

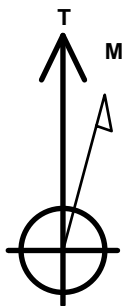
# PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Cockroft 19V-304**

Surface Location: Cockroft 5N63W19C Pad Sec.19-T5N-R63W  
 North American Datum 1983 , US State Plane 1983 Colorado Northern Zone  
 Ground Elevation: 4555.0  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1385863.50 3285745.44 40.388060 -104.474180  
 RKB - 13' WELL @ 4568.0ft (RKB - 13')

## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 1418'FNL, 1170'FEL, SEC.19	1.0	0.0	0.0	Point
BHL 1443'FNL, 2149'FEL, SEC.24	6498.0	-10.1	-6248.4	Point
LPL 1428'FNL, 821'FEL, SEC.19	6523.0	-10.1	349.1	Point



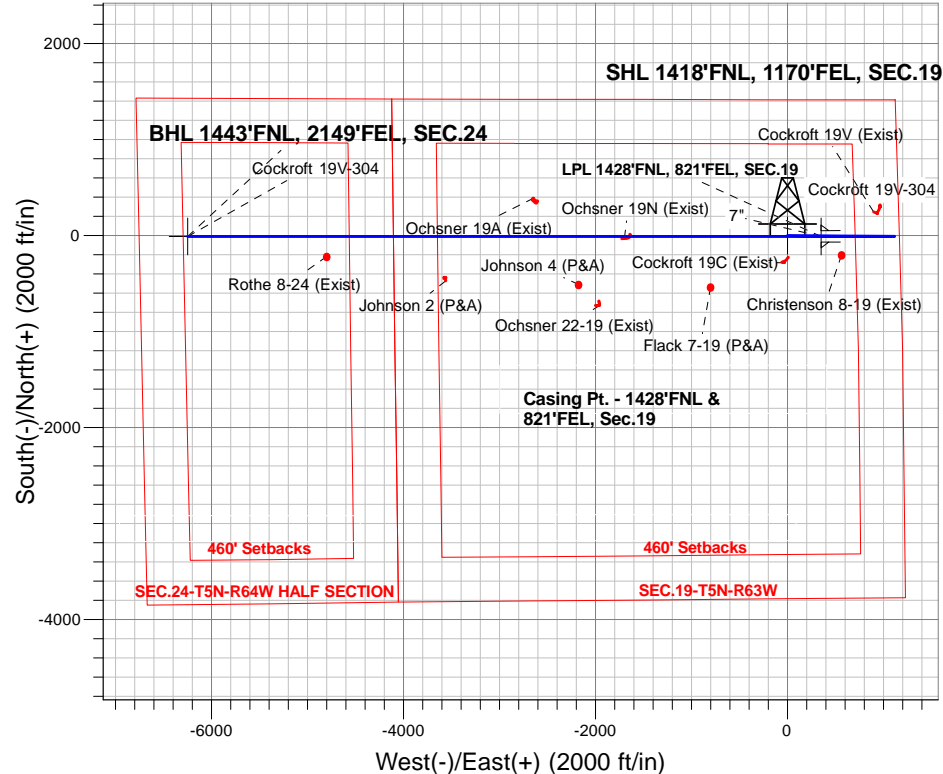
Azimuths to True North  
 Magnetic North: 8.11°

Magnetic Field  
 Strength: 52690.6snT  
 Dip Angle: 66.93°  
 Date: 11/18/2015  
 Model: IGRF2010

Cockroft 5N63W19C Pad Sec.19-T5N-R63W  
 Cockroft 19V-304  
 Plan #1 (11-13-15)  
 9:32, November 18 2015

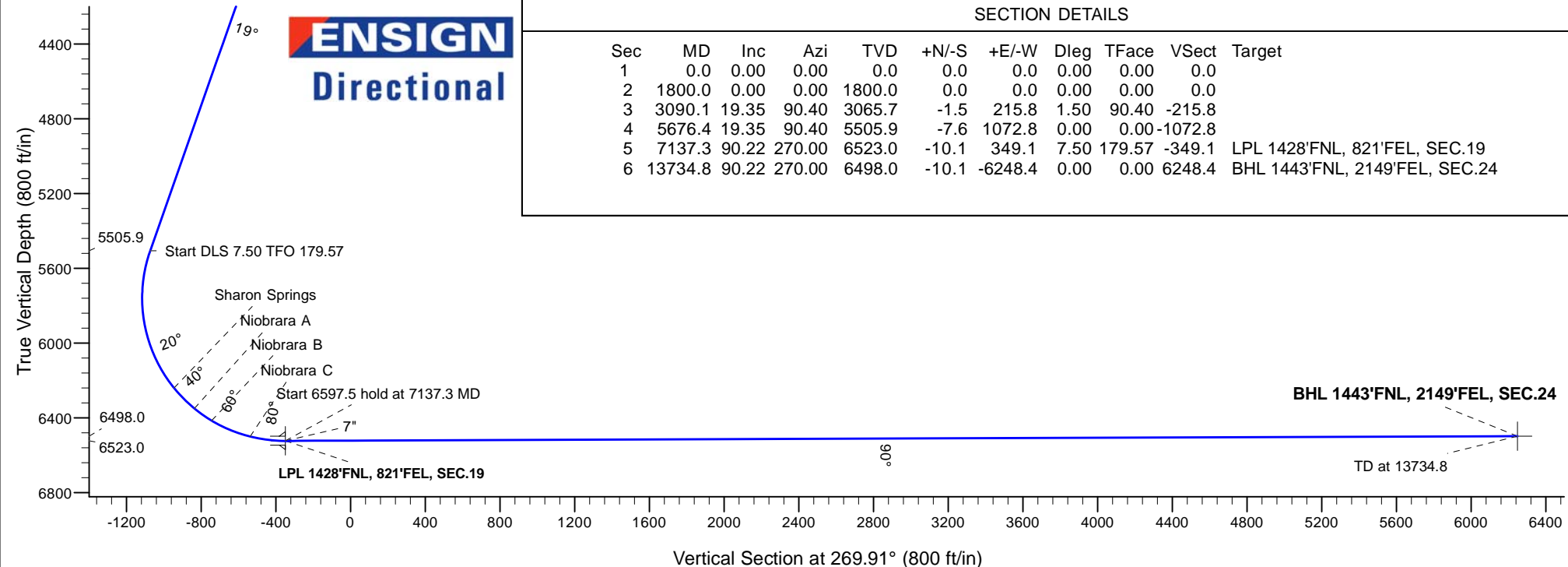
## ANNOTATIONS

TVD	MD	Annotation
1800.0	1800.0	KOP - Start Build 1.50
3065.7	3090.1	Start 2586.3 hold at 3090.1 MD
5505.9	5676.4	Start DLS 7.50 TFO 179.57
6523.0	7137.3	Start 6597.5 hold at 7137.3 MD
6498.0	13734.8	TD at 13734.8



## 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	1800.0	0.00	0.00	1800.0	0.0	0.0	0.00	0.00	0.0	
3	3090.1	19.35	90.40	3065.7	-1.5	215.8	1.50	90.40	-215.8	
4	5676.4	19.35	90.40	5505.9	-7.6	1072.8	0.00	0.00	-1072.8	
5	7137.3	90.22	270.00	6523.0	-10.1	349.1	7.50	179.57	-349.1	LPL 1428'FNL, 821'FEL, SEC.19
6	13734.8	90.22	270.00	6498.0	-10.1	-6248.4	0.00	0.00	6248.4	BHL 1443'FNL, 2149'FEL, SEC.24





## **PETROLEUM DEVELOPMENT CORP DJ Basin**

**SEC.19-T5N-R63W**

**Cockroft 5N63W19C Pad Sec.19-T5N-R63W**

**Cockroft 19V-304**

**Wellbore #1**

**Plan: Plan #1 (11-13-15)**

## **Standard Planning Report**

**18 November, 2015**

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Project:</b>	SEC.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (11-13-15)		

<b>Project</b>	SEC.19-T5N-R63W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site		Cockroft 5N63W19C Pad Sec.19-T5N-R63W			
Site Position:		Northing:	1,385,863.51 usft	Latitude:	40.388060
From:	Lat/Long	Easting:	3,285,745.44 usft	Longitude:	-104.474180
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.66

Well	Cockroft 19V-304					
Well Position	+N/-S	0.0 ft	Northing:	1,385,863.50 usft	Latitude:	40.388060
	+E/-W	0.0 ft	Easting:	3,285,745.44 usft	Longitude:	-104.474180
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,555.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	11/18/2015	8.11	66.93	52,691

<b>Design</b>	Plan #1 (11-13-15)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	269.91

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,090.1	19.35	90.40	3,065.7	-1.5	215.8	1.50	1.50	0.00	90.40	
5,676.4	19.35	90.40	5,505.9	-7.6	1,072.8	0.00	0.00	0.00	0.00	
7,137.3	90.22	270.00	6,523.0	-10.1	349.1	7.50	4.85	12.29	179.57	LPL 1428'FNL, 821'F
13,734.8	90.22	270.00	6,498.0	-10.1	-6,248.4	0.00	0.00	0.00	0.00	BHL 1443'FNL, 2149'

Database:	US_EDM	Local Co-ordinate Reference:	Well Cockroft 19V-304
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4568.0ft (RKB - 13')
Project:	SEC.19-T5N-R63W	MD Reference:	WELL @ 4568.0ft (RKB - 13')
Site:	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	North Reference:	True
Well:	Cockroft 19V-304	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-13-15)		

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 1418'FNL, 1170'FEL, SEC.19									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 1.50									
1,900.0	1.50	90.40	1,900.0	0.0	1.3	-1.3	1.50	1.50	0.00
2,000.0	3.00	90.40	1,999.9	0.0	5.2	-5.2	1.50	1.50	0.00
2,100.0	4.50	90.40	2,099.7	-0.1	11.8	-11.8	1.50	1.50	0.00
2,200.0	6.00	90.40	2,199.3	-0.1	20.9	-20.9	1.50	1.50	0.00
2,300.0	7.50	90.40	2,298.6	-0.2	32.7	-32.7	1.50	1.50	0.00
2,400.0	9.00	90.40	2,397.5	-0.3	47.0	-47.0	1.50	1.50	0.00
2,500.0	10.50	90.40	2,496.1	-0.5	64.0	-64.0	1.50	1.50	0.00
2,600.0	12.00	90.40	2,594.2	-0.6	83.5	-83.5	1.50	1.50	0.00
2,700.0	13.50	90.40	2,691.7	-0.7	105.5	-105.5	1.50	1.50	0.00
2,800.0	15.00	90.40	2,788.6	-0.9	130.2	-130.1	1.50	1.50	0.00
2,900.0	16.50	90.40	2,884.9	-1.1	157.3	-157.3	1.50	1.50	0.00
3,000.0	18.00	90.40	2,980.4	-1.3	186.9	-186.9	1.50	1.50	0.00
3,090.1	19.35	90.40	3,065.7	-1.5	215.8	-215.8	1.50	1.50	0.00
Start 2586.3 hold at 3090.1 MD									
3,100.0	19.35	90.40	3,075.1	-1.5	219.1	-219.1	0.00	0.00	0.00
3,200.0	19.35	90.40	3,169.4	-1.8	252.2	-252.2	0.00	0.00	0.00
3,300.0	19.35	90.40	3,263.8	-2.0	285.3	-285.3	0.00	0.00	0.00
3,375.5	19.35	90.40	3,335.0	-2.2	310.4	-310.4	0.00	0.00	0.00
Parkman									
3,400.0	19.35	90.40	3,358.1	-2.2	318.5	-318.5	0.00	0.00	0.00
3,500.0	19.35	90.40	3,452.5	-2.5	351.6	-351.6	0.00	0.00	0.00
3,600.0	19.35	90.40	3,546.8	-2.7	384.8	-384.7	0.00	0.00	0.00
3,700.0	19.35	90.40	3,641.2	-2.9	417.9	-417.9	0.00	0.00	0.00
3,800.0	19.35	90.40	3,735.5	-3.2	451.0	-451.0	0.00	0.00	0.00
3,900.0	19.35	90.40	3,829.9	-3.4	484.2	-484.2	0.00	0.00	0.00
4,000.0	19.35	90.40	3,924.2	-3.6	517.3	-517.3	0.00	0.00	0.00
4,100.0	19.35	90.40	4,018.6	-3.9	550.4	-550.4	0.00	0.00	0.00
4,149.2	19.35	90.40	4,065.0	-4.0	566.7	-566.7	0.00	0.00	0.00
Sussex									
4,200.0	19.35	90.40	4,112.9	-4.1	583.6	-583.6	0.00	0.00	0.00
4,300.0	19.35	90.40	4,207.3	-4.3	616.7	-616.7	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Cockroft 19V-304
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4568.0ft (RKB - 13')
Project:	SEC.19-T5N-R63W	MD Reference:	WELL @ 4568.0ft (RKB - 13')
Site:	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	North Reference:	True
Well:	Cockroft 19V-304	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-13-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,400.0	19.35	90.40	4,301.6	-4.6	649.8	-649.8	0.00	0.00	0.00
4,500.0	19.35	90.40	4,396.0	-4.8	683.0	-683.0	0.00	0.00	0.00
4,600.0	19.35	90.40	4,490.3	-5.1	716.1	-716.1	0.00	0.00	0.00
4,700.0	19.35	90.40	4,584.7	-5.3	749.2	-749.2	0.00	0.00	0.00
4,800.0	19.35	90.40	4,679.0	-5.5	782.4	-782.4	0.00	0.00	0.00
4,900.0	19.35	90.40	4,773.4	-5.8	815.5	-815.5	0.00	0.00	0.00
5,000.0	19.35	90.40	4,867.7	-6.0	848.6	-848.6	0.00	0.00	0.00
5,100.0	19.35	90.40	4,962.1	-6.2	881.8	-881.8	0.00	0.00	0.00
5,200.0	19.35	90.40	5,056.4	-6.5	914.9	-914.9	0.00	0.00	0.00
5,300.0	19.35	90.40	5,150.8	-6.7	948.1	-948.0	0.00	0.00	0.00
5,400.0	19.35	90.40	5,245.1	-6.9	981.2	-981.2	0.00	0.00	0.00
5,500.0	19.35	90.40	5,339.5	-7.2	1,014.3	-1,014.3	0.00	0.00	0.00
5,600.0	19.35	90.40	5,433.8	-7.4	1,047.5	-1,047.4	0.00	0.00	0.00
5,676.4	19.35	90.40	5,505.9	-7.6	1,072.8	-1,072.8	0.00	0.00	0.00
Start DLS 7.50 TFO 179.57									
5,700.0	17.58	90.45	5,528.3	-7.6	1,080.2	-1,080.2	7.50	-7.50	0.19
5,800.0	10.08	90.80	5,625.3	-7.9	1,104.1	-1,104.1	7.50	-7.50	0.35
5,900.0	2.59	93.15	5,724.6	-8.1	1,115.2	-1,115.1	7.50	-7.50	2.35
6,000.0	4.92	268.35	5,824.5	-8.4	1,113.1	-1,113.1	7.50	2.33	175.20
6,100.0	12.42	269.35	5,923.3	-8.6	1,098.1	-1,098.1	7.50	7.50	1.01
6,200.0	19.92	269.61	6,019.3	-8.8	1,070.2	-1,070.2	7.50	7.50	0.25
6,300.0	27.42	269.73	6,110.8	-9.1	1,030.1	-1,030.1	7.50	7.50	0.12
6,400.0	34.92	269.80	6,196.3	-9.3	978.4	-978.4	7.50	7.50	0.07
6,454.7	39.02	269.82	6,240.0	-9.4	945.6	-945.5	7.50	7.50	0.05
Sharon Springs									
6,500.0	42.42	269.84	6,274.4	-9.5	916.0	-916.0	7.50	7.50	0.04
6,600.0	49.92	269.88	6,343.6	-9.6	843.9	-843.9	7.50	7.50	0.04
6,610.1	50.67	269.88	6,350.0	-9.7	836.1	-836.1	7.50	7.50	0.03
Niobrara A									
6,700.0	57.42	269.91	6,402.8	-9.8	763.4	-763.4	7.50	7.50	0.03
6,723.3	59.16	269.91	6,415.0	-9.8	743.6	-743.6	7.50	7.50	0.03
Niobrara B									
6,800.0	64.92	269.93	6,451.0	-9.9	675.9	-675.8	7.50	7.50	0.02
6,900.0	72.42	269.95	6,487.3	-10.0	582.8	-582.8	7.50	7.50	0.02
6,946.5	75.90	269.96	6,500.0	-10.0	538.1	-538.0	7.50	7.50	0.02
Niobrara C									
7,000.0	79.92	269.97	6,511.2	-10.1	485.7	-485.7	7.50	7.50	0.02
7,100.0	87.42	269.99	6,522.2	-10.1	386.4	-386.4	7.50	7.50	0.02
7,137.3	90.21	270.00	6,523.0	-10.1	349.1	-349.1	7.49	7.49	0.02
Start 6597.5 hold at 7137.3 MD - 7" - LPL 1428'FNL, 821'FEL, SEC.19									
7,200.0	90.22	270.00	6,522.8	-10.1	286.4	-286.4	0.01	0.01	0.00
7,300.0	90.22	270.00	6,522.4	-10.1	186.4	-186.4	0.00	0.00	0.00
7,400.0	90.22	270.00	6,522.0	-10.1	86.4	-86.4	0.00	0.00	0.00
7,500.0	90.22	270.00	6,521.6	-10.1	-13.6	13.6	0.00	0.00	0.00
7,600.0	90.22	270.00	6,521.2	-10.1	-113.6	113.6	0.00	0.00	0.00
7,700.0	90.22	270.00	6,520.9	-10.1	-213.6	213.6	0.00	0.00	0.00
7,800.0	90.22	270.00	6,520.5	-10.1	-313.6	313.6	0.00	0.00	0.00
7,900.0	90.22	270.00	6,520.1	-10.1	-413.6	413.6	0.00	0.00	0.00
8,000.0	90.22	270.00	6,519.7	-10.1	-513.6	513.6	0.00	0.00	0.00
8,100.0	90.22	270.00	6,519.4	-10.1	-613.6	613.6	0.00	0.00	0.00
8,200.0	90.22	270.00	6,519.0	-10.1	-713.5	713.6	0.00	0.00	0.00
8,300.0	90.22	270.00	6,518.6	-10.1	-813.5	813.6	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Cockroft 19V-304
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 4568.0ft (RKB - 13')
Project:	SEC.19-T5N-R63W	MD Reference:	WELL @ 4568.0ft (RKB - 13')
Site:	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	North Reference:	True
Well:	Cockroft 19V-304	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-13-15)		

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)
8,400.0	90.22	270.00	6,518.2	-10.1	-913.5	913.6	0.00	0.00	0.00
8,500.0	90.22	270.00	6,517.8	-10.1	-1,013.5	1,013.6	0.00	0.00	0.00
8,600.0	90.22	270.00	6,517.5	-10.1	-1,113.5	1,113.6	0.00	0.00	0.00
8,700.0	90.22	270.00	6,517.1	-10.1	-1,213.5	1,213.6	0.00	0.00	0.00
8,800.0	90.22	270.00	6,516.7	-10.1	-1,313.5	1,313.6	0.00	0.00	0.00
8,900.0	90.22	270.00	6,516.3	-10.1	-1,413.5	1,413.6	0.00	0.00	0.00
9,000.0	90.22	270.00	6,515.9	-10.1	-1,513.5	1,513.6	0.00	0.00	0.00
9,100.0	90.22	270.00	6,515.6	-10.1	-1,613.5	1,613.6	0.00	0.00	0.00
9,200.0	90.22	270.00	6,515.2	-10.1	-1,713.5	1,713.6	0.00	0.00	0.00
9,300.0	90.22	270.00	6,514.8	-10.1	-1,813.5	1,813.6	0.00	0.00	0.00
9,400.0	90.22	270.00	6,514.4	-10.1	-1,913.5	1,913.6	0.00	0.00	0.00
9,500.0	90.22	270.00	6,514.0	-10.1	-2,013.5	2,013.6	0.00	0.00	0.00
9,600.0	90.22	270.00	6,513.7	-10.1	-2,113.5	2,113.6	0.00	0.00	0.00
9,700.0	90.22	270.00	6,513.3	-10.1	-2,213.5	2,213.6	0.00	0.00	0.00
9,800.0	90.22	270.00	6,512.9	-10.1	-2,313.5	2,313.6	0.00	0.00	0.00
9,900.0	90.22	270.00	6,512.5	-10.1	-2,413.5	2,413.6	0.00	0.00	0.00
10,000.0	90.22	270.00	6,512.2	-10.1	-2,513.5	2,513.5	0.00	0.00	0.00
10,100.0	90.22	270.00	6,511.8	-10.1	-2,613.5	2,613.5	0.00	0.00	0.00
10,200.0	90.22	270.00	6,511.4	-10.1	-2,713.5	2,713.5	0.00	0.00	0.00
10,300.0	90.22	270.00	6,511.0	-10.1	-2,813.5	2,813.5	0.00	0.00	0.00
10,400.0	90.22	270.00	6,510.6	-10.1	-2,913.5	2,913.5	0.00	0.00	0.00
10,500.0	90.22	270.00	6,510.3	-10.1	-3,013.5	3,013.5	0.00	0.00	0.00
10,600.0	90.22	270.00	6,509.9	-10.1	-3,113.5	3,113.5	0.00	0.00	0.00
10,700.0	90.22	270.00	6,509.5	-10.1	-3,213.5	3,213.5	0.00	0.00	0.00
10,800.0	90.22	270.00	6,509.1	-10.1	-3,313.5	3,313.5	0.00	0.00	0.00
10,900.0	90.22	270.00	6,508.7	-10.1	-3,413.5	3,413.5	0.00	0.00	0.00
11,000.0	90.22	270.00	6,508.4	-10.1	-3,513.5	3,513.5	0.00	0.00	0.00
11,100.0	90.22	270.00	6,508.0	-10.1	-3,613.5	3,613.5	0.00	0.00	0.00
11,200.0	90.22	270.00	6,507.6	-10.1	-3,713.5	3,713.5	0.00	0.00	0.00
11,300.0	90.22	270.00	6,507.2	-10.1	-3,813.5	3,813.5	0.00	0.00	0.00
11,400.0	90.22	270.00	6,506.8	-10.1	-3,913.5	3,913.5	0.00	0.00	0.00
11,500.0	90.22	270.00	6,506.5	-10.1	-4,013.5	4,013.5	0.00	0.00	0.00
11,600.0	90.22	270.00	6,506.1	-10.1	-4,113.5	4,113.5	0.00	0.00	0.00
11,700.0	90.22	270.00	6,505.7	-10.1	-4,213.5	4,213.5	0.00	0.00	0.00
11,800.0	90.22	270.00	6,505.3	-10.1	-4,313.5	4,313.5	0.00	0.00	0.00
11,900.0	90.22	270.00	6,505.0	-10.1	-4,413.5	4,413.5	0.00	0.00	0.00
12,000.0	90.22	270.00	6,504.6	-10.1	-4,513.5	4,513.5	0.00	0.00	0.00
12,100.0	90.22	270.00	6,504.2	-10.1	-4,613.5	4,613.5	0.00	0.00	0.00
12,200.0	90.22	270.00	6,503.8	-10.1	-4,713.5	4,713.5	0.00	0.00	0.00
12,300.0	90.22	270.00	6,503.4	-10.1	-4,813.5	4,813.5	0.00	0.00	0.00
12,400.0	90.22	270.00	6,503.1	-10.1	-4,913.5	4,913.5	0.00	0.00	0.00
12,500.0	90.22	270.00	6,502.7	-10.1	-5,013.5	5,013.5	0.00	0.00	0.00
12,600.0	90.22	270.00	6,502.3	-10.1	-5,113.5	5,113.5	0.00	0.00	0.00
12,700.0	90.22	270.00	6,501.9	-10.1	-5,213.5	5,213.5	0.00	0.00	0.00
12,800.0	90.22	270.00	6,501.5	-10.1	-5,313.5	5,313.5	0.00	0.00	0.00
12,900.0	90.22	270.00	6,501.2	-10.1	-5,413.5	5,413.5	0.00	0.00	0.00
13,000.0	90.22	270.00	6,500.8	-10.1	-5,513.5	5,513.5	0.00	0.00	0.00
13,100.0	90.22	270.00	6,500.4	-10.1	-5,613.5	5,613.5	0.00	0.00	0.00
13,200.0	90.22	270.00	6,500.0	-10.1	-5,713.5	5,713.5	0.00	0.00	0.00
13,300.0	90.22	270.00	6,499.6	-10.1	-5,813.5	5,813.5	0.00	0.00	0.00
13,400.0	90.22	270.00	6,499.3	-10.1	-5,913.5	5,913.5	0.00	0.00	0.00
13,500.0	90.22	270.00	6,498.9	-10.1	-6,013.5	6,013.5	0.00	0.00	0.00
13,600.0	90.22	270.00	6,498.5	-10.1	-6,113.5	6,113.5	0.00	0.00	0.00

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Cockcroft 19V-304
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Project:</b>	SEC.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site:</b>	Cockcroft 5N63W19C Pad Sec.19-T5N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	Cockcroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (11-13-15)		

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	90.22	270.00	6,498.1	-10.1	-6,213.5	6,213.5	0.00	0.00	0.00
13,734.8	90.22	270.00	6,498.0	-10.1	-6,248.4	6,248.4	0.00	0.00	0.00
TD at 13734.8 - BHL 1443'FNL, 2149'FEL, SEC.24									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL 1418'FNL, 1170'FEI - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,385,863.51	3,285,745.44	40.388060	-104.474180
BHL 1443'FNL, 2149'FE - plan hits target center - Point	0.00	0.00	6,498.0	-10.1	-6,248.4	1,385,781.09	3,279,497.89	40.388030	-104.496610
LPL 1428'FNL, 821'FEL, - plan hits target center - Point	0.00	0.00	6,523.0	-10.1	349.1	1,385,857.44	3,286,094.62	40.388032	-104.472927

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,137.3	6,523.0	7"	7	8-3/4	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,375.5	3,335.0	Parkman		0.00	
4,149.2	4,065.0	Sussex		0.00	
6,454.7	6,240.0	Sharon Springs		0.00	
6,610.1	6,350.0	Niobrara A		0.00	
6,723.3	6,415.0	Niobrara B		0.00	
6,946.5	6,500.0	Niobrara C		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
1,800.0	1,800.0	0.0	0.0	KOP - Start Build 1.50
3,090.1	3,065.7	-1.5	215.8	Start 2586.3 hold at 3090.1 MD
5,676.4	5,505.9	-7.6	1,072.8	Start DLS 7.50 TFO 179.57
7,137.3	6,523.0	-10.1	349.1	Start 6597.5 hold at 7137.3 MD
13,734.8	6,498.0	-10.1	-6,248.4	TD at 13734.8

# **PETROLEUM DEVELOPMENT CORP DJ Basin**

**SEC.19-T5N-R63W**

**Cockroft 5N63W19C Pad Sec.19-T5N-R63W**

**Cockroft 19V-304**

**Wellbore #1**

**Plan #1 (11-13-15)**

## **Anticollision Report**

**18 November, 2015**



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (11-13-15)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 800.0 ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b>	11/18/2015		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	13,734.8	Plan #1 (11-13-15) (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						
Cockroft 5N63W19C Pad Sec.19-T5N-R63W						
Cockroft 19U-334 - Wellbore #1 - Plan #1 (11-13-15)	600.0	599.0	89.1	86.6	36.062	CC, ES
Cockroft 19U-334 - Wellbore #1 - Plan #1 (11-13-15)	5,200.0	5,054.2	797.5	756.5	19.453	SF
Cockroft 19U-404 - Wellbore #1 - Plan #1 (11-13-15)	200.0	199.0	120.6	119.9	179.411	CC, ES
Cockroft 19U-404 - Wellbore #1 - Plan #1 (11-13-15)	4,400.0	4,243.3	799.5	769.2	26.347	SF
Cockroft 19V-204 - Wellbore #1 - Plan #1 (11-13-15)	1,600.0	1,600.0	14.4	7.4	2.066	CC
Cockroft 19V-204 - Wellbore #1 - Plan #1 (11-13-15)	13,734.8	13,636.9	251.9	-129.9	0.660	Level 1, ES, SF
Cockroft 19V-214 - Wellbore #1 - Plan #1 (11-13-15)	1,000.0	999.0	60.3	56.0	14.124	CC, ES
Cockroft 19V-214 - Wellbore #1 - Plan #1 (11-13-15)	13,734.8	13,620.4	685.3	290.3	1.735	SF
Cockroft 19V-234 - Wellbore #1 - Plan #1 (11-13-15)	1,400.0	1,399.0	28.8	22.7	4.746	CC
Cockroft 19V-234 - Wellbore #1 - Plan #1 (11-13-15)	13,734.8	13,648.3	211.1	-174.4	0.548	Level 1, ES, SF
Cockroft 19V-314 - Wellbore #1 - Plan #1 (11-13-15)	1,200.0	1,199.0	43.2	38.0	8.358	CC, ES
Cockroft 19V-314 - Wellbore #1 - Plan #1 (11-13-15)	13,734.8	13,699.4	484.5	87.4	1.220	Level 2, SF
Cockroft 19W-214 - Wellbore #1 - Plan #1 (11-13-15)	400.0	399.0	103.5	101.9	65.862	CC, ES
Cockroft 19W-214 - Wellbore #1 - Plan #1 (11-13-15)	5,750.0	5,606.8	794.6	746.2	16.428	SF
Cockroft 19W-314 - Wellbore #1 - Plan #1 (11-13-15)	800.0	799.0	74.7	71.3	22.166	CC, ES
Cockroft 19W-314 - Wellbore #1 - Plan #1 (11-13-15)	13,734.8	13,725.8	739.8	342.7	1.863	SF

