

PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Corcilius 6E-223**

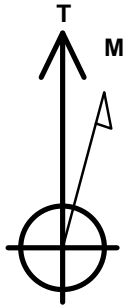
Surface Location: Corcilius 1S67W6J Pad Sec.6-T1S-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 5061.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1242662.03	3157623.30	39.998120	-104.937380	
RKB - 13' WELL @ 5074.0ft (RKB - 13')						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
50' E/W Hardline (6E-223)	1.0	-1901.3	-344.7	Rectangle (Sides: L3776.3 W100.0)
SHL 807'FNL & 825'FWL	1.0	0.0	0.0	Point
BHL 500'FSL & 458'FWL	7615.0	-3784.9	-344.7	Point



Azimuths to True North
Magnetic North: 8.40°

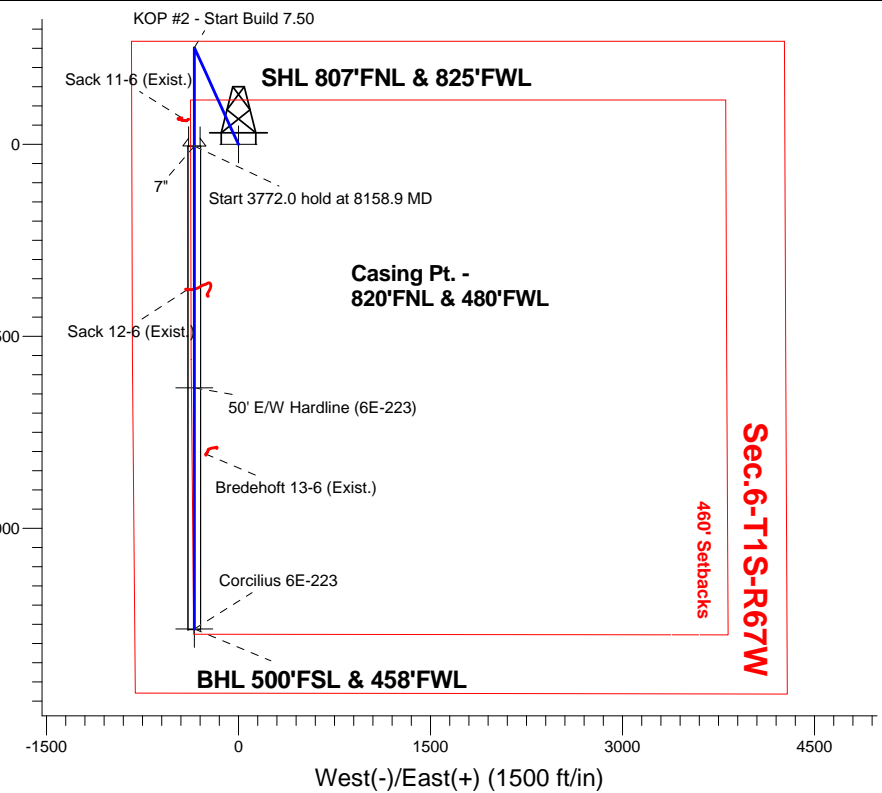
Magnetic Field
Strength: 52492.3snT
Dip Angle: 66.56°
Date: 4/29/2015
Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
800.0	800.0	KOP - Start Build 1.50
5490.3	5559.0	Start Drop -2.00
6881.4	6952.8	KOP #2 - Start Build 7.50
7645.3	8158.9	Start 3772.0 hold at 8158.9 MD
7615.0	11930.9	TD at 11930.9

Corcilius 1S67W6J Pad Sec.6-T1S-R67W
Corcilius 6E-223
Plan #1 (4-29-15)
15:35, September 23 2015

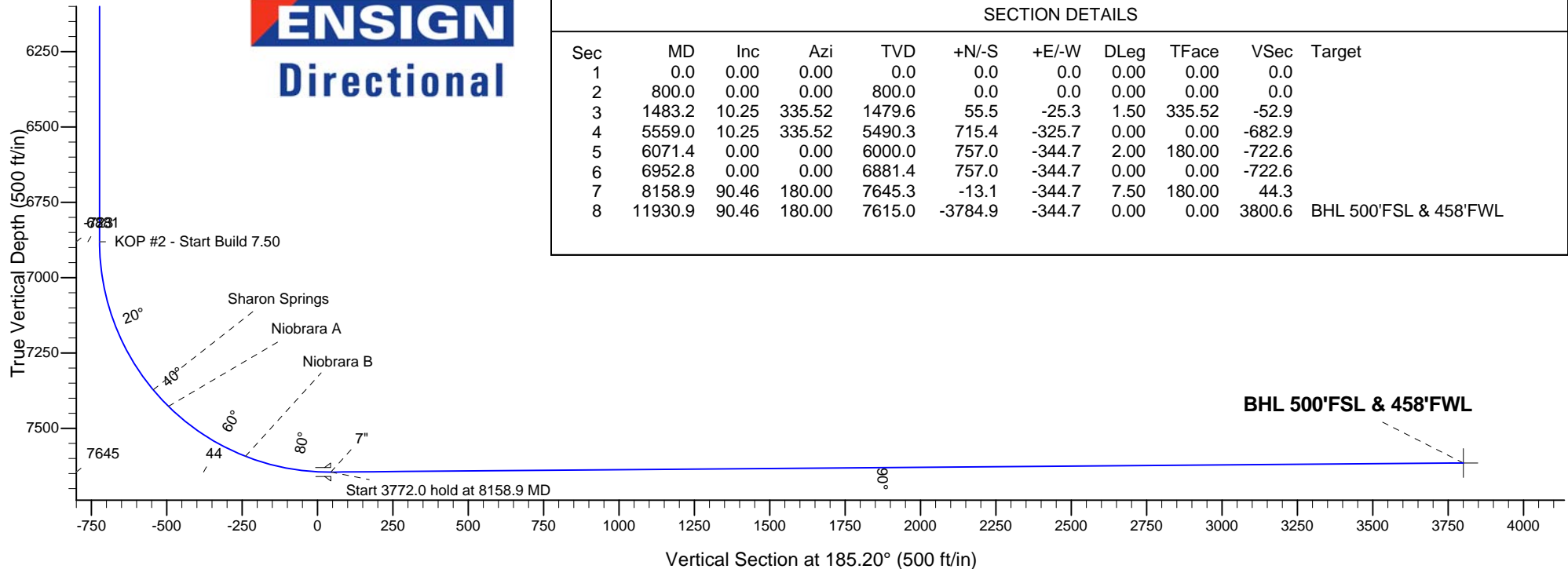
South(-)/North(+) (1500 ft/in)



ENSIGN
Directional

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0	
3	1483.2	10.25	335.52	1479.6	55.5	-25.3	1.50	335.52	-52.9	
4	5559.0	10.25	335.52	5490.3	715.4	-325.7	0.00	0.00	-682.9	
5	6071.4	0.00	0.00	6000.0	757.0	-344.7	2.00	180.00	-722.6	
6	6952.8	0.00	0.00	6881.4	757.0	-344.7	0.00	0.00	-722.6	
7	8158.9	90.46	180.00	7645.3	-13.1	-344.7	7.50	180.00	44.3	
8	11930.9	90.46	180.00	7615.0	-3784.9	-344.7	0.00	0.00	3800.6	BHL 500'FSL & 458'FWL





Directional

PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.6-T1S-R67W

Corcilus 1S67W6J Pad Sec.6-T1S-R67W

Corcilus 6E-223

Wellbore #1

Plan: Plan #1 (4-29-15)

Standard Planning Report

23 September, 2015

Database:	US_EDM	Local Co-ordinate Reference:	Well Corcilus 6E-223
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Project:	SEC.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site:	Corcilus 1S67W6J Pad Sec.6-T1S-R67W	North Reference:	True
Well:	Corcilus 6E-223	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-29-15)		

Project	SEC.6-T1S-R67W, Adams County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Corcilus 1S67W6J Pad Sec.6-T1S-R67W		
Site Position:		Northing:	1,242,661.65 usft
From:	Lat/Long	Easting:	3,157,561.67 usft
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "
		Latitude:	39.998120
		Longitude:	-104.937600
		Grid Convergence:	0.36 °

Well	Corcilus 6E-223		
Well Position	+N/-S	0.0 ft	Northing:
	+E/-W	61.6 ft	Easting:
Position Uncertainty	0.0 ft		Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/29/2015	8.40	66.56	52,492

Design	Plan #1 (4-29-15)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	185.20

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,483.2	10.25	335.52	1,479.6	55.5	-25.3	1.50	1.50	0.00	335.52	
5,559.0	10.25	335.52	5,490.3	715.4	-325.7	0.00	0.00	0.00	0.00	
6,071.4	0.00	0.00	6,000.0	757.0	-344.7	2.00	-2.00	0.00	180.00	
6,952.8	0.00	0.00	6,881.4	757.0	-344.7	0.00	0.00	0.00	0.00	
8,158.9	90.46	180.00	7,645.3	-13.1	-344.7	7.50	7.50	0.00	180.00	
11,930.9	90.46	180.00	7,615.0	-3,784.9	-344.7	0.00	0.00	0.00	0.00	BHL 500'FSL & 458'F

Database:	US_EDM	Local Co-ordinate Reference:	Well Corcilus 6E-223
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Project:	SEC.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site:	Corcilus 1S67W6J Pad Sec.6-T1S-R67W	North Reference:	True
Well:	Corcilus 6E-223	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-29-15)		

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
50' E/W Hardline (6E-223) - SHL 807'FNL & 825'FWL									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 1.50									
900.0	1.50	335.52	900.0	1.2	-0.5	-1.1	1.50	1.50	0.00
1,000.0	3.00	335.52	999.9	4.8	-2.2	-4.5	1.50	1.50	0.00
1,100.0	4.50	335.52	1,099.7	10.7	-4.9	-10.2	1.50	1.50	0.00
1,200.0	6.00	335.52	1,199.3	19.0	-8.7	-18.2	1.50	1.50	0.00
1,300.0	7.50	335.52	1,298.6	29.7	-13.5	-28.4	1.50	1.50	0.00
1,400.0	9.00	335.52	1,397.5	42.8	-19.5	-40.9	1.50	1.50	0.00
1,483.2	10.25	335.52	1,479.6	55.5	-25.3	-52.9	1.50	1.50	0.00
1,500.0	10.25	335.52	1,496.1	58.2	-26.5	-55.5	0.00	0.00	0.00
1,600.0	10.25	335.52	1,594.5	74.4	-33.9	-71.0	0.00	0.00	0.00
1,700.0	10.25	335.52	1,692.9	90.6	-41.2	-86.5	0.00	0.00	0.00
1,800.0	10.25	335.52	1,791.3	106.8	-48.6	-101.9	0.00	0.00	0.00
1,900.0	10.25	335.52	1,889.7	122.9	-56.0	-117.4	0.00	0.00	0.00
2,000.0	10.25	335.52	1,988.1	139.1	-63.3	-132.8	0.00	0.00	0.00
2,100.0	10.25	335.52	2,086.5	155.3	-70.7	-148.3	0.00	0.00	0.00
2,200.0	10.25	335.52	2,184.9	171.5	-78.1	-163.7	0.00	0.00	0.00
2,300.0	10.25	335.52	2,283.3	187.7	-85.5	-179.2	0.00	0.00	0.00
2,400.0	10.25	335.52	2,381.7	203.9	-92.8	-194.6	0.00	0.00	0.00
2,500.0	10.25	335.52	2,480.1	220.1	-100.2	-210.1	0.00	0.00	0.00
2,600.0	10.25	335.52	2,578.5	236.3	-107.6	-225.6	0.00	0.00	0.00
2,700.0	10.25	335.52	2,677.0	252.5	-115.0	-241.0	0.00	0.00	0.00
2,800.0	10.25	335.52	2,775.4	268.7	-122.3	-256.5	0.00	0.00	0.00
2,900.0	10.25	335.52	2,873.8	284.9	-129.7	-271.9	0.00	0.00	0.00
3,000.0	10.25	335.52	2,972.2	301.1	-137.1	-287.4	0.00	0.00	0.00
3,100.0	10.25	335.52	3,070.6	317.2	-144.4	-302.8	0.00	0.00	0.00
3,200.0	10.25	335.52	3,169.0	333.4	-151.8	-318.3	0.00	0.00	0.00
3,300.0	10.25	335.52	3,267.4	349.6	-159.2	-333.8	0.00	0.00	0.00
3,400.0	10.25	335.52	3,365.8	365.8	-166.6	-349.2	0.00	0.00	0.00
3,500.0	10.25	335.52	3,464.2	382.0	-173.9	-364.7	0.00	0.00	0.00
3,600.0	10.25	335.52	3,562.6	398.2	-181.3	-380.1	0.00	0.00	0.00
3,700.0	10.25	335.52	3,661.0	414.4	-188.7	-395.6	0.00	0.00	0.00
3,800.0	10.25	335.52	3,759.4	430.6	-196.0	-411.0	0.00	0.00	0.00
3,900.0	10.25	335.52	3,857.8	446.8	-203.4	-426.5	0.00	0.00	0.00
4,000.0	10.25	335.52	3,956.2	463.0	-210.8	-442.0	0.00	0.00	0.00
4,100.0	10.25	335.52	4,054.6	479.2	-218.2	-457.4	0.00	0.00	0.00
4,200.0	10.25	335.52	4,153.0	495.4	-225.5	-472.9	0.00	0.00	0.00
4,300.0	10.25	335.52	4,251.4	511.6	-232.9	-488.3	0.00	0.00	0.00
4,400.0	10.25	335.52	4,349.8	527.7	-240.3	-503.8	0.00	0.00	0.00
4,481.5	10.25	335.52	4,430.0	540.9	-246.3	-516.4	0.00	0.00	0.00
Parkman									
4,500.0	10.25	335.52	4,448.2	543.9	-247.7	-519.2	0.00	0.00	0.00
4,600.0	10.25	335.52	4,546.6	560.1	-255.0	-534.7	0.00	0.00	0.00

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Project:	SEC.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site:	Corcilus 1S67W6J Pad Sec.6-T1S-R67W	North Reference:	True
Well:	Corcilus 6E-223	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-29-15)		

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)
4,700.0	10.25	335.52	4,645.0	576.3	-262.4	-550.1	0.00	0.00	0.00
4,800.0	10.25	335.52	4,743.4	592.5	-269.8	-565.6	0.00	0.00	0.00
4,857.5	10.25	335.52	4,800.0	601.8	-274.0	-574.5	0.00	0.00	0.00
Sussex									
4,900.0	10.25	335.52	4,841.9	608.7	-277.1	-581.1	0.00	0.00	0.00
5,000.0	10.25	335.52	4,940.3	624.9	-284.5	-596.5	0.00	0.00	0.00
5,100.0	10.25	335.52	5,038.7	641.1	-291.9	-612.0	0.00	0.00	0.00
5,200.0	10.25	335.52	5,137.1	657.3	-299.3	-627.4	0.00	0.00	0.00
5,300.0	10.25	335.52	5,235.5	673.5	-306.6	-642.9	0.00	0.00	0.00
5,400.0	10.25	335.52	5,333.9	689.7	-314.0	-658.3	0.00	0.00	0.00
5,446.9	10.25	335.52	5,380.0	697.3	-317.5	-665.6	0.00	0.00	0.00
Shannon									
5,500.0	10.25	335.52	5,432.3	705.9	-321.4	-673.8	0.00	0.00	0.00
5,559.0	10.25	335.52	5,490.3	715.4	-325.7	-682.9	0.00	0.00	0.00
Start Drop -2.00									
5,600.0	9.43	335.52	5,530.7	721.8	-328.6	-689.0	2.00	-2.00	0.00
5,700.0	7.43	335.52	5,629.7	735.1	-334.7	-701.7	2.00	-2.00	0.00
5,800.0	5.43	335.52	5,729.0	745.3	-339.3	-711.5	2.00	-2.00	0.00
5,900.0	3.43	335.52	5,828.7	752.3	-342.5	-718.2	2.00	-2.00	0.00
6,000.0	1.43	335.52	5,928.6	756.2	-344.3	-721.9	2.00	-2.00	0.00
6,071.4	0.00	0.00	6,000.0	757.0	-344.7	-722.6	2.00	-2.00	0.00
6,100.0	0.00	0.00	6,028.6	757.0	-344.7	-722.6	0.00	0.00	0.00
6,200.0	0.00	0.00	6,128.6	757.0	-344.7	-722.6	0.00	0.00	0.00
6,300.0	0.00	0.00	6,228.6	757.0	-344.7	-722.6	0.00	0.00	0.00
6,400.0	0.00	0.00	6,328.6	757.0	-344.7	-722.6	0.00	0.00	0.00
6,500.0	0.00	0.00	6,428.6	757.0	-344.7	-722.6	0.00	0.00	0.00
6,600.0	0.00	0.00	6,528.6	757.0	-344.7	-722.6	0.00	0.00	0.00
6,700.0	0.00	0.00	6,628.6	757.0	-344.7	-722.6	0.00	0.00	0.00
6,800.0	0.00	0.00	6,728.6	757.0	-344.7	-722.6	0.00	0.00	0.00
6,900.0	0.00	0.00	6,828.6	757.0	-344.7	-722.6	0.00	0.00	0.00
6,952.8	0.00	0.00	6,881.4	757.0	-344.7	-722.6	0.00	0.00	0.00
KOP #2 - Start Build 7.50									
7,000.0	3.54	180.00	6,928.6	755.5	-344.7	-721.2	7.51	7.51	0.00
7,100.0	11.04	180.00	7,027.7	742.9	-344.7	-708.5	7.50	7.50	0.00
7,200.0	18.54	180.00	7,124.3	717.3	-344.7	-683.1	7.50	7.50	0.00
7,300.0	26.04	180.00	7,216.8	679.4	-344.7	-645.4	7.50	7.50	0.00
7,400.0	33.54	180.00	7,303.5	629.8	-344.7	-595.9	7.50	7.50	0.00
7,485.5	39.96	180.00	7,372.0	578.6	-344.7	-545.0	7.50	7.50	0.00
Sharon Springs									
7,500.0	41.04	180.00	7,383.0	569.2	-344.7	-535.6	7.50	7.50	0.00
7,560.5	45.58	180.00	7,427.0	527.7	-344.7	-494.3	7.50	7.50	0.00
Niobrara A									
7,600.0	48.54	180.00	7,453.9	498.8	-344.7	-465.5	7.50	7.50	0.00
7,700.0	56.04	180.00	7,515.0	419.8	-344.7	-386.8	7.50	7.50	0.00
7,800.0	63.54	180.00	7,565.3	333.4	-344.7	-300.8	7.50	7.50	0.00
7,868.4	68.67	180.00	7,593.0	270.9	-344.7	-238.5	7.50	7.50	0.00
Niobrara B									
7,900.0	71.04	180.00	7,603.9	241.2	-344.7	-209.0	7.50	7.50	0.00
8,000.0	78.54	180.00	7,630.1	144.8	-344.7	-112.9	7.50	7.50	0.00
8,100.0	86.04	180.00	7,643.5	45.8	-344.7	-14.3	7.50	7.50	0.00
8,158.9	90.46	180.00	7,645.3	-13.1	-344.7	44.3	7.50	7.50	0.00
Start 3772.0 hold at 8158.9 MD - 7"									

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Project:	SEC.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site:	Corcilus 1S67W6J Pad Sec.6-T1S-R67W	North Reference:	True
Well:	Corcilus 6E-223	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-29-15)		

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)
8,200.0	90.46	180.00	7,645.0	-54.2	-344.7	85.2	0.00	0.00	0.00
8,300.0	90.46	180.00	7,644.1	-154.2	-344.7	184.8	0.00	0.00	0.00
8,400.0	90.46	180.00	7,643.3	-254.2	-344.7	284.4	0.00	0.00	0.00
8,500.0	90.46	180.00	7,642.5	-354.2	-344.7	384.0	0.00	0.00	0.00
8,600.0	90.46	180.00	7,641.7	-454.2	-344.7	483.6	0.00	0.00	0.00
8,700.0	90.46	180.00	7,640.9	-554.2	-344.7	583.1	0.00	0.00	0.00
8,800.0	90.46	180.00	7,640.1	-654.2	-344.7	682.7	0.00	0.00	0.00
8,900.0	90.46	180.00	7,639.3	-754.2	-344.7	782.3	0.00	0.00	0.00
9,000.0	90.46	180.00	7,638.5	-854.2	-344.7	881.9	0.00	0.00	0.00
9,100.0	90.46	180.00	7,637.7	-954.2	-344.7	981.5	0.00	0.00	0.00
9,200.0	90.46	180.00	7,636.9	-1,054.2	-344.7	1,081.1	0.00	0.00	0.00
9,300.0	90.46	180.00	7,636.1	-1,154.2	-344.7	1,180.7	0.00	0.00	0.00
9,400.0	90.46	180.00	7,635.3	-1,254.2	-344.7	1,280.2	0.00	0.00	0.00
9,500.0	90.46	180.00	7,634.5	-1,354.1	-344.7	1,379.8	0.00	0.00	0.00
9,600.0	90.46	180.00	7,633.7	-1,454.1	-344.7	1,479.4	0.00	0.00	0.00
9,700.0	90.46	180.00	7,632.9	-1,554.1	-344.7	1,579.0	0.00	0.00	0.00
9,800.0	90.46	180.00	7,632.1	-1,654.1	-344.7	1,678.6	0.00	0.00	0.00
9,900.0	90.46	180.00	7,631.3	-1,754.1	-344.7	1,778.2	0.00	0.00	0.00
10,000.0	90.46	180.00	7,630.5	-1,854.1	-344.7	1,877.7	0.00	0.00	0.00
10,100.0	90.46	180.00	7,629.7	-1,954.1	-344.7	1,977.3	0.00	0.00	0.00
10,200.0	90.46	180.00	7,628.9	-2,054.1	-344.7	2,076.9	0.00	0.00	0.00
10,300.0	90.46	180.00	7,628.1	-2,154.1	-344.7	2,176.5	0.00	0.00	0.00
10,400.0	90.46	180.00	7,627.3	-2,254.1	-344.7	2,276.1	0.00	0.00	0.00
10,500.0	90.46	180.00	7,626.5	-2,354.1	-344.7	2,375.7	0.00	0.00	0.00
10,600.0	90.46	180.00	7,625.7	-2,454.1	-344.7	2,475.3	0.00	0.00	0.00
10,700.0	90.46	180.00	7,624.9	-2,554.1	-344.7	2,574.8	0.00	0.00	0.00
10,800.0	90.46	180.00	7,624.1	-2,654.1	-344.7	2,674.4	0.00	0.00	0.00
10,900.0	90.46	180.00	7,623.3	-2,754.1	-344.7	2,774.0	0.00	0.00	0.00
11,000.0	90.46	180.00	7,622.5	-2,854.1	-344.7	2,873.6	0.00	0.00	0.00
11,100.0	90.46	180.00	7,621.7	-2,954.1	-344.7	2,973.2	0.00	0.00	0.00
11,200.0	90.46	180.00	7,620.9	-3,054.1	-344.7	3,072.8	0.00	0.00	0.00
11,300.0	90.46	180.00	7,620.1	-3,154.1	-344.7	3,172.4	0.00	0.00	0.00
11,400.0	90.46	180.00	7,619.3	-3,254.1	-344.7	3,271.9	0.00	0.00	0.00
11,500.0	90.46	180.00	7,618.5	-3,354.1	-344.7	3,371.5	0.00	0.00	0.00
11,600.0	90.46	180.00	7,617.7	-3,454.1	-344.7	3,471.1	0.00	0.00	0.00
11,700.0	90.46	180.00	7,616.9	-3,554.1	-344.7	3,570.7	0.00	0.00	0.00
11,800.0	90.46	180.00	7,616.1	-3,654.1	-344.7	3,670.3	0.00	0.00	0.00
11,900.0	90.46	180.00	7,615.2	-3,754.1	-344.7	3,769.9	0.00	0.00	0.00
11,930.9	90.46	180.00	7,615.0	-3,784.9	-344.7	3,800.6	0.00	0.00	0.00
TD at 11930.9 - BHL 500'FSL & 458'FWL									

Database:	US_EDM	Local Co-ordinate Reference:	Well Corcilus 6E-223
Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Project:	SEC.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site:	Corcilus 1S67W6J Pad Sec.6-T1S-R67W	North Reference:	True
Well:	Corcilus 6E-223	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-29-15)		

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
50' E/W Hardline (6E-22) - plan misses target center by 1932.3ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E) - Rectangle (sides W100.0 H3,776.3 D0.0)	0.00	0.00	1.0	-1,901.3	-344.7	1,240,758.65	3,157,290.68	39.992901	-104.938610
SHL 807'FNL & 825'FWL - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,242,662.04	3,157,623.30	39.998120	-104.937380
BHL 500'FSL & 458'FWL - plan hits target center - Point	0.00	0.00	7,615.0	-3,784.9	-344.7	1,238,875.12	3,157,302.67	39.987730	-104.938610

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
8,158.9	7,645.3	7"	7	7-1/2	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,481.5	4,430.0	Parkman		0.00	
4,857.5	4,800.0	Sussex		0.00	
5,446.9	5,380.0	Shannon		0.00	
7,485.5	7,372.0	Sharon Springs		0.00	
7,560.5	7,427.0	Niobrara A		0.00	
7,868.4	7,593.0	Niobrara B		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
800.0	800.0	0.0	0.0	KOP - Start Build 1.50	
5,559.0	5,490.3	715.4	-325.7	Start Drop -2.00	
6,952.8	6,881.4	757.0	-344.7	KOP #2 - Start Build 7.50	
8,158.9	7,645.3	-13.1	-344.7	Start 3772.0 hold at 8158.9 MD	
11,930.9	7,615.0	-3,784.9	-344.7	TD at 11930.9	



Directional

PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.6-T1S-R67W

Corcilus 1S67W6J Pad Sec.6-T1S-R67W

Corcilus 6E-223

Wellbore #1

Plan #1 (4-29-15)

Anticollision Report

23 September, 2015



Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilius 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilius 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilius 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (4-29-15)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 5/4/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,930.2	Plan #1 (4-29-15) (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						
Corcilius 1S67W6J Pad Sec.6-T1S-R67W						
Corcilius 6E-203 - Wellbore #1 - Plan #1 (4-29-15)	200.0	200.0	61.6	61.0	91.410	CC, ES
Corcilius 6E-203 - Wellbore #1 - Plan #1 (4-29-15)	11,930.9	11,949.8	406.3	250.0	2.600	SF
Corcilius 6E-323 - Wellbore #1 - Plan #1 (4-29-15)	400.0	400.0	30.8	29.2	19.588	CC, ES
Corcilius 6E-323 - Wellbore #1 - Plan #1 (4-29-15)	11,930.9	12,036.7	225.9	85.9	1.613	SF
Corcilius 6J-443 - Wellbore #1 - Plan #1 (4-29-15)	800.0	799.0	28.0	24.6	8.316	CC, ES
Corcilius 6J-443 - Wellbore #1 - Plan #1 (4-29-15)	11,930.9	12,139.6	406.6	276.8	3.133	SF
Existing Wells Sec.6-T1S-R67W						
Bredheft 13-6 (Exist.) - Wellbore #1 - Wellbore #1	10,561.9	7,638.2	91.9	23.5	1.345	Level 3, CC, ES, SF
Sack 11-6 (Exist.) - Wellbore #1 - Wellbore #1	7,939.1	7,611.5	113.7	79.6	3.331	CC, ES, SF
Sack 12-6 (Exist.) - Wellbore #1 - Wellbore #1	9,281.4	7,625.9	65.4	17.7	1.372	Level 3, CC, ES, SF