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Existing Wells Sec.19-T5N-R63W						
Christenson 8-19 (Exist) - Wellbore #1 - Wellbore #1	6,921.1	6,486.4	190.3	34.7	1.223	Level 2, CC, ES, SF
Cockroft 19C (Exist) - Wellbore #1 - Wellbore #1	100.0	85.8	226.1	225.9	1,080.585	CC
Cockroft 19C (Exist) - Wellbore #1 - Wellbore #1	1,700.0	1,685.0	230.2	223.5	34.169	ES
Cockroft 19C (Exist) - Wellbore #1 - Wellbore #1	7,520.2	6,504.4	271.8	224.5	5.741	SF
Cockroft 19V (Exist) - Wellbore #1 - Wellbore #1	5,279.6	5,149.7	238.3	207.6	7.748	CC
Cockroft 19V (Exist) - Wellbore #1 - Wellbore #1	6,469.4	6,261.8	240.3	204.7	6.765	ES, SF
Flack 7-19 (P&A) - Wellbore #1 - Wellbore #1	8,288.8	6,505.6	525.4	344.0	2.897	CC
Flack 7-19 (P&A) - Wellbore #1 - Wellbore #1	8,300.0	6,505.6	525.5	343.9	2.893	ES, SF
Johnson 2 (P&A) - Wellbore #1 - Wellbore #1	11,046.9	6,488.8	458.0	321.9	3.366	CC, ES
Johnson 2 (P&A) - Wellbore #1 - Wellbore #1	11,100.0	6,488.8	461.1	323.6	3.352	SF
Johnson 4 (P&A) - Wellbore #1 - Wellbore #1	9,662.1	6,500.4	499.8	282.9	2.304	CC, ES
Johnson 4 (P&A) - Wellbore #1 - Wellbore #1	9,700.0	6,500.3	501.3	283.3	2.300	SF
Ochsner 19A (Exist) - Wellbore #1 - Wellbore #1	10,140.0	6,497.2	394.5	283.6	3.557	CC, ES
Ochsner 19A (Exist) - Wellbore #1 - Wellbore #1	10,200.0	6,495.0	399.0	286.5	3.546	SF
Ochsner 19N (Exist) - Wellbore #1 - Wellbore #1	9,189.8	6,506.0	13.1	-72.3	0.153	Level 1, CC, ES, SF
Ochsner 22-19 (Exist) - Wellbore #1 - Wellbore #1	9,444.1	6,508.9	718.1	624.5	7.676	CC, ES
Ochsner 22-19 (Exist) - Wellbore #1 - Wellbore #1	9,600.0	6,507.3	734.8	637.1	7.519	SF
Rothe 8-24 (Exist) - Wellbore #1 - Wellbore #1	12,286.3	6,496.5	208.0	-80.9	0.720	Level 1, CC, ES, SF

Offset Design													Offset Site Error:	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19U-334 - Wellbore #1 - Plan #1 (11-13-15)													Offset Well Error:	0.0 ft
Survey Program: 0-MWD														
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	75.80	21.9	86.4	89.1					
100.0	100.0	99.0	99.0	0.1	0.1	75.80	21.9	86.4	89.1	88.9	0.22	398.314		
200.0	200.0	199.0	199.0	0.3	0.3	75.80	21.9	86.4	89.1	88.4	0.67	132.550		
300.0	300.0	299.0	299.0	0.6	0.6	75.80	21.9	86.4	89.1	88.0	1.12	79.424		
400.0	400.0	399.0	399.0	0.8	0.8	75.80	21.9	86.4	89.1	87.5	1.57	56.699		
500.0	500.0	499.0	499.0	1.0	1.0	75.80	21.9	86.4	89.1	87.1	2.02	44.085		
600.0	600.0	599.0	599.0	1.2	1.2	75.80	21.9	86.4	89.1	86.6	2.47	36.062	CC, ES	
700.0	700.0	697.0	697.0	1.5	1.5	75.42	22.7	87.3	90.2	87.3	2.91	30.978		
800.0	800.0	794.8	794.7	1.7	1.7	74.35	25.2	90.0	93.6	90.2	3.35	27.916		
900.0	900.0	892.4	892.1	1.9	1.9	72.73	29.4	94.6	99.3	95.5	3.80	26.139		
1,000.0	1,000.0	989.6	988.9	2.1	2.1	70.75	35.3	101.0	107.5	103.2	4.26	25.240		
1,100.0	1,100.0	1,086.3	1,085.0	2.4	2.4	68.62	42.7	109.2	118.1	113.3	4.73	24.955		
1,200.0	1,200.0	1,182.4	1,180.1	2.6	2.6	66.49	51.8	119.0	131.2	126.0	5.23	25.105		
1,300.0	1,300.0	1,277.7	1,274.2	2.8	2.9	64.48	62.4	130.6	146.8	141.1	5.75	25.555		
1,400.0	1,400.0	1,372.2	1,367.0	3.0	3.3	62.64	74.4	143.7	165.0	158.7	6.29	26.209		
1,500.0	1,500.0	1,465.8	1,458.4	3.3	3.6	60.99	87.8	158.4	185.6	178.8	6.88	26.996		
1,600.0	1,600.0	1,558.3	1,548.3	3.5	4.0	59.55	102.6	174.5	208.7	201.2	7.49	27.864		
1,700.0	1,700.0	1,649.6	1,636.5	3.7	4.4	58.30	118.6	192.1	234.2	226.1	8.14	28.775		
1,800.0	1,800.0	1,742.0	1,725.1	3.9	4.9	57.19	136.2	211.2	262.0	253.1	8.83	29.675		
1,900.0	1,900.0	1,838.1	1,817.2	4.1	5.4	-34.08	154.7	231.5	289.2	280.8	8.37	34.565		
2,000.0	1,999.9	1,934.7	1,909.7	4.3	5.9	-35.05	173.4	251.8	314.4	305.6	8.82	35.643		
2,100.0	2,099.7	2,031.6	2,002.7	4.6	6.5	-36.12	192.1	272.3	337.7	328.4	9.28	36.377		
2,200.0	2,199.3	2,129.0	2,095.9	4.8	7.0	-37.29	210.9	292.8	359.1	349.3	9.75	36.816		
2,300.0	2,298.6	2,226.6	2,189.5	5.0	7.5	-38.57	229.7	313.4	378.6	368.4	10.23	36.998		
2,400.0	2,397.5	2,324.4	2,283.2	5.3	8.1	-39.97	248.6	334.0	396.4	385.7	10.73	36.950		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19U-334 - Wellbore #1 - Plan #1 (11-13-15)											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)				
2,500.0	2,496.1	2,422.4	2,377.1	5.5	8.7	-41.47	267.5	354.7	412.6	401.4	11.25	36.692			
2,600.0	2,594.2	2,520.5	2,471.1	5.8	9.2	-43.10	286.5	375.4	427.2	415.4	11.79	36.236			
2,700.0	2,691.7	2,618.6	2,565.1	6.2	9.8	-44.86	305.4	396.0	440.3	427.9	12.37	35.595			
2,800.0	2,788.6	2,716.6	2,659.1	6.5	10.3	-46.75	324.3	416.7	452.1	439.1	13.00	34.777			
2,900.0	2,884.9	2,814.5	2,752.9	6.9	10.9	-48.78	343.2	437.3	462.8	449.1	13.69	33.795			
3,000.0	2,980.4	2,912.3	2,846.5	7.4	11.5	-50.95	362.1	458.0	472.4	457.9	14.46	32.663			
3,090.1	3,065.7	3,000.1	2,930.7	7.9	12.0	-53.03	379.0	476.5	480.3	465.1	15.23	31.534			
3,100.0	3,075.1	3,009.7	2,939.9	7.9	12.0	-53.28	380.9	478.5	481.2	465.9	15.32	31.402			
3,200.0	3,169.4	3,107.1	3,033.2	8.5	12.6	-55.71	399.7	499.0	490.3	474.0	16.27	30.127			
3,300.0	3,263.8	3,204.4	3,126.5	9.1	13.2	-58.05	418.5	519.6	500.2	482.9	17.28	28.944			
3,400.0	3,358.1	3,301.8	3,219.8	9.7	13.7	-60.29	437.3	540.1	511.0	492.7	18.34	27.857			
3,500.0	3,452.5	3,399.1	3,313.1	10.3	14.3	-62.45	456.1	560.6	522.6	503.1	19.45	26.865			
3,600.0	3,546.8	3,496.5	3,406.4	10.9	14.9	-64.51	474.9	581.1	534.9	514.3	20.60	25.965			
3,700.0	3,641.2	3,593.9	3,499.7	11.5	15.4	-66.49	493.6	601.7	547.8	526.0	21.78	25.153			
3,800.0	3,735.5	3,691.2	3,593.0	12.1	16.0	-68.37	512.4	622.2	561.4	538.4	22.99	24.422			
3,900.0	3,829.9	3,788.6	3,686.3	12.8	16.6	-70.16	531.2	642.7	575.6	551.4	24.22	23.765			
4,000.0	3,924.2	3,885.9	3,779.6	13.4	17.1	-71.87	550.0	663.2	590.3	564.9	25.47	23.176			
4,100.0	4,018.6	3,983.3	3,872.9	14.1	17.7	-73.50	568.8	683.8	605.6	578.8	26.74	22.649			
4,200.0	4,112.9	4,080.6	3,966.2	14.8	18.3	-75.05	587.6	704.3	621.2	593.2	28.01	22.176			
4,300.0	4,207.3	4,178.0	4,059.4	15.4	18.9	-76.52	606.4	724.8	637.4	608.1	29.30	21.754			
4,400.0	4,301.6	4,275.3	4,152.7	16.1	19.4	-77.92	625.2	745.3	653.9	623.3	30.59	21.375			
4,500.0	4,396.0	4,372.7	4,246.0	16.8	20.0	-79.25	644.0	765.9	670.8	638.9	31.89	21.035			
4,600.0	4,490.3	4,470.0	4,339.3	17.5	20.6	-80.52	662.8	786.4	688.1	654.9	33.19	20.731			
4,700.0	4,584.7	4,567.4	4,432.6	18.1	21.1	-81.73	681.6	806.9	705.6	671.1	34.49	20.457			
4,800.0	4,679.0	4,664.8	4,525.9	18.8	21.7	-82.88	700.4	827.4	723.5	687.7	35.79	20.212			
4,900.0	4,773.4	4,762.1	4,619.2	19.5	22.3	-83.97	719.2	848.0	741.6	704.5	37.10	19.991			
5,000.0	4,867.7	4,859.5	4,712.5	20.2	22.9	-85.02	737.9	868.5	760.0	721.6	38.40	19.793			
5,100.0	4,962.1	4,956.8	4,805.8	20.9	23.4	-86.01	756.7	889.0	778.6	738.9	39.70	19.614			
5,200.0	5,056.4	5,054.2	4,899.1	21.6	24.0	-86.96	775.5	909.5	797.5	756.5	41.00	19.453 SF			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19U-404 - Wellbore #1 - Plan #1 (11-13-15)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
Reference				Offset			Semi Major Axis		Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	76.02	29.1	117.0	120.6				
100.0	100.0	99.0	99.0	0.1	0.1	76.02	29.1	117.0	120.6	120.3	0.22	539.130	
200.0	200.0	199.0	199.0	0.3	0.3	76.02	29.1	117.0	120.6	119.9	0.67	179.411 CC, ES	
300.0	300.0	296.5	296.5	0.6	0.6	75.69	30.1	117.8	121.6	120.5	1.11	109.151	
400.0	400.0	393.8	393.7	0.8	0.8	74.72	32.8	120.2	124.7	123.2	1.56	79.974	
500.0	500.0	490.9	490.6	1.0	1.0	73.22	37.5	124.3	130.1	128.1	2.01	64.572	
600.0	600.0	587.6	586.9	1.2	1.2	71.32	43.9	129.9	137.7	135.2	2.48	55.459	
700.0	700.0	683.8	682.5	1.5	1.5	69.17	52.2	137.1	147.6	144.7	2.97	49.714	
800.0	800.0	779.4	777.2	1.7	1.8	66.91	62.2	145.9	160.0	156.6	3.48	45.972	
900.0	900.0	874.3	870.8	1.9	2.1	64.68	73.8	156.0	174.9	170.9	4.02	43.498	
1,000.0	1,000.0	968.3	963.1	2.1	2.5	62.54	87.1	167.7	192.3	187.7	4.59	41.868	
1,100.0	1,100.0	1,061.4	1,054.1	2.4	2.9	60.55	102.0	180.6	212.2	207.0	5.20	40.820	
1,200.0	1,200.0	1,153.5	1,143.6	2.6	3.3	58.74	118.3	194.9	234.6	228.8	5.84	40.183	
1,300.0	1,300.0	1,244.4	1,231.5	2.8	3.7	57.11	136.0	210.4	259.4	252.9	6.51	39.856	
1,400.0	1,400.0	1,338.3	1,321.7	3.0	4.2	55.63	155.6	227.5	286.2	279.0	7.23	39.594	
1,500.0	1,500.0	1,434.4	1,413.9	3.3	4.8	54.35	175.7	245.0	313.3	305.3	7.97	39.294	
1,600.0	1,600.0	1,530.4	1,506.2	3.5	5.3	53.29	195.9	262.6	340.5	331.8	8.73	39.027	
1,700.0	1,700.0	1,626.5	1,598.4	3.7	5.8	52.37	216.0	280.2	367.8	358.3	9.48	38.790	
1,800.0	1,800.0	1,722.5	1,690.7	3.9	6.4	51.59	236.1	297.8	395.2	384.9	10.24	38.582	
1,900.0	1,900.0	1,818.8	1,783.2	4.1	6.9	-39.36	256.3	315.4	421.7	413.0	8.67	48.657	
2,000.0	1,999.9	1,915.5	1,876.0	4.3	7.4	-40.04	276.6	333.1	446.3	437.1	9.14	48.823	
2,100.0	2,099.7	2,012.5	1,969.2	4.6	8.0	-40.86	296.9	350.9	469.0	459.4	9.62	48.767	
2,200.0	2,199.3	2,109.8	2,062.7	4.8	8.5	-41.80	317.3	368.7	490.0	479.9	10.10	48.520	
2,300.0	2,298.6	2,207.3	2,156.3	5.0	9.1	-42.86	337.8	386.6	509.3	498.8	10.59	48.101	
2,400.0	2,397.5	2,305.0	2,250.1	5.3	9.6	-44.04	358.2	404.5	527.0	515.9	11.09	47.523	
2,500.0	2,496.1	2,402.7	2,344.0	5.5	10.2	-45.33	378.7	422.4	543.2	531.6	11.61	46.790	
2,600.0	2,594.2	2,500.4	2,437.9	5.8	10.7	-46.75	399.2	440.3	557.9	545.7	12.15	45.905	
2,700.0	2,691.7	2,598.1	2,531.7	6.2	11.3	-48.28	419.7	458.1	571.3	558.6	12.73	44.871	
2,800.0	2,788.6	2,695.7	2,625.4	6.5	11.9	-49.93	440.1	476.0	583.5	570.1	13.36	43.687	
2,900.0	2,884.9	2,793.1	2,718.9	6.9	12.4	-51.71	460.6	493.8	594.6	580.6	14.04	42.360	
3,000.0	2,980.4	2,890.2	2,812.2	7.4	13.0	-53.60	480.9	511.6	604.9	590.1	14.79	40.899	
3,090.1	3,065.7	2,977.4	2,896.0	7.9	13.5	-55.41	499.2	527.6	613.5	598.0	15.54	39.483	
3,100.0	3,075.1	2,987.0	2,905.2	7.9	13.5	-55.63	501.2	529.3	614.4	598.8	15.63	39.322	
3,200.0	3,169.4	3,083.6	2,998.0	8.5	14.1	-57.77	521.5	547.0	624.3	607.8	16.54	37.745	
3,300.0	3,263.8	3,180.2	3,090.8	9.1	14.6	-59.85	541.7	564.7	635.0	617.5	17.51	36.271	
3,400.0	3,358.1	3,276.9	3,183.6	9.7	15.2	-61.86	562.0	582.4	646.6	628.1	18.53	34.902	
3,500.0	3,452.5	3,373.5	3,276.5	10.3	15.7	-63.80	582.2	600.1	659.0	639.4	19.59	33.642	
3,600.0	3,546.8	3,470.2	3,369.3	10.9	16.3	-65.67	602.5	617.8	672.1	651.5	20.69	32.487	
3,700.0	3,641.2	3,566.8	3,462.1	11.5	16.8	-67.47	622.8	635.5	686.0	664.2	21.82	31.433	
3,800.0	3,735.5	3,663.4	3,554.9	12.1	17.4	-69.20	643.0	653.2	700.5	677.5	22.99	30.475	
3,900.0	3,829.9	3,760.1	3,647.7	12.8	17.9	-70.86	663.3	670.9	715.7	691.5	24.17	29.605	
4,000.0	3,924.2	3,856.7	3,740.6	13.4	18.5	-72.46	683.5	688.6	731.4	706.0	25.38	28.817	
4,100.0	4,018.6	3,953.4	3,833.4	14.1	19.0	-73.99	703.8	706.3	747.7	721.1	26.60	28.104	
4,200.0	4,112.9	4,050.0	3,926.2	14.8	19.6	-75.45	724.1	724.0	764.5	736.7	27.84	27.459	
4,300.0	4,207.3	4,146.6	4,019.0	15.4	20.1	-76.86	744.3	741.7	781.8	752.7	29.09	26.875	
4,400.0	4,301.6	4,243.3	4,111.8	16.1	20.7	-78.20	764.6	759.4	799.5	769.2	30.35	26.347 SF	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19V-204 - Wellbore #1 - Plan #1 (11-13-15)		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	75.34	3.6	13.9	14.4	14.4	0.00	N/A					
100.0	100.0	100.0	100.0	0.1	0.1	75.34	3.6	13.9	14.4	14.2	0.22	64.054					
200.0	200.0	200.0	200.0	0.3	0.3	75.34	3.6	13.9	14.4	13.7	0.67	21.351					
300.0	300.0	300.0	300.0	0.6	0.6	75.34	3.6	13.9	14.4	13.3	1.12	12.811					
400.0	400.0	400.0	400.0	0.8	0.8	75.34	3.6	13.9	14.4	12.8	1.57	9.151					
500.0	500.0	500.0	500.0	1.0	1.0	75.34	3.6	13.9	14.4	12.4	2.02	7.117					
600.0	600.0	600.0	600.0	1.2	1.2	75.34	3.6	13.9	14.4	11.9	2.47	5.823					
700.0	700.0	700.0	700.0	1.5	1.5	75.34	3.6	13.9	14.4	11.5	2.92	4.927					
800.0	800.0	800.0	800.0	1.7	1.7	75.34	3.6	13.9	14.4	11.0	3.37	4.270					
900.0	900.0	900.0	900.0	1.9	1.9	75.34	3.6	13.9	14.4	10.6	3.82	3.768					
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	75.34	3.6	13.9	14.4	10.1	4.27	3.371					
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	75.34	3.6	13.9	14.4	9.7	4.72	3.050					
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	75.34	3.6	13.9	14.4	9.2	5.17	2.785					
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	75.34	3.6	13.9	14.4	8.8	5.62	2.562					
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	75.34	3.6	13.9	14.4	8.3	6.07	2.372					
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	75.34	3.6	13.9	14.4	7.9	6.52	2.209					
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	75.34	3.6	13.9	14.4	7.4	6.97	2.066 CC					
1,700.0	1,700.0	1,699.6	1,699.6	3.7	3.7	75.79	3.9	15.2	15.7	8.3	7.41	2.120					
1,800.0	1,800.0	1,799.1	1,799.0	3.9	3.9	76.77	4.5	19.0	19.6	11.8	7.83	2.501					
1,900.0	1,900.0	1,898.4	1,898.1	4.1	4.1	-13.30	5.5	25.4	24.8	16.6	8.24	3.010					
2,000.0	1,999.9	1,997.5	1,996.8	4.3	4.3	-13.90	7.0	34.3	30.1	21.4	8.64	3.480					
2,100.0	2,099.7	2,096.5	2,095.1	4.6	4.6	-15.02	8.8	45.7	35.4	26.4	9.04	3.915					
2,200.0	2,199.3	2,195.4	2,193.0	4.8	4.8	-16.44	11.1	59.6	40.8	31.3	9.45	4.318					
2,300.0	2,298.6	2,294.1	2,290.3	5.0	5.1	-18.05	13.8	76.0	46.3	36.4	9.86	4.694					
2,400.0	2,397.5	2,392.7	2,387.0	5.3	5.4	-19.78	16.9	94.8	51.9	41.6	10.28	5.047					
2,500.0	2,496.1	2,491.1	2,483.1	5.5	5.7	-21.58	20.3	116.1	57.6	46.9	10.71	5.376					
2,600.0	2,594.2	2,589.4	2,578.4	5.8	6.1	-23.43	24.2	139.7	63.4	52.3	11.17	5.681					
2,700.0	2,691.7	2,687.6	2,672.9	6.2	6.5	-25.28	28.4	165.7	69.5	57.8	11.65	5.962					
2,800.0	2,788.6	2,785.6	2,766.6	6.5	7.0	-27.14	33.1	194.1	75.6	63.5	12.17	6.215					
2,900.0	2,884.9	2,884.5	2,860.6	6.9	7.5	-29.10	38.1	224.7	81.7	68.9	12.75	6.405					
3,000.0	2,980.4	2,984.4	2,955.3	7.4	8.0	-31.65	43.2	255.8	85.7	72.3	13.41	6.393					
3,090.1	3,065.7	3,074.3	3,040.7	7.9	8.5	-34.56	47.7	283.9	87.7	73.6	14.11	6.215					
3,100.0	3,075.1	3,084.2	3,050.1	7.9	8.6	-34.92	48.3	287.0	87.8	73.6	14.20	6.186					
3,200.0	3,169.4	3,184.1	3,144.8	8.5	9.1	-38.46	53.3	318.1	89.4	74.2	15.15	5.900					
3,300.0	3,263.8	3,283.9	3,239.5	9.1	9.7	-41.86	58.4	349.3	91.3	75.1	16.19	5.636					
3,400.0	3,358.1	3,383.7	3,334.2	9.7	10.3	-45.13	63.5	380.4	93.4	76.1	17.32	5.396					
3,500.0	3,452.5	3,483.6	3,428.9	10.3	10.9	-48.23	68.6	411.5	95.9	77.4	18.51	5.181					
3,600.0	3,546.8	3,583.4	3,523.7	10.9	11.5	-51.17	73.7	442.7	98.6	78.9	19.77	4.990					
3,700.0	3,641.2	3,683.3	3,618.4	11.5	12.2	-53.94	78.8	473.8	101.6	80.5	21.08	4.821					
3,800.0	3,735.5	3,783.1	3,713.1	12.1	12.8	-56.55	83.9	505.0	104.8	82.4	22.43	4.674					
3,900.0	3,829.9	3,882.9	3,807.8	12.8	13.4	-59.01	89.0	536.1	108.2	84.4	23.81	4.547					
4,000.0	3,924.2	3,982.8	3,902.5	13.4	14.0	-61.30	94.0	567.3	111.8	86.6	25.21	4.436					
4,100.0	4,018.6	4,082.6	3,997.3	14.1	14.7	-63.46	99.1	598.4	115.6	89.0	26.63	4.341					
4,200.0	4,112.9	4,182.4	4,092.0	14.8	15.3	-65.47	104.2	629.5	119.5	91.5	28.07	4.259					
4,300.0	4,207.3	4,282.3	4,186.7	15.4	16.0	-67.35	109.3	660.7	123.6	94.1	29.51	4.189					
4,400.0	4,301.6	4,382.1	4,281.4	16.1	16.6	-69.12	114.4	691.8	127.8	96.8	30.95	4.128					
4,500.0	4,396.0	4,482.0	4,376.1	16.8	17.2	-70.77	119.5	723.0	132.1	99.7	32.40	4.076					
4,600.0	4,490.3	4,581.8	4,470.9	17.5	17.9	-72.31	124.6	754.1	136.5	102.6	33.84	4.032					
4,700.0	4,584.7	4,681.6	4,565.6	18.1	18.5	-73.76	129.7	785.2	141.0	105.7	35.29	3.994					
4,800.0	4,679.0	4,781.5	4,660.3	18.8	19.2	-75.11	134.7	816.4	145.5	108.8	36.73	3.962					
4,900.0	4,773.4	4,881.3	4,755.0	19.5	19.8	-76.39	139.8	847.5	150.2	112.0	38.17	3.934					