Offset Design													Corcilius 1S67W6J Pad Sec.6-T1S-R67W - Corcilius 6E-203 - Wellbore #1 - Plan #1 (4-29-15)		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	-90.00	0.0	-61.6	61.6								
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-61.6	61.6	61.4	0.22	274.230					
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-61.6	61.6	61.0	0.67	91.410	CC, ES				
300.0	300.0	298.9	298.9	0.6	0.6	-89.13	0.9	-62.5	62.5	61.4	1.12	55.845					
400.0	400.0	397.7	397.6	0.8	0.8	-86.67	3.8	-65.1	65.2	63.7	1.57	41.584					
500.0	500.0	496.2	495.9	1.0	1.0	-83.02	8.5	-69.4	70.0	68.0	2.02	34.623					
600.0	600.0	594.3	593.6	1.2	1.3	-78.70	15.1	-75.3	77.1	74.6	2.48	31.110					
700.0	700.0	691.9	690.5	1.5	1.5	-74.23	23.4	-82.9	86.7	83.7	2.93	29.530					
800.0	800.0	788.9	786.5	1.7	1.8	-69.99	33.5	-92.1	98.9	95.5	3.39	29.142					
900.0	900.0	885.4	881.7	1.9	2.2	-42.00	45.4	-102.9	112.9	109.1	3.88	29.100					
1,000.0	999.9	984.4	979.2	2.1	2.5	-39.76	58.4	-114.6	126.3	122.0	4.35	29.029					
1,100.0	1,099.7	1,083.7	1,076.9	2.4	2.9	-38.62	71.4	-126.5	137.8	132.9	4.83	28.548					
1,200.0	1,199.3	1,183.3	1,174.9	2.6	3.3	-38.29	84.4	-138.3	147.2	141.9	5.31	27.712					
1,300.0	1,298.6	1,283.0	1,273.1	2.9	3.7	-38.61	97.5	-150.2	154.6	148.8	5.81	26.595					
1,400.0	1,397.5	1,382.8	1,371.3	3.1	4.1	-39.50	110.5	-162.0	160.0	153.7	6.33	25.258					
1,483.2	1,479.6	1,465.9	1,453.1	3.4	4.4	-40.66	121.4	-171.9	163.0	156.2	6.79	23.999					

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilius 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilius 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilius 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Offset Design		Corcilius 1S67W6J Pad Sec.6-T1S-R67W - Corcilius 6E-203 - Wellbore #1 - Plan #1 (4-29-15)											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)				
1,500.0	1,496.1	1,482.7	1,469.6	3.4	4.5	-40.93	123.6	-173.9	163.5	156.6	6.89	23.734			
1,600.0	1,594.5	1,582.5	1,567.8	3.8	4.9	-42.55	136.7	-185.8	166.4	158.9	7.47	22.272			
1,700.0	1,692.9	1,682.4	1,666.1	4.1	5.3	-44.10	149.8	-197.7	169.4	161.3	8.07	20.983			
1,800.0	1,791.3	1,782.2	1,764.4	4.4	5.6	-45.60	162.8	-209.5	172.5	163.8	8.69	19.844			
1,900.0	1,889.7	1,882.1	1,862.7	4.8	6.0	-47.05	175.9	-221.4	175.8	166.5	9.33	18.834			
2,000.0	1,988.1	1,981.9	1,960.9	5.2	6.4	-48.44	189.0	-233.3	179.2	169.2	9.99	17.935			
2,100.0	2,086.5	2,081.8	2,059.2	5.5	6.8	-49.79	202.1	-245.2	182.7	172.0	10.66	17.132			
2,200.0	2,184.9	2,181.6	2,157.5	5.9	7.2	-51.08	215.2	-257.0	186.2	174.9	11.35	16.414			
2,300.0	2,283.3	2,281.5	2,255.8	6.3	7.6	-52.32	228.2	-268.9	189.9	177.8	12.04	15.768			
2,400.0	2,381.7	2,381.3	2,354.0	6.7	8.0	-53.51	241.3	-280.8	193.6	180.9	12.75	15.186			
2,500.0	2,480.1	2,481.2	2,452.3	7.0	8.4	-54.66	254.4	-292.7	197.5	184.0	13.47	14.661			
2,600.0	2,578.5	2,581.0	2,550.6	7.4	8.8	-55.76	267.5	-304.5	201.4	187.2	14.20	14.184			
2,700.0	2,677.0	2,680.9	2,648.9	7.8	9.2	-56.82	280.5	-316.4	205.3	190.4	14.93	13.751			
2,800.0	2,775.4	2,780.7	2,747.1	8.2	9.6	-57.84	293.6	-328.3	209.4	193.7	15.68	13.357			
2,900.0	2,873.8	2,880.6	2,845.4	8.6	10.0	-58.83	306.7	-340.2	213.5	197.1	16.43	12.997			
3,000.0	2,972.2	2,980.4	2,943.7	9.0	10.4	-59.77	319.8	-352.1	217.7	200.5	17.18	12.667			
3,100.0	3,070.6	3,080.3	3,042.0	9.4	10.8	-60.68	332.8	-363.9	221.9	203.9	17.95	12.364			
3,200.0	3,169.0	3,180.1	3,140.2	9.8	11.2	-61.56	345.9	-375.8	226.2	207.5	18.71	12.086			
3,300.0	3,267.4	3,280.0	3,238.5	10.1	11.6	-62.40	359.0	-387.7	230.5	211.0	19.49	11.829			
3,400.0	3,365.8	3,379.8	3,336.8	10.5	12.0	-63.21	372.1	-399.6	234.9	214.6	20.26	11.592			
3,500.0	3,464.2	3,479.7	3,435.1	10.9	12.4	-63.99	385.2	-411.4	239.3	218.3	21.04	11.373			
3,600.0	3,562.6	3,579.5	3,533.3	11.3	12.8	-64.74	398.2	-423.3	243.8	221.9	21.82	11.169			
3,700.0	3,661.0	3,679.4	3,631.6	11.7	13.2	-65.47	411.3	-435.2	248.3	225.7	22.61	10.981			
3,800.0	3,759.4	3,779.2	3,729.9	12.1	13.6	-66.17	424.4	-447.1	252.8	229.4	23.40	10.805			
3,900.0	3,857.8	3,879.1	3,828.2	12.5	14.0	-66.84	437.5	-458.9	257.4	233.2	24.19	10.641			
4,000.0	3,956.2	3,978.9	3,926.4	12.9	14.4	-67.49	450.5	-470.8	262.0	237.0	24.98	10.488			
4,100.0	4,054.6	4,078.8	4,024.7	13.3	14.8	-68.12	463.6	-482.7	266.7	240.9	25.78	10.345			
4,200.0	4,153.0	4,178.6	4,123.0	13.7	15.2	-68.73	476.7	-494.6	271.3	244.8	26.57	10.211			
4,300.0	4,251.4	4,278.5	4,221.3	14.1	15.6	-69.32	489.8	-506.4	276.1	248.7	27.37	10.085			
4,400.0	4,349.8	4,378.3	4,319.5	14.5	16.0	-69.88	502.8	-518.3	280.8	252.6	28.17	9.967			
4,500.0	4,448.2	4,478.2	4,417.8	14.9	16.4	-70.43	515.9	-530.2	285.6	256.6	28.97	9.856			
4,600.0	4,546.6	4,578.0	4,516.1	15.3	16.8	-70.96	529.0	-542.1	290.3	260.6	29.77	9.752			
4,700.0	4,645.0	4,677.9	4,614.4	15.7	17.2	-71.47	542.1	-554.0	295.2	264.6	30.58	9.653			
4,800.0	4,743.4	4,777.7	4,712.6	16.1	17.6	-71.97	555.2	-565.8	300.0	268.6	31.38	9.560			
4,900.0	4,841.9	4,877.6	4,810.9	16.5	18.0	-72.45	568.2	-577.7	304.8	272.7	32.18	9.472			
5,000.0	4,940.3	4,977.4	4,909.2	16.9	18.4	-72.91	581.3	-589.6	309.7	276.7	32.99	9.389			
5,100.0	5,038.7	5,077.3	5,007.5	17.2	18.8	-73.37	594.4	-601.5	314.6	280.8	33.79	9.310			
5,200.0	5,137.1	5,177.1	5,105.7	17.6	19.2	-73.80	607.5	-613.3	319.5	284.9	34.60	9.236			
5,300.0	5,235.5	5,277.0	5,204.0	18.0	19.6	-74.23	620.5	-625.2	324.5	289.1	35.40	9.165			
5,400.0	5,333.9	5,376.8	5,302.3	18.4	20.0	-74.64	633.6	-637.1	329.4	293.2	36.21	9.098			
5,500.0	5,432.3	5,476.7	5,400.6	18.8	20.4	-75.04	646.7	-649.0	334.4	297.4	37.02	9.034			
5,559.0	5,490.3	5,535.5	5,458.5	19.1	20.7	-75.27	654.4	-656.0	337.3	299.8	37.49	8.997			
5,600.0	5,530.7	5,576.5	5,498.8	19.2	20.8	-75.42	659.8	-660.8	339.5	301.7	37.80	8.980			
5,700.0	5,629.7	5,676.3	5,597.1	19.5	21.2	-75.39	672.8	-672.7	345.2	306.8	38.43	8.984			
5,800.0	5,729.0	5,776.0	5,695.2	19.7	21.6	-74.84	685.9	-684.6	351.9	313.0	38.94	9.039			
5,900.0	5,828.7	5,875.4	5,793.1	19.9	22.0	-73.80	698.9	-696.4	359.6	320.3	39.32	9.146			
6,000.0	5,928.6	5,974.5	5,890.5	20.1	22.4	-72.32	711.9	-708.2	368.5	329.0	39.58	9.311			
6,071.4	6,000.0	6,044.9	5,959.8	20.2	22.7	-95.51	721.1	-716.6	375.8	336.1	39.69	9.468			
6,100.0	6,028.6	6,073.1	5,987.5	20.2	22.8	-94.90	724.8	-719.9	378.8	339.1	39.71	9.540			
6,200.0	6,128.6	6,180.3	6,093.4	20.4	23.1	-92.88	737.5	-731.5	388.9	349.1	39.77	9.778			
6,300.0	6,228.6	6,289.2	6,201.5	20.5	23.4	-91.38	747.5	-740.5	396.9	357.0	39.88	9.952			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilus 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilus 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilus 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Offset Design													Corcilus 1S67W6J Pad Sec.6-T1S-R67W - Corcilus 6E-203 - Wellbore #1 - Plan #1 (4-29-15)		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					
6,400.0	6,328.6	6,399.0	6,310.9	20.7	23.6	-90.37	754.4	-746.8	402.5	362.5	40.04	10.052					
6,500.0	6,428.6	6,509.3	6,421.1	20.8	23.8	-89.83	758.2	-750.2	405.6	365.4	40.26	10.075					
6,600.0	6,528.6	6,616.9	6,528.6	21.0	23.9	-89.72	759.0	-751.0	406.3	365.8	40.54	10.021					
6,700.0	6,628.6	6,716.9	6,628.6	21.1	24.1	-89.72	759.0	-751.0	406.3	365.5	40.85	9.947					
6,800.0	6,728.6	6,816.9	6,728.6	21.3	24.2	-89.72	759.0	-751.0	406.3	365.1	41.15	9.873					
6,900.0	6,828.6	6,916.9	6,828.6	21.4	24.3	-89.72	759.0	-751.0	406.3	364.8	41.46	9.799					
6,952.8	6,881.4	6,969.6	6,881.4	21.5	24.4	-89.72	759.0	-751.0	406.3	364.7	41.63	9.761					
7,000.0	6,928.6	7,017.0	6,928.7	21.5	24.5	90.28	757.5	-751.0	406.3	364.6	41.73	9.737					
7,050.0	6,978.3	7,067.1	6,978.6	21.6	24.5	90.28	752.8	-751.0	406.3	364.5	41.76	9.729					
7,100.0	7,027.7	7,117.3	7,028.1	21.5	24.5	90.28	744.8	-751.0	406.3	364.6	41.73	9.735					
7,150.0	7,076.4	7,167.4	7,076.9	21.5	24.4	90.27	733.6	-751.0	406.3	364.7	41.65	9.756					
7,200.0	7,124.3	7,217.5	7,124.9	21.4	24.4	90.27	719.1	-751.0	406.3	364.8	41.50	9.790					
7,250.0	7,171.2	7,267.6	7,171.9	21.3	24.3	90.26	701.6	-751.0	406.3	365.0	41.30	9.837					
7,300.0	7,216.8	7,317.8	7,217.6	21.2	24.2	90.25	681.0	-751.0	406.3	365.2	41.06	9.895					
7,350.0	7,260.9	7,367.9	7,261.8	21.1	24.0	90.25	657.5	-751.0	406.3	365.5	40.78	9.964					
7,400.0	7,303.5	7,418.0	7,304.4	20.9	23.9	90.24	631.2	-751.0	406.3	365.8	40.46	10.041					
7,450.0	7,344.2	7,468.1	7,345.2	20.8	23.7	90.23	602.1	-751.0	406.3	366.2	40.13	10.125					
7,500.0	7,383.0	7,518.2	7,384.0	20.6	23.6	90.21	570.4	-751.0	406.3	366.5	39.78	10.215					
7,550.0	7,419.6	7,568.3	7,420.6	20.4	23.4	90.20	536.2	-751.0	406.3	366.9	39.42	10.307					
7,600.0	7,453.9	7,618.4	7,454.9	20.2	23.2	90.19	499.7	-751.0	406.3	367.2	39.07	10.399					
7,650.0	7,485.8	7,668.5	7,486.7	20.0	23.0	90.17	461.0	-751.0	406.3	367.6	38.74	10.489					
7,700.0	7,515.0	7,718.6	7,516.0	19.9	22.8	90.16	420.4	-751.0	406.3	367.9	38.43	10.572					
7,750.0	7,541.6	7,768.6	7,542.5	19.7	22.6	90.14	377.9	-751.0	406.3	368.1	38.17	10.645					
7,800.0	7,565.3	7,818.7	7,566.1	19.5	22.4	90.13	333.8	-751.0	406.3	368.4	37.95	10.706					
7,850.0	7,586.1	7,868.7	7,586.8	19.4	22.3	90.11	288.2	-751.0	406.3	368.5	37.79	10.751					
7,900.0	7,603.9	7,918.8	7,604.5	19.2	22.1	90.09	241.4	-751.0	406.3	368.6	37.70	10.778					
7,950.0	7,618.6	7,968.8	7,619.1	19.1	21.9	90.08	193.6	-751.0	406.3	368.6	37.68	10.783					
8,000.0	7,630.1	8,018.9	7,630.5	19.1	21.7	90.06	144.9	-751.0	406.3	368.6	37.74	10.766					
8,009.8	7,632.0	8,028.7	7,632.4	19.1	21.7	90.05	135.2	-751.0	406.3	368.5	37.77	10.759					
8,050.0	7,638.4	8,068.9	7,638.7	19.0	21.6	90.04	95.5	-751.0	406.3	368.4	37.88	10.725					
8,100.0	7,643.5	8,118.9	7,643.6	19.0	21.4	90.02	45.8	-751.0	406.3	368.2	38.11	10.662					
8,150.0	7,645.3	8,168.9	7,645.3	19.1	21.3	90.00	-4.2	-751.0	406.3	367.9	38.41	10.577					
8,158.9	7,645.3	8,177.8	7,645.3	19.1	21.3	90.00	-13.1	-751.0	406.3	367.8	38.48	10.560					
8,200.0	7,645.0	8,218.9	7,645.0	19.2	21.2	90.00	-54.2	-751.0	406.3	367.5	38.82	10.466					
8,300.0	7,644.1	8,318.9	7,644.1	19.7	21.1	90.00	-154.2	-751.0	406.3	366.4	39.87	10.190					
8,400.0	7,643.3	8,418.9	7,643.3	20.4	21.5	90.00	-254.2	-751.0	406.3	365.0	41.26	9.848					
8,500.0	7,642.5	8,518.9	7,642.5	21.3	22.3	90.00	-354.2	-751.0	406.3	363.4	42.94	9.463					
8,600.0	7,641.7	8,618.9	7,641.7	22.4	23.4	90.00	-454.2	-751.0	406.3	361.4	44.88	9.053					
8,700.0	7,640.9	8,718.9	7,640.9	23.5	24.5	90.00	-554.2	-751.0	406.3	359.2	47.06	8.634					
8,800.0	7,640.1	8,818.9	7,640.1	24.7	25.7	90.00	-654.2	-751.0	406.3	356.9	49.44	8.218					
8,900.0	7,639.3	8,918.9	7,639.3	26.0	27.0	90.00	-754.2	-751.0	406.3	354.3	51.99	7.815					
9,000.0	7,638.5	9,018.9	7,638.5	27.4	28.4	90.00	-854.2	-751.0	406.3	351.6	54.69	7.429					
9,100.0	7,637.7	9,118.9	7,637.7	28.8	29.8	90.00	-954.2	-751.0	406.3	348.8	57.52	7.064					
9,200.0	7,636.9	9,218.9	7,636.9	30.3	31.3	90.00	-1,054.2	-751.0	406.3	345.8	60.46	6.720					
9,300.0	7,636.1	9,318.9	7,636.1	31.9	32.8	90.00	-1,154.2	-751.0	406.3	342.8	63.50	6.399					
9,400.0	7,635.3	9,418.9	7,635.3	33.4	34.3	90.00	-1,254.2	-751.0	406.3	339.7	66.61	6.100					
9,500.0	7,634.5	9,518.9	7,634.5	35.0	35.9	90.00	-1,354.1	-751.0	406.3	336.5	69.80	5.821					
9,600.0	7,633.7	9,618.9	7,633.7	36.7	37.5	90.00	-1,454.1	-751.0	406.3	333.3	73.05	5.562					
9,700.0	7,632.9	9,718.9	7,632.9	38.3	39.1	90.00	-1,554.1	-751.0	406.3	330.0	76.35	5.321					
9,800.0	7,632.1	9,818.9	7,632.1	40.0	40.8	90.00	-1,654.1	-751.0	406.3	326.6	79.70	5.098					
9,900.0	7,631.3	9,918.9	7,631.3	41.7	42.4	90.00	-1,754.1	-751.0	406.3	323.2	83.09	4.890					