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19V-204 - Wellbore #1 - Plan #1 (11-13-15)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
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
5,000.0	4,867.7	4,981.1	4,849.7	20.2	20.5	-77.58	144.9	878.7	154.9	115.3	39.61	3.911	
5,100.0	4,962.1	5,081.0	4,944.5	20.9	21.1	-78.71	150.0	909.8	159.7	118.6	41.04	3.891	
5,200.0	5,056.4	5,180.8	5,039.2	21.6	21.8	-79.77	155.1	940.9	164.5	122.1	42.46	3.874	
5,300.0	5,150.8	5,280.7	5,133.9	22.2	22.5	-80.77	160.2	972.1	169.4	125.5	43.89	3.860	
5,400.0	5,245.1	5,380.5	5,228.6	22.9	23.1	-81.71	165.3	1,003.2	174.4	129.1	45.31	3.849	
5,500.0	5,339.5	5,480.3	5,323.3	23.6	23.8	-82.60	170.4	1,034.4	179.4	132.6	46.72	3.839	
5,600.0	5,433.8	5,580.2	5,418.1	24.3	24.4	-83.44	175.4	1,065.5	184.4	136.3	48.13	3.831	
5,676.4	5,505.9	5,657.7	5,492.2	24.9	24.9	-84.72	179.4	1,087.6	188.1	138.9	49.20	3.823	
5,700.0	5,528.3	5,681.5	5,515.4	25.0	24.9	-85.57	180.7	1,093.0	189.2	139.7	49.49	3.822	
5,750.0	5,576.4	5,731.9	5,565.0	25.2	25.1	-87.38	183.3	1,101.9	191.6	141.6	49.98	3.833	
5,800.0	5,625.3	5,782.0	5,614.6	25.4	25.2	-89.26	186.0	1,107.5	194.2	143.8	50.37	3.855	
5,850.0	5,674.8	5,831.8	5,664.2	25.5	25.3	-91.35	188.7	1,109.8	196.9	146.3	50.64	3.889	
5,900.0	5,724.6	5,881.2	5,713.6	25.6	25.3	-94.79	191.3	1,108.9	199.8	149.0	50.81	3.933	
5,950.0	5,774.6	5,930.3	5,762.5	25.7	25.3	-93.79	193.9	1,104.9	202.8	151.9	50.89	3.986	
6,000.0	5,824.5	5,979.2	5,810.7	25.7	25.3	87.04	196.5	1,097.7	205.9	155.1	50.88	4.048	
6,050.0	5,874.2	6,027.8	5,858.2	25.7	25.3	84.92	199.1	1,087.6	209.1	158.3	50.79	4.118	
6,100.0	5,923.3	6,076.1	5,904.6	25.6	25.2	83.31	201.6	1,074.5	212.3	161.7	50.62	4.194	
6,150.0	5,971.8	6,124.1	5,949.9	25.6	25.1	81.89	204.0	1,058.7	215.6	165.2	50.40	4.278	
6,200.0	6,019.3	6,171.9	5,993.8	25.5	25.0	80.60	206.4	1,040.1	218.8	168.7	50.12	4.366	
6,250.0	6,065.7	6,219.5	6,036.3	25.4	24.9	79.41	208.7	1,018.9	222.0	172.2	49.80	4.458	
6,300.0	6,110.8	6,266.8	6,077.3	25.3	24.8	78.31	210.9	995.2	225.2	175.8	49.46	4.554	
6,350.0	6,154.4	6,314.0	6,116.5	25.1	24.7	77.29	213.0	969.1	228.3	179.2	49.10	4.650	
6,400.0	6,196.3	6,360.9	6,153.9	25.0	24.6	76.34	215.0	940.8	231.4	182.6	48.75	4.746	
6,450.0	6,236.4	6,407.7	6,189.3	24.9	24.5	75.48	216.9	910.3	234.3	185.9	48.41	4.839	
6,500.0	6,274.4	6,454.3	6,222.7	24.9	24.4	74.69	218.7	877.9	237.0	188.9	48.10	4.928	
6,550.0	6,310.1	6,500.0	6,253.5	24.8	24.4	73.98	220.4	844.2	239.7	191.8	47.85	5.009	
6,600.0	6,343.6	6,547.1	6,283.0	24.8	24.4	73.32	222.0	807.5	242.1	194.5	47.66	5.080	
6,650.0	6,374.5	6,593.3	6,309.8	24.8	24.4	72.74	223.4	769.9	244.4	196.9	47.56	5.139	
6,700.0	6,402.8	6,639.4	6,334.1	24.9	24.5	72.23	224.7	730.8	246.5	198.9	47.57	5.182	
6,750.0	6,428.3	6,685.4	6,356.1	25.0	24.7	71.79	225.9	690.4	248.4	200.7	47.69	5.209	
6,800.0	6,451.0	6,731.3	6,375.5	25.2	24.9	71.41	226.9	648.8	250.1	202.1	47.93	5.217	
6,850.0	6,470.7	6,777.1	6,392.4	25.5	25.1	71.09	227.9	606.2	251.5	203.2	48.30	5.207	
6,900.0	6,487.3	6,822.9	6,406.6	25.8	25.4	70.85	228.6	562.8	252.7	203.9	48.81	5.177	
6,950.0	6,500.8	6,868.6	6,418.3	26.2	25.7	70.66	229.3	518.5	253.7	204.2	49.46	5.129	
7,000.0	6,511.2	6,914.3	6,427.3	26.6	26.1	70.54	229.8	473.7	254.4	204.1	50.24	5.063	
7,050.0	6,518.3	6,960.0	6,433.5	27.1	26.6	70.48	230.1	428.5	254.8	203.7	51.15	4.982	
7,100.0	6,522.2	7,005.7	6,437.1	27.7	27.1	70.49	230.3	383.0	255.0	202.9	52.17	4.889	
7,137.3	6,523.0	7,039.8	6,438.0	28.1	27.5	70.53	230.3	348.9	255.0	202.0	53.00	4.812	
7,200.0	6,522.8	7,102.0	6,437.9	28.9	28.3	70.55	230.3	286.6	255.0	200.4	54.54	4.675	
7,300.0	6,522.4	7,202.0	6,437.6	30.4	29.7	70.59	230.3	186.6	254.9	197.6	57.33	4.447	
7,400.0	6,522.0	7,302.0	6,437.4	32.0	31.3	70.62	230.3	86.6	254.9	194.4	60.46	4.216	
7,500.0	6,521.6	7,402.0	6,437.2	33.8	33.1	70.65	230.3	-13.4	254.8	191.0	63.88	3.989	
7,600.0	6,521.2	7,502.0	6,437.0	35.7	35.1	70.68	230.3	-113.4	254.8	187.2	67.55	3.772	
7,700.0	6,520.9	7,602.0	6,436.7	37.8	37.1	70.71	230.3	-213.4	254.7	183.3	71.44	3.566	
7,800.0	6,520.5	7,702.0	6,436.5	39.9	39.2	70.75	230.3	-313.4	254.7	179.2	75.50	3.373	
7,900.0	6,520.1	7,802.0	6,436.3	42.1	41.5	70.78	230.3	-413.4	254.6	174.9	79.72	3.194	
8,000.0	6,519.7	7,902.0	6,436.1	44.4	43.7	70.81	230.3	-513.4	254.6	170.5	84.06	3.029	
8,100.0	6,519.4	8,002.0	6,435.8	46.7	46.1	70.84	230.3	-613.4	254.5	166.0	88.52	2.876	
8,200.0	6,519.0	8,102.0	6,435.6	49.1	48.5	70.88	230.3	-713.4	254.5	161.4	93.07	2.734	
8,300.0	6,518.6	8,202.0	6,435.4	51.5	50.9	70.91	230.3	-813.4	254.4	156.7	97.71	2.604	
8,400.0	6,518.2	8,302.0	6,435.1	54.0	53.4	70.94	230.3	-913.4	254.4	152.0	102.41	2.484	

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference														
Offset				Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
8,500.0	6,517.8	8,402.0	6,434.9	56.5	55.9	70.97	230.3	-1,013.4	254.3	147.2	107.18	2.373		
8,600.0	6,517.5	8,502.0	6,434.7	59.0	58.4	71.00	230.3	-1,113.4	254.3	142.3	112.00	2.270		
8,700.0	6,517.1	8,602.0	6,434.5	61.6	61.0	71.04	230.3	-1,213.4	254.2	137.4	116.88	2.175		
8,800.0	6,516.7	8,702.0	6,434.2	64.1	63.6	71.07	230.3	-1,313.4	254.2	132.4	121.79	2.087		
8,900.0	6,516.3	8,802.0	6,434.0	66.7	66.2	71.10	230.3	-1,413.4	254.1	127.4	126.74	2.005		
9,000.0	6,515.9	8,902.0	6,433.8	69.3	68.8	71.13	230.3	-1,513.4	254.1	122.4	131.73	1.929		
9,100.0	6,515.6	9,002.0	6,433.5	72.0	71.4	71.17	230.3	-1,613.4	254.0	117.3	136.74	1.858		
9,200.0	6,515.2	9,102.0	6,433.3	74.6	74.1	71.20	230.3	-1,713.4	254.0	112.2	141.79	1.791		
9,300.0	6,514.8	9,202.0	6,433.1	77.3	76.7	71.23	230.3	-1,813.4	253.9	107.1	146.85	1.729		
9,400.0	6,514.4	9,302.0	6,432.9	79.9	79.4	71.26	230.3	-1,913.4	253.9	102.0	151.94	1.671		
9,500.0	6,514.0	9,402.0	6,432.6	82.6	82.1	71.30	230.3	-2,013.4	253.9	96.8	157.06	1.616		
9,600.0	6,513.7	9,502.0	6,432.4	85.3	84.7	71.33	230.3	-2,113.4	253.8	91.6	162.19	1.565		
9,700.0	6,513.3	9,602.0	6,432.2	88.0	87.4	71.36	230.3	-2,213.4	253.8	86.4	167.33	1.516		
9,800.0	6,512.9	9,702.0	6,432.0	90.6	90.1	71.39	230.3	-2,313.4	253.7	81.2	172.49	1.471 Level 3		
9,900.0	6,512.5	9,802.0	6,431.7	93.4	92.8	71.43	230.3	-2,413.4	253.7	76.0	177.67	1.428 Level 3		
10,000.0	6,512.2	9,902.0	6,431.5	96.1	95.5	71.46	230.3	-2,513.4	253.6	70.7	182.86	1.387 Level 3		
10,100.0	6,511.8	10,002.0	6,431.3	98.8	98.3	71.49	230.3	-2,613.4	253.6	65.5	188.07	1.348 Level 3		
10,200.0	6,511.4	10,102.0	6,431.0	101.5	101.0	71.52	230.3	-2,713.4	253.5	60.2	193.28	1.312 Level 3		
10,300.0	6,511.0	10,202.0	6,430.8	104.2	103.7	71.56	230.3	-2,813.4	253.5	55.0	198.51	1.277 Level 3		
10,400.0	6,510.6	10,302.0	6,430.6	106.9	106.4	71.59	230.3	-2,913.4	253.4	49.7	203.74	1.244 Level 2		
10,500.0	6,510.3	10,402.0	6,430.4	109.7	109.2	71.62	230.3	-3,013.4	253.4	44.4	208.99	1.212 Level 2		
10,600.0	6,509.9	10,502.0	6,430.1	112.4	111.9	71.65	230.3	-3,113.4	253.3	39.1	214.24	1.182 Level 2		
10,700.0	6,509.5	10,602.0	6,429.9	115.2	114.7	71.69	230.3	-3,213.4	253.3	33.8	219.50	1.154 Level 2		
10,800.0	6,509.1	10,702.0	6,429.7	117.9	117.4	71.72	230.3	-3,313.4	253.2	28.5	224.77	1.127 Level 2		
10,900.0	6,508.7	10,802.0	6,429.5	120.6	120.2	71.75	230.3	-3,413.4	253.2	23.1	230.05	1.101 Level 2		
11,000.0	6,508.4	10,902.0	6,429.2	123.4	122.9	71.78	230.3	-3,513.4	253.1	17.8	235.34	1.076 Level 2		
11,100.0	6,508.0	11,002.0	6,429.0	126.1	125.7	71.82	230.3	-3,613.4	253.1	12.5	240.63	1.052 Level 2		
11,200.0	6,507.6	11,102.0	6,428.8	128.9	128.4	71.85	230.3	-3,713.3	253.0	7.1	245.93	1.029 Level 2		
11,300.0	6,507.2	11,202.0	6,428.5	131.7	131.2	71.88	230.3	-3,813.3	253.0	1.8	251.24	1.007 Level 2		
11,400.0	6,506.8	11,302.0	6,428.3	134.4	133.9	71.91	230.3	-3,913.3	252.9	-3.6	256.55	0.986 Level 1		
11,500.0	6,506.5	11,402.0	6,428.1	137.2	136.7	71.95	230.3	-4,013.3	252.9	-9.0	261.86	0.966 Level 1		
11,600.0	6,506.1	11,502.0	6,427.9	139.9	139.5	71.98	230.3	-4,113.3	252.8	-14.3	267.19	0.946 Level 1		
11,700.0	6,505.7	11,602.0	6,427.6	142.7	142.2	72.01	230.3	-4,213.3	252.8	-19.7	272.51	0.928 Level 1		
11,800.0	6,505.3	11,702.0	6,427.4	145.5	145.0	72.04	230.3	-4,313.3	252.8	-25.1	277.85	0.910 Level 1		
11,900.0	6,505.0	11,802.0	6,427.2	148.2	147.8	72.08	230.3	-4,413.3	252.7	-30.5	283.18	0.892 Level 1		
12,000.0	6,504.6	11,902.0	6,427.0	151.0	150.5	72.11	230.3	-4,513.3	252.7	-35.9	288.53	0.876 Level 1		
12,100.0	6,504.2	12,002.0	6,426.7	153.8	153.3	72.14	230.3	-4,613.3	252.6	-41.3	293.87	0.860 Level 1		
12,200.0	6,503.8	12,102.0	6,426.5	156.6	156.1	72.18	230.3	-4,713.3	252.6	-46.7	299.22	0.844 Level 1		
12,300.0	6,503.4	12,202.0	6,426.3	159.3	158.9	72.21	230.3	-4,813.3	252.5	-52.1	304.58	0.829 Level 1		
12,400.0	6,503.1	12,302.0	6,426.0	162.1	161.6	72.24	230.3	-4,913.3	252.5	-57.5	309.94	0.815 Level 1		
12,500.0	6,502.7	12,402.0	6,425.8	164.9	164.4	72.27	230.3	-5,013.3	252.4	-62.9	315.30	0.801 Level 1		
12,600.0	6,502.3	12,502.0	6,425.6	167.7	167.2	72.31	230.3	-5,113.3	252.4	-68.3	320.67	0.787 Level 1		
12,700.0	6,501.9	12,602.0	6,425.4	170.4	170.0	72.34	230.3	-5,213.3	252.3	-73.7	326.04	0.774 Level 1		
12,800.0	6,501.5	12,702.0	6,425.1	173.2	172.8	72.37	230.3	-5,313.3	252.3	-79.1	331.41	0.761 Level 1		
12,900.0	6,501.2	12,802.0	6,424.9	176.0	175.5	72.40	230.3	-5,413.3	252.2	-84.5	336.79	0.749 Level 1		
13,000.0	6,500.8	12,902.0	6,424.7	178.8	178.3	72.44	230.3	-5,513.3	252.2	-90.0	342.17	0.737 Level 1		
13,100.0	6,500.4	13,002.0	6,424.5	181.6	181.1	72.47	230.3	-5,613.3	252.2	-95.4	347.56	0.726 Level 1		
13,200.0	6,500.0	13,102.0	6,424.2	184.3	183.9	72.50	230.3	-5,713.3	252.1	-100.8	352.94	0.714 Level 1		
13,300.0	6,499.6	13,202.0	6,424.0	187.1	186.7	72.54	230.3	-5,813.3	252.1	-106.3	358.34	0.703 Level 1		
13,400.0	6,499.3	13,302.0	6,423.8	189.9	189.5	72.57	230.3	-5,913.3	252.0	-111.7	363.73	0.693 Level 1		
13,500.0	6,498.9	13,402.0	6,423.5	192.7	192.2	72.60	230.3	-6,013.3	252.0	-117.2	369.13	0.683 Level 1		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>													Offset Site Error:	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19V-204 - Wellbore #1 - Plan #1 (11-13-15)													Offset Well Error:	0.0 ft
Survey Program: 0-MWD														
Reference		Offset		Semi Major Axis		Distance								
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
13,600.0	6,498.5	13,502.0	6,423.3	195.5	195.0	72.63	230.3	-6,113.3	251.9	-122.6	374.53	0.673	Level 1	
13,700.0	6,498.1	13,602.0	6,423.1	198.3	197.8	72.67	230.3	-6,213.3	251.9	-128.0	379.93	0.663	Level 1	
13,734.8	6,498.0	13,636.9	6,423.0	199.2	198.8	72.68	230.3	-6,248.2	251.9	-129.9	381.81	0.660	Level 1, ES, SF	



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19V-214 - Wellbore #1 - Plan #1 (11-13-15)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
Reference				Offset			Semi Major Axis		Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	76.01	14.6	58.5	60.3				
100.0	100.0	99.0	99.0	0.1	0.1	76.01	14.6	58.5	60.3	60.1	0.22	269.569	
200.0	200.0	199.0	199.0	0.3	0.3	76.01	14.6	58.5	60.3	59.6	0.67	89.707	
300.0	300.0	299.0	299.0	0.6	0.6	76.01	14.6	58.5	60.3	59.2	1.12	53.752	
400.0	400.0	399.0	399.0	0.8	0.8	76.01	14.6	58.5	60.3	58.7	1.57	38.373	
500.0	500.0	499.0	499.0	1.0	1.0	76.01	14.6	58.5	60.3	58.3	2.02	29.836	
600.0	600.0	599.0	599.0	1.2	1.2	76.01	14.6	58.5	60.3	57.8	2.47	24.406	
700.0	700.0	699.0	699.0	1.5	1.5	76.01	14.6	58.5	60.3	57.4	2.92	20.648	
800.0	800.0	799.0	799.0	1.7	1.7	76.01	14.6	58.5	60.3	56.9	3.37	17.894	
900.0	900.0	899.0	899.0	1.9	1.9	76.01	14.6	58.5	60.3	56.5	3.82	15.787	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	76.01	14.6	58.5	60.3	56.0	4.27	14.124 CC, ES	
1,100.0	1,100.0	1,097.5	1,097.5	2.4	2.3	75.74	15.1	59.6	61.5	56.8	4.71	13.067	
1,200.0	1,200.0	1,195.8	1,195.7	2.6	2.6	74.98	16.9	62.9	65.3	60.1	5.14	12.688	
1,300.0	1,300.0	1,293.9	1,293.6	2.8	2.8	73.88	19.8	68.5	71.5	65.9	5.59	12.806	
1,400.0	1,400.0	1,391.6	1,390.9	3.0	3.0	72.63	23.9	76.3	80.3	74.3	6.04	13.307	
1,500.0	1,500.0	1,488.8	1,487.4	3.3	3.2	71.38	29.0	86.2	91.7	85.2	6.50	14.098	
1,600.0	1,600.0	1,585.3	1,583.0	3.5	3.5	70.23	35.3	98.2	105.5	98.6	6.99	15.106	
1,700.0	1,700.0	1,681.1	1,677.5	3.7	3.8	69.20	42.6	112.2	121.9	114.4	7.49	16.269	
1,800.0	1,800.0	1,776.1	1,770.7	3.9	4.1	68.32	50.9	128.1	140.8	132.7	8.03	17.535	
1,900.0	1,900.0	1,870.3	1,862.8	4.1	4.4	-22.89	60.3	146.0	160.9	152.6	8.23	19.558	
2,000.0	1,999.9	1,964.0	1,953.8	4.3	4.8	-23.87	70.6	165.8	181.1	172.4	8.65	20.939	
2,100.0	2,099.7	2,057.2	2,043.7	4.6	5.2	-24.95	81.9	187.3	201.4	192.3	9.08	22.190	
2,200.0	2,199.3	2,154.0	2,136.8	4.8	5.7	-26.17	94.3	211.2	221.1	211.6	9.52	23.227	
2,300.0	2,298.6	2,252.3	2,231.2	5.0	6.2	-27.47	107.0	235.4	238.8	228.8	9.98	23.933	
2,400.0	2,397.5	2,350.9	2,325.9	5.3	6.7	-28.88	119.7	259.7	254.2	243.8	10.45	24.339	
2,500.0	2,496.1	2,449.7	2,420.8	5.5	7.2	-30.40	132.4	284.1	267.6	256.7	10.93	24.477	
2,600.0	2,594.2	2,548.7	2,515.9	5.8	7.7	-32.06	145.1	308.5	279.0	267.6	11.45	24.375	
2,700.0	2,691.7	2,647.8	2,611.1	6.2	8.2	-33.89	157.9	332.9	288.5	276.5	11.99	24.053	
2,800.0	2,788.6	2,746.9	2,706.3	6.5	8.8	-35.89	170.7	357.4	296.1	283.5	12.58	23.529	
2,900.0	2,884.9	2,846.1	2,801.5	6.9	9.3	-38.10	183.4	381.8	302.0	288.8	13.23	22.823	
3,000.0	2,980.4	2,945.1	2,896.6	7.4	9.9	-40.53	196.2	406.2	306.5	292.5	13.96	21.950	
3,090.1	3,065.7	3,034.1	2,982.2	7.9	10.4	-42.95	207.6	428.2	309.3	294.6	14.70	21.039	
3,100.0	3,075.1	3,043.9	2,991.6	7.9	10.4	-43.23	208.9	430.6	309.5	294.8	14.79	20.930	
3,200.0	3,169.4	3,142.7	3,086.4	8.5	11.0	-46.02	221.6	454.9	312.6	296.9	15.73	19.871	
3,300.0	3,263.8	3,241.5	3,181.3	9.1	11.5	-48.76	234.3	479.3	316.4	299.6	16.74	18.896	
3,400.0	3,358.1	3,340.2	3,276.2	9.7	12.1	-51.43	247.0	503.6	320.9	303.1	17.82	18.006	
3,500.0	3,452.5	3,439.0	3,371.0	10.3	12.7	-54.02	259.8	528.0	326.1	307.1	18.96	17.200	
3,600.0	3,546.8	3,537.8	3,465.9	10.9	13.2	-56.53	272.5	552.3	332.0	311.8	20.15	16.475	
3,700.0	3,641.2	3,636.5	3,560.8	11.5	13.8	-58.94	285.2	576.7	338.4	317.1	21.38	15.827	
3,800.0	3,735.5	3,735.3	3,655.6	12.1	14.3	-61.27	297.9	601.0	345.5	322.9	22.65	15.251	
3,900.0	3,829.9	3,834.1	3,750.5	12.8	14.9	-63.50	310.6	625.4	353.1	329.2	23.96	14.741	
4,000.0	3,924.2	3,932.8	3,845.4	13.4	15.5	-65.63	323.3	649.7	361.3	336.0	25.28	14.290	
4,100.0	4,018.6	4,031.6	3,940.3	14.1	16.0	-67.67	336.1	674.1	369.9	343.3	26.62	13.893	
4,200.0	4,112.9	4,130.4	4,035.1	14.8	16.6	-69.61	348.8	698.4	379.0	351.0	27.98	13.544	
4,300.0	4,207.3	4,229.1	4,130.0	15.4	17.2	-71.47	361.5	722.8	388.5	359.1	29.35	13.237	
4,400.0	4,301.6	4,327.9	4,224.9	16.1	17.7	-73.23	374.2	747.1	398.4	367.6	30.72	12.967	
4,500.0	4,396.0	4,426.7	4,319.7	16.8	18.3	-74.91	386.9	771.5	408.6	376.5	32.09	12.731	
4,600.0	4,490.3	4,525.4	4,414.6	17.5	18.9	-76.50	399.7	795.8	419.2	385.7	33.47	12.524	
4,700.0	4,584.7	4,624.2	4,509.5	18.1	19.4	-78.02	412.4	820.2	430.1	395.2	34.85	12.342	
4,800.0	4,679.0	4,723.0	4,604.3	18.8	20.0	-79.46	425.1	844.5	441.3	405.0	36.22	12.183	
4,900.0	4,773.4	4,821.7	4,699.2	19.5	20.6	-80.84	437.8	868.8	452.7	415.1	37.59	12.044	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19V-214 - Wellbore #1 - Plan #1 (11-13-15)		Offset Site Error:		0.0 ft
Survey Program:		0-MWD											Offset Well Error:		0.0 ft		
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor					
5,000.0	4,867.7	4,920.5	4,794.1	20.2	21.2	-82.14	450.5	893.2	464.4	425.4	38.95	11.923					
5,100.0	4,962.1	5,019.3	4,889.0	20.9	21.7	-83.38	463.2	917.5	476.3	436.0	40.31	11.817					
5,200.0	5,056.4	5,118.0	4,983.8	21.6	22.3	-84.56	476.0	941.9	488.4	446.8	41.66	11.724					
5,300.0	5,150.8	5,216.8	5,078.7	22.2	22.9	-85.68	488.7	966.2	500.8	457.7	43.01	11.643					
5,400.0	5,245.1	5,315.6	5,173.6	22.9	23.4	-86.75	501.4	990.6	513.3	468.9	44.35	11.573					
5,500.0	5,339.5	5,414.3	5,268.4	23.6	24.0	-87.77	514.1	1,014.9	525.9	480.3	45.69	11.512					
5,600.0	5,433.8	5,513.1	5,363.3	24.3	24.6	-88.74	526.8	1,039.3	538.8	491.8	47.01	11.460					
5,676.4	5,505.9	5,588.6	5,435.8	24.9	25.0	-89.45	536.5	1,057.9	548.7	500.7	48.03	11.425					
5,700.0	5,528.3	5,611.9	5,458.2	25.0	25.2	-89.90	539.5	1,063.6	551.8	503.4	48.34	11.415					
5,750.0	5,576.4	5,661.1	5,505.5	25.2	25.4	-90.65	545.9	1,075.7	558.3	509.4	48.88	11.422					
5,800.0	5,625.3	5,709.5	5,552.5	25.4	25.7	-91.39	552.2	1,085.4	564.9	515.6	49.31	11.456					
5,850.0	5,674.8	5,757.8	5,599.9	25.5	25.8	-92.38	558.5	1,092.1	571.6	522.0	49.64	11.515					
5,900.0	5,724.6	5,806.1	5,647.6	25.6	25.9	-94.74	564.9	1,095.7	578.4	528.5	49.89	11.593					
5,950.0	5,774.6	5,854.4	5,695.5	25.7	26.0	94.87	571.4	1,096.3	585.2	535.1	50.06	11.689					
6,000.0	5,824.5	5,902.7	5,743.3	25.7	26.1	89.10	577.8	1,093.9	591.9	541.7	50.16	11.801					
6,050.0	5,874.2	5,951.0	5,790.9	25.7	26.1	87.92	584.2	1,088.4	598.6	548.4	50.19	11.928					
6,100.0	5,923.3	5,999.4	5,838.0	25.6	26.1	87.20	590.5	1,079.8	605.3	555.1	50.15	12.069					
6,150.0	5,971.8	6,047.8	5,884.6	25.6	26.1	86.62	596.7	1,068.3	611.8	561.7	50.06	12.222					
6,200.0	6,019.3	6,096.2	5,930.4	25.5	26.0	86.12	602.9	1,053.8	618.2	568.3	49.92	12.385					
6,250.0	6,065.7	6,144.7	5,975.2	25.4	25.9	85.67	608.9	1,036.4	624.5	574.7	49.74	12.556					
6,300.0	6,110.8	6,193.3	6,019.0	25.3	25.8	85.27	614.8	1,016.1	630.6	581.1	49.52	12.733					
6,350.0	6,154.4	6,242.0	6,061.4	25.1	25.7	84.89	620.5	993.0	636.5	587.2	49.29	12.913					
6,400.0	6,196.3	6,290.7	6,102.4	25.0	25.6	84.55	626.0	967.1	642.1	593.1	49.05	13.092					
6,450.0	6,236.4	6,339.5	6,141.7	24.9	25.5	84.24	631.3	938.7	647.5	598.7	48.81	13.265					
6,500.0	6,274.4	6,388.5	6,179.2	24.9	25.3	83.96	636.3	907.7	652.6	604.0	48.60	13.429					
6,550.0	6,310.1	6,437.6	6,214.8	24.8	25.2	83.71	641.1	874.2	657.5	609.1	48.43	13.577					
6,600.0	6,343.6	6,486.7	6,248.2	24.8	25.1	83.48	645.6	838.4	662.0	613.7	48.31	13.703					
6,650.0	6,374.5	6,536.0	6,279.4	24.8	25.0	83.29	649.8	800.5	666.2	617.9	48.26	13.803					
6,700.0	6,402.8	6,585.4	6,308.1	24.9	24.9	83.13	653.6	760.4	670.0	621.7	48.31	13.869					
6,750.0	6,428.3	6,635.0	6,334.2	25.0	24.9	82.99	657.1	718.5	673.5	625.0	48.46	13.897					
6,800.0	6,451.0	6,684.7	6,357.7	25.2	24.8	82.89	660.3	674.9	676.5	627.8	48.73	13.883					
6,850.0	6,470.7	6,734.4	6,378.4	25.5	24.9	82.81	663.1	629.7	679.2	630.1	49.13	13.825					
6,900.0	6,487.3	6,784.3	6,396.1	25.8	25.0	82.77	665.5	583.1	681.5	631.8	49.66	13.722					
6,950.0	6,500.8	6,834.4	6,410.8	26.2	25.1	82.75	667.5	535.4	683.3	633.0	50.33	13.576					
7,000.0	6,511.2	6,884.5	6,422.4	26.6	25.3	82.77	669.0	486.6	684.8	633.6	51.14	13.390					
7,050.0	6,518.3	6,934.7	6,430.9	27.1	25.6	82.81	670.2	437.1	685.7	633.7	52.08	13.168					
7,100.0	6,522.2	6,985.1	6,436.1	27.7	26.0	82.88	670.9	387.1	686.3	633.2	53.13	12.918					
7,137.3	6,523.0	7,022.7	6,437.8	28.1	26.4	82.96	671.1	349.5	686.4	632.4	53.99	12.715					
7,200.0	6,522.8	7,085.6	6,437.9	28.9	27.0	82.98	671.2	286.6	686.4	630.8	55.57	12.352					
7,300.0	6,522.4	7,185.6	6,437.7	30.4	28.3	82.99	671.2	186.6	686.4	628.0	58.45	11.744					
7,400.0	6,522.0	7,285.6	6,437.4	32.0	29.8	83.01	671.2	86.6	686.4	624.7	61.69	11.127					
7,500.0	6,521.6	7,385.6	6,437.2	33.8	31.6	83.02	671.2	-13.4	686.4	621.1	65.25	10.519					
7,600.0	6,521.2	7,485.6	6,437.0	35.7	33.5	83.03	671.2	-113.4	686.3	617.3	69.08	9.936					
7,700.0	6,520.9	7,585.6	6,436.8	37.8	35.6	83.05	671.2	-213.4	686.3	613.2	73.13	9.385					
7,800.0	6,520.5	7,685.6	6,436.5	39.9	37.7	83.06	671.2	-313.4	686.3	608.9	77.38	8.869					
7,900.0	6,520.1	7,785.6	6,436.3	42.1	40.0	83.07	671.2	-413.4	686.3	604.5	81.79	8.391					
8,000.0	6,519.7	7,885.6	6,436.1	44.4	42.3	83.08	671.2	-513.4	686.3	599.9	86.33	7.949					
8,100.0	6,519.4	7,985.6	6,435.9	46.7	44.6	83.10	671.2	-613.4	686.2	595.3	90.99	7.542					
8,200.0	6,519.0	8,085.6	6,435.6	49.1	47.1	83.11	671.2	-713.4	686.2	590.5	95.75	7.167					
8,300.0	6,518.6	8,185.6	6,435.4	51.5	49.5	83.12	671.2	-813.4	686.2	585.6	100.60	6.821					
8,400.0	6,518.2	8,285.6	6,435.2	54.0	52.0	83.13	671.2	-913.4	686.2	580.7	105.52	6.503					

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference														
Offset														
Semi Major Axis														
Distance														
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	
8,500.0	6,517.8	8,385.6	6,434.9	56.5	54.5	83.15	671.2	-1,013.4	686.2	575.7	110.50	6.210		
8,600.0	6,517.5	8,485.6	6,434.7	59.0	57.1	83.16	671.2	-1,113.4	686.2	570.6	115.54	5.939		
8,700.0	6,517.1	8,585.6	6,434.5	61.6	59.7	83.17	671.2	-1,213.4	686.1	565.5	120.62	5.688		
8,800.0	6,516.7	8,685.6	6,434.3	64.1	62.3	83.18	671.2	-1,313.4	686.1	560.4	125.75	5.456		
8,900.0	6,516.3	8,785.6	6,434.0	66.7	64.9	83.20	671.2	-1,413.4	686.1	555.2	130.92	5.241		
9,000.0	6,515.9	8,885.6	6,433.8	69.3	67.5	83.21	671.2	-1,513.4	686.1	550.0	136.12	5.040		
9,100.0	6,515.6	8,985.6	6,433.6	72.0	70.1	83.22	671.2	-1,613.4	686.1	544.7	141.35	4.854		
9,200.0	6,515.2	9,085.6	6,433.3	74.6	72.8	83.23	671.2	-1,713.4	686.0	539.4	146.61	4.679		
9,300.0	6,514.8	9,185.6	6,433.1	77.3	75.5	83.25	671.2	-1,813.4	686.0	534.1	151.89	4.517		
9,400.0	6,514.4	9,285.6	6,432.9	79.9	78.1	83.26	671.2	-1,913.4	686.0	528.8	157.19	4.364		
9,500.0	6,514.0	9,385.6	6,432.7	82.6	80.8	83.27	671.2	-2,013.4	686.0	523.5	162.52	4.221		
9,600.0	6,513.7	9,485.6	6,432.4	85.3	83.5	83.28	671.2	-2,113.4	686.0	518.1	167.86	4.087		
9,700.0	6,513.3	9,585.6	6,432.2	88.0	86.2	83.30	671.2	-2,213.4	686.0	512.7	173.21	3.960		
9,800.0	6,512.9	9,685.6	6,432.0	90.6	88.9	83.31	671.2	-2,313.4	685.9	507.4	178.58	3.841		
9,900.0	6,512.5	9,785.6	6,431.8	93.4	91.6	83.32	671.2	-2,413.4	685.9	502.0	183.96	3.729		
10,000.0	6,512.2	9,885.6	6,431.5	96.1	94.3	83.33	671.2	-2,513.4	685.9	496.5	189.36	3.622		
10,100.0	6,511.8	9,985.6	6,431.3	98.8	97.1	83.35	671.2	-2,613.4	685.9	491.1	194.77	3.522		
10,200.0	6,511.4	10,085.6	6,431.1	101.5	99.8	83.36	671.2	-2,713.4	685.9	485.7	200.19	3.426		
10,300.0	6,511.0	10,185.6	6,430.8	104.2	102.5	83.37	671.2	-2,813.4	685.9	480.2	205.61	3.336		
10,400.0	6,510.6	10,285.6	6,430.6	106.9	105.3	83.38	671.2	-2,913.4	685.8	474.8	211.05	3.250		
10,500.0	6,510.3	10,385.6	6,430.4	109.7	108.0	83.40	671.2	-3,013.4	685.8	469.3	216.49	3.168		
10,600.0	6,509.9	10,485.6	6,430.2	112.4	110.7	83.41	671.2	-3,113.4	685.8	463.9	221.94	3.090		
10,700.0	6,509.5	10,585.6	6,429.9	115.2	113.5	83.42	671.2	-3,213.4	685.8	458.4	227.40	3.016		
10,800.0	6,509.1	10,685.6	6,429.7	117.9	116.2	83.43	671.2	-3,313.4	685.8	452.9	232.87	2.945		
10,900.0	6,508.7	10,785.6	6,429.5	120.6	119.0	83.45	671.2	-3,413.4	685.7	447.4	238.34	2.877		
11,000.0	6,508.4	10,885.6	6,429.3	123.4	121.7	83.46	671.2	-3,513.4	685.7	441.9	243.82	2.812		
11,100.0	6,508.0	10,985.6	6,429.0	126.1	124.5	83.47	671.2	-3,613.4	685.7	436.4	249.30	2.751		
11,200.0	6,507.6	11,085.6	6,428.8	128.9	127.3	83.48	671.1	-3,713.4	685.7	430.9	254.79	2.691		
11,300.0	6,507.2	11,185.6	6,428.6	131.7	130.0	83.50	671.1	-3,813.4	685.7	425.4	260.28	2.634		
11,400.0	6,506.8	11,285.6	6,428.3	134.4	132.8	83.51	671.1	-3,913.4	685.7	419.9	265.78	2.580		
11,500.0	6,506.5	11,385.6	6,428.1	137.2	135.6	83.52	671.1	-4,013.4	685.6	414.4	271.28	2.527		
11,600.0	6,506.1	11,485.6	6,427.9	139.9	138.3	83.53	671.1	-4,113.4	685.6	408.8	276.78	2.477		
11,700.0	6,505.7	11,585.6	6,427.7	142.7	141.1	83.55	671.1	-4,213.4	685.6	403.3	282.29	2.429		
11,800.0	6,505.3	11,685.6	6,427.4	145.5	143.9	83.56	671.1	-4,313.4	685.6	397.8	287.80	2.382		
11,900.0	6,505.0	11,785.6	6,427.2	148.2	146.6	83.57	671.1	-4,413.4	685.6	392.3	293.32	2.337		
12,000.0	6,504.6	11,885.6	6,427.0	151.0	149.4	83.59	671.1	-4,513.4	685.6	386.7	298.84	2.294		
12,100.0	6,504.2	11,985.6	6,426.8	153.8	152.2	83.60	671.1	-4,613.4	685.5	381.2	304.36	2.252		
12,200.0	6,503.8	12,085.6	6,426.5	156.6	155.0	83.61	671.1	-4,713.4	685.5	375.6	309.89	2.212		
12,300.0	6,503.4	12,185.6	6,426.3	159.3	157.7	83.62	671.1	-4,813.4	685.5	370.1	315.41	2.173		
12,400.0	6,503.1	12,285.6	6,426.1	162.1	160.5	83.64	671.1	-4,913.4	685.5	364.5	320.94	2.136		
12,500.0	6,502.7	12,385.6	6,425.8	164.9	163.3	83.65	671.1	-5,013.3	685.5	359.0	326.48	2.100		
12,600.0	6,502.3	12,485.6	6,425.6	167.7	166.1	83.66	671.1	-5,113.3	685.5	353.4	332.01	2.065		
12,700.0	6,501.9	12,585.6	6,425.4	170.4	168.9	83.67	671.1	-5,213.3	685.4	347.9	337.55	2.031		
12,800.0	6,501.5	12,685.6	6,425.2	173.2	171.6	83.69	671.1	-5,313.3	685.4	342.3	343.09	1.998		
12,900.0	6,501.2	12,785.6	6,424.9	176.0	174.4	83.70	671.1	-5,413.3	685.4	336.8	348.63	1.966		
13,000.0	6,500.8	12,885.6	6,424.7	178.8	177.2	83.71	671.1	-5,513.3	685.4	331.2	354.17	1.935		
13,100.0	6,500.4	12,985.6	6,424.5	181.6	180.0	83.72	671.1	-5,613.3	685.4	325.7	359.72	1.905		
13,200.0	6,500.0	13,085.6	6,424.2	184.3	182.8	83.74	671.1	-5,713.3	685.4	320.1	365.27	1.876		
13,300.0	6,499.6	13,185.6	6,424.0	187.1	185.6	83.75	671.1	-5,813.3	685.3	314.5	370.82	1.848		
13,400.0	6,499.3	13,285.6	6,423.8	189.9	188.4	83.76	671.1	-5,913.3	685.3	309.0	376.37	1.821		
13,500.0	6,498.9	13,385.6	6,423.6	192.7	191.1	83.77	671.1	-6,013.3	685.3	303.4	381.92	1.794		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>												<b>Offset Site Error:</b>	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19V-214 - Wellbore #1 - Plan #1 (11-13-15)												<b>Offset Well Error:</b>	0.0 ft
Survey Program: 0-MWD													
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
13,600.0	6,498.5	13,485.6	6,423.3	195.5	193.9	83.79	671.1	-6,113.3	685.3	297.8	387.47	1.769	
13,700.0	6,498.1	13,585.6	6,423.1	198.3	196.7	83.80	671.1	-6,213.3	685.3	292.2	393.03	1.744	
13,734.8	6,498.0	13,620.4	6,423.0	199.2	197.7	83.80	671.1	-6,248.2	685.3	290.3	394.96	1.735 SF	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19V-234 - Wellbore #1 - Plan #1 (11-13-15)												Offset Well Error:	0.0 ft
Survey Program:		Reference		Offset		Semi Major Axis		Distance					
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	75.35	7.3	27.9	28.8				
100.0	100.0	99.0	99.0	0.1	0.1	75.35	7.3	27.9	28.8	28.6	0.22	128.746	
200.0	200.0	199.0	199.0	0.3	0.3	75.35	7.3	27.9	28.8	28.1	0.67	42.844	
300.0	300.0	299.0	299.0	0.6	0.6	75.35	7.3	27.9	28.8	27.7	1.12	25.672	
400.0	400.0	399.0	399.0	0.8	0.8	75.35	7.3	27.9	28.8	27.2	1.57	18.327	
500.0	500.0	499.0	499.0	1.0	1.0	75.35	7.3	27.9	28.8	26.8	2.02	14.249	
600.0	600.0	599.0	599.0	1.2	1.2	75.35	7.3	27.9	28.8	26.3	2.47	11.656	
700.0	700.0	699.0	699.0	1.5	1.5	75.35	7.3	27.9	28.8	25.9	2.92	9.862	
800.0	800.0	799.0	799.0	1.7	1.7	75.35	7.3	27.9	28.8	25.4	3.37	8.546	
900.0	900.0	899.0	899.0	1.9	1.9	75.35	7.3	27.9	28.8	25.0	3.82	7.540	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	75.35	7.3	27.9	28.8	24.5	4.27	6.746	
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	75.35	7.3	27.9	28.8	24.1	4.72	6.103	
1,200.0	1,200.0	1,199.0	1,199.0	2.6	2.6	75.35	7.3	27.9	28.8	23.6	5.17	5.572	
1,300.0	1,300.0	1,299.0	1,299.0	2.8	2.8	75.35	7.3	27.9	28.8	23.2	5.62	5.126	
1,400.0	1,400.0	1,399.0	1,399.0	3.0	3.0	75.35	7.3	27.9	28.8	22.7	6.07	4.746 CC	
1,500.0	1,500.0	1,498.3	1,498.3	3.3	3.2	76.33	7.1	29.1	30.0	23.5	6.50	4.610	
1,600.0	1,600.0	1,597.5	1,597.4	3.5	3.4	78.89	6.5	32.9	33.6	26.6	6.92	4.850	
1,700.0	1,700.0	1,696.4	1,696.1	3.7	3.6	82.11	5.4	39.2	39.7	32.3	7.35	5.400	
1,800.0	1,800.0	1,794.9	1,794.2	3.9	3.9	85.24	4.0	48.0	48.4	40.6	7.79	6.214	
1,900.0	1,900.0	1,893.0	1,891.6	4.1	4.1	-2.55	2.2	59.2	58.4	50.2	8.18	7.141	
2,000.0	1,999.9	1,990.9	1,988.5	4.3	4.3	-0.38	-0.1	72.9	68.4	59.9	8.58	7.978	
2,100.0	2,099.7	2,088.5	2,084.7	4.6	4.6	1.51	-2.7	88.9	78.4	69.5	8.98	8.737	
2,200.0	2,199.3	2,185.8	2,180.3	4.8	4.9	3.22	-5.7	107.4	88.5	79.1	9.38	9.430	
2,300.0	2,298.6	2,282.9	2,275.1	5.0	5.2	4.79	-9.1	128.1	98.5	88.7	9.78	10.063	
2,400.0	2,397.5	2,379.8	2,369.0	5.3	5.6	6.27	-12.9	151.2	108.5	98.3	10.19	10.641	
2,500.0	2,496.1	2,476.3	2,462.2	5.5	6.0	7.68	-17.0	176.5	118.5	107.8	10.61	11.169	
2,600.0	2,594.2	2,574.0	2,555.6	5.8	6.5	9.04	-21.5	204.3	128.3	117.2	11.03	11.630	
2,700.0	2,691.7	2,673.6	2,650.9	6.2	7.0	10.43	-26.2	233.1	136.0	124.6	11.46	11.866	
2,800.0	2,788.6	2,773.4	2,746.3	6.5	7.5	11.88	-30.9	261.9	141.3	129.4	11.91	11.865	
2,900.0	2,884.9	2,873.3	2,841.8	6.9	8.1	13.48	-35.6	290.8	144.2	131.8	12.38	11.648	
3,000.0	2,980.4	2,973.2	2,937.3	7.4	8.6	15.28	-40.4	319.7	144.6	131.7	12.87	11.236	
3,090.1	3,065.7	3,063.1	3,023.3	7.9	9.1	17.16	-44.6	345.6	142.9	129.6	13.34	10.713	
3,100.0	3,075.1	3,073.0	3,032.8	7.9	9.2	17.38	-45.1	348.5	142.6	129.2	13.40	10.642	
3,200.0	3,169.4	3,172.8	3,128.2	8.5	9.8	19.68	-49.8	377.3	139.9	125.8	14.05	9.955	
3,300.0	3,263.8	3,272.6	3,223.7	9.1	10.3	22.07	-54.5	406.2	137.4	122.6	14.76	9.308	
3,400.0	3,358.1	3,372.4	3,319.1	9.7	10.9	24.54	-59.2	435.0	135.1	119.6	15.53	8.699	
3,500.0	3,452.5	3,472.2	3,414.5	10.3	11.5	27.09	-63.9	463.8	133.1	116.8	16.38	8.127	
3,600.0	3,546.8	3,572.0	3,510.0	10.9	12.1	29.71	-68.6	492.7	131.4	114.1	17.31	7.590	
3,700.0	3,641.2	3,671.8	3,605.4	11.5	12.7	32.39	-73.3	521.5	130.0	111.6	18.33	7.090	
3,800.0	3,735.5	3,771.6	3,700.8	12.1	13.3	35.13	-78.0	550.3	128.8	109.4	19.44	6.627	
3,900.0	3,829.9	3,871.4	3,796.2	12.8	13.9	37.91	-82.7	579.2	128.0	107.3	20.64	6.201	
4,000.0	3,924.2	3,971.2	3,891.7	13.4	14.5	40.72	-87.4	608.0	127.4	105.5	21.92	5.813	
4,100.0	4,018.6	4,071.0	3,987.1	14.1	15.1	43.54	-92.1	636.8	127.2	103.9	23.29	5.462	
4,124.7	4,041.9	4,095.7	4,010.7	14.3	15.2	44.25	-93.3	644.0	127.2	103.6	23.64	5.381	
4,200.0	4,112.9	4,170.8	4,082.5	14.8	15.7	46.38	-96.8	665.7	127.3	102.6	24.73	5.147	
4,300.0	4,207.3	4,270.6	4,178.0	15.4	16.3	49.20	-101.5	694.5	127.7	101.4	26.24	4.866	
4,400.0	4,301.6	4,370.4	4,273.4	16.1	16.9	51.99	-106.2	723.3	128.4	100.6	27.80	4.617	
4,500.0	4,396.0	4,470.2	4,368.8	16.8	17.5	54.75	-111.0	752.2	129.4	100.0	29.41	4.399	
4,600.0	4,490.3	4,570.0	4,464.2	17.5	18.1	57.46	-115.7	781.0	130.7	99.6	31.05	4.209	
4,700.0	4,584.7	4,669.8	4,559.7	18.1	18.7	60.12	-120.4	809.8	132.3	99.5	32.71	4.043	
4,800.0	4,679.0	4,769.6	4,655.1	18.8	19.3	62.70	-125.1	838.7	134.1	99.7	34.38	3.901	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19V-234 - Wellbore #1 - Plan #1 (11-13-15)												Offset Well Error:	0.0 ft
Survey Program:		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
4,900.0	4,773.4	4,869.4	4,750.5	19.5	20.0	65.21	-129.8	867.5	136.2	100.2	36.06	3.778	
5,000.0	4,867.7	4,969.2	4,846.0	20.2	20.6	67.64	-134.5	896.3	138.6	100.9	37.73	3.674	
5,100.0	4,962.1	5,069.0	4,941.4	20.9	21.2	69.98	-139.2	925.2	141.3	101.9	39.39	3.586	
5,200.0	5,056.4	5,168.8	5,036.8	21.6	21.8	72.23	-143.9	954.0	144.1	103.1	41.04	3.511	
5,300.0	5,150.8	5,268.6	5,132.3	22.2	22.4	74.40	-148.6	982.8	147.2	104.5	42.67	3.449	
5,400.0	5,245.1	5,368.4	5,227.7	22.9	23.0	76.47	-153.3	1,011.7	150.4	106.2	44.27	3.398	
5,500.0	5,339.5	5,468.2	5,323.1	23.6	23.7	78.45	-158.0	1,040.5	153.9	108.0	45.85	3.356	
5,600.0	5,433.8	5,568.0	5,418.5	24.3	24.3	80.34	-162.7	1,069.3	157.5	110.1	47.41	3.323	
5,676.4	5,505.9	5,644.8	5,492.0	24.9	24.7	81.81	-166.4	1,091.3	160.4	111.8	48.58	3.302	
5,700.0	5,528.3	5,668.8	5,515.2	25.0	24.8	82.47	-167.5	1,097.3	161.2	112.3	48.90	3.297	
5,750.0	5,576.4	5,719.7	5,565.0	25.2	25.0	83.82	-170.0	1,107.7	163.1	113.7	49.47	3.297	
5,800.0	5,625.3	5,770.4	5,615.1	25.4	25.2	85.06	-172.4	1,114.6	165.2	115.2	49.94	3.307	
5,850.0	5,674.8	5,820.8	5,665.3	25.5	25.3	86.03	-174.9	1,118.3	167.3	117.0	50.30	3.326	
5,900.0	5,724.6	5,870.9	5,715.4	25.6	25.3	85.58	-177.4	1,118.6	169.5	119.0	50.55	3.353	
5,950.0	5,774.6	5,920.8	5,765.1	25.7	25.3	82.93	-179.8	1,115.6	171.8	121.1	50.71	3.388	
6,000.0	5,824.5	5,970.5	5,814.4	25.7	25.3	86.88	-182.3	1,109.4	174.2	123.4	50.78	3.430	
6,050.0	5,874.2	6,020.0	5,862.9	25.7	25.3	86.29	-184.7	1,100.1	176.6	125.9	50.76	3.479	
6,100.0	5,923.3	6,069.2	5,910.5	25.6	25.2	85.32	-187.0	1,087.7	179.1	128.4	50.67	3.534	
6,150.0	5,971.8	6,118.3	5,957.0	25.6	25.1	84.26	-189.3	1,072.4	181.6	131.1	50.52	3.595	
6,200.0	6,019.3	6,167.1	6,002.2	25.5	25.0	83.20	-191.5	1,054.2	184.1	133.8	50.30	3.660	
6,250.0	6,065.7	6,215.7	6,046.0	25.4	24.9	82.16	-193.7	1,033.2	186.6	136.6	50.04	3.729	
6,300.0	6,110.8	6,264.1	6,088.2	25.3	24.8	81.17	-195.8	1,009.6	189.1	139.3	49.75	3.801	
6,350.0	6,154.4	6,312.4	6,128.7	25.1	24.7	80.22	-197.8	983.4	191.5	142.1	49.44	3.874	
6,400.0	6,196.3	6,360.5	6,167.3	25.0	24.6	79.32	-199.7	954.9	193.9	144.8	49.12	3.948	
6,450.0	6,236.4	6,408.4	6,204.0	24.9	24.5	78.47	-201.5	924.0	196.2	147.4	48.81	4.020	
6,500.0	6,274.4	6,456.1	6,238.5	24.9	24.4	77.68	-203.2	891.1	198.4	149.9	48.52	4.089	
6,550.0	6,310.1	6,503.7	6,270.8	24.8	24.3	76.95	-204.8	856.2	200.5	152.3	48.28	4.153	
6,600.0	6,343.6	6,550.0	6,300.0	24.8	24.3	76.28	-206.3	820.4	202.5	154.4	48.10	4.211	
6,650.0	6,374.5	6,598.6	6,328.3	24.8	24.4	75.65	-207.7	780.9	204.4	156.4	47.99	4.259	
6,700.0	6,402.8	6,645.8	6,353.4	24.9	24.4	75.09	-208.9	740.9	206.1	158.1	47.98	4.296	
6,750.0	6,428.3	6,693.0	6,376.0	25.0	24.6	74.58	-210.0	699.5	207.7	159.6	48.08	4.320	
6,800.0	6,451.0	6,740.0	6,395.9	25.2	24.7	74.13	-211.0	656.9	209.1	160.8	48.29	4.330	
6,850.0	6,470.7	6,787.0	6,413.1	25.5	25.0	73.74	-211.9	613.2	210.4	161.7	48.63	4.325	
6,900.0	6,487.3	6,833.9	6,427.5	25.8	25.3	73.41	-212.6	568.6	211.4	162.3	49.11	4.305	
6,950.0	6,500.8	6,880.7	6,439.2	26.2	25.6	73.13	-213.2	523.3	212.3	162.6	49.71	4.270	
7,000.0	6,511.2	6,927.5	6,448.1	26.6	26.0	72.91	-213.6	477.3	213.0	162.5	50.45	4.221	
7,050.0	6,518.3	6,974.3	6,454.2	27.1	26.5	72.74	-213.9	431.0	213.5	162.1	51.31	4.160	
7,100.0	6,522.2	7,021.0	6,457.4	27.7	27.0	72.63	-214.1	384.4	213.7	161.5	52.29	4.088	
7,137.3	6,523.0	7,056.2	6,458.0	28.1	27.4	72.58	-214.1	349.2	213.8	160.7	53.09	4.028	
7,200.0	6,522.8	7,118.8	6,457.8	28.9	28.2	72.61	-214.1	286.6	213.8	159.1	54.67	3.911	
7,300.0	6,522.4	7,218.8	6,457.6	30.4	29.6	72.64	-214.1	186.6	213.7	156.3	57.49	3.718	
7,400.0	6,522.0	7,318.8	6,457.4	32.0	31.2	72.68	-214.1	86.6	213.7	153.0	60.66	3.523	
7,500.0	6,521.6	7,418.8	6,457.2	33.8	33.0	72.72	-214.1	-13.4	213.7	149.5	64.13	3.332	
7,600.0	6,521.2	7,518.8	6,456.9	35.7	35.0	72.76	-214.1	-113.4	213.6	145.8	67.85	3.148	
7,700.0	6,520.9	7,618.8	6,456.7	37.8	37.0	72.80	-214.1	-213.4	213.6	141.8	71.78	2.975	
7,800.0	6,520.5	7,718.8	6,456.5	39.9	39.1	72.84	-214.1	-313.4	213.5	137.6	75.90	2.813	
7,900.0	6,520.1	7,818.8	6,456.3	42.1	41.4	72.88	-214.1	-413.4	213.5	133.3	80.17	2.663	
8,000.0	6,519.7	7,918.8	6,456.0	44.4	43.7	72.92	-214.1	-513.4	213.4	128.9	84.57	2.524	
8,100.0	6,519.4	8,018.8	6,455.8	46.7	46.0	72.95	-214.1	-613.4	213.4	124.3	89.08	2.396	
8,200.0	6,519.0	8,118.8	6,455.6	49.1	48.4	72.99	-214.1	-713.4	213.3	119.7	93.68	2.277	
8,300.0	6,518.6	8,218.8	6,455.3	51.5	50.8	73.03	-214.1	-813.4	213.3	114.9	98.37	2.168	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockcroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockcroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockcroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Cockcroft 5N63W19C Pad Sec.19-T5N-R63W - Cockcroft 19V-234 - Wellbore #1 - Plan #1 (11-13-15)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,400.0	6,518.2	8,318.8	6,455.1	54.0	53.3	-73.07	-214.1	-913.4	213.3	110.1	103.14	2.068		
8,500.0	6,517.8	8,418.8	6,454.9	56.5	55.8	-73.11	-214.1	-1,013.4	213.2	105.3	107.96	1.975		
8,600.0	6,517.5	8,518.8	6,454.7	59.0	58.4	-73.15	-214.1	-1,113.4	213.2	100.3	112.84	1.889		
8,700.0	6,517.1	8,618.8	6,454.4	61.6	60.9	-73.19	-214.1	-1,213.4	213.1	95.4	117.77	1.810		
8,800.0	6,516.7	8,718.8	6,454.2	64.1	63.5	-73.23	-214.1	-1,313.4	213.1	90.3	122.74	1.736		
8,900.0	6,516.3	8,818.8	6,454.0	66.7	66.1	-73.27	-214.1	-1,413.4	213.0	85.3	127.75	1.668		
9,000.0	6,515.9	8,918.8	6,453.8	69.3	68.7	-73.31	-214.1	-1,513.4	213.0	80.2	132.79	1.604		
9,100.0	6,515.6	9,018.8	6,453.5	72.0	71.4	-73.34	-214.1	-1,613.4	213.0	75.1	137.86	1.545		
9,200.0	6,515.2	9,118.8	6,453.3	74.6	74.0	-73.38	-214.1	-1,713.4	212.9	69.9	142.96	1.489 Level 3		
9,300.0	6,514.8	9,218.8	6,453.1	77.3	76.7	-73.42	-214.1	-1,813.4	212.9	64.8	148.09	1.437 Level 3		
9,400.0	6,514.4	9,318.8	6,452.8	79.9	79.3	-73.46	-214.1	-1,913.4	212.8	59.6	153.24	1.389 Level 3		
9,500.0	6,514.0	9,418.8	6,452.6	82.6	82.0	-73.50	-214.1	-2,013.4	212.8	54.4	158.41	1.343 Level 3		
9,600.0	6,513.7	9,518.8	6,452.4	85.3	84.7	-73.54	-214.1	-2,113.4	212.7	49.1	163.59	1.300 Level 3		
9,700.0	6,513.3	9,618.8	6,452.2	88.0	87.4	-73.58	-214.1	-2,213.4	212.7	43.9	168.80	1.260 Level 3		
9,800.0	6,512.9	9,718.8	6,451.9	90.6	90.1	-73.62	-214.1	-2,313.4	212.6	38.6	174.02	1.222 Level 2		
9,900.0	6,512.5	9,818.8	6,451.7	93.4	92.8	-73.66	-214.1	-2,413.4	212.6	33.4	179.25	1.186 Level 2		
10,000.0	6,512.2	9,918.8	6,451.5	96.1	95.5	-73.70	-214.1	-2,513.4	212.6	28.1	184.50	1.152 Level 2		
10,100.0	6,511.8	10,018.8	6,451.3	98.8	98.2	-73.74	-214.1	-2,613.4	212.5	22.8	189.76	1.120 Level 2		
10,200.0	6,511.4	10,118.8	6,451.0	101.5	100.9	-73.78	-214.1	-2,713.4	212.5	17.4	195.03	1.089 Level 2		
10,300.0	6,511.0	10,218.8	6,450.8	104.2	103.7	-73.81	-214.1	-2,813.4	212.4	12.1	200.32	1.060 Level 2		
10,400.0	6,510.6	10,318.8	6,450.6	106.9	106.4	-73.85	-214.1	-2,913.4	212.4	6.8	205.61	1.033 Level 2		
10,500.0	6,510.3	10,418.8	6,450.3	109.7	109.1	-73.89	-214.1	-3,013.4	212.4	1.4	210.92	1.007 Level 2		
10,600.0	6,509.9	10,518.8	6,450.1	112.4	111.9	-73.93	-214.1	-3,113.4	212.3	-3.9	216.23	0.982 Level 1		
10,700.0	6,509.5	10,618.8	6,449.9	115.2	114.6	-73.97	-214.1	-3,213.4	212.3	-9.3	221.55	0.958 Level 1		
10,800.0	6,509.1	10,718.8	6,449.7	117.9	117.4	-74.01	-214.1	-3,313.4	212.2	-14.7	226.88	0.935 Level 1		
10,900.0	6,508.7	10,818.8	6,449.4	120.6	120.1	-74.05	-214.1	-3,413.4	212.2	-20.0	232.22	0.914 Level 1		
11,000.0	6,508.4	10,918.8	6,449.2	123.4	122.9	-74.09	-214.1	-3,513.4	212.1	-25.4	237.56	0.893 Level 1		
11,100.0	6,508.0	11,018.8	6,449.0	126.1	125.6	-74.13	-214.1	-3,613.4	212.1	-30.8	242.91	0.873 Level 1		
11,200.0	6,507.6	11,118.8	6,448.8	128.9	128.4	-74.17	-214.1	-3,713.4	212.1	-36.2	248.27	0.854 Level 1		
11,300.0	6,507.2	11,218.8	6,448.5	131.7	131.1	-74.21	-214.1	-3,813.4	212.0	-41.6	253.64	0.836 Level 1		
11,400.0	6,506.8	11,318.8	6,448.3	134.4	133.9	-74.25	-214.1	-3,913.4	212.0	-47.0	259.01	0.818 Level 1		
11,500.0	6,506.5	11,418.8	6,448.1	137.2	136.7	-74.29	-214.1	-4,013.4	211.9	-52.4	264.38	0.802 Level 1		
11,600.0	6,506.1	11,518.8	6,447.8	139.9	139.4	-74.33	-214.1	-4,113.4	211.9	-57.9	269.76	0.785 Level 1		
11,700.0	6,505.7	11,618.8	6,447.6	142.7	142.2	-74.37	-214.1	-4,213.4	211.9	-63.3	275.15	0.770 Level 1		
11,800.0	6,505.3	11,718.8	6,447.4	145.5	145.0	-74.40	-214.1	-4,313.4	211.8	-68.7	280.54	0.755 Level 1		
11,900.0	6,505.0	11,818.8	6,447.2	148.2	147.7	-74.44	-214.1	-4,413.4	211.8	-74.2	285.94	0.741 Level 1		
12,000.0	6,504.6	11,918.8	6,446.9	151.0	150.5	-74.48	-214.1	-4,513.4	211.7	-79.6	291.34	0.727 Level 1		
12,100.0	6,504.2	12,018.8	6,446.7	153.8	153.3	-74.52	-214.1	-4,613.4	211.7	-85.1	296.75	0.713 Level 1		
12,200.0	6,503.8	12,118.8	6,446.5	156.6	156.1	-74.56	-214.1	-4,713.4	211.7	-90.5	302.16	0.700 Level 1		
12,300.0	6,503.4	12,218.8	6,446.3	159.3	158.8	-74.60	-214.1	-4,813.4	211.6	-96.0	307.57	0.688 Level 1		
12,400.0	6,503.1	12,318.8	6,446.0	162.1	161.6	-74.64	-214.1	-4,913.4	211.6	-101.4	312.99	0.676 Level 1		
12,500.0	6,502.7	12,418.8	6,445.8	164.9	164.4	-74.68	-214.1	-5,013.4	211.5	-106.9	318.41	0.664 Level 1		
12,600.0	6,502.3	12,518.8	6,445.6	167.7	167.2	-74.72	-214.1	-5,113.4	211.5	-112.3	323.84	0.653 Level 1		
12,700.0	6,501.9	12,618.8	6,445.3	170.4	169.9	-74.76	-214.1	-5,213.4	211.5	-117.8	329.27	0.642 Level 1		
12,800.0	6,501.5	12,718.8	6,445.1	173.2	172.7	-74.80	-214.1	-5,313.4	211.4	-123.3	334.71	0.632 Level 1		
12,900.0	6,501.2	12,818.8	6,444.9	176.0	175.5	-74.84	-214.1	-5,413.4	211.4	-128.8	340.14	0.621 Level 1		
13,000.0	6,500.8	12,918.8	6,444.7	178.8	178.3	-74.88	-214.1	-5,513.4	211.3	-134.3	345.59	0.612 Level 1		
13,100.0	6,500.4	13,018.8	6,444.4	181.6	181.1	-74.92	-214.1	-5,613.4	211.3	-139.7	351.03	0.602 Level 1		
13,200.0	6,500.0	13,118.8	6,444.2	184.3	183.9	-74.96	-214.1	-5,713.4	211.3	-145.2	356.48	0.593 Level 1		
13,300.0	6,499.6	13,218.8	6,444.0	187.1	186.7	-75.00	-214.1	-5,813.4	211.2	-150.7	361.93	0.584 Level 1		
13,400.0	6,499.3	13,318.8	6,443.7	189.9	189.4	-75.04	-214.1	-5,913.4	211.2	-156.2	367.38	0.575 Level 1		