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilius 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilius 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilius 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Corcilius 1S67W6J Pad Sec.6-T1S-R67W - Corcilius 6E-203 - Wellbore #1 - Plan #1 (4-29-15)													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		
10,000.0	7,630.5	10,018.9	7,630.5	43.4	44.1	90.00	-1,854.1	-751.0	406.3	319.8	86.52	4.696		
10,100.0	7,629.7	10,118.9	7,629.7	45.1	45.8	90.00	-1,954.1	-751.0	406.3	316.3	89.98	4.515		
10,200.0	7,628.9	10,218.9	7,628.9	46.9	47.6	90.00	-2,054.1	-751.0	406.3	312.8	93.47	4.347		
10,300.0	7,628.1	10,318.9	7,628.1	48.6	49.3	90.00	-2,154.1	-751.0	406.3	309.3	96.99	4.189		
10,400.0	7,627.3	10,418.9	7,627.3	50.4	51.0	90.00	-2,254.1	-751.0	406.3	305.8	100.53	4.042		
10,500.0	7,626.5	10,518.9	7,626.5	52.2	52.8	90.00	-2,354.1	-751.0	406.3	302.2	104.08	3.904		
10,600.0	7,625.7	10,618.9	7,625.7	54.0	54.6	90.00	-2,454.1	-751.0	406.3	298.6	107.66	3.774		
10,700.0	7,624.9	10,718.9	7,624.9	55.8	56.4	90.00	-2,554.1	-751.0	406.3	295.1	111.26	3.652		
10,800.0	7,624.1	10,818.9	7,624.1	57.6	58.1	90.00	-2,654.1	-751.0	406.3	291.4	114.87	3.537		
10,900.0	7,623.3	10,918.9	7,623.3	59.4	59.9	90.00	-2,754.1	-751.0	406.3	287.8	118.49	3.429		
11,000.0	7,622.5	11,018.9	7,622.5	61.2	61.7	90.00	-2,854.1	-751.0	406.3	284.2	122.12	3.327		
11,100.0	7,621.7	11,118.9	7,621.7	63.0	63.5	90.00	-2,954.1	-751.0	406.3	280.5	125.77	3.231		
11,200.0	7,620.9	11,218.9	7,620.9	64.9	65.4	90.00	-3,054.1	-751.0	406.3	276.9	129.43	3.139		
11,300.0	7,620.1	11,318.9	7,620.1	66.7	67.2	90.00	-3,154.1	-751.0	406.3	273.2	133.10	3.053		
11,400.0	7,619.3	11,418.9	7,619.3	68.5	69.0	90.00	-3,254.1	-751.0	406.3	269.5	136.77	2.971		
11,500.0	7,618.5	11,518.9	7,618.5	70.4	70.8	90.00	-3,354.1	-751.0	406.3	265.9	140.46	2.893		
11,600.0	7,617.7	11,618.9	7,617.7	72.2	72.7	90.00	-3,454.1	-751.0	406.3	262.2	144.15	2.819		
11,700.0	7,616.9	11,718.9	7,616.9	74.1	74.5	90.00	-3,554.1	-751.0	406.3	258.5	147.85	2.748		
11,800.0	7,616.1	11,818.9	7,616.1	75.9	76.3	90.00	-3,654.1	-751.0	406.3	254.8	151.55	2.681		
11,900.0	7,615.2	11,918.9	7,615.2	77.8	78.2	90.00	-3,754.1	-751.0	406.3	251.0	155.26	2.617		
11,912.8	7,615.1	11,931.7	7,615.1	78.0	78.4	90.00	-3,766.9	-751.0	406.3	250.6	155.69	2.610		
11,930.9	7,615.0	11,949.8	7,615.0	78.2	78.7	90.00	-3,784.9	-751.0	406.3	250.0	156.29	2.600 SF		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilus 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilus 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilus 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Corcilus 1S67W6J Pad Sec.6-T1S-R67W - Corcilus 6E-323 - Wellbore #1 - Plan #1 (4-29-15)												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	-90.00	0.0	-30.8	30.8				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-30.8	30.8	30.6	0.22	137.115	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-30.8	30.8	30.1	0.67	45.705	
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	0.0	-30.8	30.8	29.7	1.12	27.423	
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-30.8	30.8	29.2	1.57	19.588 CC, ES	
500.0	500.0	499.5	499.5	1.0	1.0	-88.05	1.1	-31.5	31.6	29.5	2.02	15.628	
600.0	600.0	598.9	598.8	1.2	1.2	-82.75	4.3	-33.7	34.0	31.5	2.47	13.781	
700.0	700.0	698.0	697.7	1.5	1.5	-75.54	9.6	-37.3	38.6	35.7	2.92	13.227	
800.0	800.0	796.8	796.1	1.7	1.7	-68.07	17.1	-42.4	45.8	42.5	3.37	13.585	
900.0	900.0	895.1	893.7	1.9	2.0	-37.70	26.5	-48.8	54.8	51.0	3.83	14.322	
1,000.0	999.9	993.2	990.8	2.1	2.3	-33.84	38.1	-56.6	64.4	60.2	4.29	15.033	
1,100.0	1,099.7	1,091.0	1,087.3	2.4	2.6	-31.29	51.6	-65.7	74.4	69.6	4.75	15.663	
1,200.0	1,199.3	1,190.6	1,185.2	2.6	2.9	-29.89	66.5	-75.8	83.4	78.2	5.22	15.972	
1,300.0	1,298.6	1,290.3	1,283.3	2.9	3.3	-29.57	81.4	-85.9	90.2	84.5	5.70	15.812	
1,400.0	1,397.5	1,390.2	1,381.6	3.1	3.7	-30.08	96.3	-96.0	94.7	88.5	6.20	15.272	
1,483.2	1,479.6	1,473.4	1,463.4	3.4	4.0	-31.08	108.7	-104.4	96.8	90.1	6.63	14.592	
1,500.0	1,496.1	1,490.2	1,479.9	3.4	4.1	-31.33	111.2	-106.1	97.0	90.3	6.72	14.434	
1,600.0	1,594.5	1,590.1	1,578.2	3.8	4.4	-32.83	126.2	-116.2	98.6	91.3	7.27	13.561	
1,700.0	1,692.9	1,690.1	1,676.5	4.1	4.8	-34.27	141.1	-126.3	100.3	92.4	7.84	12.789	
1,800.0	1,791.3	1,790.0	1,774.8	4.4	5.2	-35.67	156.0	-136.4	102.0	93.6	8.43	12.105	
1,900.0	1,889.7	1,890.0	1,873.1	4.8	5.6	-37.02	171.0	-146.5	103.8	94.7	9.03	11.496	
2,000.0	1,988.1	1,989.9	1,971.4	5.2	6.0	-38.32	185.9	-156.6	105.6	96.0	9.64	10.950	
2,100.0	2,086.5	2,089.9	2,069.8	5.5	6.4	-39.58	200.8	-166.7	107.5	97.2	10.27	10.461	
2,200.0	2,184.9	2,189.9	2,168.1	5.9	6.8	-40.79	215.7	-176.8	109.4	98.5	10.92	10.021	
2,300.0	2,283.3	2,289.8	2,266.4	6.3	7.2	-41.97	230.7	-186.9	111.4	99.8	11.58	9.623	
2,400.0	2,381.7	2,389.8	2,364.7	6.7	7.6	-43.10	245.6	-197.0	113.4	101.2	12.25	9.263	
2,500.0	2,480.1	2,489.7	2,463.0	7.0	8.0	-44.19	260.5	-207.1	115.5	102.6	12.93	8.935	
2,600.0	2,578.5	2,589.7	2,561.3	7.4	8.4	-45.24	275.4	-217.2	117.6	104.0	13.62	8.637	
2,700.0	2,677.0	2,689.6	2,659.7	7.8	8.8	-46.25	290.4	-227.3	119.8	105.5	14.32	8.365	
2,800.0	2,775.4	2,789.6	2,758.0	8.2	9.2	-47.23	305.3	-237.4	122.0	106.9	15.03	8.116	
2,900.0	2,873.8	2,889.5	2,856.3	8.6	9.6	-48.18	320.2	-247.5	124.2	108.4	15.74	7.887	
3,000.0	2,972.2	2,989.5	2,954.6	9.0	10.0	-49.09	335.2	-257.6	126.4	110.0	16.47	7.677	
3,100.0	3,070.6	3,089.4	3,052.9	9.4	10.4	-49.96	350.1	-267.6	128.7	111.5	17.20	7.483	
3,200.0	3,169.0	3,189.4	3,151.2	9.8	10.8	-50.81	365.0	-277.7	131.0	113.1	17.94	7.304	
3,300.0	3,267.4	3,289.4	3,249.6	10.1	11.2	-51.63	379.9	-287.8	133.4	114.7	18.68	7.139	
3,400.0	3,365.8	3,389.3	3,347.9	10.5	11.6	-52.42	394.9	-297.9	135.7	116.3	19.43	6.985	
3,500.0	3,464.2	3,489.3	3,446.2	10.9	12.0	-53.18	409.8	-308.0	138.1	117.9	20.19	6.843	
3,600.0	3,562.6	3,589.2	3,544.5	11.3	12.4	-53.92	424.7	-318.1	140.5	119.6	20.95	6.710	
3,700.0	3,661.0	3,689.2	3,642.8	11.7	12.8	-54.63	439.6	-328.2	143.0	121.3	21.71	6.587	
3,800.0	3,759.4	3,789.1	3,741.1	12.1	13.2	-55.31	454.6	-338.3	145.4	123.0	22.48	6.471	
3,900.0	3,857.8	3,889.1	3,839.5	12.5	13.6	-55.98	469.5	-348.4	147.9	124.7	23.25	6.364	
4,000.0	3,956.2	3,989.0	3,937.8	12.9	14.0	-56.62	484.4	-358.5	150.4	126.4	24.02	6.263	
4,100.0	4,054.6	4,089.0	4,036.1	13.3	14.4	-57.24	499.4	-368.6	152.9	128.1	24.80	6.168	
4,200.0	4,153.0	4,188.9	4,134.4	13.7	14.8	-57.84	514.3	-378.7	155.5	129.9	25.58	6.079	
4,300.0	4,251.4	4,288.9	4,232.7	14.1	15.2	-58.42	529.2	-388.8	158.0	131.7	26.36	5.996	
4,400.0	4,349.8	4,388.9	4,331.0	14.5	15.6	-58.99	544.1	-398.9	160.6	133.5	27.14	5.917	
4,500.0	4,448.2	4,488.8	4,429.4	14.9	16.0	-59.53	559.1	-409.0	163.2	135.3	27.93	5.843	
4,600.0	4,546.6	4,588.8	4,527.7	15.3	16.5	-60.06	574.0	-419.1	165.8	137.1	28.71	5.773	
4,700.0	4,645.0	4,688.7	4,626.0	15.7	16.9	-60.57	588.9	-429.2	168.4	138.9	29.50	5.707	
4,800.0	4,743.4	4,788.7	4,724.3	16.1	17.3	-61.07	603.8	-439.3	171.0	140.7	30.30	5.645	
4,900.0	4,841.9	4,888.6	4,822.6	16.5	17.7	-61.55	618.8	-449.4	173.6	142.6	31.09	5.585	

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilus 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilus 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilus 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Offset Design													Corcilus 1S67W6J Pad Sec.6-T1S-R67W - Corcilus 6E-323 - Wellbore #1 - Plan #1 (4-29-15)		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	4,940.3	4,988.6	4,920.9	16.9	18.1	-62.02	633.7	-459.5	176.3	144.4	31.88	5.529					
5,100.0	5,038.7	5,088.5	5,019.3	17.2	18.5	-62.47	648.6	-469.6	178.9	146.3	32.68	5.476					
5,200.0	5,137.1	5,188.5	5,117.6	17.6	18.9	-62.91	663.6	-479.7	181.6	148.1	33.48	5.425					
5,300.0	5,235.5	5,288.5	5,215.9	18.0	19.3	-63.34	678.5	-489.8	184.3	150.0	34.27	5.377					
5,400.0	5,333.9	5,388.4	5,314.2	18.4	19.7	-63.75	693.4	-499.9	187.0	151.9	35.07	5.332					
5,500.0	5,432.3	5,488.4	5,412.5	18.8	20.1	-64.16	708.3	-510.0	189.7	153.8	35.87	5.288					
5,559.0	5,490.3	5,547.3	5,470.5	19.1	20.3	-64.39	717.1	-516.0	191.3	154.9	36.34	5.263					
5,600.0	5,530.7	5,589.4	5,512.0	19.2	20.5	-64.53	723.3	-520.1	192.4	155.8	36.64	5.252					
5,700.0	5,629.7	5,693.4	5,614.7	19.5	20.8	-64.80	736.4	-529.0	194.9	157.7	37.23	5.235					
5,800.0	5,729.0	5,797.4	5,718.0	19.7	21.0	-65.00	746.5	-535.8	196.8	159.1	37.73	5.215					
5,900.0	5,828.7	5,901.5	5,821.7	19.9	21.2	-65.14	753.4	-540.5	198.1	159.9	38.15	5.192					
6,000.0	5,928.6	6,005.6	5,925.7	20.1	21.4	-65.22	757.2	-543.1	198.8	160.3	38.48	5.166					
6,071.4	6,000.0	6,079.9	6,000.0	20.2	21.5	-89.71	758.0	-543.6	198.9	160.3	38.67	5.145					
6,100.0	6,028.6	6,108.5	6,028.6	20.2	21.5	-89.71	758.0	-543.6	198.9	160.2	38.75	5.135					
6,200.0	6,128.6	6,208.5	6,128.6	20.4	21.7	-89.71	758.0	-543.6	198.9	159.9	39.04	5.096					
6,300.0	6,228.6	6,308.5	6,228.6	20.5	21.8	-89.71	758.0	-543.6	198.9	159.6	39.34	5.058					
6,400.0	6,328.6	6,408.5	6,328.6	20.7	21.9	-89.71	758.0	-543.6	198.9	159.3	39.63	5.020					
6,500.0	6,428.6	6,508.5	6,428.6	20.8	22.1	-89.71	758.0	-543.6	198.9	159.0	39.94	4.982					
6,600.0	6,528.6	6,608.5	6,528.6	21.0	22.2	-89.71	758.0	-543.6	198.9	158.7	40.24	4.944					
6,700.0	6,628.6	6,708.5	6,628.6	21.1	22.4	-89.71	758.0	-543.6	198.9	158.4	40.55	4.907					
6,800.0	6,728.6	6,808.5	6,728.6	21.3	22.5	-89.71	758.0	-543.6	198.9	158.1	40.86	4.869					
6,900.0	6,828.6	6,908.5	6,828.6	21.4	22.7	-89.71	758.0	-543.6	198.9	157.8	41.17	4.832					
6,952.8	6,881.4	6,961.2	6,881.4	21.5	22.7	-89.71	758.0	-543.6	198.9	157.6	41.34	4.813					
7,000.0	6,928.6	7,008.4	6,928.6	21.5	22.8	90.71	758.0	-543.6	199.0	157.6	41.39	4.807					
7,050.0	6,978.3	7,058.2	6,978.4	21.6	22.9	92.05	758.0	-543.6	199.1	157.8	41.26	4.825					
7,100.0	7,027.7	7,108.5	7,028.6	21.5	22.9	93.85	756.3	-543.6	199.4	158.4	40.98	4.866					
7,150.0	7,076.4	7,159.2	7,079.0	21.5	22.9	95.63	751.3	-543.6	199.9	159.3	40.63	4.921					
7,200.0	7,124.3	7,210.3	7,129.5	21.4	22.9	97.38	742.8	-543.6	200.6	160.4	40.21	4.989					
7,250.0	7,171.2	7,261.9	7,179.6	21.3	22.9	99.10	730.9	-543.6	201.5	161.8	39.75	5.070					
7,300.0	7,216.8	7,314.0	7,229.3	21.2	22.8	100.77	715.4	-543.6	202.6	163.3	39.23	5.163					
7,350.0	7,260.9	7,366.4	7,278.2	21.1	22.7	102.38	696.5	-543.6	203.7	165.1	38.68	5.267					
7,400.0	7,303.5	7,419.4	7,326.1	20.9	22.6	103.93	674.0	-543.6	205.1	166.9	38.10	5.382					
7,450.0	7,344.2	7,472.7	7,372.7	20.8	22.4	105.41	648.0	-543.6	206.4	168.9	37.50	5.505					
7,500.0	7,383.0	7,526.5	7,417.8	20.6	22.3	106.80	618.6	-543.6	207.9	171.0	36.89	5.636					
7,550.0	7,419.6	7,580.7	7,461.0	20.4	22.1	108.11	585.8	-543.6	209.4	173.1	36.28	5.772					
7,600.0	7,453.9	7,635.3	7,502.0	20.2	21.9	109.33	549.8	-543.6	210.9	175.2	35.69	5.911					
7,650.0	7,485.8	7,690.4	7,540.6	20.0	21.7	110.46	510.7	-543.6	212.4	177.3	35.12	6.049					
7,700.0	7,515.0	7,745.7	7,576.6	19.9	21.5	111.48	468.5	-543.6	213.9	179.3	34.60	6.182					
7,750.0	7,541.6	7,801.5	7,609.6	19.7	21.3	112.40	423.6	-543.6	215.3	181.1	34.13	6.307					
7,800.0	7,565.3	7,857.5	7,639.3	19.5	21.1	113.22	376.2	-543.6	216.5	182.8	33.74	6.418					
7,850.0	7,586.1	7,913.8	7,665.7	19.4	20.9	113.93	326.4	-543.6	217.7	184.3	33.44	6.511					
7,900.0	7,603.9	7,970.4	7,688.4	19.2	20.7	114.53	274.6	-543.6	218.7	185.5	33.23	6.582					
7,950.0	7,618.6	8,027.2	7,707.3	19.1	20.5	115.02	221.0	-543.6	219.6	186.4	33.14	6.626					
8,000.0	7,630.1	8,084.2	7,722.2	19.1	20.3	115.40	166.1	-543.6	220.2	187.1	33.16	6.642					
8,050.0	7,638.4	8,141.3	7,732.9	19.0	20.1	115.67	110.0	-543.6	220.7	187.4	33.30	6.628					
8,100.0	7,643.5	8,198.5	7,739.5	19.0	20.0	115.82	53.2	-543.6	221.0	187.5	33.57	6.584					
8,150.0	7,645.3	8,255.7	7,741.8	19.1	19.9	115.87	-3.9	-543.6	221.1	187.1	33.96	6.511					
8,156.8	7,645.3	8,263.2	7,741.8	19.1	19.9	115.87	-11.4	-543.6	221.1	187.1	34.02	6.500					
8,158.9	7,645.3	8,265.3	7,741.7	19.1	19.9	115.87	-13.6	-543.6	221.1	187.1	34.04	6.496					
8,200.0	7,645.0	8,306.4	7,741.5	19.2	19.8	115.89	-54.7	-543.6	221.2	186.8	34.33	6.441					
8,300.0	7,644.1	8,406.4	7,741.0	19.7	20.1	115.96	-154.7	-543.6	221.3	186.0	35.28	6.272					