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference														
Offset														
Semi Major Axis														
Distance														
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
13,500.0	6,498.9	13,418.8	6,443.5	192.7	192.2	-75.08	-214.1	-6,013.4	211.1	-161.7	372.84	0.566	Level 1	
13,600.0	6,498.5	13,518.8	6,443.3	195.5	195.0	-75.12	-214.1	-6,113.4	211.1	-167.2	378.30	0.558	Level 1	
13,700.0	6,498.1	13,618.8	6,443.1	198.3	197.8	-75.16	-214.1	-6,213.4	211.1	-172.7	383.77	0.550	Level 1	
13,726.5	6,498.0	13,645.3	6,443.0	199.0	198.5	-75.17	-214.1	-6,239.9	211.0	-174.2	385.22	0.548	Level 1	
13,734.8	6,498.0	13,648.3	6,443.0	199.2	198.6	-75.17	-214.1	-6,242.8	211.1	-174.4	385.52	0.548	Level 1, ES, SF	



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19V-314 - Wellbore #1 - Plan #1 (11-13-15)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	75.35	10.9	41.8	43.2				
100.0	100.0	99.0	99.0	0.1	0.1	75.35	10.9	41.8	43.2	43.0	0.22	193.121	
200.0	200.0	199.0	199.0	0.3	0.3	75.35	10.9	41.8	43.2	42.5	0.67	64.266	
300.0	300.0	299.0	299.0	0.6	0.6	75.35	10.9	41.8	43.2	42.1	1.12	38.508	
400.0	400.0	399.0	399.0	0.8	0.8	75.35	10.9	41.8	43.2	41.6	1.57	27.490	
500.0	500.0	499.0	499.0	1.0	1.0	75.35	10.9	41.8	43.2	41.2	2.02	21.375	
600.0	600.0	599.0	599.0	1.2	1.2	75.35	10.9	41.8	43.2	40.7	2.47	17.485	
700.0	700.0	699.0	699.0	1.5	1.5	75.35	10.9	41.8	43.2	40.3	2.92	14.793	
800.0	800.0	799.0	799.0	1.7	1.7	75.35	10.9	41.8	43.2	39.8	3.37	12.819	
900.0	900.0	899.0	899.0	1.9	1.9	75.35	10.9	41.8	43.2	39.4	3.82	11.310	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	75.35	10.9	41.8	43.2	38.9	4.27	10.119	
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	75.35	10.9	41.8	43.2	38.5	4.72	9.155	
1,200.0	1,200.0	1,199.0	1,199.0	2.6	2.6	75.35	10.9	41.8	43.2	38.0	5.17	8.358 CC, ES	
1,300.0	1,300.0	1,297.9	1,297.9	2.8	2.8	75.20	11.3	43.0	44.5	38.8	5.61	7.930	
1,400.0	1,400.0	1,396.6	1,396.6	3.0	3.0	74.82	12.6	46.5	48.3	42.3	6.04	7.997	
1,500.0	1,500.0	1,495.1	1,494.8	3.3	3.2	74.29	14.8	52.5	54.7	48.2	6.48	8.445	
1,600.0	1,600.0	1,593.2	1,592.5	3.5	3.4	73.73	17.7	60.8	63.7	56.8	6.93	9.195	
1,700.0	1,700.0	1,690.7	1,689.4	3.7	3.7	73.21	21.5	71.4	75.2	67.8	7.39	10.180	
1,800.0	1,800.0	1,787.6	1,785.3	3.9	3.9	72.76	26.1	84.3	89.3	81.4	7.87	11.345	
1,900.0	1,900.0	1,884.0	1,880.4	4.1	4.2	-18.17	31.5	99.3	104.6	96.4	8.21	12.741	
2,000.0	1,999.9	1,980.0	1,974.6	4.3	4.5	-18.96	37.7	116.5	120.0	111.4	8.62	13.913	
2,100.0	2,099.7	2,075.6	2,067.9	4.6	4.9	-19.92	44.6	135.8	135.4	126.4	9.04	14.978	
2,200.0	2,199.3	2,170.7	2,160.3	4.8	5.2	-21.00	52.3	157.3	150.9	141.5	9.46	15.950	
2,300.0	2,298.6	2,265.5	2,251.7	5.0	5.6	-22.14	60.7	180.8	166.6	156.7	9.90	16.833	
2,400.0	2,397.5	2,364.3	2,346.7	5.3	6.1	-23.43	69.9	206.4	181.2	170.8	10.35	17.507	
2,500.0	2,496.1	2,463.4	2,442.0	5.5	6.6	-24.84	79.1	232.1	193.5	182.7	10.82	17.889	
2,600.0	2,594.2	2,562.7	2,537.4	5.8	7.1	-26.41	88.4	257.9	203.6	192.3	11.31	18.008	
2,700.0	2,691.7	2,662.2	2,633.1	6.2	7.6	-28.17	97.6	283.7	211.6	199.7	11.83	17.889	
2,800.0	2,788.6	2,761.7	2,728.7	6.5	8.1	-30.15	106.9	309.6	217.5	205.1	12.39	17.555	
2,900.0	2,884.9	2,861.3	2,824.4	6.9	8.6	-32.38	116.2	335.4	221.4	208.4	13.00	17.026	
3,000.0	2,980.4	2,960.7	2,920.0	7.4	9.2	-34.93	125.4	361.2	223.5	209.8	13.69	16.323	
3,090.1	3,065.7	3,050.3	3,006.1	7.9	9.7	-37.52	133.7	384.5	224.0	209.6	14.40	15.556	
3,100.0	3,075.1	3,060.1	3,015.5	7.9	9.7	-37.82	134.6	387.0	224.0	209.5	14.49	15.462	
3,107.5	3,082.1	3,067.5	3,022.7	8.0	9.7	-38.05	135.3	388.9	224.0	209.5	14.55	15.391	
3,200.0	3,169.4	3,159.4	3,110.9	8.5	10.2	-40.88	143.9	412.8	224.3	208.9	15.41	14.553	
3,300.0	3,263.8	3,258.6	3,206.4	9.1	10.8	-43.92	153.1	438.6	225.2	208.8	16.42	13.717	
3,400.0	3,358.1	3,357.9	3,301.8	9.7	11.3	-46.93	162.3	464.3	226.8	209.3	17.50	12.957	
3,500.0	3,452.5	3,457.2	3,397.2	10.3	11.9	-49.89	171.6	490.1	228.9	210.3	18.66	12.271	
3,600.0	3,546.8	3,556.4	3,492.6	10.9	12.5	-52.78	180.8	515.9	231.7	211.9	19.88	11.659	
3,700.0	3,641.2	3,655.7	3,588.1	11.5	13.0	-55.60	190.1	541.6	235.1	214.0	21.15	11.116	
3,800.0	3,735.5	3,755.0	3,683.5	12.1	13.6	-58.34	199.3	567.4	239.0	216.6	22.47	10.639	
3,900.0	3,829.9	3,854.3	3,778.9	12.8	14.1	-60.98	208.5	593.2	243.5	219.7	23.82	10.221	
4,000.0	3,924.2	3,953.5	3,874.3	13.4	14.7	-63.53	217.8	618.9	248.5	223.3	25.21	9.858	
4,100.0	4,018.6	4,052.8	3,969.8	14.1	15.3	-65.97	227.0	644.7	253.9	227.3	26.61	9.543	
4,200.0	4,112.9	4,152.1	4,065.2	14.8	15.8	-68.30	236.2	670.5	259.8	231.8	28.02	9.271	
4,300.0	4,207.3	4,251.4	4,160.6	15.4	16.4	-70.53	245.5	696.2	266.1	236.7	29.44	9.038	
4,400.0	4,301.6	4,350.6	4,256.0	16.1	16.9	-72.66	254.7	722.0	272.8	241.9	30.87	8.838	
4,500.0	4,396.0	4,449.9	4,351.5	16.8	17.5	-74.68	263.9	747.8	279.8	247.6	32.29	8.667	
4,600.0	4,490.3	4,549.2	4,446.9	17.5	18.1	-76.60	273.2	773.5	287.2	253.5	33.71	8.521	
4,700.0	4,584.7	4,648.4	4,542.3	18.1	18.7	-78.42	282.4	799.3	294.9	259.8	35.12	8.398	
4,800.0	4,679.0	4,747.7	4,637.7	18.8	19.2	-80.15	291.6	825.1	302.9	266.4	36.52	8.294	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19V-314 - Wellbore #1 - Plan #1 (11-13-15)												Offset Well Error:	0.0 ft
Survey Program:		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
4,900.0	4,773.4	4,847.0	4,733.2	19.5	19.8	-81.79	300.9	850.8	311.1	273.2	37.91	8.207	
5,000.0	4,867.7	4,946.3	4,828.6	20.2	20.4	-83.34	310.1	876.6	319.6	280.3	39.29	8.134	
5,100.0	4,962.1	5,045.5	4,924.0	20.9	20.9	-84.82	319.3	902.4	328.3	287.6	40.66	8.074	
5,200.0	5,056.4	5,144.8	5,019.4	21.6	21.5	-86.22	328.6	928.1	337.2	295.2	42.02	8.024	
5,300.0	5,150.8	5,244.1	5,114.8	22.2	22.1	-87.54	337.8	953.9	346.3	302.9	43.37	7.985	
5,400.0	5,245.1	5,343.3	5,210.3	22.9	22.7	-88.80	347.0	979.7	355.6	310.9	44.71	7.953	
5,500.0	5,339.5	5,442.6	5,305.7	23.6	23.2	-89.99	356.3	1,005.4	365.0	319.0	46.04	7.929	
5,600.0	5,433.8	5,541.9	5,401.1	24.3	23.8	-91.12	365.5	1,031.2	374.6	327.2	47.35	7.910	
5,676.4	5,505.9	5,617.8	5,474.1	24.9	24.2	-91.95	372.6	1,050.9	382.0	333.6	48.35	7.900	
5,700.0	5,528.3	5,641.2	5,496.6	25.0	24.4	-92.36	374.7	1,057.0	384.3	335.6	48.65	7.900	
5,750.0	5,576.4	5,690.9	5,544.4	25.2	24.7	-92.90	379.4	1,069.9	389.1	339.9	49.18	7.912	
5,800.0	5,625.3	5,739.8	5,591.5	25.4	24.9	-93.12	383.9	1,082.1	393.8	344.2	49.61	7.937	
5,850.0	5,674.8	5,788.2	5,638.7	25.5	25.1	-93.55	388.5	1,091.5	398.5	348.6	49.92	7.984	
5,900.0	5,724.6	5,836.6	5,686.5	25.6	25.2	-95.37	393.1	1,097.9	403.3	353.2	50.14	8.044	
5,950.0	5,774.6	5,885.3	5,734.8	25.7	25.3	94.78	397.8	1,101.2	408.1	357.9	50.28	8.118	
6,000.0	5,824.5	5,934.1	5,783.4	25.7	25.4	89.54	402.5	1,101.4	413.0	362.6	50.35	8.203	
6,050.0	5,874.2	5,983.1	5,832.1	25.7	25.4	88.89	407.2	1,098.5	417.8	367.5	50.35	8.299	
6,100.0	5,923.3	6,032.3	5,880.7	25.6	25.4	88.66	411.9	1,092.5	422.6	372.3	50.29	8.404	
6,150.0	5,971.8	6,081.7	5,929.0	25.6	25.4	88.58	416.6	1,083.2	427.4	377.2	50.17	8.519	
6,200.0	6,019.3	6,131.3	5,976.8	25.5	25.4	88.55	421.2	1,070.8	432.1	382.1	50.01	8.640	
6,250.0	6,065.7	6,181.1	6,023.8	25.4	25.3	88.56	425.8	1,055.2	436.7	386.9	49.81	8.767	
6,300.0	6,110.8	6,231.2	6,070.0	25.3	25.2	88.59	430.3	1,036.5	441.2	391.6	49.58	8.898	
6,350.0	6,154.4	6,281.4	6,115.1	25.1	25.1	88.64	434.7	1,014.7	445.6	396.2	49.34	9.031	
6,400.0	6,196.3	6,331.9	6,158.8	25.0	24.9	88.69	438.9	989.8	449.8	400.7	49.09	9.163	
6,450.0	6,236.4	6,382.6	6,201.0	24.9	24.8	88.76	443.0	962.0	453.9	405.0	48.86	9.290	
6,500.0	6,274.4	6,433.6	6,241.4	24.9	24.7	88.83	446.9	931.2	457.8	409.1	48.65	9.410	
6,550.0	6,310.1	6,484.8	6,279.9	24.8	24.6	88.90	450.7	897.7	461.5	413.0	48.49	9.517	
6,600.0	6,343.6	6,536.2	6,316.2	24.8	24.4	88.99	454.2	861.5	464.9	416.5	48.38	9.609	
6,650.0	6,374.5	6,587.8	6,350.2	24.8	24.4	89.07	457.5	822.7	468.2	419.8	48.36	9.681	
6,700.0	6,402.8	6,639.7	6,381.5	24.9	24.3	89.17	460.6	781.6	471.1	422.7	48.43	9.728	
6,750.0	6,428.3	6,691.8	6,410.2	25.0	24.3	89.26	463.4	738.2	473.9	425.2	48.61	9.748	
6,800.0	6,451.0	6,744.0	6,435.9	25.2	24.4	89.36	465.9	692.8	476.3	427.4	48.92	9.737	
6,850.0	6,470.7	6,796.5	6,458.6	25.5	24.5	89.46	468.1	645.5	478.4	429.1	49.35	9.694	
6,900.0	6,487.3	6,849.1	6,478.0	25.8	24.6	89.57	470.0	596.7	480.3	430.3	49.93	9.618	
6,950.0	6,500.8	6,902.0	6,494.1	26.2	24.9	89.68	471.6	546.4	481.8	431.1	50.65	9.511	
7,000.0	6,511.2	6,954.9	6,506.7	26.6	25.2	89.79	472.8	495.0	483.0	431.5	51.51	9.376	
7,050.0	6,518.3	7,008.0	6,515.8	27.1	25.6	89.90	473.7	442.7	483.8	431.3	52.50	9.216	
7,100.0	6,522.2	7,061.2	6,521.2	27.7	26.1	90.02	474.2	389.8	484.3	430.7	53.60	9.036	
7,137.3	6,523.0	7,101.0	6,522.9	28.1	26.5	90.11	474.4	350.0	484.5	430.0	54.49	8.891	
7,200.0	6,522.8	7,164.6	6,522.8	28.9	27.3	90.12	474.4	286.4	484.5	428.4	56.11	8.635	
7,300.0	6,522.4	7,264.6	6,522.4	30.4	28.7	90.12	474.4	186.4	484.5	425.5	59.00	8.213	
7,400.0	6,522.0	7,364.6	6,522.1	32.0	30.2	90.12	474.4	86.4	484.5	422.3	62.25	7.783	
7,500.0	6,521.6	7,464.6	6,521.7	33.8	32.0	90.12	474.4	-13.6	484.5	418.7	65.83	7.360	
7,600.0	6,521.2	7,564.6	6,521.3	35.7	33.9	90.12	474.4	-113.6	484.5	414.9	69.68	6.954	
7,700.0	6,520.9	7,664.6	6,520.9	37.8	36.0	90.12	474.4	-213.6	484.5	410.8	73.75	6.570	
7,800.0	6,520.5	7,764.6	6,520.5	39.9	38.1	90.12	474.4	-313.6	484.5	406.5	78.02	6.210	
7,900.0	6,520.1	7,864.6	6,520.2	42.1	40.3	90.12	474.4	-413.6	484.5	402.1	82.45	5.877	
8,000.0	6,519.7	7,964.6	6,519.8	44.4	42.6	90.12	474.4	-513.6	484.5	397.5	87.02	5.568	
8,100.0	6,519.4	8,064.6	6,519.4	46.7	45.0	90.12	474.4	-613.6	484.5	392.8	91.70	5.284	
8,200.0	6,519.0	8,164.6	6,519.0	49.1	47.4	90.12	474.4	-713.6	484.5	388.0	96.49	5.022	
8,300.0	6,518.6	8,264.6	6,518.6	51.5	49.9	90.12	474.4	-813.6	484.5	383.2	101.36	4.780	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockcroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockcroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockcroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Cockcroft 5N63W19C Pad Sec.19-T5N-R63W - Cockcroft 19V-314 - Wellbore #1 - Plan #1 (11-13-15)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
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
8,400.0	6,518.2	8,364.6	6,518.3	54.0	52.3	90.12	474.4	-913.6	484.5	378.2	106.31	4.558	
8,500.0	6,517.8	8,464.6	6,517.9	56.5	54.9	90.12	474.4	-1,013.6	484.5	373.2	111.32	4.353	
8,600.0	6,517.5	8,564.6	6,517.5	59.0	57.4	90.12	474.4	-1,113.6	484.5	368.1	116.38	4.163	
8,700.0	6,517.1	8,664.6	6,517.1	61.6	60.0	90.12	474.4	-1,213.6	484.5	363.0	121.50	3.988	
8,800.0	6,516.7	8,764.6	6,516.8	64.1	62.5	90.12	474.4	-1,313.6	484.5	357.9	126.65	3.826	
8,900.0	6,516.3	8,864.6	6,516.4	66.7	65.2	90.12	474.4	-1,413.5	484.5	352.7	131.85	3.675	
9,000.0	6,515.9	8,964.6	6,516.0	69.3	67.8	90.12	474.4	-1,513.5	484.5	347.5	137.08	3.535	
9,100.0	6,515.6	9,064.6	6,515.6	72.0	70.4	90.12	474.4	-1,613.5	484.5	342.2	142.34	3.404	
9,200.0	6,515.2	9,164.6	6,515.2	74.6	73.1	90.12	474.4	-1,713.5	484.5	336.9	147.62	3.282	
9,300.0	6,514.8	9,264.6	6,514.9	77.3	75.7	90.12	474.4	-1,813.5	484.5	331.6	152.93	3.168	
9,400.0	6,514.4	9,364.6	6,514.5	79.9	78.4	90.12	474.4	-1,913.5	484.5	326.3	158.26	3.062	
9,500.0	6,514.0	9,464.6	6,514.1	82.6	81.1	90.12	474.4	-2,013.5	484.5	320.9	163.61	2.961	
9,600.0	6,513.7	9,564.6	6,513.7	85.3	83.8	90.12	474.4	-2,113.5	484.5	315.6	168.98	2.867	
9,700.0	6,513.3	9,664.6	6,513.3	88.0	86.5	90.12	474.4	-2,213.5	484.5	310.2	174.36	2.779	
9,800.0	6,512.9	9,764.6	6,513.0	90.6	89.2	90.12	474.4	-2,313.5	484.5	304.8	179.76	2.695	
9,900.0	6,512.5	9,864.6	6,512.6	93.4	91.9	90.12	474.4	-2,413.5	484.5	299.4	185.17	2.617	
10,000.0	6,512.2	9,964.6	6,512.2	96.1	94.6	90.12	474.4	-2,513.5	484.5	293.9	190.60	2.542	
10,100.0	6,511.8	10,064.6	6,511.8	98.8	97.3	90.12	474.4	-2,613.5	484.5	288.5	196.03	2.472	
10,200.0	6,511.4	10,164.6	6,511.4	101.5	100.0	90.12	474.4	-2,713.5	484.5	283.1	201.48	2.405	
10,300.0	6,511.0	10,264.6	6,511.1	104.2	102.8	90.12	474.4	-2,813.5	484.5	277.6	206.93	2.342	
10,400.0	6,510.6	10,364.6	6,510.7	106.9	105.5	90.12	474.4	-2,913.5	484.5	272.1	212.40	2.281	
10,500.0	6,510.3	10,464.6	6,510.3	109.7	108.2	90.12	474.4	-3,013.5	484.5	266.7	217.87	2.224	
10,600.0	6,509.9	10,564.6	6,509.9	112.4	111.0	90.12	474.4	-3,113.5	484.5	261.2	223.35	2.169	
10,700.0	6,509.5	10,664.6	6,509.5	115.2	113.7	90.12	474.4	-3,213.5	484.5	255.7	228.83	2.117	
10,800.0	6,509.1	10,764.6	6,509.2	117.9	116.5	90.12	474.4	-3,313.5	484.5	250.2	234.32	2.068	
10,900.0	6,508.7	10,864.6	6,508.8	120.6	119.2	90.12	474.4	-3,413.5	484.5	244.7	239.82	2.020	
11,000.0	6,508.4	10,964.6	6,508.4	123.4	122.0	90.12	474.4	-3,513.5	484.5	239.2	245.32	1.975	
11,100.0	6,508.0	11,064.6	6,508.0	126.1	124.7	90.12	474.4	-3,613.5	484.5	233.7	250.83	1.932	
11,200.0	6,507.6	11,164.6	6,507.7	128.9	127.5	90.12	474.4	-3,713.5	484.5	228.2	256.35	1.890	
11,300.0	6,507.2	11,264.6	6,507.3	131.7	130.3	90.12	474.4	-3,813.5	484.5	222.7	261.86	1.850	
11,400.0	6,506.8	11,364.6	6,506.9	134.4	133.0	90.12	474.4	-3,913.5	484.5	217.1	267.39	1.812	
11,500.0	6,506.5	11,464.6	6,506.5	137.2	135.8	90.12	474.4	-4,013.5	484.5	211.6	272.91	1.775	
11,600.0	6,506.1	11,564.6	6,506.1	139.9	138.6	90.12	474.4	-4,113.5	484.5	206.1	278.44	1.740	
11,700.0	6,505.7	11,664.6	6,505.8	142.7	141.3	90.12	474.4	-4,213.5	484.5	200.6	283.98	1.706	
11,800.0	6,505.3	11,764.6	6,505.4	145.5	144.1	90.12	474.4	-4,313.5	484.5	195.0	289.52	1.674	
11,900.0	6,505.0	11,864.6	6,505.0	148.2	146.9	90.12	474.4	-4,413.5	484.5	189.5	295.06	1.642	
12,000.0	6,504.6	11,964.6	6,504.6	151.0	149.6	90.12	474.4	-4,513.5	484.5	183.9	300.60	1.612	
12,100.0	6,504.2	12,064.6	6,504.2	153.8	152.4	90.12	474.4	-4,613.5	484.5	178.4	306.15	1.583	
12,200.0	6,503.8	12,164.6	6,503.9	156.6	155.2	90.12	474.4	-4,713.5	484.5	172.8	311.69	1.555	
12,300.0	6,503.4	12,264.6	6,503.5	159.3	158.0	90.12	474.4	-4,813.5	484.5	167.3	317.25	1.527	
12,400.0	6,503.1	12,364.6	6,503.1	162.1	160.7	90.12	474.4	-4,913.5	484.5	161.7	322.80	1.501	
12,500.0	6,502.7	12,464.6	6,502.7	164.9	163.5	90.12	474.4	-5,013.5	484.5	156.2	328.36	1.476 Level 3	
12,600.0	6,502.3	12,564.6	6,502.3	167.7	166.3	90.12	474.4	-5,113.5	484.5	150.6	333.91	1.451 Level 3	
12,700.0	6,501.9	12,664.6	6,502.0	170.4	169.1	90.12	474.4	-5,213.5	484.5	145.1	339.47	1.427 Level 3	
12,800.0	6,501.5	12,764.6	6,501.6	173.2	171.9	90.12	474.4	-5,313.5	484.5	139.5	345.04	1.404 Level 3	
12,900.0	6,501.2	12,864.6	6,501.2	176.0	174.6	90.12	474.4	-5,413.5	484.5	133.9	350.60	1.382 Level 3	
13,000.0	6,500.8	12,964.6	6,500.8	178.8	177.4	90.12	474.4	-5,513.5	484.5	128.4	356.17	1.360 Level 3	
13,100.0	6,500.4	13,064.6	6,500.4	181.6	180.2	90.12	474.4	-5,613.5	484.5	122.8	361.73	1.339 Level 3	
13,200.0	6,500.0	13,164.6	6,500.1	184.3	183.0	90.12	474.4	-5,713.5	484.5	117.2	367.30	1.319 Level 3	
13,300.0	6,499.6	13,264.6	6,499.7	187.1	185.8	90.12	474.4	-5,813.5	484.5	111.7	372.87	1.299 Level 3	
13,400.0	6,499.3	13,364.6	6,499.3	189.9	188.6	90.12	474.4	-5,913.5	484.5	106.1	378.45	1.280 Level 3	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>													Offset Site Error:	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19V-314 - Wellbore #1 - Plan #1 (11-13-15)													Offset Well Error:	0.0 ft
Survey Program: 0-MWD														
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	
13,500.0	6,498.9	13,464.6	6,498.9	192.7	191.4	90.12	474.4	-6,013.5	484.5	100.5	384.02	1.262	Level 3	
13,600.0	6,498.5	13,564.6	6,498.6	195.5	194.2	90.12	474.4	-6,113.5	484.5	94.9	389.60	1.244	Level 2	
13,700.0	6,498.1	13,664.6	6,498.2	198.3	196.9	90.12	474.4	-6,213.5	484.5	89.4	395.17	1.226	Level 2	
13,734.8	6,498.0	13,699.4	6,498.0	199.2	197.9	90.12	474.4	-6,248.4	484.5	87.4	397.12	1.220	Level 2, SF	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19W-214 - Wellbore #1 - Plan #1 (11-13-15)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	75.73	25.5	100.3	103.5				
100.0	100.0	99.0	99.0	0.1	0.1	75.73	25.5	100.3	103.5	103.3	0.22	462.687	
200.0	200.0	199.0	199.0	0.3	0.3	75.73	25.5	100.3	103.5	102.8	0.67	153.972	
300.0	300.0	299.0	299.0	0.6	0.6	75.73	25.5	100.3	103.5	102.4	1.12	92.260	
400.0	400.0	399.0	399.0	0.8	0.8	75.73	25.5	100.3	103.5	101.9	1.57	65.862 CC, ES	
500.0	500.0	497.4	497.4	1.0	1.0	76.28	24.7	101.2	104.2	102.2	2.00	52.193	
600.0	600.0	595.7	595.6	1.2	1.2	77.90	22.3	104.2	106.6	104.2	2.42	44.107	
700.0	700.0	693.7	693.4	1.5	1.4	80.45	18.3	109.0	110.7	107.8	2.85	38.843	
800.0	800.0	791.3	790.6	1.7	1.6	83.70	12.8	115.8	116.8	113.5	3.30	35.413	
900.0	900.0	888.4	887.1	1.9	1.9	87.38	5.7	124.4	125.1	121.3	3.76	33.228	
1,000.0	1,000.0	984.9	982.6	2.1	2.2	91.22	-2.9	134.8	135.8	131.6	4.26	31.912	
1,100.0	1,100.0	1,080.7	1,077.1	2.4	2.5	95.02	-12.9	147.0	149.2	144.4	4.78	31.206	
1,200.0	1,200.0	1,175.5	1,170.2	2.6	2.9	98.60	-24.3	160.9	165.3	159.9	5.34	30.931	
1,300.0	1,300.0	1,269.5	1,262.0	2.8	3.2	101.87	-37.1	176.4	184.0	178.1	5.94	30.957	
1,400.0	1,400.0	1,362.3	1,352.2	3.0	3.7	104.79	-51.1	193.4	205.5	198.9	6.59	31.193	
1,500.0	1,500.0	1,454.1	1,440.7	3.3	4.1	107.36	-66.3	211.9	229.6	222.3	7.27	31.595	
1,600.0	1,600.0	1,549.8	1,532.8	3.5	4.7	109.65	-82.9	232.2	255.3	247.3	8.00	31.901	
1,700.0	1,700.0	1,646.0	1,625.3	3.7	5.2	111.54	-99.7	252.6	281.4	272.6	8.76	32.137	
1,800.0	1,800.0	1,742.1	1,717.7	3.9	5.7	113.10	-116.4	273.0	307.7	298.2	9.52	32.326	
1,900.0	1,900.0	1,838.6	1,810.5	4.1	6.3	113.10	-133.2	293.4	333.0	324.5	8.55	38.933	
2,000.0	1,999.9	1,935.5	1,903.7	4.3	6.8	113.10	-150.1	313.9	356.2	347.2	9.02	39.506	
2,100.0	2,099.7	2,032.8	1,997.3	4.6	7.4	113.10	-167.1	334.6	377.3	367.8	9.48	39.803	
2,200.0	2,199.3	2,130.5	2,091.3	4.8	7.9	113.10	-184.1	355.3	396.3	386.4	9.94	39.865	
2,300.0	2,298.6	2,228.5	2,185.5	5.0	8.5	113.10	-201.2	376.1	413.3	402.9	10.41	39.723	
2,400.0	2,397.5	2,326.8	2,280.0	5.3	9.1	113.10	-218.3	396.9	428.3	417.5	10.87	39.399	
2,500.0	2,496.1	2,425.1	2,374.6	5.5	9.6	113.10	-235.4	417.7	441.5	430.1	11.35	38.908	
2,600.0	2,594.2	2,523.6	2,469.3	5.8	10.2	113.10	-252.6	438.6	452.7	440.9	11.83	38.257	
2,700.0	2,691.7	2,622.1	2,564.0	6.2	10.8	113.10	-269.7	459.5	462.2	449.9	12.34	37.450	
2,800.0	2,788.6	2,720.6	2,658.6	6.5	11.4	113.10	-286.9	480.3	470.1	457.3	12.89	36.487	
2,900.0	2,884.9	2,818.9	2,753.2	6.9	11.9	113.10	-304.0	501.2	476.5	463.0	13.47	35.367	
3,000.0	2,980.4	2,917.0	2,847.6	7.4	12.5	113.10	-321.1	522.0	481.5	467.4	14.12	34.092	
3,090.1	3,065.7	3,005.3	2,932.4	7.9	13.0	113.10	-336.5	540.7	485.0	470.2	14.78	32.814	
3,100.0	3,075.1	3,015.0	2,941.8	7.9	13.1	113.10	-338.2	542.7	485.3	470.5	14.86	32.663	
3,200.0	3,169.4	3,112.8	3,035.8	8.5	13.7	113.10	-355.2	563.4	489.2	473.5	15.69	31.176	
3,300.0	3,263.8	3,210.5	3,129.8	9.1	14.2	113.10	-372.2	584.2	494.0	477.4	16.59	29.767	
3,400.0	3,358.1	3,308.3	3,223.9	9.7	14.8	113.10	-389.3	604.9	499.6	482.0	17.56	28.444	
3,500.0	3,452.5	3,406.1	3,317.9	10.3	15.4	113.10	-406.3	625.6	505.9	487.3	18.59	27.211	
3,600.0	3,546.8	3,503.9	3,412.0	10.9	16.0	113.10	-423.3	646.3	513.1	493.4	19.68	26.071	
3,700.0	3,641.2	3,601.7	3,506.0	11.5	16.5	113.10	-440.4	667.1	521.0	500.2	20.82	25.023	
3,800.0	3,735.5	3,699.5	3,600.0	12.1	17.1	113.10	-457.4	687.8	529.6	507.6	22.01	24.066	
3,900.0	3,829.9	3,797.3	3,694.1	12.8	17.7	113.10	-474.4	708.5	538.9	515.6	23.23	23.195	
4,000.0	3,924.2	3,895.1	3,788.1	13.4	18.3	113.10	-491.5	729.3	548.8	524.3	24.49	22.406	
4,100.0	4,018.6	3,992.9	3,882.2	14.1	18.8	113.10	-508.5	750.0	559.3	533.5	25.78	21.693	
4,200.0	4,112.9	4,090.7	3,976.2	14.8	19.4	113.10	-525.5	770.7	570.4	543.3	27.10	21.050	
4,300.0	4,207.3	4,188.5	4,070.3	15.4	20.0	113.10	-542.6	791.4	582.0	553.6	28.43	20.471	
4,400.0	4,301.6	4,286.3	4,164.3	16.1	20.6	113.10	-559.6	812.2	594.1	564.3	29.78	19.950	
4,500.0	4,396.0	4,384.1	4,258.3	16.8	21.2	113.10	-576.6	832.9	606.7	575.6	31.14	19.482	
4,600.0	4,490.3	4,481.9	4,352.4	17.5	21.7	113.10	-593.7	853.6	619.8	587.3	32.51	19.062	
4,700.0	4,584.7	4,579.7	4,446.4	18.1	22.3	113.10	-610.7	874.3	633.3	599.4	33.89	18.684	
4,800.0	4,679.0	4,677.5	4,540.5	18.8	22.9	113.10	-627.7	895.1	647.1	611.9	35.28	18.345	
4,900.0	4,773.4	4,775.2	4,634.5	19.5	23.5	113.10	-644.8	915.8	661.4	624.7	36.66	18.040	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19W-214 - Wellbore #1 - Plan #1 (11-13-15)													Offset Well Error:	0.0 ft
Survey Program: 0-MWD														
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,000.0	4,867.7	4,873.0	4,728.5	20.2	24.0	78.52	-661.8	936.5	676.0	637.9	38.05	17.766		
5,100.0	4,962.1	4,970.8	4,822.6	20.9	24.6	79.75	-678.9	957.2	690.9	651.4	39.43	17.520		
5,200.0	5,056.4	5,068.6	4,916.6	21.6	25.2	80.92	-695.9	978.0	706.1	665.3	40.82	17.299		
5,300.0	5,150.8	5,166.4	5,010.7	22.2	25.8	82.05	-712.9	998.7	721.6	679.4	42.20	17.100		
5,400.0	5,245.1	5,264.2	5,104.7	22.9	26.3	83.13	-730.0	1,019.4	737.3	693.8	43.58	16.920		
5,500.0	5,339.5	5,362.0	5,198.8	23.6	26.9	84.17	-747.0	1,040.1	753.4	708.4	44.95	16.759		
5,600.0	5,433.8	5,459.8	5,292.8	24.3	27.5	85.16	-764.0	1,060.9	769.6	723.3	46.32	16.614		
5,676.4	5,505.9	5,534.6	5,364.7	24.9	27.9	85.89	-777.0	1,076.7	782.2	734.8	47.37	16.513		
5,700.0	5,528.3	5,557.6	5,386.9	25.0	28.1	86.34	-781.1	1,081.6	786.1	738.4	47.72	16.473		
5,750.0	5,576.4	5,606.8	5,434.2	25.2	28.4	87.09	-789.6	1,092.0	794.6	746.2	48.36	16.428 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19W-314 - Wellbore #1 - Plan #1 (11-13-15)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
Reference				Offset			Semi Major Axis		Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	75.88	18.2	72.4	74.7				
100.0	100.0	99.0	99.0	0.1	0.1	75.88	18.2	72.4	74.7	74.5	0.22	333.941	
200.0	200.0	199.0	199.0	0.3	0.3	75.88	18.2	72.4	74.7	74.0	0.67	111.128	
300.0	300.0	299.0	299.0	0.6	0.6	75.88	18.2	72.4	74.7	73.6	1.12	66.588	
400.0	400.0	399.0	399.0	0.8	0.8	75.88	18.2	72.4	74.7	73.1	1.57	47.536	
500.0	500.0	499.0	499.0	1.0	1.0	75.88	18.2	72.4	74.7	72.7	2.02	36.960	
600.0	600.0	599.0	599.0	1.2	1.2	75.88	18.2	72.4	74.7	72.2	2.47	30.234	
700.0	700.0	699.0	699.0	1.5	1.5	75.88	18.2	72.4	74.7	71.8	2.92	25.579	
800.0	800.0	799.0	799.0	1.7	1.7	75.88	18.2	72.4	74.7	71.3	3.37	22.166	CC, ES
900.0	900.0	897.6	897.6	1.9	1.9	76.56	17.6	73.5	75.6	71.8	3.80	19.911	
1,000.0	1,000.0	996.1	996.0	2.1	2.1	78.51	15.6	76.7	78.4	74.1	4.21	18.611	
1,100.0	1,100.0	1,094.4	1,094.1	2.4	2.3	81.46	12.3	82.1	83.2	78.5	4.63	17.948	
1,200.0	1,200.0	1,192.2	1,191.5	2.6	2.5	85.05	7.8	89.6	90.3	85.2	5.07	17.796	
1,300.0	1,300.0	1,289.5	1,288.2	2.8	2.7	88.88	1.9	99.2	99.8	94.3	5.53	18.055	
1,400.0	1,400.0	1,386.2	1,383.9	3.0	3.0	92.64	-5.1	110.8	111.9	105.9	6.01	18.636	
1,500.0	1,500.0	1,482.2	1,478.6	3.3	3.3	96.12	-13.3	124.3	126.7	120.2	6.51	19.453	
1,600.0	1,600.0	1,577.3	1,571.9	3.5	3.6	99.23	-22.7	139.8	144.2	137.1	7.06	20.434	
1,700.0	1,700.0	1,671.4	1,663.9	3.7	4.0	101.94	-33.2	157.0	164.3	156.6	7.63	21.518	
1,800.0	1,800.0	1,764.4	1,754.2	3.9	4.4	104.25	-44.7	175.9	186.9	178.7	8.25	22.659	
1,900.0	1,900.0	1,856.6	1,843.2	4.1	4.8	115.82	-57.2	196.5	210.9	202.7	8.20	25.717	
2,000.0	1,999.9	1,953.4	1,936.3	4.3	5.3	17.71	-71.0	219.2	234.0	225.3	8.64	27.068	
2,100.0	2,099.7	2,050.9	2,030.0	4.6	5.8	19.45	-84.9	242.0	254.8	245.7	9.09	28.046	
2,200.0	2,199.3	2,148.8	2,124.2	4.8	6.3	21.11	-98.8	265.0	273.5	263.9	9.53	28.693	
2,300.0	2,298.6	2,247.1	2,218.7	5.0	6.9	22.75	-112.8	288.0	290.0	280.0	9.98	29.054	
2,400.0	2,397.5	2,345.6	2,313.5	5.3	7.4	24.41	-126.8	311.1	304.4	293.9	10.44	29.165	
2,500.0	2,496.1	2,444.4	2,408.4	5.5	8.0	26.13	-140.9	334.2	316.7	305.8	10.90	29.053	
2,600.0	2,594.2	2,543.3	2,503.6	5.8	8.5	27.93	-155.0	357.4	327.0	315.6	11.38	28.736	
2,700.0	2,691.7	2,642.3	2,598.8	6.2	9.1	29.84	-169.1	380.6	335.3	323.5	11.88	28.231	
2,800.0	2,788.6	2,741.3	2,694.0	6.5	9.6	31.90	-183.2	403.8	341.9	329.4	12.41	27.547	
2,900.0	2,884.9	2,840.2	2,789.1	6.9	10.2	34.11	-197.3	427.0	346.7	333.7	12.99	26.690	
3,000.0	2,980.4	2,939.0	2,884.1	7.4	10.8	36.52	-211.4	450.1	349.9	336.3	13.63	25.669	
3,090.1	3,065.7	3,027.9	2,969.6	7.9	11.3	38.88	-224.0	470.9	351.6	337.3	14.28	24.616	
3,100.0	3,075.1	3,037.7	2,979.0	7.9	11.3	39.15	-225.4	473.2	351.8	337.4	14.36	24.488	
3,200.0	3,169.4	3,136.2	3,073.7	8.5	11.9	41.87	-239.4	496.3	353.6	338.4	15.21	23.244	
3,300.0	3,263.8	3,234.7	3,168.5	9.1	12.5	44.55	-253.5	519.4	356.2	340.1	16.14	22.076	
3,400.0	3,358.1	3,333.3	3,263.3	9.7	13.0	47.20	-267.5	542.5	359.6	342.5	17.13	20.988	
3,500.0	3,452.5	3,431.8	3,358.0	10.3	13.6	49.78	-281.5	565.6	363.8	345.6	18.20	19.985	
3,600.0	3,546.8	3,530.3	3,452.8	10.9	14.2	52.31	-295.6	588.6	368.8	349.4	19.34	19.068	
3,700.0	3,641.2	3,628.9	3,547.5	11.5	14.8	54.77	-309.6	611.7	374.4	353.9	20.53	18.235	
3,800.0	3,735.5	3,727.4	3,642.3	12.1	15.3	57.15	-323.6	634.8	380.7	359.0	21.78	17.485	
3,900.0	3,829.9	3,825.9	3,737.0	12.8	15.9	59.45	-337.7	657.9	387.7	364.7	23.06	16.811	
4,000.0	3,924.2	3,924.5	3,831.8	13.4	16.5	61.67	-351.7	681.0	395.3	370.9	24.39	16.210	
4,100.0	4,018.6	4,023.0	3,926.5	14.1	17.1	63.80	-365.7	704.1	403.5	377.8	25.74	15.676	
4,200.0	4,112.9	4,121.5	4,021.3	14.8	17.6	65.85	-379.7	727.1	412.2	385.1	27.12	15.202	
4,300.0	4,207.3	4,220.0	4,116.1	15.4	18.2	67.81	-393.8	750.2	421.5	392.9	28.51	14.783	
4,400.0	4,301.6	4,318.6	4,210.8	16.1	18.8	69.69	-407.8	773.3	431.2	401.2	29.92	14.412	
4,500.0	4,396.0	4,417.1	4,305.6	16.8	19.4	71.48	-421.8	796.4	441.3	410.0	31.33	14.085	
4,600.0	4,490.3	4,515.6	4,400.3	17.5	20.0	73.20	-435.9	819.5	451.9	419.1	32.75	13.797	
4,700.0	4,584.7	4,614.2	4,495.1	18.1	20.5	74.83	-449.9	842.6	462.9	428.7	34.18	13.543	
4,800.0	4,679.0	4,712.7	4,589.8	18.8	21.1	76.39	-463.9	865.7	474.2	438.6	35.60	13.319	
4,900.0	4,773.4	4,811.2	4,684.6	19.5	21.7	77.88	-478.0	888.7	485.9	448.8	37.02	13.123	

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19W-314 - Wellbore #1 - Plan #1 (11-13-15)												Offset Well Error:	0.0 ft
Survey Program:		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
5,000.0	4,867.7	4,909.8	4,779.3	20.2	22.3	79.30	-492.0	911.8	497.8	459.4	38.44	12.950	
5,100.0	4,962.1	5,008.3	4,874.1	20.9	22.9	80.65	-506.0	934.9	510.1	470.2	39.86	12.798	
5,200.0	5,056.4	5,106.8	4,968.9	21.6	23.4	81.93	-520.1	958.0	522.6	481.4	41.27	12.665	
5,300.0	5,150.8	5,205.4	5,063.6	22.2	24.0	83.16	-534.1	981.1	535.4	492.7	42.67	12.548	
5,400.0	5,245.1	5,303.9	5,158.4	22.9	24.6	84.33	-548.1	1,004.2	548.4	504.4	44.07	12.446	
5,500.0	5,339.5	5,402.4	5,253.1	23.6	25.2	85.45	-562.2	1,027.2	561.7	516.2	45.46	12.356	
5,600.0	5,433.8	5,501.0	5,347.9	24.3	25.8	86.52	-576.2	1,050.3	575.1	528.3	46.84	12.278	
5,676.4	5,505.9	5,576.3	5,420.3	24.9	26.2	87.30	-586.9	1,068.0	585.5	537.6	47.89	12.226	
5,700.0	5,528.3	5,599.5	5,442.7	25.0	26.3	87.70	-590.2	1,073.4	588.8	540.5	48.23	12.208	
5,750.0	5,576.4	5,649.0	5,490.2	25.2	26.6	88.29	-597.3	1,085.0	595.7	546.9	48.83	12.201	
5,800.0	5,625.3	5,698.5	5,537.8	25.4	26.9	88.47	-604.3	1,096.6	602.7	553.4	49.33	12.219	
5,850.0	5,674.8	5,747.7	5,585.2	25.5	27.2	88.10	-611.3	1,108.1	609.8	560.1	49.73	12.262	
5,900.0	5,724.6	5,796.8	5,632.7	25.6	27.4	86.20	-618.4	1,118.1	617.0	567.0	50.00	12.341	
5,950.0	5,774.6	5,846.3	5,681.2	25.7	27.6	-83.73	-625.5	1,125.0	624.3	574.1	50.18	12.441	
6,000.0	5,824.5	5,896.1	5,730.4	25.7	27.7	-89.05	-632.8	1,128.7	631.6	581.3	50.29	12.559	
6,050.0	5,874.2	5,946.5	5,780.1	25.7	27.8	-89.78	-640.2	1,129.2	638.9	588.6	50.33	12.695	
6,100.0	5,923.3	5,997.2	5,830.2	25.6	27.9	-90.07	-647.6	1,126.3	646.2	595.9	50.30	12.847	
6,150.0	5,971.8	6,048.4	5,880.5	25.6	27.9	-90.22	-655.1	1,120.0	653.5	603.3	50.22	13.013	
6,200.0	6,019.3	6,100.1	5,930.7	25.5	27.9	-90.31	-662.5	1,110.2	660.7	610.6	50.09	13.190	
6,250.0	6,065.7	6,152.2	5,980.5	25.4	27.8	-90.36	-669.9	1,096.9	667.8	617.9	49.92	13.379	
6,300.0	6,110.8	6,204.9	6,029.9	25.3	27.8	-90.39	-677.2	1,079.9	674.8	625.0	49.71	13.574	
6,350.0	6,154.4	6,258.1	6,078.3	25.1	27.7	-90.40	-684.4	1,059.4	681.5	632.0	49.48	13.772	
6,400.0	6,196.3	6,311.7	6,125.7	25.0	27.6	-90.40	-691.4	1,035.3	688.0	638.8	49.25	13.971	
6,450.0	6,236.4	6,365.9	6,171.7	24.9	27.5	-90.39	-698.2	1,007.6	694.3	645.3	49.02	14.165	
6,500.0	6,274.4	6,420.5	6,216.1	24.9	27.3	-90.37	-704.8	976.4	700.3	651.5	48.81	14.348	
6,550.0	6,310.1	6,475.6	6,258.4	24.8	27.2	-90.35	-711.1	941.7	706.0	657.3	48.64	14.514	
6,600.0	6,343.6	6,531.2	6,298.6	24.8	27.1	-90.32	-717.1	903.8	711.3	662.8	48.53	14.656	
6,650.0	6,374.5	6,587.1	6,336.1	24.8	27.0	-90.28	-722.6	862.6	716.2	667.7	48.50	14.767	
6,700.0	6,402.8	6,643.5	6,370.8	24.9	26.8	-90.24	-727.8	818.5	720.8	672.2	48.57	14.841	
6,750.0	6,428.3	6,700.3	6,402.4	25.0	26.7	-90.19	-732.5	771.6	724.8	676.1	48.75	14.870	
6,800.0	6,451.0	6,757.4	6,430.6	25.2	26.7	-90.14	-736.7	722.1	728.5	679.4	49.06	14.848	
6,850.0	6,470.7	6,814.8	6,455.2	25.5	26.7	-90.08	-740.3	670.4	731.6	682.1	49.52	14.773	
6,900.0	6,487.3	6,872.4	6,475.9	25.8	26.7	-90.02	-743.4	616.8	734.3	684.1	50.13	14.646	
6,950.0	6,500.8	6,930.1	6,492.7	26.2	26.8	-89.95	-745.9	561.6	736.4	685.5	50.89	14.468	
7,000.0	6,511.2	6,988.1	6,505.3	26.6	26.9	-89.88	-747.8	505.1	738.0	686.2	51.80	14.245	
7,050.0	6,518.3	7,046.0	6,513.6	27.1	27.2	-89.81	-749.0	447.8	739.0	686.2	52.85	13.983	
7,100.0	6,522.2	7,104.0	6,517.6	27.7	27.5	-89.73	-749.6	390.0	739.5	685.5	54.03	13.688	
7,137.3	6,523.0	7,144.8	6,518.0	28.1	27.8	-89.69	-749.7	349.1	739.6	684.6	54.96	13.457	
7,200.0	6,522.8	7,207.5	6,517.9	28.9	28.4	-89.70	-749.7	286.4	739.6	683.0	56.57	13.074	
7,300.0	6,522.4	7,307.5	6,517.7	30.4	29.5	-89.72	-749.7	186.4	739.6	680.1	59.48	12.435	
7,400.0	6,522.0	7,407.5	6,517.6	32.0	31.0	-89.73	-749.7	86.5	739.6	676.8	62.76	11.785	
7,500.0	6,521.6	7,507.5	6,517.4	33.8	32.6	-89.75	-749.7	-13.5	739.6	673.2	66.35	11.146	
7,600.0	6,521.2	7,607.5	6,517.3	35.7	34.5	-89.77	-749.7	-113.5	739.6	669.4	70.21	10.533	
7,700.0	6,520.9	7,707.5	6,517.1	37.8	36.5	-89.79	-749.7	-213.5	739.6	665.3	74.30	9.954	
7,800.0	6,520.5	7,807.5	6,517.0	39.9	38.7	-89.81	-749.7	-313.5	739.6	661.0	78.58	9.412	
7,900.0	6,520.1	7,907.5	6,516.8	42.1	40.9	-89.82	-749.7	-413.5	739.6	656.6	83.01	8.909	
8,000.0	6,519.7	8,007.5	6,516.7	44.4	43.2	-89.84	-749.7	-513.5	739.6	652.0	87.58	8.444	
8,100.0	6,519.4	8,107.5	6,516.5	46.7	45.6	-89.86	-749.7	-613.5	739.6	647.3	92.27	8.015	
8,200.0	6,519.0	8,207.5	6,516.4	49.1	48.0	-89.88	-749.7	-713.5	739.6	642.5	97.06	7.620	
8,300.0	6,518.6	8,307.5	6,516.2	51.5	50.4	-89.89	-749.7	-813.5	739.6	637.6	101.93	7.256	
8,400.0	6,518.2	8,407.5	6,516.1	54.0	52.9	-89.91	-749.7	-913.5	739.6	632.7	106.88	6.920	