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilius 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilius 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilius 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference													Warning	
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	
8,400.0	7,643.3	8,506.4	7,740.5	20.4	20.8	116.02	116.02	-254.7	-543.6	221.4	184.9	36.54	6.059	
8,500.0	7,642.5	8,606.4	7,740.0	21.3	21.8	116.09	116.09	-354.7	-543.6	221.5	183.4	38.08	5.818	
8,600.0	7,641.7	8,706.4	7,739.4	22.4	22.8	116.15	116.15	-454.7	-543.6	221.6	181.8	39.86	5.560	
8,700.0	7,640.9	8,806.4	7,738.9	23.5	24.0	116.22	116.22	-554.7	-543.6	221.8	179.9	41.86	5.298	
8,800.0	7,640.1	8,906.4	7,738.4	24.7	25.2	116.28	116.28	-654.7	-543.6	221.9	177.8	44.04	5.038	
8,900.0	7,639.3	9,006.4	7,737.9	26.0	26.5	116.35	116.35	-754.7	-543.6	222.0	175.6	46.38	4.787	
9,000.0	7,638.5	9,106.4	7,737.3	27.4	27.9	116.41	116.41	-854.7	-543.6	222.1	173.3	48.85	4.547	
9,100.0	7,637.7	9,206.4	7,736.8	28.8	29.3	116.48	116.48	-954.7	-543.6	222.3	170.8	51.44	4.321	
9,200.0	7,636.9	9,306.4	7,736.3	30.3	30.8	116.54	116.54	-1,054.7	-543.6	222.4	168.3	54.12	4.109	
9,300.0	7,636.1	9,406.4	7,735.8	31.9	32.3	116.61	116.61	-1,154.7	-543.6	222.5	165.6	56.89	3.911	
9,400.0	7,635.3	9,506.4	7,735.2	33.4	33.8	116.67	116.67	-1,254.7	-543.6	222.6	162.9	59.72	3.728	
9,500.0	7,634.5	9,606.4	7,734.7	35.0	35.4	116.73	116.73	-1,354.7	-543.6	222.8	160.1	62.62	3.557	
9,600.0	7,633.7	9,706.4	7,734.2	36.7	37.1	116.80	116.80	-1,454.7	-543.6	222.9	157.3	65.57	3.399	
9,700.0	7,632.9	9,806.4	7,733.7	38.3	38.7	116.86	116.86	-1,554.7	-543.6	223.0	154.4	68.57	3.253	
9,800.0	7,632.1	9,906.4	7,733.2	40.0	40.4	116.93	116.93	-1,654.7	-543.6	223.1	151.5	71.60	3.117	
9,900.0	7,631.3	10,006.4	7,732.6	41.7	42.0	116.99	116.99	-1,754.7	-543.6	223.3	148.6	74.67	2.990	
10,000.0	7,630.5	10,106.4	7,732.1	43.4	43.8	117.05	117.05	-1,854.7	-543.6	223.4	145.6	77.76	2.873	
10,100.0	7,629.7	10,206.4	7,731.6	45.1	45.5	117.12	117.12	-1,954.7	-543.6	223.5	142.6	80.88	2.764	
10,200.0	7,628.9	10,306.4	7,731.1	46.9	47.2	117.18	117.18	-2,054.7	-543.6	223.6	139.6	84.03	2.662	
10,300.0	7,628.1	10,406.4	7,730.5	48.6	49.0	117.24	117.24	-2,154.7	-543.6	223.8	136.6	87.19	2.567	
10,400.0	7,627.3	10,506.4	7,730.0	50.4	50.7	117.31	117.31	-2,254.7	-543.6	223.9	133.5	90.37	2.478	
10,500.0	7,626.5	10,606.4	7,729.5	52.2	52.5	117.37	117.37	-2,354.7	-543.6	224.0	130.5	93.56	2.394	
10,600.0	7,625.7	10,706.4	7,729.0	54.0	54.3	117.44	117.44	-2,454.7	-543.6	224.2	127.4	96.77	2.316	
10,700.0	7,624.9	10,806.4	7,728.4	55.8	56.0	117.50	117.50	-2,554.7	-543.6	224.3	124.3	99.99	2.243	
10,800.0	7,624.1	10,906.4	7,727.9	57.6	57.8	117.56	117.56	-2,654.7	-543.6	224.4	121.2	103.22	2.174	
10,900.0	7,623.3	11,006.4	7,727.4	59.4	59.6	117.63	117.63	-2,754.6	-543.6	224.5	118.1	106.46	2.109	
11,000.0	7,622.5	11,106.4	7,726.9	61.2	61.5	117.69	117.69	-2,854.6	-543.6	224.7	115.0	109.70	2.048	
11,100.0	7,621.7	11,206.4	7,726.3	63.0	63.3	117.75	117.75	-2,954.6	-543.6	224.8	111.9	112.95	1.990	
11,200.0	7,620.9	11,306.4	7,725.8	64.9	65.1	117.81	117.81	-3,054.6	-543.6	224.9	108.7	116.21	1.936	
11,300.0	7,620.1	11,406.4	7,725.3	66.7	66.9	117.88	117.88	-3,154.6	-543.6	225.1	105.6	119.47	1.884	
11,400.0	7,619.3	11,506.4	7,724.8	68.5	68.7	117.94	117.94	-3,254.6	-543.6	225.2	102.5	122.74	1.835	
11,500.0	7,618.5	11,606.4	7,724.3	70.4	70.6	118.00	118.00	-3,354.6	-543.6	225.3	99.3	126.01	1.788	
11,600.0	7,617.7	11,706.4	7,723.7	72.2	72.4	118.07	118.07	-3,454.6	-543.6	225.5	96.2	129.29	1.744	
11,700.0	7,616.9	11,806.4	7,723.2	74.1	74.3	118.13	118.13	-3,554.6	-543.6	225.6	93.0	132.56	1.702	
11,800.0	7,616.1	11,906.4	7,722.7	75.9	76.1	118.19	118.19	-3,654.6	-543.6	225.7	89.9	135.84	1.662	
11,900.0	7,615.2	12,006.4	7,722.2	77.8	78.0	118.25	118.25	-3,754.6	-543.6	225.9	86.7	139.13	1.623	
11,930.9	7,615.0	12,036.7	7,722.0	78.2	78.5	118.27	118.27	-3,784.9	-543.6	225.9	85.9	140.02	1.613 SF	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilus 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilus 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilus 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Corcilus 1S67W6J Pad Sec.6-T1S-R67W - Corcilus 6J-443 - Wellbore #1 - Plan #1 (4-29-15)												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	90.00	0.0	28.0	28.0				
100.0	100.0	99.0	99.0	0.1	0.1	90.00	0.0	28.0	28.0	27.8	0.22	125.275	
200.0	200.0	199.0	199.0	0.3	0.3	90.00	0.0	28.0	28.0	27.3	0.67	41.689	
300.0	300.0	299.0	299.0	0.6	0.6	90.00	0.0	28.0	28.0	26.9	1.12	24.980	
400.0	400.0	399.0	399.0	0.8	0.8	90.00	0.0	28.0	28.0	26.4	1.57	17.833	
500.0	500.0	499.0	499.0	1.0	1.0	90.00	0.0	28.0	28.0	26.0	2.02	13.865	
600.0	600.0	599.0	599.0	1.2	1.2	90.00	0.0	28.0	28.0	25.5	2.47	11.342	
700.0	700.0	699.0	699.0	1.5	1.5	90.00	0.0	28.0	28.0	25.1	2.92	9.596	
800.0	800.0	799.0	799.0	1.7	1.7	90.00	0.0	28.0	28.0	24.6	3.37	8.316 CC, ES	
900.0	900.0	899.0	899.0	1.9	1.9	116.86	0.0	28.0	28.6	24.8	3.82	7.489	
1,000.0	999.9	998.9	998.9	2.1	2.1	123.41	0.0	28.0	30.6	26.3	4.26	7.167	
1,100.0	1,099.7	1,098.7	1,098.7	2.4	2.4	132.44	0.0	28.0	34.6	29.9	4.71	7.341	
1,200.0	1,199.3	1,198.3	1,198.3	2.6	2.6	141.76	0.0	28.0	41.3	36.2	5.16	8.007	
1,300.0	1,298.6	1,297.6	1,297.6	2.9	2.8	149.86	0.0	28.0	51.1	45.5	5.61	9.109	
1,400.0	1,397.5	1,396.5	1,396.5	3.1	3.0	156.24	0.0	28.0	63.9	57.9	6.06	10.559	
1,483.2	1,479.6	1,478.6	1,478.6	3.4	3.2	160.34	0.0	28.0	76.9	70.5	6.42	11.971	
1,500.0	1,496.1	1,495.1	1,495.1	3.4	3.2	161.07	0.0	28.0	79.7	73.2	6.50	12.265	
1,600.0	1,594.5	1,593.5	1,593.5	3.8	3.5	164.48	0.0	28.0	96.7	89.8	6.95	13.914	
1,700.0	1,692.9	1,694.2	1,694.2	4.1	3.7	166.60	1.2	27.9	113.1	105.6	7.41	15.251	
1,800.0	1,791.3	1,795.9	1,795.8	4.4	3.9	167.53	5.0	27.6	127.3	119.4	7.88	16.157	
1,900.0	1,889.7	1,898.2	1,897.9	4.8	4.2	167.69	11.6	27.2	139.3	130.9	8.35	16.681	
2,000.0	1,988.1	2,001.0	2,000.2	5.2	4.4	167.24	21.0	26.5	149.0	140.2	8.83	16.877	
2,100.0	2,086.5	2,104.1	2,102.6	5.5	4.6	166.30	33.1	25.6	156.5	147.2	9.32	16.792	
2,200.0	2,184.9	2,206.8	2,204.3	5.9	4.9	164.90	47.9	24.5	161.9	152.1	9.83	16.475	
2,300.0	2,283.3	2,306.6	2,302.9	6.3	5.2	163.44	63.2	23.3	166.6	156.3	10.34	16.112	
2,400.0	2,381.7	2,406.4	2,401.5	6.7	5.4	162.06	78.5	22.2	171.4	160.6	10.87	15.776	
2,500.0	2,480.1	2,506.2	2,500.1	7.0	5.7	160.76	93.8	21.1	176.4	165.0	11.41	15.463	
2,600.0	2,578.5	2,606.0	2,598.7	7.4	6.0	159.53	109.1	19.9	181.4	169.4	11.96	15.171	
2,700.0	2,677.0	2,705.8	2,697.3	7.8	6.3	158.37	124.4	18.8	186.5	173.9	12.52	14.899	
2,800.0	2,775.4	2,805.6	2,796.0	8.2	6.6	157.26	139.6	17.7	191.6	178.5	13.09	14.644	
2,900.0	2,873.8	2,905.4	2,894.6	8.6	6.9	156.22	154.9	16.6	196.8	183.2	13.66	14.406	
3,000.0	2,972.2	3,005.2	2,993.2	9.0	7.3	155.23	170.2	15.4	202.1	187.9	14.25	14.182	
3,100.0	3,070.6	3,105.0	3,091.8	9.4	7.6	154.29	185.5	14.3	207.5	192.6	14.85	13.972	
3,200.0	3,169.0	3,204.8	3,190.4	9.8	7.9	153.40	200.8	13.2	212.9	197.4	15.45	13.775	
3,300.0	3,267.4	3,304.6	3,289.0	10.1	8.2	152.55	216.1	12.0	218.3	202.3	16.07	13.589	
3,400.0	3,365.8	3,404.4	3,387.7	10.5	8.6	151.75	231.4	10.9	223.8	207.1	16.68	13.415	
3,500.0	3,464.2	3,504.2	3,486.3	10.9	8.9	150.98	246.6	9.8	229.4	212.0	17.31	13.251	
3,600.0	3,562.6	3,604.0	3,584.9	11.3	9.2	150.25	261.9	8.6	234.9	217.0	17.94	13.096	
3,700.0	3,661.0	3,703.8	3,683.5	11.7	9.6	149.55	277.2	7.5	240.5	222.0	18.58	12.949	
3,800.0	3,759.4	3,803.6	3,782.1	12.1	9.9	148.89	292.5	6.4	246.2	227.0	19.22	12.811	
3,900.0	3,857.8	3,903.4	3,880.7	12.5	10.2	148.25	307.8	5.2	251.9	232.0	19.86	12.681	
4,000.0	3,956.2	4,003.2	3,979.4	12.9	10.6	147.64	323.1	4.1	257.6	237.1	20.51	12.558	
4,100.0	4,054.6	4,103.0	4,078.0	13.3	10.9	147.06	338.4	3.0	263.3	242.1	21.16	12.441	
4,200.0	4,153.0	4,202.8	4,176.6	13.7	11.3	146.51	353.7	1.9	269.1	247.2	21.82	12.330	
4,300.0	4,251.4	4,302.6	4,275.2	14.1	11.6	145.97	368.9	0.7	274.8	252.4	22.48	12.225	
4,400.0	4,349.8	4,402.4	4,373.8	14.5	11.9	145.46	384.2	-0.4	280.6	257.5	23.15	12.125	
4,500.0	4,448.2	4,502.2	4,472.4	14.9	12.3	144.97	399.5	-1.5	286.5	262.7	23.81	12.031	
4,600.0	4,546.6	4,602.0	4,571.1	15.3	12.6	144.50	414.8	-2.7	292.3	267.8	24.48	11.941	
4,700.0	4,645.0	4,701.8	4,669.7	15.7	13.0	144.05	430.1	-3.8	298.2	273.0	25.15	11.855	
4,800.0	4,743.4	4,801.6	4,768.3	16.1	13.3	143.62	445.4	-4.9	304.1	278.2	25.83	11.773	
4,900.0	4,841.9	4,901.4	4,866.9	16.5	13.7	143.20	460.7	-6.1	310.0	283.5	26.50	11.695	

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilus 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilus 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilus 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Offset Design		Corcilus 1S67W6J Pad Sec.6-T1S-R67W - Corcilus 6J-443 - Wellbore #1 - Plan #1 (4-29-15)											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	4,940.3	5,001.2	4,965.5	16.9	14.0	142.79	475.9	-7.2	315.9	288.7	27.18	11.621			
5,100.0	5,038.7	5,101.0	5,064.1	17.2	14.4	142.41	491.2	-8.3	321.8	294.0	27.86	11.550			
5,200.0	5,137.1	5,200.8	5,162.8	17.6	14.7	142.03	506.5	-9.5	327.8	299.2	28.54	11.483			
5,300.0	5,235.5	5,300.6	5,261.4	18.0	15.1	141.67	521.8	-10.6	333.7	304.5	29.23	11.418			
5,400.0	5,333.9	5,400.4	5,360.0	18.4	15.4	141.33	537.1	-11.7	339.7	309.8	29.91	11.356			
5,500.0	5,432.3	5,500.2	5,458.6	18.8	15.8	140.99	552.4	-12.8	345.7	315.1	30.60	11.297			
5,559.0	5,490.3	5,559.1	5,516.8	19.1	16.0	140.80	561.4	-13.5	349.2	318.2	31.01	11.263			
5,600.0	5,530.7	5,600.0	5,557.2	19.2	16.1	140.66	567.7	-14.0	351.4	320.2	31.29	11.232			
5,700.0	5,629.7	5,699.9	5,655.9	19.5	16.5	140.07	583.0	-15.1	355.0	323.1	31.96	11.108			
5,800.0	5,729.0	5,799.7	5,754.5	19.7	16.8	139.09	598.2	-16.2	356.0	323.3	32.65	10.902			
5,900.0	5,828.7	5,899.3	5,853.0	19.9	17.2	137.71	613.5	-17.4	354.5	321.1	33.37	10.623			
6,000.0	5,928.6	5,998.6	5,951.1	20.1	17.5	135.91	628.7	-18.5	350.6	316.5	34.11	10.280			
6,071.4	6,000.0	6,069.3	6,020.9	20.2	17.8	109.85	639.5	-19.3	346.6	312.0	34.66	10.001			
6,100.0	6,028.6	6,097.6	6,048.9	20.2	17.9	109.19	643.9	-19.6	344.8	309.9	34.89	9.883			
6,200.0	6,128.6	6,196.4	6,146.5	20.4	18.2	106.83	659.0	-20.7	339.0	303.2	35.72	9.488			
6,300.0	6,228.6	6,295.2	6,244.2	20.5	18.6	104.40	674.1	-21.9	333.7	297.1	36.55	9.129			
6,400.0	6,328.6	6,394.0	6,341.8	20.7	18.9	101.89	689.3	-23.0	329.0	291.7	37.38	8.803			
6,500.0	6,428.6	6,492.8	6,439.4	20.8	19.3	99.32	704.4	-24.1	325.1	286.9	38.19	8.511			
6,600.0	6,528.6	6,591.6	6,537.1	21.0	19.6	96.69	719.5	-25.2	321.8	282.8	38.99	8.252			
6,700.0	6,628.6	6,689.2	6,633.7	21.1	19.9	94.21	733.5	-26.2	319.3	279.6	39.71	8.041			
6,800.0	6,728.6	6,787.2	6,731.0	21.3	20.2	92.28	744.4	-27.0	317.9	277.6	40.29	7.890			
6,900.0	6,828.6	6,885.8	6,829.3	21.4	20.4	90.92	751.9	-27.6	317.1	276.3	40.77	7.778			
6,952.8	6,881.4	6,938.0	6,881.4	21.5	20.5	90.44	754.6	-27.8	316.9	275.9	40.99	7.731			
7,000.0	6,928.6	6,984.7	6,928.2	21.5	20.5	-90.11	756.1	-27.9	316.7	275.6	41.16	7.695			
7,027.0	6,955.5	7,011.4	6,954.8	21.6	20.6	-90.59	756.6	-28.0	316.7	275.5	41.25	7.678			
7,050.0	6,978.3	7,034.1	6,977.5	21.6	20.6	-91.10	756.9	-28.0	316.7	275.4	41.33	7.664			
7,100.0	7,027.7	7,083.3	7,026.7	21.5	20.7	-92.51	757.0	-28.0	317.0	275.5	41.49	7.641			
7,150.0	7,076.4	7,132.0	7,075.4	21.5	20.8	-94.42	757.0	-28.0	317.7	276.1	41.63	7.632			
7,200.0	7,124.3	7,180.9	7,124.3	21.4	20.8	-96.79	756.8	-28.0	319.1	277.4	41.72	7.648			
7,250.0	7,171.2	7,231.8	7,175.1	21.3	20.9	-99.28	753.8	-28.0	321.3	279.6	41.71	7.702			
7,300.0	7,216.8	7,283.8	7,226.7	21.2	20.9	-101.73	747.2	-28.0	324.0	282.5	41.58	7.794			
7,350.0	7,260.9	7,337.0	7,278.9	21.1	20.9	-104.12	737.0	-28.0	327.4	286.1	41.32	7.924			
7,400.0	7,303.5	7,391.4	7,331.3	20.9	20.8	-106.43	722.7	-28.0	331.3	290.4	40.94	8.093			
7,450.0	7,344.2	7,447.0	7,383.8	20.8	20.7	-108.66	704.3	-28.0	335.6	295.2	40.44	8.300			
7,500.0	7,383.0	7,503.9	7,436.0	20.6	20.6	-110.79	681.6	-28.0	340.3	300.5	39.83	8.545			
7,550.0	7,419.6	7,562.2	7,487.5	20.4	20.4	-112.80	654.4	-28.0	345.3	306.2	39.12	8.826			
7,600.0	7,453.9	7,621.9	7,538.0	20.2	20.2	-114.70	622.5	-28.0	350.5	312.1	38.35	9.139			
7,650.0	7,485.8	7,683.0	7,586.9	20.0	20.0	-116.46	585.9	-28.0	355.7	318.1	37.52	9.479			
7,700.0	7,515.0	7,745.4	7,633.7	19.9	19.8	-118.08	544.6	-28.0	360.8	324.1	36.67	9.838			
7,750.0	7,541.6	7,809.3	7,677.8	19.7	19.6	-119.56	498.5	-28.0	365.8	330.0	35.84	10.208			
7,800.0	7,565.3	7,874.4	7,718.8	19.5	19.4	-120.88	447.9	-28.0	370.5	335.5	35.04	10.573			
7,850.0	7,586.1	7,940.8	7,756.0	19.4	19.2	-122.04	392.9	-28.0	374.8	340.5	34.33	10.918			
7,900.0	7,603.9	8,008.4	7,788.8	19.2	19.1	-123.03	333.9	-28.0	378.7	345.0	33.74	11.223			
7,950.0	7,618.6	8,076.9	7,816.6	19.1	19.0	-123.85	271.2	-28.0	382.0	348.7	33.31	11.468			
8,000.0	7,630.1	8,146.3	7,838.9	19.1	18.9	-124.50	205.5	-28.0	384.7	351.6	33.06	11.637			
8,050.0	7,638.4	8,216.4	7,855.2	19.0	19.0	-124.97	137.4	-28.0	386.6	353.6	33.01	11.712			
8,100.0	7,643.5	8,287.0	7,865.4	19.0	19.1	-125.25	67.6	-28.0	387.9	354.7	33.19	11.687			
8,150.0	7,645.3	8,357.8	7,869.0	19.1	19.3	-125.36	-3.0	-28.0	388.3	354.7	33.57	11.565			
8,158.9	7,645.3	8,367.8	7,869.0	19.1	19.3	-125.36	-13.1	-28.0	388.3	354.6	33.66	11.537			
8,200.0	7,645.0	8,408.9	7,869.0	19.2	19.5	-125.40	-54.2	-28.0	388.5	354.5	34.00	11.427			
8,300.0	7,644.1	8,508.9	7,869.0	19.7	20.0	-125.50	-154.2	-28.0	389.0	353.9	35.02	11.108			