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19W-314 - Wellbore #1 - Plan #1 (11-13-15)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
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
8,500.0	6,517.8	8,507.5	6,515.9	56.5	55.4	-89.93	-749.7	-1,013.5	739.6	627.7	111.89	6.610	
8,600.0	6,517.5	8,607.5	6,515.8	59.0	58.0	-89.95	-749.7	-1,113.5	739.6	622.6	116.95	6.324	
8,700.0	6,517.1	8,707.5	6,515.6	61.6	60.6	-89.96	-749.7	-1,213.5	739.6	617.5	122.07	6.059	
8,800.0	6,516.7	8,807.5	6,515.5	64.1	63.1	-89.98	-749.7	-1,313.5	739.6	612.4	127.23	5.813	
8,900.0	6,516.3	8,907.5	6,515.3	66.7	65.8	-90.00	-749.7	-1,413.5	739.6	607.2	132.42	5.585	
9,000.0	6,515.9	9,007.5	6,515.2	69.3	68.4	-90.02	-749.7	-1,513.5	739.6	601.9	137.65	5.373	
9,100.0	6,515.6	9,107.5	6,515.0	72.0	71.0	-90.03	-749.7	-1,613.5	739.6	596.7	142.91	5.175	
9,200.0	6,515.2	9,207.5	6,514.8	74.6	73.7	-90.05	-749.7	-1,713.5	739.6	591.4	148.19	4.991	
9,300.0	6,514.8	9,307.5	6,514.7	77.3	76.3	-90.07	-749.7	-1,813.5	739.6	586.1	153.50	4.818	
9,400.0	6,514.4	9,407.5	6,514.5	79.9	79.0	-90.09	-749.7	-1,913.5	739.6	580.7	158.83	4.656	
9,500.0	6,514.0	9,507.5	6,514.4	82.6	81.7	-90.10	-749.7	-2,013.5	739.6	575.4	164.18	4.505	
9,501.4	6,514.0	9,508.9	6,514.4	82.6	81.7	-90.10	-749.7	-2,015.0	739.6	575.3	164.25	4.503	
9,600.0	6,513.7	9,607.5	6,514.2	85.3	84.4	-90.12	-749.7	-2,113.5	739.6	570.0	169.54	4.362	
9,700.0	6,513.3	9,707.5	6,514.1	88.0	87.1	-90.14	-749.7	-2,213.5	739.6	564.6	174.93	4.228	
9,800.0	6,512.9	9,807.5	6,513.9	90.6	89.8	-90.16	-749.7	-2,313.5	739.6	559.3	180.32	4.101	
9,900.0	6,512.5	9,907.5	6,513.8	93.4	92.5	-90.17	-749.7	-2,413.5	739.6	553.8	185.73	3.982	
10,000.0	6,512.2	10,007.5	6,513.6	96.1	95.2	-90.19	-749.7	-2,513.5	739.6	548.4	191.16	3.869	
10,100.0	6,511.8	10,107.5	6,513.5	98.8	97.9	-90.21	-749.7	-2,613.5	739.6	543.0	196.59	3.762	
10,200.0	6,511.4	10,207.5	6,513.3	101.5	100.6	-90.23	-749.7	-2,713.5	739.6	537.5	202.03	3.661	
10,300.0	6,511.0	10,307.5	6,513.2	104.2	103.4	-90.25	-749.7	-2,813.5	739.6	532.1	207.49	3.564	
10,400.0	6,510.6	10,407.5	6,513.0	106.9	106.1	-90.26	-749.7	-2,913.5	739.6	526.6	212.95	3.473	
10,500.0	6,510.3	10,507.5	6,512.9	109.7	108.9	-90.28	-749.7	-3,013.5	739.6	521.2	218.42	3.386	
10,600.0	6,509.9	10,607.5	6,512.7	112.4	111.6	-90.30	-749.7	-3,113.5	739.6	515.7	223.90	3.303	
10,700.0	6,509.5	10,707.5	6,512.6	115.2	114.3	-90.32	-749.7	-3,213.5	739.6	510.2	229.38	3.224	
10,800.0	6,509.1	10,807.5	6,512.4	117.9	117.1	-90.33	-749.7	-3,313.5	739.6	504.7	234.87	3.149	
10,900.0	6,508.7	10,907.5	6,512.3	120.6	119.8	-90.35	-749.7	-3,413.5	739.6	499.2	240.37	3.077	
11,000.0	6,508.4	11,007.5	6,512.1	123.4	122.6	-90.37	-749.7	-3,513.5	739.6	493.7	245.87	3.008	
11,100.0	6,508.0	11,107.5	6,512.0	126.1	125.3	-90.39	-749.7	-3,613.5	739.6	488.2	251.38	2.942	
11,200.0	6,507.6	11,207.5	6,511.8	128.9	128.1	-90.40	-749.7	-3,713.5	739.6	482.7	256.89	2.879	
11,300.0	6,507.2	11,307.5	6,511.7	131.7	130.9	-90.42	-749.7	-3,813.5	739.6	477.2	262.41	2.818	
11,400.0	6,506.8	11,407.5	6,511.5	134.4	133.6	-90.44	-749.7	-3,913.5	739.6	471.7	267.93	2.760	
11,500.0	6,506.5	11,507.5	6,511.4	137.2	136.4	-90.46	-749.7	-4,013.5	739.6	466.1	273.45	2.705	
11,600.0	6,506.1	11,607.5	6,511.2	139.9	139.2	-90.47	-749.7	-4,113.5	739.6	460.6	278.98	2.651	
11,700.0	6,505.7	11,707.5	6,511.1	142.7	141.9	-90.49	-749.7	-4,213.5	739.6	455.1	284.51	2.599	
11,800.0	6,505.3	11,807.5	6,510.9	145.5	144.7	-90.51	-749.7	-4,313.5	739.6	449.5	290.05	2.550	
11,900.0	6,505.0	11,907.5	6,510.8	148.2	147.5	-90.53	-749.7	-4,413.5	739.6	444.0	295.59	2.502	
12,000.0	6,504.6	12,007.5	6,510.6	151.0	150.2	-90.54	-749.7	-4,513.5	739.6	438.5	301.13	2.456	
12,100.0	6,504.2	12,107.5	6,510.5	153.8	153.0	-90.56	-749.7	-4,613.5	739.6	432.9	306.68	2.412	
12,200.0	6,503.8	12,207.5	6,510.3	156.6	155.8	-90.58	-749.7	-4,713.5	739.6	427.4	312.22	2.369	
12,300.0	6,503.4	12,307.5	6,510.2	159.3	158.6	-90.60	-749.7	-4,813.5	739.6	421.8	317.77	2.327	
12,400.0	6,503.1	12,407.5	6,510.0	162.1	161.3	-90.62	-749.7	-4,913.5	739.6	416.3	323.32	2.287	
12,500.0	6,502.7	12,507.5	6,509.8	164.9	164.1	-90.63	-749.7	-5,013.5	739.6	410.7	328.88	2.249	
12,600.0	6,502.3	12,607.5	6,509.7	167.7	166.9	-90.65	-749.7	-5,113.5	739.6	405.2	334.44	2.212	
12,700.0	6,501.9	12,707.5	6,509.5	170.4	169.7	-90.67	-749.7	-5,213.5	739.6	399.6	339.99	2.175	
12,800.0	6,501.5	12,807.5	6,509.4	173.2	172.5	-90.69	-749.7	-5,313.5	739.6	394.1	345.55	2.140	
12,900.0	6,501.2	12,907.5	6,509.2	176.0	175.2	-90.70	-749.7	-5,413.5	739.6	388.5	351.12	2.106	
13,000.0	6,500.8	13,007.5	6,509.1	178.8	178.0	-90.72	-749.7	-5,513.5	739.6	382.9	356.68	2.074	
13,100.0	6,500.4	13,107.5	6,508.9	181.6	180.8	-90.74	-749.7	-5,613.5	739.6	377.4	362.25	2.042	
13,200.0	6,500.0	13,207.5	6,508.8	184.3	183.6	-90.76	-749.7	-5,713.5	739.6	371.8	367.81	2.011	
13,300.0	6,499.6	13,307.5	6,508.6	187.1	186.4	-90.77	-749.7	-5,813.5	739.6	366.2	373.38	1.981	
13,400.0	6,499.3	13,407.5	6,508.5	189.9	189.2	-90.79	-749.7	-5,913.5	739.6	360.7	378.95	1.952	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>													<b>Offset Site Error:</b>	0.0 ft
Cockroft 5N63W19C Pad Sec.19-T5N-R63W - Cockroft 19W-314 - Wellbore #1 - Plan #1 (11-13-15)													<b>Offset Well Error:</b>	0.0 ft
<b>Survey Program:</b>		0-MWD												
<b>Reference</b>		<b>Offset</b>		<b>Semi Major Axis</b>			<b>Distance</b>							
<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Reference (ft)</b>	<b>Offset (ft)</b>	<b>Highside Toolface (°)</b>	<b>Offset Wellbore Centre +N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Between Centres (ft)</b>	<b>Between Ellipses (ft)</b>	<b>Minimum Separation (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>	
13,500.0	6,498.9	13,507.5	6,508.3	192.7	192.0	-90.81	-749.7	-6,013.5	739.6	355.1	384.52	1.924		
13,600.0	6,498.5	13,607.5	6,508.2	195.5	194.7	-90.83	-749.7	-6,113.5	739.6	349.5	390.10	1.896		
13,700.0	6,498.1	13,707.5	6,508.0	198.3	197.5	-90.84	-749.7	-6,213.5	739.6	344.0	395.67	1.869		
13,707.1	6,498.1	13,714.6	6,508.0	198.5	197.7	-90.85	-749.7	-6,220.6	739.6	343.6	396.07	1.867		
13,734.8	6,498.0	13,725.8	6,508.0	199.2	198.0	-90.85	-749.7	-6,231.8	739.8	342.7	397.15	1.863 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Existing Wells Sec.19-T5N-R63W - Christenson 8-19 (Exist) - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Survey Program: 6732-UNKNOWN													
Reference				Offset			Semi Major Axis		Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	109.60	-200.4	562.7	597.4				
100.0	100.0	93.0	93.0	0.1	1.9	109.60	-200.4	562.7	597.3	595.4	1.97	302.814	
200.0	200.0	193.0	193.0	0.3	3.9	109.60	-200.4	562.7	597.3	593.1	4.20	142.310	
300.0	300.0	293.0	293.0	0.6	5.9	109.60	-200.4	562.7	597.3	590.9	6.42	93.011	
400.0	400.0	393.0	393.0	0.8	7.9	109.60	-200.4	562.7	597.3	588.7	8.65	69.080	
500.0	500.0	493.0	493.0	1.0	9.9	109.60	-200.4	562.7	597.3	586.5	10.87	54.944	
600.0	600.0	593.0	593.0	1.2	11.9	109.60	-200.4	562.7	597.3	584.2	13.10	45.610	
700.0	700.0	693.0	693.0	1.5	13.9	109.60	-200.4	562.7	597.3	582.0	15.32	38.987	
800.0	800.0	793.0	793.0	1.7	15.9	109.60	-200.4	562.7	597.3	579.8	17.55	34.044	
900.0	900.0	893.0	893.0	1.9	17.9	109.60	-200.4	562.7	597.3	577.6	19.77	30.213	
1,000.0	1,000.0	993.0	993.0	2.1	19.9	109.60	-200.4	562.7	597.3	575.3	22.00	27.157	
1,100.0	1,100.0	1,093.0	1,093.0	2.4	21.9	109.60	-200.4	562.7	597.3	573.1	24.22	24.662	
1,200.0	1,200.0	1,193.0	1,193.0	2.6	23.9	109.60	-200.4	562.7	597.3	570.9	26.44	22.587	
1,300.0	1,300.0	1,293.0	1,293.0	2.8	25.9	109.60	-200.4	562.7	597.3	568.7	28.67	20.835	
1,400.0	1,400.0	1,393.0	1,393.0	3.0	27.9	109.60	-200.4	562.7	597.3	566.4	30.89	19.334	
1,500.0	1,500.0	1,493.0	1,493.0	3.3	29.9	109.60	-200.4	562.7	597.3	564.2	33.12	18.036	
1,600.0	1,600.0	1,593.0	1,593.0	3.5	31.9	109.60	-200.4	562.7	597.3	562.0	35.34	16.900	
1,700.0	1,700.0	1,693.0	1,693.0	3.7	33.9	109.60	-200.4	562.7	597.3	559.8	37.57	15.900	
1,800.0	1,800.0	1,793.0	1,793.0	3.9	35.9	109.60	-200.4	562.7	597.3	557.5	39.79	15.011	
1,900.0	1,900.0	1,893.0	1,893.0	4.1	37.9	19.24	-200.4	562.7	596.1	554.1	41.99	14.196	
2,000.0	1,999.9	1,992.9	1,992.9	4.3	39.9	19.39	-200.4	562.7	592.4	548.2	44.15	13.418	
2,100.0	2,099.7	2,092.7	2,092.7	4.6	41.9	19.63	-200.4	562.7	586.2	539.9	46.27	12.669	
2,200.0	2,199.3	2,192.3	2,192.3	4.8	43.8	19.98	-200.4	562.7	577.6	529.2	48.36	11.943	
2,300.0	2,298.6	2,291.6	2,291.6	5.0	45.8	20.44	-200.4	562.7	566.6	516.2	50.42	11.238	
2,400.0	2,397.5	2,390.5	2,390.5	5.3	47.8	21.03	-200.4	562.7	553.1	500.7	52.43	10.550	
2,500.0	2,496.1	2,489.1	2,489.1	5.5	49.8	21.77	-200.4	562.7	537.3	482.9	54.40	9.878	
2,600.0	2,594.2	2,587.2	2,587.2	5.8	51.7	22.67	-200.4	562.7	519.2	462.9	56.33	9.218	
2,700.0	2,691.7	2,684.7	2,684.7	6.2	53.7	23.77	-200.4	562.7	498.9	440.6	58.22	8.568	
2,800.0	2,788.6	2,781.6	2,781.6	6.5	55.6	25.10	-200.4	562.7	476.3	416.2	60.09	7.927	
2,900.0	2,884.9	2,877.9	2,877.9	6.9	57.6	26.72	-200.4	562.7	451.7	389.8	61.94	7.294	
3,000.0	2,980.4	2,973.4	2,973.4	7.4	59.5	28.70	-200.4	562.7	425.2	361.4	63.79	6.666	
3,090.1	3,065.7	3,058.7	3,058.7	7.9	61.2	30.86	-200.4	562.7	399.9	334.4	65.50	6.105	
3,100.0	3,075.1	3,068.1	3,068.1	7.9	61.4	31.10	-200.4	562.7	397.0	331.3	65.73	6.040	
3,200.0	3,169.4	3,162.4	3,162.4	8.5	63.2	33.72	-200.4	562.7	368.6	300.5	68.10	5.412	
3,300.0	3,263.8	3,256.8	3,256.8	9.1	65.1	36.75	-200.4	562.7	341.0	270.4	70.57	4.832	
3,400.0	3,358.1	3,351.1	3,351.1	9.7	67.0	40.28	-200.4	562.7	314.5	241.3	73.16	4.299	
3,500.0	3,452.5	3,445.5	3,445.5	10.3	68.9	44.41	-200.4	562.7	289.3	213.5	75.88	3.813	
3,600.0	3,546.8	3,539.8	3,539.8	10.9	70.8	49.25	-200.4	562.7	266.0	187.2	78.76	3.377	
3,700.0	3,641.2	3,634.2	3,634.2	11.5	72.7	54.91	-200.4	562.7	244.8	163.0	81.80	2.993	
3,800.0	3,735.5	3,728.5	3,728.5	12.1	74.6	61.49	-200.4	562.7	226.6	141.6	84.97	2.667	
3,900.0	3,829.9	3,822.9	3,822.9	12.8	76.5	68.99	-200.4	562.7	212.0	123.8	88.21	2.404	
4,000.0	3,924.2	3,917.2	3,917.2	13.4	78.3	77.33	-200.4	562.7	201.9	110.5	91.37	2.210	
4,100.0	4,018.6	4,011.6	4,011.6	14.1	80.2	86.24	-200.4	562.7	196.9	102.6	94.29	2.088	
4,141.3	4,057.5	4,050.5	4,050.5	14.4	81.0	90.00	-200.4	562.7	196.4	101.0	95.39	2.059	
4,200.0	4,112.9	4,105.9	4,105.9	14.8	82.1	95.34	-200.4	562.7	197.4	100.5	96.83	2.038	
4,300.0	4,207.3	4,200.3	4,200.3	15.4	84.0	104.18	-200.4	562.7	203.3	104.4	98.94	2.055	
4,400.0	4,301.6	4,294.6	4,294.6	16.1	85.9	112.39	-200.4	562.7	214.3	113.6	100.67	2.129	
4,500.0	4,396.0	4,389.0	4,389.0	16.8	87.8	119.73	-200.4	562.7	229.6	127.4	102.16	2.247	
4,600.0	4,490.3	4,483.3	4,483.3	17.5	89.7	126.14	-200.4	562.7	248.3	144.8	103.53	2.399	
4,700.0	4,584.7	4,577.7	4,577.7	18.1	91.6	131.65	-200.4	562.7	269.9	165.0	104.88	2.574	
4,800.0	4,679.0	4,672.0	4,672.0	18.8	93.4	136.36	-200.4	562.7	293.6	187.4	106.25	2.763	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.19-T5N-R63W - Christenson 8-19 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 6732-UNKNOWN												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
4,900.0	4,773.4	4,766.4	4,766.4	19.5	95.3	140.38	-200.4	562.7	319.0	211.3	107.70	2.962	
5,000.0	4,867.7	4,860.7	4,860.7	20.2	97.2	143.81	-200.4	562.7	345.7	236.5	109.21	3.166	
5,100.0	4,962.1	4,955.1	4,955.1	20.9	99.1	146.77	-200.4	562.7	373.5	262.7	110.79	3.371	
5,200.0	5,056.4	5,049.4	5,049.4	21.6	101.0	149.32	-200.4	562.7	402.1	289.6	112.44	3.576	
5,300.0	5,150.8	5,143.8	5,143.8	22.2	102.9	151.54	-200.4	562.7	431.3	317.1	114.15	3.778	
5,400.0	5,245.1	5,238.1	5,238.1	22.9	104.8	153.48	-200.4	562.7	461.0	345.1	115.90	3.978	
5,500.0	5,339.5	5,332.5	5,332.5	23.6	106.6	155.19	-200.4	562.7	491.2	373.5	117.70	4.173	
5,600.0	5,433.8	5,426.8	5,426.8	24.3	108.5	156.70	-200.4	562.7	521.7	402.2	119.54	4.365	
5,676.4	5,505.9	5,498.9	5,498.9	24.9	110.0	157.75	-200.4	562.7	545.3	424.3	120.96	4.508	
5,700.0	5,528.3	5,521.3	5,521.3	25.0	110.4	158.20	-200.4	562.7	552.3	429.9	122.31	4.515	
5,750.0	5,576.4	5,569.4	5,569.4	25.2	111.4	158.93	-200.4	562.7	564.9	440.0	124.93	4.522	
5,800.0	5,625.3	5,618.3	5,618.3	25.4	112.4	159.34	-200.4	562.7	574.6	447.4	127.20	4.517	
5,850.0	5,674.8	5,667.8	5,667.8	25.5	113.4	159.28	-200.4	562.7	581.3	452.2	129.08	4.504	
5,900.0	5,724.6	5,717.6	5,717.6	25.6	114.4	157.64	-200.4	562.7	584.9	454.4	130.51	4.482	
5,950.0	5,774.6	5,767.6	5,767.6	25.7	115.4	-12.21	-200.4	562.7	585.5	454.0	131.49	4.453	
6,000.0	5,824.5	5,817.5	5,817.5	25.7	116.4	-17.64	-200.4	562.7	582.9	451.0	131.98	4.417	
6,050.0	5,874.2	5,867.2	5,867.2	25.7	117.3	-18.68	-200.4	562.7	577.3	445.3	132.00	4.374	
6,100.0	5,923.3	5,916.3	5,916.3	25.6	118.3	-19.48	-200.4	562.7	568.7	437.1	131.54	4.323	
6,150.0	5,971.8	5,964.8	5,964.8	25.6	119.3	-20.38	-200.4	562.7	557.0	426.4	130.63	4.264	
6,200.0	6,019.3	6,012.3	6,012.3	25.5	120.2	-21.46	-200.4	562.7	542.5	413.1	129.34	4.194	
6,250.0	6,065.7	6,058.7	6,058.7	25.4	121.2	-22.80	-200.4	562.7	525.1	397.4	127.72	4.111	
6,300.0	6,110.8	6,103.8	6,103.8	25.3	122.1	-24.45	-200.4	562.7	505.0	379.1	125.91	4.011	
6,350.0	6,154.4	6,147.4	6,147.4	25.1	122.9	-26.51	-200.4	562.7	482.5	358.4	124.08	3.888	
6,400.0	6,196.3	6,189.3	6,189.3	25.0	123.8	-29.04	-200.4	562.7	457.5	335.0	122.48	3.735	
6,450.0	6,236.4	6,229.4	6,229.4	24.9	124.6	-32.17	-200.4	562.7	430.5	309.0	121.47	3.544	
6,500.0	6,274.4	6,267.4	6,267.4	24.9	125.3	-36.02	-200.4	562.7	401.5	280.1	121.47	3.306	
6,550.0	6,310.1	6,303.1	6,303.1	24.8	126.1	-40.72	-200.4	562.7	371.2	248.2	122.98	3.018	
6,600.0	6,343.6	6,336.6	6,336.6	24.8	126.7	-46.36	-200.4	562.7	339.8	213.4	126.36	2.689	
6,650.0	6,374.5	6,367.5	6,367.5	24.8	127.3	-52.96	-200.4	562.7	308.0	176.4	131.62	2.340	
6,700.0	6,402.8	6,395.8	6,395.8	24.9	127.9	-60.36	-200.4	562.7	276.7	138.6	138.15	2.003	
6,750.0	6,428.3	6,421.3	6,421.3	25.0	128.4	-68.18	-200.4	562.7	247.3	102.5	144.76	1.708	
6,800.0	6,451.0	6,444.0	6,444.0	25.2	128.9	-75.83	-200.4	562.7	221.5	71.4	150.15	1.475 Level 3	
6,850.0	6,470.7	6,463.7	6,463.7	25.5	129.3	-82.66	-200.4	562.7	201.9	48.3	153.62	1.314 Level 3	
6,900.0	6,487.3	6,480.3	6,480.3	25.8	129.6	-88.16	-200.4	562.7	191.4	36.1	155.33	1.232 Level 2	
6,921.1	6,493.4	6,486.4	6,486.4	26.0	129.7	-90.00	-200.4	562.7	190.3	34.7	155.69	1.223 Level 2, CC, ES, SF	
6,950.0	6,500.8	6,493.8	6,493.8	26.2	129.9	-92.01	-200.4	562.7	192.4	36.4	155.97	1.233 Level 2	
7,000.0	6,511.2	6,504.2	6,504.2	26.6	130.1	-94.05	-200.4	562.7	205.3	48.9	156.35	1.313 Level 3	
7,050.0	6,518.3	6,511.3	6,511.3	27.1	130.2	-94.19	-200.4	562.7	228.5	71.5	156.96	1.456 Level 3	
7,100.0	6,522.2	6,515.2	6,515.2	27.7	130.3	-92.39	-200.4	562.7	259.4	101.5	157.87	1.643	
7,137.3	6,523.0	6,516.0	6,516.0	28.1	130.3	-89.76	-200.4	562.7	286.1	127.6	158.45	1.805	
7,200.0	6,522.8	6,515.8	6,515.8	28.9	130.3	-89.68	-200.4	562.7	335.5	176.2	159.25	2.106	
7,300.0	6,522.4	6,515.4	6,515.4	30.4	130.3	-89.57	-200.4	562.7	421.6	260.9	160.70	2.624	
7,400.0	6,522.0	6,515.0	6,515.0	32.0	130.3	-89.46	-200.4	562.7	512.9	350.5	162.32	3.160	
7,500.0	6,521.6	6,514.6	6,514.6	33.8	130.3	-89.34	-200.4	562.7	606.9	442.8	164.10	3.698	
7,600.0	6,521.2	6,514.2	6,514.2	35.7	130.3	-89.23	-200.4	562.7	702.5	536.5	166.01	4.232	
7,700.0	6,520.9	6,513.9	6,513.9	37.8	130.3	-89.11	-200.4	562.7	799.2	631.2	168.03	4.756	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.19-T5N-R63W - Cockroft 19C (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 500-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	177.88	-225.9	8.4	226.5				
100.0	100.0	85.8	85.8	0.1	0.1	177.88	-225.9	8.4	226.1	225.9	0.21	1,080.585 CC	
200.0	200.0	185.6	185.6	0.3	0.2	177.89	-226.0	8.3	226.2	225.6	0.55	414.015	
300.0	300.0	285.4	285.4	0.6	0.3	177.89	-226.2	8.3	226.4	225.5	0.88	256.268	
400.0	400.0	385.2	385.2	0.8	0.4	177.90	-226.5	8.3	226.7	225.5	1.22	185.734	
500.0	500.0	485.0	485.0	1.0	0.5	177.92	-226.9	8.3	227.1	225.5	1.56	145.788	
600.0	600.0	585.1	585.1	1.2	0.7	177.93	-227.4	8.2	227.5	225.5	1.97	115.526	
700.0	700.0	684.7	684.7	1.5	0.9	177.93	-227.8	8.2	228.0	225.6	2.39	95.244	
800.0	800.0	785.1	785.1	1.7	1.1	177.94	-228.4	8.2	228.5	225.7	2.83	80.864	
900.0	900.0	884.8	884.8	1.9	1.3	177.96	-228.8	8.1	229.0	225.7	3.26	70.311	
1,000.0	1,000.0	985.4	985.4	2.1	1.6	177.96	-229.2	8.2	229.4	225.7	3.69	62.191	
1,100.0	1,100.0	1,086.4	1,086.4	2.4	1.8	177.96	-229.3	8.2	229.4	225.3	4.12	55.702	
1,200.0	1,200.0	1,186.2	1,186.1	2.6	2.0	177.94	-229.1	8.2	229.3	224.7	4.55	50.387	
1,300.0	1,300.0	1,286.0	1,286.0	2.8	2.2	178.00	-229.1	8.0	229.2	224.3	4.98	45.994	
1,319.6	1,319.6	1,305.6	1,305.6	2.9	2.2	178.00	-229.1	8.0	229.2	224.2	5.07	45.220	
1,400.0	1,400.0	1,385.8	1,385.8	3.0	2.4	178.00	-229.1	8.0	229.3	223.9	5.42	42.312	
1,500.0	1,500.0	1,485.3	1,485.3	3.3	2.6	178.07	-229.3	7.7	229.4	223.6	5.85	39.188	
1,600.0	1,600.0	1,585.1	1,585.1	3.5	2.8	178.22	-229.7	7.1	229.8	223.5	6.30	36.500	
1,700.0	1,700.0	1,685.0	1,685.0	3.7	3.0	178.41	-230.1	6.4	230.2	223.5	6.74	34.169 ES	
1,800.0	1,800.0	1,784.8	1,784.8	3.9	3.2	178.64	-230.6	5.5	230.7	223.5	7.18	32.133	
1,900.0	1,900.0	1,884.7	1,884.6	4.1	3.5	88.82	-231.2	4.4	231.2	223.6	7.61	30.398	
2,000.0	1,999.9	1,984.4	1,984.3	4.3	3.7	90.09	-231.8	3.2	231.8	223.8	8.02	28.889	
2,100.0	2,099.7	2,083.3	2,083.3	4.6	3.9	91.99	-232.6	1.8	232.8	224.3	8.45	27.553	
2,200.0	2,199.3	2,181.9	2,181.9	4.8	4.1	94.48	-233.8	0.5	234.6	225.7	8.88	26.410	
2,300.0	2,298.6	2,280.2	2,280.1	5.0	4.3	97.51	-235.3	-0.8	237.5	228.1	9.33	25.464	
2,400.0	2,397.5	2,378.1	2,378.0	5.3	4.5	101.00	-237.1	-2.2	241.9	232.1	9.78	24.724	
2,500.0	2,496.1	2,475.6	2,475.4	5.5	4.8	104.85	-239.3	-3.5	248.3	238.0	10.26	24.202	
2,600.0	2,594.2	2,573.1	2,572.9	5.8	5.0	108.99	-241.7	-4.8	256.9	246.1	10.75	23.902	
2,700.0	2,691.7	2,670.3	2,670.1	6.2	5.2	113.30	-244.1	-6.2	267.9	256.7	11.25	23.816	
2,800.0	2,788.6	2,766.8	2,766.5	6.5	5.4	117.66	-246.5	-7.6	281.7	269.9	11.76	23.957	
2,900.0	2,884.9	2,862.6	2,862.3	6.9	5.6	121.96	-248.9	-9.0	298.5	286.3	12.27	24.328	
3,000.0	2,980.4	2,957.5	2,957.2	7.4	5.8	126.09	-251.2	-10.4	318.6	305.8	12.78	24.927	
3,090.1	3,065.7	3,042.3	3,042.0	7.9	6.0	129.62	-253.3	-11.7	339.5	326.3	13.23	25.656	
3,100.0	3,075.1	3,051.6	3,051.2	7.9	6.0	130.03	-253.5	-11.9	342.0	328.7	13.28	25.742	
3,200.0	3,169.4	3,145.1	3,144.7	8.5	6.2	133.84	-255.6	-13.6	367.7	353.9	13.80	26.648	
3,300.0	3,263.8	3,238.5	3,238.0	9.1	6.4	137.21	-257.5	-15.6	394.9	380.6	14.30	27.611	
3,400.0	3,358.1	3,331.6	3,331.1	9.7	6.6	140.20	-259.2	-17.8	423.4	408.6	14.80	28.611	
3,500.0	3,452.5	3,424.6	3,424.1	10.3	6.8	142.85	-260.8	-20.3	453.0	437.7	15.29	29.632	
3,600.0	3,546.8	3,517.4	3,516.8	10.9	7.0	145.22	-262.1	-23.0	483.5	467.8	15.77	30.661	
3,700.0	3,641.2	3,609.9	3,609.2	11.5	7.2	147.32	-263.5	-25.8	514.9	498.6	16.25	31.681	
3,800.0	3,735.5	3,702.3	3,701.6	12.1	7.5	149.18	-264.9	-28.8	546.9	530.2	16.73	32.690	
3,900.0	3,829.9	3,794.7	3,793.9	12.8	7.7	150.83	-266.5	-31.8	579.6	562.4	17.21	33.680	
4,000.0	3,924.2	3,887.0	3,886.1	13.4	7.9	152.31	-268.1	-35.0	612.8	595.1	17.69	34.648	
4,100.0	4,018.6	3,979.1	3,978.2	14.1	8.1	153.63	-269.9	-38.3	646.5	628.4	18.17	35.591	
4,200.0	4,112.9	4,074.7	4,073.7	14.8	8.3	154.87	-271.6	-41.6	680.5	661.8	18.64	36.506	
4,300.0	4,207.3	4,171.5	4,170.4	15.4	8.5	156.02	-273.1	-44.6	714.2	695.1	19.11	37.368	
4,400.0	4,301.6	4,268.6	4,267.5	16.1	8.7	157.08	-274.1	-47.3	747.7	728.1	19.58	38.176	
4,500.0	4,396.0	4,366.0	4,364.9	16.8	8.9	158.08	-274.8	-49.6	780.9	760.8	20.06	38.933	
6,800.0	6,451.0	6,450.1	6,448.5	25.2	13.1	-42.88	-281.0	-34.9	760.8	733.2	27.56	27.606	
6,850.0	6,470.7	6,468.1	6,466.5	25.5	13.1	-49.32	-281.3	-34.5	717.7	687.6	30.15	23.808	
6,900.0	6,487.3	6,483.2	6,481.6	25.8	13.1	-56.62	-281.5	-34.2	674.1	641.1	32.98	20.440	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.19-T5N-R63W - Cockroft 19C (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 500-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		
6,950.0	6,500.8	6,500.0	6,498.4	26.2	13.2	-65.31	-281.8	-33.8	630.2	594.3	35.95	17.531		
7,000.0	6,511.2	6,504.5	6,502.9	26.6	13.2	-72.55	-281.9	-33.7	586.3	548.3	38.04	15.415		
7,050.0	6,518.3	6,510.7	6,509.1	27.1	13.2	-80.16	-282.0	-33.6	542.9	503.2	39.72	13.668		
7,100.0	6,522.2	6,513.6	6,512.0	27.7	13.2	-86.80	-282.0	-33.5	500.3	459.6	40.79	12.267		
7,137.3	6,523.0	6,513.6	6,512.0	28.1	13.2	-90.94	-282.0	-33.5	469.4	428.2	41.30	11.368		
7,200.0	6,522.8	6,512.1	6,510.5	28.9	13.2	-90.62	-282.0	-33.6	419.9	377.8	42.10	9.975		
7,300.0	6,522.4	6,509.7	6,508.1	30.4	13.2	-90.12	-282.0	-33.6	349.8	306.2	43.55	8.031		
7,400.0	6,522.0	6,507.3	6,505.7	32.0	13.2	-89.61	-281.9	-33.7	297.2	252.0	45.18	6.578		
7,500.0	6,521.6	6,504.9	6,503.3	33.8	13.2	-89.10	-281.9	-33.7	272.6	225.6	46.96	5.804		
7,520.2	6,521.5	6,504.4	6,502.8	34.2	13.2	-88.99	-281.9	-33.7	271.8	224.5	47.35	5.741 SF		
7,600.0	6,521.2	6,502.4	6,500.8	35.7	13.2	-88.58	-281.8	-33.8	283.3	234.4	48.87	5.797		
7,700.0	6,520.9	6,500.0	6,498.4	37.8	13.2	-88.07	-281.8	-33.8	325.9	275.0	50.89	6.404		
7,800.0	6,520.5	6,497.6	6,496.0	39.9	13.2	-87.56	-281.8	-33.9	390.0	337.0	52.99	7.361		
7,900.0	6,520.1	6,495.1	6,493.5	42.1	13.2	-87.05	-281.7	-33.9	467.0	411.8	55.17	8.464		
8,000.0	6,519.7	6,492.7	6,491.1	44.4	13.2	-86.53	-281.7	-34.0	551.3	493.9	57.41	9.603		
8,100.0	6,519.4	6,490.2	6,488.6	46.7	13.2	-86.01	-281.6	-34.0	640.2	580.5	59.70	10.723		
8,200.0	6,519.0	6,487.8	6,486.2	49.1	13.2	-85.49	-281.6	-34.1	731.9	669.9	62.04	11.798		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.19-T5N-R63W - Cockroft 19V (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 600-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
3,200.0	3,169.4	3,195.0	3,194.8	8.5	5.6	-25.88	316.2	964.7	780.3	767.8	12.55	62.188		
3,300.0	3,263.8	3,297.2	3,296.8	9.1	5.7	-26.79	312.0	964.0	748.1	735.1	13.01	57.487		
3,400.0	3,358.1	3,398.8	3,398.3	9.7	5.8	-27.67	306.1	963.0	715.1	701.6	13.50	52.979		
3,500.0	3,452.5	3,500.0	3,499.2	10.3	5.9	-28.53	298.7	961.5	681.1	667.1	14.00	48.662		
3,600.0	3,546.8	3,591.8	3,590.8	10.9	6.0	-29.36	291.5	960.0	646.9	632.4	14.54	44.505		
3,700.0	3,641.2	3,683.7	3,682.4	11.5	6.1	-30.34	284.9	958.4	613.1	598.0	15.10	40.599		
3,800.0	3,735.5	3,775.7	3,774.1	12.1	6.3	-31.49	279.0	956.8	579.7	564.0	15.70	36.930		
3,900.0	3,829.9	3,867.6	3,865.9	12.8	6.4	-32.84	273.7	955.0	546.9	530.6	16.33	33.487		
4,000.0	3,924.2	3,959.6	3,957.7	13.4	6.5	-34.41	269.0	953.3	514.6	497.6	17.01	30.264		
4,100.0	4,018.6	4,052.7	4,050.7	14.1	6.7	-36.28	264.8	951.4	483.1	465.3	17.75	27.210		
4,200.0	4,112.9	4,146.6	4,144.5	14.8	6.8	-38.44	260.7	949.4	452.0	433.4	18.58	24.331		
4,300.0	4,207.3	4,240.3	4,238.1	15.4	7.0	-40.95	256.9	947.1	421.6	402.1	19.47	21.655		
4,400.0	4,301.6	4,333.9	4,331.6	16.1	7.2	-43.85	253.1	944.7	392.0	371.6	20.44	19.182		
4,500.0	4,396.0	4,427.4	4,425.0	16.8	7.3	-47.22	249.6	942.0	363.5	342.0	21.49	16.916		
4,600.0	4,490.3	4,520.2	4,517.7	17.5	7.5	-51.13	246.2	939.3	336.4	313.8	22.63	14.863		
4,700.0	4,584.7	4,611.5	4,608.9	18.1	7.7	-55.56	243.2	936.8	311.6	287.7	23.86	13.056		
4,800.0	4,679.0	4,703.2	4,700.6	18.8	7.9	-60.61	240.4	935.0	289.6	264.4	25.16	11.508		
4,900.0	4,773.4	4,795.4	4,792.7	19.5	8.0	-66.30	238.0	933.6	271.0	244.5	26.50	10.224		
5,000.0	4,867.7	4,888.0	4,885.2	20.2	8.2	-72.60	235.9	932.8	256.2	228.4	27.82	9.208		
5,100.0	4,962.1	4,980.9	4,978.2	20.9	8.4	-79.42	234.1	932.6	245.7	216.6	29.05	8.458		
5,200.0	5,056.4	5,074.7	5,072.0	21.6	8.6	-86.63	232.6	932.8	239.8	209.7	30.09	7.968		
5,279.6	5,131.5	5,149.7	5,146.9	22.1	8.7	-92.48	231.5	933.2	238.3	207.6	30.76	7.748 CC		
5,300.0	5,150.8	5,168.9	5,166.2	22.2	8.7	-93.98	231.2	933.4	238.4	207.5	30.90	7.715		
5,400.0	5,245.1	5,263.3	5,260.6	22.9	8.9	-101.22	230.0	934.3	241.6	210.1	31.45	7.680		
5,500.0	5,339.5	5,358.0	5,355.2	23.6	9.1	-108.13	228.9	935.6	248.9	217.1	31.76	7.837		
5,600.0	5,433.8	5,452.9	5,450.1	24.3	9.2	-114.52	228.0	937.2	259.9	228.1	31.87	8.156		
5,676.4	5,505.9	5,525.1	5,522.2	24.9	9.3	-118.98	227.4	938.6	270.6	238.7	31.87	8.491		
5,700.0	5,528.3	5,547.1	5,544.3	25.0	9.4	-120.49	227.2	939.0	274.0	242.2	31.84	8.608		
5,750.0	5,576.4	5,594.5	5,591.7	25.2	9.5	-123.22	226.9	939.7	280.7	249.0	31.77	8.837		
5,800.0	5,625.3	5,642.5	5,639.7	25.4	9.5	-125.39	226.7	940.2	286.1	254.4	31.73	9.017		
5,850.0	5,674.8	5,691.0	5,688.2	25.5	9.6	-127.18	226.5	940.6	290.1	258.3	31.73	9.140		
5,900.0	5,724.6	5,739.8	5,737.0	25.6	9.7	-129.76	226.5	940.7	292.3	260.5	31.78	9.199		
5,950.0	5,774.6	5,788.8	5,785.9	25.7	9.8	60.23	226.5	940.7	292.8	260.9	31.86	9.191		
6,000.0	5,824.5	5,837.6	5,834.8	25.7	9.9	55.41	226.5	940.5	291.5	259.5	31.98	9.115		
6,050.0	5,874.2	5,886.3	5,883.4	25.7	10.0	55.76	226.7	940.0	288.6	256.4	32.17	8.971		
6,100.0	5,923.3	5,934.5	5,931.7	25.6	10.0	57.17	226.9	939.4	284.0	251.6	32.41	8.762		
6,150.0	5,971.8	5,982.2	5,979.3	25.6	10.1	59.35	227.2	938.6	278.1	245.3	32.74	8.494		
6,200.0	6,019.3	6,029.1	6,026.2	25.5	10.2	62.25	227.6	937.7	271.1	238.0	33.15	8.179		
6,250.0	6,065.7	6,075.0	6,072.1	25.4	10.3	65.86	228.0	936.5	263.6	229.9	33.64	7.835		
6,300.0	6,110.8	6,119.9	6,117.0	25.3	10.4	70.16	228.6	935.2	255.9	221.8	34.17	7.490		
6,350.0	6,154.4	6,163.5	6,160.6	25.1	10.5	75.06	229.1	933.8	249.0	214.3	34.71	7.174		
6,400.0	6,196.3	6,205.8	6,202.8	25.0	10.5	80.44	229.8	932.3	243.5	208.4	35.16	6.926		
6,450.0	6,236.4	6,246.5	6,243.5	24.9	10.6	86.09	230.4	930.7	240.5	205.1	35.45	6.785		
6,469.4	6,251.4	6,261.8	6,258.8	24.9	10.7	88.31	230.7	930.0	240.3	204.7	35.51	6.765 ES, SF		
6,500.0	6,274.4	6,285.4	6,282.4	24.9	10.7	91.76	231.1	929.0	241.0	205.5	35.53	6.783		
6,550.0	6,310.1	6,322.6	6,319.5	24.8	10.8	97.19	231.9	927.2	245.8	210.5	35.37	6.949		
6,600.0	6,343.6	6,357.7	6,354.5	24.8	10.8	102.14	232.6	925.5	255.6	220.6	35.02	7.299		
6,650.0	6,374.5	6,390.6	6,387.4	24.8	10.9	106.42	233.3	923.7	270.7	236.1	34.55	7.835		
6,700.0	6,402.8	6,421.2	6,417.9	24.9	11.0	109.93	234.1	922.0	290.9	256.9	34.05	8.544		
6,750.0	6,428.3	6,449.4	6,446.1	25.0	11.0	112.59	234.8	920.4	316.0	282.4	33.63	9.396		
6,800.0	6,451.0	6,474.9	6,471.6	25.2	11.1	114.35	235.4	918.8	345.4	312.0	33.39	10.346		