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilius 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilius 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilius 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Corcilius 1S67W6J Pad Sec.6-T1S-R67W - Corcilius 6J-443 - Wellbore #1 - Plan #1 (4-29-15)													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		
8,400.0	7,643.3	8,608.9	7,869.0	20.4	20.7	-125.59	-254.2	-28.0	389.4	353.1	36.29	10.730		
8,500.0	7,642.5	8,708.9	7,869.0	21.3	21.6	-125.69	-354.2	-28.0	389.9	352.1	37.80	10.315		
8,600.0	7,641.7	8,808.9	7,869.0	22.4	22.6	-125.78	-454.2	-28.0	390.4	350.9	39.50	9.881		
8,700.0	7,640.9	8,908.9	7,869.0	23.5	23.7	-125.88	-554.2	-28.0	390.8	349.4	41.39	9.443		
8,800.0	7,640.1	9,008.9	7,869.0	24.7	24.9	-125.97	-654.2	-28.0	391.3	347.9	43.42	9.012		
8,900.0	7,639.3	9,108.9	7,869.0	26.0	26.1	-126.07	-754.2	-28.0	391.8	346.2	45.59	8.594		
9,000.0	7,638.5	9,208.9	7,869.0	27.4	27.5	-126.16	-854.2	-28.0	392.2	344.4	47.86	8.196		
9,100.0	7,637.7	9,308.9	7,869.0	28.8	28.9	-126.26	-954.2	-28.0	392.7	342.5	50.23	7.818		
9,200.0	7,636.9	9,408.9	7,869.0	30.3	30.4	-126.35	-1,054.2	-28.0	393.2	340.5	52.68	7.464		
9,300.0	7,636.1	9,508.9	7,869.0	31.9	31.9	-126.45	-1,154.2	-28.0	393.7	338.5	55.20	7.132		
9,400.0	7,635.3	9,608.9	7,869.0	33.4	33.5	-126.54	-1,254.2	-28.0	394.1	336.4	57.78	6.822		
9,500.0	7,634.5	9,708.9	7,869.0	35.0	35.1	-126.64	-1,354.2	-28.0	394.6	334.2	60.41	6.533		
9,600.0	7,633.7	9,808.9	7,869.0	36.7	36.7	-126.73	-1,454.1	-28.0	395.1	332.0	63.08	6.263		
9,700.0	7,632.9	9,908.8	7,869.0	38.3	38.3	-126.82	-1,554.1	-28.0	395.6	329.8	65.79	6.013		
9,800.0	7,632.1	10,008.8	7,869.0	40.0	40.0	-126.92	-1,654.1	-28.0	396.1	327.5	68.53	5.779		
9,900.0	7,631.3	10,108.8	7,869.0	41.7	41.7	-127.01	-1,754.1	-28.0	396.5	325.2	71.30	5.562		
10,000.0	7,630.5	10,208.8	7,869.0	43.4	43.4	-127.10	-1,854.1	-28.0	397.0	322.9	74.09	5.358		
10,100.0	7,629.7	10,308.8	7,869.0	45.1	45.2	-127.19	-1,954.1	-28.0	397.5	320.6	76.91	5.169		
10,200.0	7,628.9	10,408.8	7,869.0	46.9	46.9	-127.28	-2,054.1	-28.0	398.0	318.3	79.74	4.991		
10,300.0	7,628.1	10,508.8	7,869.0	48.6	48.7	-127.38	-2,154.1	-28.0	398.5	315.9	82.58	4.825		
10,400.0	7,627.3	10,608.8	7,869.0	50.4	50.4	-127.47	-2,254.1	-28.0	399.0	313.5	85.44	4.670		
10,500.0	7,626.5	10,708.8	7,869.0	52.2	52.2	-127.56	-2,354.1	-28.0	399.5	311.2	88.31	4.523		
10,600.0	7,625.7	10,808.8	7,869.0	54.0	54.0	-127.65	-2,454.1	-28.0	399.9	308.8	91.19	4.386		
10,700.0	7,624.9	10,908.8	7,869.0	55.8	55.8	-127.74	-2,554.1	-28.0	400.4	306.4	94.07	4.257		
10,800.0	7,624.1	11,008.8	7,869.0	57.6	57.6	-127.83	-2,654.1	-28.0	400.9	304.0	96.97	4.135		
10,900.0	7,623.3	11,108.8	7,869.0	59.4	59.4	-127.92	-2,754.1	-28.0	401.4	301.6	99.86	4.020		
11,000.0	7,622.5	11,208.8	7,869.0	61.2	61.2	-128.01	-2,854.1	-28.0	401.9	299.2	102.77	3.911		
11,100.0	7,621.7	11,308.8	7,869.0	63.0	63.0	-128.10	-2,954.1	-28.0	402.4	296.7	105.67	3.808		
11,200.0	7,620.9	11,408.8	7,869.0	64.9	64.9	-128.19	-3,054.1	-28.0	402.9	294.3	108.58	3.711		
11,300.0	7,620.1	11,508.8	7,869.0	66.7	66.7	-128.28	-3,154.1	-28.0	403.4	291.9	111.49	3.618		
11,400.0	7,619.3	11,608.8	7,869.0	68.5	68.5	-128.37	-3,254.1	-28.0	403.9	289.5	114.40	3.530		
11,500.0	7,618.5	11,708.8	7,869.0	70.4	70.4	-128.46	-3,354.1	-28.0	404.4	287.1	117.32	3.447		
11,600.0	7,617.7	11,808.8	7,869.0	72.2	72.2	-128.55	-3,454.1	-28.0	404.9	284.7	120.23	3.368		
11,700.0	7,616.9	11,908.8	7,869.0	74.1	74.1	-128.64	-3,554.1	-28.0	405.4	282.3	123.14	3.292		
11,800.0	7,616.1	12,008.8	7,869.0	75.9	75.9	-128.73	-3,654.1	-28.0	405.9	279.8	126.06	3.220		
11,900.0	7,615.2	12,108.8	7,869.0	77.8	77.8	-128.82	-3,754.1	-28.0	406.4	277.4	128.97	3.151		
11,930.9	7,615.0	12,139.6	7,869.0	78.2	78.4	-128.84	-3,784.9	-28.0	406.6	276.8	129.76	3.133 SF		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilius 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilius 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilius 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.6-T1S-R67W - Bredehoft 13-6 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
9,600.0	7,633.7	7,638.8	7,636.9	36.7	15.2	-90.55	-2,416.0	-252.8	966.2	914.6	51.68	18.698		
9,700.0	7,632.9	7,638.7	7,636.8	38.3	15.2	-90.52	-2,416.0	-252.8	866.8	813.4	53.33	16.252		
9,800.0	7,632.1	7,638.6	7,636.8	40.0	15.2	-90.49	-2,416.0	-252.8	767.4	712.4	55.01	13.949		
9,900.0	7,631.3	7,638.6	7,636.7	41.7	15.2	-90.45	-2,416.0	-252.8	668.2	611.5	56.71	11.782		
10,000.0	7,630.5	7,638.5	7,636.7	43.4	15.2	-90.42	-2,416.0	-252.8	569.3	510.9	58.43	9.744		
10,100.0	7,629.7	7,638.5	7,636.6	45.1	15.2	-90.39	-2,416.0	-252.8	470.9	410.8	60.17	7.827		
10,200.0	7,628.9	7,638.4	7,636.6	46.9	15.2	-90.36	-2,416.0	-252.8	373.3	311.4	61.91	6.030		
10,300.0	7,628.1	7,638.4	7,636.5	48.6	15.2	-90.32	-2,416.0	-252.8	277.5	213.8	63.67	4.358		
10,400.0	7,627.3	7,638.3	7,636.5	50.4	15.2	-90.29	-2,416.0	-252.8	186.1	120.7	65.45	2.844		
10,500.0	7,626.5	7,638.3	7,636.4	52.2	15.2	-90.26	-2,416.0	-252.8	110.8	43.5	67.23	1.648		
10,561.9	7,626.0	7,638.2	7,636.4	53.3	15.2	-90.24	-2,416.0	-252.8	91.9	23.5	68.34	1.345	Level 3, CC, ES, SF	
10,600.0	7,625.7	7,638.2	7,636.3	54.0	15.2	-90.22	-2,416.0	-252.8	99.5	30.5	69.02	1.441	Level 3	
10,700.0	7,624.9	7,638.2	7,636.3	55.8	15.2	-90.19	-2,416.0	-252.8	165.9	95.1	70.82	2.343		
10,800.0	7,624.1	7,638.1	7,636.2	57.6	15.2	-90.16	-2,416.0	-252.8	255.2	182.6	72.62	3.515		
10,900.0	7,623.3	7,638.1	7,636.2	59.4	15.2	-90.12	-2,416.0	-252.8	350.4	276.0	74.44	4.707		
11,000.0	7,622.5	7,638.0	7,636.1	61.2	15.2	-90.09	-2,416.0	-252.8	447.7	371.4	76.26	5.870		
11,100.0	7,621.7	7,638.0	7,636.1	63.0	15.2	-90.06	-2,416.0	-252.8	545.9	467.8	78.08	6.992		
11,200.0	7,620.9	7,637.9	7,636.0	64.9	15.2	-90.02	-2,416.0	-252.8	644.7	564.8	79.91	8.068		
11,300.0	7,620.1	7,637.9	7,636.0	66.7	15.2	-89.99	-2,416.0	-252.8	743.8	662.1	81.75	9.099		
11,400.0	7,619.3	7,637.8	7,635.9	68.5	15.2	-89.96	-2,416.0	-252.8	843.2	759.6	83.59	10.087		
11,500.0	7,618.5	7,637.7	7,635.9	70.4	15.2	-89.93	-2,416.0	-252.8	942.6	857.2	85.43	11.034		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilus 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilus 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilus 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.6-T1S-R67W - Sack 11-6 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.0	0.0	0.0	0.0	0.0	0.0	-63.20	196.7	-389.4	436.4				
100.0	100.0	89.7	89.7	0.1	0.1	-63.25	196.6	-389.9	436.6	436.4	0.23	1,885.196	
200.0	200.0	190.5	190.5	0.3	0.4	-63.37	196.1	-390.9	437.4	436.6	0.71	617.397	
300.0	300.0	292.3	292.3	0.6	0.6	-63.49	195.4	-391.7	437.7	436.5	1.20	365.831	
400.0	400.0	392.0	392.0	0.8	0.9	-63.58	194.8	-392.2	437.9	436.2	1.68	260.482	
500.0	500.0	489.4	489.4	1.0	1.1	-63.66	194.5	-392.9	438.4	436.3	2.15	203.671	
600.0	600.0	588.1	588.0	1.2	1.4	-63.74	194.4	-394.0	439.4	436.8	2.62	167.437	
700.0	700.0	689.2	689.2	1.5	1.7	-63.88	193.9	-395.4	440.4	437.3	3.11	141.567	
800.0	800.0	790.9	790.9	1.7	1.9	-64.10	192.7	-396.8	441.1	437.5	3.60	122.521	
900.0	900.0	891.0	891.0	1.9	2.2	-39.97	191.2	-398.0	440.6	436.5	4.08	107.952	
1,000.0	999.9	990.9	990.8	2.1	2.4	-40.55	189.9	-399.2	438.0	433.5	4.56	96.009	
1,100.0	1,099.7	1,089.5	1,089.4	2.4	2.7	-41.33	188.9	-400.3	433.7	428.7	5.04	85.979	
1,200.0	1,199.3	1,188.3	1,188.2	2.6	3.0	-42.34	188.2	-401.5	427.7	422.2	5.53	77.344	
1,300.0	1,298.6	1,288.1	1,288.0	2.9	3.2	-43.64	187.6	-402.7	420.0	414.0	6.03	69.703	
1,400.0	1,397.5	1,387.5	1,387.4	3.1	3.5	-45.27	187.0	-403.9	410.5	404.0	6.53	62.828	
1,483.2	1,479.6	1,470.2	1,470.0	3.4	3.7	-46.89	186.4	-404.7	401.4	394.4	6.97	57.578	
1,500.0	1,496.1	1,486.8	1,486.7	3.4	3.7	-47.23	186.3	-404.8	399.5	392.4	7.06	56.557	
1,600.0	1,594.5	1,584.0	1,583.8	3.8	4.0	-49.23	185.7	-405.8	388.2	380.6	7.61	51.014	
1,700.0	1,692.9	1,681.8	1,681.7	4.1	4.2	-51.34	185.4	-406.9	377.8	369.7	8.17	46.245	
1,800.0	1,791.3	1,779.6	1,779.4	4.4	4.5	-53.52	185.4	-408.2	368.1	359.3	8.74	42.132	
1,900.0	1,889.7	1,877.2	1,877.0	4.8	4.7	-55.79	185.5	-409.6	359.1	349.8	9.31	38.572	
2,000.0	1,988.1	1,975.2	1,975.1	5.2	5.0	-58.16	185.7	-411.2	351.0	341.1	9.90	35.463	
2,100.0	2,086.5	2,073.3	2,073.1	5.5	5.2	-60.63	186.0	-413.0	343.7	333.2	10.50	32.726	
2,200.0	2,184.9	2,170.9	2,170.7	5.9	5.4	-63.21	186.1	-414.9	337.2	326.1	11.12	30.320	
2,300.0	2,283.3	2,269.0	2,268.8	6.3	5.7	-65.92	186.1	-417.1	331.7	320.0	11.76	28.204	
2,400.0	2,381.7	2,367.2	2,366.9	6.7	5.9	-68.72	186.1	-419.4	327.1	314.7	12.41	26.354	
2,500.0	2,480.1	2,465.6	2,465.3	7.0	6.2	-71.56	186.3	-421.8	323.4	310.4	13.07	24.749	
2,600.0	2,578.5	2,564.1	2,563.7	7.4	6.4	-74.44	186.6	-424.2	320.6	306.9	13.73	23.357	
2,700.0	2,677.0	2,662.7	2,662.3	7.8	6.7	-77.31	187.2	-426.8	318.7	304.3	14.38	22.158	
2,800.0	2,775.4	2,761.1	2,760.7	8.2	6.9	-80.15	188.0	-429.4	317.6	302.5	15.03	21.125	
2,873.5	2,847.7	2,833.5	2,833.1	8.5	7.1	-82.26	188.6	-431.4	317.3	301.8	15.51	20.458	
2,900.0	2,873.8	2,859.8	2,859.3	8.6	7.1	-83.02	188.8	-432.1	317.4	301.7	15.69	20.234	
3,000.0	2,972.2	2,959.1	2,958.7	9.0	7.4	-85.95	189.3	-434.6	317.9	301.5	16.34	19.451	
3,100.0	3,070.6	3,058.6	3,058.2	9.4	7.7	-89.02	189.3	-436.6	319.0	302.0	17.00	18.761	
3,200.0	3,169.0	3,158.3	3,157.8	9.8	7.9	-92.17	188.8	-438.0	320.7	303.1	17.66	18.163	
3,300.0	3,267.4	3,257.9	3,257.4	10.1	8.2	-95.31	188.3	-439.0	323.0	304.7	18.30	17.653	
3,400.0	3,365.8	3,357.3	3,356.8	10.5	8.4	-98.41	187.9	-439.7	326.0	307.1	18.92	17.227	
3,500.0	3,464.2	3,456.2	3,455.7	10.9	8.7	-101.44	187.6	-440.1	329.6	310.1	19.53	16.875	
3,600.0	3,562.6	3,555.8	3,555.3	11.3	8.9	-104.39	187.6	-440.5	334.0	313.9	20.10	16.619	
3,700.0	3,661.0	3,655.8	3,655.2	11.7	9.1	-107.21	188.1	-440.7	338.7	318.1	20.57	16.464	
3,800.0	3,759.4	3,754.6	3,754.1	12.1	9.2	-109.91	188.9	-440.8	344.0	323.0	20.99	16.391	
3,900.0	3,857.8	3,851.9	3,851.3	12.5	9.3	-112.52	189.4	-440.8	350.1	328.7	21.41	16.352	
4,000.0	3,956.2	3,949.3	3,948.7	12.9	9.5	-115.08	189.4	-440.9	357.5	335.6	21.90	16.325	
4,100.0	4,054.6	4,047.3	4,046.8	13.3	9.8	-117.54	189.4	-441.1	365.6	343.2	22.41	16.313	
4,200.0	4,153.0	4,145.7	4,145.2	13.7	10.0	-119.80	189.7	-442.0	374.5	351.6	22.92	16.344	
4,300.0	4,251.4	4,244.6	4,244.1	14.1	10.3	-121.91	190.3	-443.1	383.9	360.5	23.40	16.405	
4,400.0	4,349.8	4,343.0	4,342.4	14.5	10.5	-123.87	191.0	-444.3	393.8	369.9	23.88	16.490	
4,500.0	4,448.2	4,441.0	4,440.4	14.9	10.7	-125.70	191.7	-445.8	404.2	379.8	24.36	16.592	
4,600.0	4,546.6	4,538.9	4,538.3	15.3	11.0	-127.39	192.4	-447.7	415.2	390.3	24.84	16.713	
4,700.0	4,645.0	4,637.7	4,637.1	15.7	11.2	-128.95	193.3	-450.0	426.5	401.2	25.33	16.842	
4,800.0	4,743.4	4,737.1	4,736.4	16.1	11.5	-130.41	194.3	-452.5	438.1	412.3	25.81	16.977	