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Wells Sec.19-T5N-R63W - Cockroft 19V (Exist) - Wellbore #1 - Wellbore #1													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 600-NS-GYRO-MS													<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
6,850.0	6,470.7	6,497.8	6,494.4	25.5	11.1	115.19	236.0	917.4	378.5	345.2	33.38	11.339		
6,900.0	6,487.3	6,517.6	6,514.1	25.8	11.1	115.00	236.6	916.1	414.9	381.2	33.70	12.312		
6,950.0	6,500.8	6,534.4	6,530.9	26.2	11.2	113.72	237.1	915.0	453.9	419.6	34.36	13.211		
7,000.0	6,511.2	6,548.1	6,544.5	26.6	11.2	111.22	237.5	914.1	495.2	459.8	35.37	14.000		
7,050.0	6,518.3	6,558.7	6,555.1	27.1	11.2	107.32	237.8	913.4	538.2	501.6	36.67	14.676		
7,100.0	6,522.2	6,566.0	6,562.4	27.7	11.2	101.82	238.0	912.9	582.7	544.6	38.11	15.288		
7,137.3	6,523.0	6,569.4	6,565.8	28.1	11.2	96.59	238.1	912.7	616.6	577.5	39.11	15.766		
7,200.0	6,522.8	6,573.5	6,569.9	28.9	11.3	97.51	238.2	912.4	674.3	634.5	39.84	16.925		
7,300.0	6,522.4	6,580.1	6,576.5	30.4	11.3	99.00	238.4	912.0	768.0	726.9	41.15	18.663		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 6701-UNKNOWN Existing Wells Sec.19-T5N-R63W - Flack 7-19 (P&A) - Wellbore #1 - Wellbore #1												<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
7,700.0	6,520.9	6,507.9	6,507.9	37.8	130.2	-90.24	-535.5	-802.3	789.1	621.2	167.94	4.699	
7,800.0	6,520.5	6,507.5	6,507.5	39.9	130.1	-90.20	-535.5	-802.3	717.6	547.5	170.06	4.220	
7,900.0	6,520.1	6,507.1	6,507.1	42.1	130.1	-90.16	-535.5	-802.3	653.6	481.3	172.26	3.794	
8,000.0	6,519.7	6,506.7	6,506.7	44.4	130.1	-90.12	-535.5	-802.3	599.5	425.0	174.53	3.435	
8,100.0	6,519.4	6,506.4	6,506.4	46.7	130.1	-90.08	-535.5	-802.3	558.3	381.4	176.85	3.157	
8,200.0	6,519.0	6,506.0	6,506.0	49.1	130.1	-90.04	-535.5	-802.3	532.9	353.6	179.23	2.973	
8,288.8	6,518.6	6,505.6	6,505.6	51.3	130.1	-90.00	-535.5	-802.3	525.4	344.0	181.38	2.897 CC	
8,300.0	6,518.6	6,505.6	6,505.6	51.5	130.1	-90.00	-535.5	-802.3	525.5	343.9	181.65	2.893 ES, SF	
8,400.0	6,518.2	6,505.2	6,505.2	54.0	130.1	-89.95	-535.5	-802.3	537.1	353.0	184.11	2.917	
8,500.0	6,517.8	6,504.8	6,504.8	56.5	130.1	-89.91	-535.5	-802.3	566.3	379.7	186.60	3.035	
8,600.0	6,517.5	6,504.5	6,504.5	59.0	130.1	-89.87	-535.5	-802.3	610.7	421.6	189.11	3.229	
8,700.0	6,517.1	6,504.1	6,504.1	61.6	130.1	-89.83	-535.5	-802.3	667.2	475.6	191.66	3.481	
8,800.0	6,516.7	6,503.7	6,503.7	64.1	130.1	-89.79	-535.5	-802.3	733.1	538.9	194.22	3.775	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Wells Sec.19-T5N-R63W - Johnson 2 (P&A) - Wellbore #1 - Wellbore #1													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 100-NS-GYRO-MS													<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,400.0	6,510.6	6,488.4	6,487.3	106.9	11.4	-88.51	-468.0	-3,560.4	792.6	674.3	118.34	6.698		
10,500.0	6,510.3	6,488.5	6,487.3	109.7	11.4	-88.52	-468.0	-3,560.4	713.4	592.3	121.07	5.892		
10,600.0	6,509.9	6,488.5	6,487.4	112.4	11.4	-88.52	-468.0	-3,560.4	639.9	516.1	123.81	5.169		
10,700.0	6,509.5	6,488.6	6,487.4	115.2	11.4	-88.53	-468.0	-3,560.4	574.6	448.0	126.55	4.540		
10,800.0	6,509.1	6,488.6	6,487.5	117.9	11.4	-88.54	-468.0	-3,560.4	520.3	391.0	129.29	4.025		
10,900.0	6,508.7	6,488.7	6,487.6	120.6	11.4	-88.54	-468.0	-3,560.4	481.0	349.0	132.04	3.643		
11,000.0	6,508.4	6,488.7	6,487.6	123.4	11.4	-88.55	-468.0	-3,560.4	460.4	325.6	134.78	3.416		
11,046.9	6,508.2	6,488.8	6,487.6	124.7	11.4	-88.56	-468.0	-3,560.4	458.0	321.9	136.08	3.366 CC, ES		
11,100.0	6,508.0	6,488.8	6,487.7	126.1	11.4	-88.56	-468.0	-3,560.4	461.1	323.6	137.54	3.352 SF		
11,200.0	6,507.6	6,488.9	6,487.7	128.9	11.4	-88.57	-468.0	-3,560.4	482.9	342.6	140.29	3.442		
11,300.0	6,507.2	6,488.9	6,487.8	131.7	11.4	-88.57	-468.0	-3,560.4	523.3	380.3	143.05	3.658		
11,400.0	6,506.8	6,489.0	6,487.8	134.4	11.4	-88.58	-468.0	-3,560.4	578.3	432.5	145.81	3.966		
11,500.0	6,506.5	6,489.0	6,487.9	137.2	11.4	-88.59	-468.0	-3,560.4	644.3	495.7	148.57	4.337		
11,600.0	6,506.1	6,489.1	6,488.0	139.9	11.4	-88.60	-468.0	-3,560.4	718.1	566.8	151.33	4.745		
11,700.0	6,505.7	6,489.2	6,488.0	142.7	11.4	-88.61	-468.0	-3,560.4	797.7	643.6	154.09	5.177		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Wells Sec.19-T5N-R63W - Johnson 4 (P&A) - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 6700-UNKNOWN												<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
9,100.0	6,515.6	6,502.6	6,502.6	72.0	130.1	-90.24	-509.9	-2,175.7	752.2	550.2	202.02	3.723	
9,200.0	6,515.2	6,502.2	6,502.2	74.6	130.0	-90.20	-509.9	-2,175.7	680.7	476.1	204.65	3.326	
9,300.0	6,514.8	6,501.8	6,501.8	77.3	130.0	-90.16	-509.9	-2,175.7	617.2	409.9	207.29	2.978	
9,400.0	6,514.4	6,501.4	6,501.4	79.9	130.0	-90.11	-509.9	-2,175.7	564.4	354.5	209.95	2.688	
9,500.0	6,514.0	6,501.0	6,501.0	82.6	130.0	-90.07	-509.9	-2,175.7	525.5	312.9	212.61	2.472	
9,600.0	6,513.7	6,500.7	6,500.7	85.3	130.0	-90.03	-509.9	-2,175.7	503.7	288.4	215.28	2.340	
9,662.1	6,513.4	6,500.4	6,500.4	86.9	130.0	-90.00	-509.9	-2,175.7	499.8	282.9	216.95	2.304 CC, ES	
9,700.0	6,513.3	6,500.3	6,500.3	88.0	130.0	-89.98	-509.9	-2,175.7	501.3	283.3	217.96	2.300 SF	
9,800.0	6,512.9	6,499.9	6,499.9	90.6	130.0	-89.94	-509.9	-2,175.7	518.5	297.8	220.65	2.350	
9,900.0	6,512.5	6,499.5	6,499.5	93.4	130.0	-89.90	-509.9	-2,175.7	553.5	330.2	223.34	2.478	
10,000.0	6,512.2	6,499.2	6,499.2	96.1	130.0	-89.85	-509.9	-2,175.7	603.3	377.3	226.04	2.669	
10,100.0	6,511.8	6,498.8	6,498.8	98.8	130.0	-89.81	-509.9	-2,175.7	664.5	435.7	228.75	2.905	
10,200.0	6,511.4	6,498.4	6,498.4	101.5	130.0	-89.77	-509.9	-2,175.7	734.2	502.8	231.46	3.172	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Wells Sec.19-T5N-R63W - Ochsner 19A (Exist) - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 500-NS-GYRO-MS												<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
9,500.0	6,514.0	6,520.7	6,518.2	82.6	11.1	92.25	384.8	-2,652.7	751.4	657.8	93.64	8.025	
9,600.0	6,513.7	6,517.1	6,514.6	85.3	11.1	91.74	384.7	-2,652.8	668.4	572.1	96.34	6.939	
9,700.0	6,513.3	6,513.5	6,511.1	88.0	11.1	91.23	384.6	-2,652.9	590.7	491.7	99.04	5.965	
9,800.0	6,512.9	6,509.9	6,507.4	90.6	11.1	90.70	384.6	-2,653.1	520.6	418.9	101.74	5.117	
9,900.0	6,512.5	6,506.2	6,503.8	93.4	11.1	90.16	384.5	-2,653.2	461.7	357.2	104.45	4.420	
10,000.0	6,512.2	6,502.5	6,500.0	96.1	11.1	89.62	384.4	-2,653.3	418.6	311.4	107.15	3.907	
10,100.0	6,511.8	6,498.7	6,496.3	98.8	11.1	89.08	384.4	-2,653.4	396.5	286.7	109.85	3.610	
10,140.0	6,511.6	6,497.2	6,494.8	99.9	11.1	88.86	384.3	-2,653.5	394.5	283.6	110.93	3.557 CC, ES	
10,200.0	6,511.4	6,495.0	6,492.6	101.5	11.1	88.54	384.3	-2,653.6	399.0	286.5	112.54	3.546 SF	
10,300.0	6,511.0	6,491.4	6,488.9	104.2	11.1	88.01	384.2	-2,653.7	425.7	310.5	115.23	3.694	
10,400.0	6,510.6	6,487.8	6,485.3	106.9	11.1	87.49	384.1	-2,653.8	472.4	354.5	117.92	4.006	
10,500.0	6,510.3	6,484.2	6,481.7	109.7	11.1	86.97	384.1	-2,653.9	533.9	413.3	120.60	4.427	
10,600.0	6,509.9	6,480.7	6,478.2	112.4	11.1	86.46	384.0	-2,654.0	605.8	482.5	123.27	4.914	
10,700.0	6,509.5	6,477.2	6,474.7	115.2	11.1	85.95	383.9	-2,654.1	684.7	558.8	125.93	5.437	
10,800.0	6,509.1	6,473.8	6,471.3	117.9	11.0	85.46	383.9	-2,654.3	768.6	640.0	128.59	5.977	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.19-T5N-R63W - Ochsner 19N (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 600-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
8,400.0	6,518.2	6,538.9	6,536.2	54.0	11.1	-158.41	-23.2	-1,703.9	791.0	761.5	29.53	26.787		
8,500.0	6,517.8	6,535.0	6,532.3	56.5	11.1	-155.86	-23.1	-1,704.0	691.1	658.3	32.79	21.075		
8,600.0	6,517.5	6,531.1	6,528.3	59.0	11.1	-152.61	-23.1	-1,704.2	591.2	554.3	36.87	16.035		
8,700.0	6,517.1	6,527.0	6,524.3	61.6	11.1	-148.33	-23.1	-1,704.3	491.3	449.2	42.09	11.673		
8,800.0	6,516.7	6,522.9	6,520.2	64.1	11.0	-142.54	-23.1	-1,704.5	391.4	342.6	48.88	8.008		
8,900.0	6,516.3	6,518.7	6,516.0	66.7	11.0	-134.48	-23.1	-1,704.6	291.6	233.9	57.71	5.053		
9,000.0	6,515.9	6,514.4	6,511.7	69.3	11.0	-123.09	-23.1	-1,704.8	191.9	123.3	68.57	2.798		
9,100.0	6,515.6	6,510.0	6,507.3	72.0	11.0	-107.41	-23.1	-1,705.0	92.4	12.9	79.56	1.162 Level 2		
9,189.8	6,515.2	6,506.0	6,503.3	74.3	11.0	-90.18	-23.0	-1,705.2	13.1	-72.3	85.36	0.153 Level 1, CC, ES, SF		
9,200.0	6,515.2	6,505.5	6,502.8	74.6	11.0	-88.13	-23.0	-1,705.2	15.4	-70.2	85.58	0.180 Level 1		
9,300.0	6,514.8	6,500.9	6,498.2	77.3	11.0	-68.84	-23.0	-1,705.4	109.0	26.3	82.76	1.318 Level 3		
9,400.0	6,514.4	6,496.4	6,493.7	79.9	11.0	-53.46	-23.0	-1,705.6	208.6	134.0	74.55	2.798		
9,500.0	6,514.0	6,491.8	6,489.1	82.6	11.0	-42.49	-23.0	-1,705.8	308.3	242.3	66.04	4.669		
9,600.0	6,513.7	6,487.4	6,484.7	85.3	11.0	-34.78	-23.0	-1,705.9	408.2	349.0	59.14	6.902		
9,700.0	6,513.3	6,482.9	6,480.2	88.0	11.0	-29.24	-23.0	-1,706.1	508.0	454.0	53.97	9.413		
9,800.0	6,512.9	6,478.5	6,475.8	90.6	11.0	-25.14	-23.0	-1,706.3	607.9	557.7	50.21	12.108		
9,900.0	6,512.5	6,474.1	6,471.5	93.4	11.0	-22.02	-23.0	-1,706.5	707.8	660.3	47.49	14.904		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Wells Sec.19-T5N-R63W - Ochsner 22-19 (Exist) - Wellbore #1 - Wellbore #1													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 500-NS-GYRO-MS													<b>Offset Well Error:</b>	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	
9,100.0	6,515.6	6,512.5	6,510.3	72.0	12.5	-90.72	-728.2	-1,957.7	796.3	711.9	84.43	9.431		
9,200.0	6,515.2	6,511.5	6,509.2	74.6	12.5	-90.64	-728.2	-1,957.7	758.5	671.4	87.07	8.711		
9,300.0	6,514.8	6,510.4	6,508.2	77.3	12.5	-90.55	-728.2	-1,957.7	732.4	642.7	89.72	8.164		
9,400.0	6,514.4	6,509.4	6,507.2	79.9	12.5	-90.47	-728.2	-1,957.7	719.4	627.1	92.38	7.788		
9,444.1	6,514.3	6,508.9	6,506.7	81.1	12.5	-90.43	-728.2	-1,957.7	718.1	624.5	93.56	7.676 CC, ES		
9,500.0	6,514.0	6,508.4	6,506.1	82.6	12.5	-90.39	-728.2	-1,957.7	720.3	625.2	95.05	7.578		
9,600.0	6,513.7	6,507.3	6,505.1	85.3	12.5	-90.30	-728.2	-1,957.7	734.8	637.1	97.73	7.519 SF		
9,700.0	6,513.3	6,506.3	6,504.0	88.0	12.5	-90.22	-728.2	-1,957.7	762.3	661.9	100.41	7.592		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Cockroft 19V-304
<b>Project:</b>	SEC.19-T5N-R63W	<b>TVD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Reference Site:</b>	Cockroft 5N63W19C Pad Sec.19-T5N-R63W	<b>MD Reference:</b>	WELL @ 4568.0ft (RKB - 13')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Cockroft 19V-304	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (11-13-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.19-T5N-R63W - Rothe 8-24 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 6735-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		
11,600.0	6,506.1	6,499.1	6,499.1	139.9	130.0	-90.72	-218.1	-4,799.8	717.1	447.2	269.90	2.657		
11,700.0	6,505.7	6,498.7	6,498.7	142.7	130.0	-90.61	-218.1	-4,799.8	622.1	349.4	272.66	2.282		
11,800.0	6,505.3	6,498.3	6,498.3	145.5	130.0	-90.51	-218.1	-4,799.8	528.9	253.5	275.43	1.920		
11,900.0	6,505.0	6,498.0	6,498.0	148.2	130.0	-90.40	-218.1	-4,799.8	438.7	160.5	278.19	1.577		
12,000.0	6,504.6	6,497.6	6,497.6	151.0	130.0	-90.30	-218.1	-4,799.8	353.9	72.9	280.96	1.260 Level 3		
12,100.0	6,504.2	6,497.2	6,497.2	153.8	129.9	-90.19	-218.1	-4,799.8	279.2	-4.5	283.72	0.984 Level 1		
12,200.0	6,503.8	6,496.8	6,496.8	156.6	129.9	-90.09	-218.1	-4,799.8	225.2	-61.3	286.49	0.786 Level 1		
12,286.3	6,503.5	6,496.5	6,496.5	158.9	129.9	-90.00	-218.1	-4,799.8	208.0	-80.9	288.87	0.720 Level 1, CC, ES, SF		
12,300.0	6,503.4	6,496.4	6,496.4	159.3	129.9	-89.99	-218.1	-4,799.8	208.5	-80.8	289.25	0.721 Level 1		
12,400.0	6,503.1	6,496.1	6,496.1	162.1	129.9	-89.88	-218.1	-4,799.8	237.0	-55.0	292.02	0.812 Level 1		
12,500.0	6,502.7	6,495.7	6,495.7	164.9	129.9	-89.78	-218.1	-4,799.8	298.2	3.4	294.79	1.012 Level 2		
12,600.0	6,502.3	6,495.3	6,495.3	167.7	129.9	-89.67	-218.1	-4,799.8	376.4	78.8	297.55	1.265 Level 3		
12,700.0	6,501.9	6,494.9	6,494.9	170.4	129.9	-89.57	-218.1	-4,799.8	463.0	162.7	300.32	1.542		
12,800.0	6,501.5	6,494.5	6,494.5	173.2	129.9	-89.46	-218.1	-4,799.8	554.2	251.1	303.09	1.829		
12,900.0	6,501.2	6,494.2	6,494.2	176.0	129.9	-89.36	-218.1	-4,799.8	648.0	342.1	305.85	2.119		
13,000.0	6,500.8	6,493.8	6,493.8	178.8	129.9	-89.26	-218.1	-4,799.8	743.4	434.8	308.62	2.409		



Reference Depths are relative to WELL @ 4568.0ft (RKB - 13')	Coordinates are relative to: Cockroft 19V-304
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000	Grid Convergence at Surface is: 0.66°



Coordinates are relative to: Cockroft 19V-304  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.66°