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilus 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilus 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilus 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.6-T1S-R67W - Sack 11-6 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
4,900.0	4,841.9	4,836.6	4,835.9	16.5	11.7	-131.81	195.5	-454.8	449.8	423.5	26.29	17.112		
5,000.0	4,940.3	4,935.1	4,934.4	16.9	11.9	-133.13	196.7	-457.1	461.7	434.9	26.76	17.254		
5,100.0	5,038.7	5,033.1	5,032.3	17.2	12.2	-134.37	197.8	-459.4	473.9	446.6	27.23	17.402		
5,200.0	5,137.1	5,130.2	5,129.4	17.6	12.4	-135.54	198.7	-461.7	486.5	458.8	27.71	17.559		
5,300.0	5,235.5	5,227.3	5,226.5	18.0	12.7	-136.64	199.3	-464.3	499.7	471.5	28.19	17.727		
5,400.0	5,333.9	5,325.6	5,324.8	18.4	12.9	-137.72	199.6	-466.7	513.3	484.6	28.68	17.899		
5,500.0	5,432.3	5,423.6	5,422.7	18.8	13.2	-138.86	199.6	-468.2	527.1	498.0	29.15	18.083		
5,559.0	5,490.3	5,481.3	5,480.5	19.1	13.3	-139.54	199.5	-468.7	535.4	506.0	29.42	18.198		
5,600.0	5,530.7	5,521.8	5,520.9	19.2	13.4	-140.07	199.3	-469.0	541.0	511.4	29.61	18.273		
5,700.0	5,629.7	5,621.5	5,620.7	19.5	13.7	-141.16	199.0	-469.5	552.8	522.8	30.01	18.422		
5,800.0	5,729.0	5,721.2	5,720.4	19.7	13.9	-141.97	198.8	-469.7	561.9	531.5	30.39	18.488		
5,900.0	5,828.7	5,819.1	5,818.2	19.9	14.1	-142.50	198.3	-470.0	568.5	537.8	30.74	18.491		
6,000.0	5,928.6	5,920.6	5,919.7	20.1	14.4	-142.78	197.9	-470.4	572.3	541.2	31.10	18.403		
6,071.4	6,000.0	5,992.3	5,991.4	20.2	14.6	-167.29	197.8	-470.8	573.3	541.9	31.36	18.280		
6,100.0	6,028.6	6,020.9	6,020.0	20.2	14.6	-167.28	197.7	-470.9	573.3	541.9	31.48	18.212		
6,200.0	6,128.6	6,121.4	6,120.6	20.4	14.9	-167.23	197.6	-471.5	573.6	541.7	31.91	17.978		
6,300.0	6,228.6	6,224.4	6,223.5	20.5	15.0	-167.21	197.7	-471.6	573.5	541.3	32.24	17.786		
6,400.0	6,328.6	6,325.1	6,324.3	20.7	15.1	-167.21	198.1	-471.5	573.1	540.6	32.49	17.638		
6,500.0	6,428.6	6,425.4	6,424.5	20.8	15.2	-167.24	198.5	-471.2	572.6	539.9	32.71	17.505		
6,600.0	6,528.6	6,526.6	6,525.7	21.0	15.2	-167.25	199.1	-470.9	572.0	539.1	32.95	17.361		
6,700.0	6,628.6	6,627.2	6,626.3	21.1	15.3	-167.27	199.9	-470.6	571.2	538.0	33.19	17.207		
6,800.0	6,728.6	6,725.7	6,724.8	21.3	15.3	-167.33	200.4	-469.8	570.5	537.1	33.40	17.079		
6,900.0	6,828.6	6,825.1	6,824.2	21.4	15.3	-167.42	200.7	-468.8	570.0	536.4	33.59	16.971		
6,952.8	6,881.4	6,877.8	6,876.9	21.5	15.3	-167.46	200.8	-468.3	569.8	536.1	33.69	16.914		
7,000.0	6,928.6	6,925.4	6,924.6	21.5	15.3	12.55	200.9	-467.9	568.1	534.5	33.62	16.897		
7,050.0	6,978.3	6,976.2	6,975.3	21.6	15.3	12.69	201.1	-467.3	563.2	529.8	33.42	16.851		
7,100.0	7,027.7	7,026.3	7,025.4	21.5	15.4	12.96	201.4	-466.7	555.1	522.0	33.10	16.769		
7,150.0	7,076.4	7,075.6	7,074.7	21.5	15.4	13.37	201.7	-466.1	543.7	511.1	32.66	16.646		
7,200.0	7,124.3	7,123.2	7,122.3	21.4	15.4	13.95	202.1	-465.6	529.3	497.2	32.11	16.481		
7,250.0	7,171.2	7,169.0	7,168.1	21.3	15.4	14.70	202.4	-465.1	511.9	480.5	31.46	16.269		
7,300.0	7,216.8	7,213.9	7,213.0	21.2	15.4	15.67	202.5	-464.5	491.7	461.0	30.73	16.001		
7,350.0	7,260.9	7,258.0	7,257.0	21.1	15.4	16.92	202.7	-463.9	468.8	438.8	29.94	15.656		
7,400.0	7,303.5	7,300.4	7,299.5	20.9	15.4	18.52	202.8	-463.3	443.2	414.0	29.13	15.212		
7,450.0	7,344.2	7,341.7	7,340.8	20.8	15.5	20.59	203.0	-462.8	415.0	386.6	28.36	14.634		
7,500.0	7,383.0	7,380.9	7,379.9	20.6	15.5	23.25	203.2	-462.2	384.5	356.8	27.70	13.881		
7,550.0	7,419.6	7,417.5	7,416.6	20.4	15.5	26.68	203.4	-461.6	351.8	324.5	27.26	12.906		
7,600.0	7,453.9	7,451.6	7,450.6	20.2	15.5	31.13	203.6	-461.0	317.3	290.1	27.19	11.670		
7,650.0	7,485.8	7,483.1	7,482.2	20.0	15.5	36.92	203.8	-460.5	281.5	253.8	27.67	10.170		
7,700.0	7,515.0	7,512.2	7,511.2	19.9	15.5	44.37	204.0	-460.0	244.7	215.9	28.83	8.488		
7,750.0	7,541.6	7,538.4	7,537.5	19.7	15.5	53.61	204.1	-459.5	207.9	177.4	30.57	6.803		
7,800.0	7,565.3	7,561.9	7,560.9	19.5	15.6	64.27	204.2	-459.2	172.6	140.2	32.42	5.324		
7,850.0	7,586.1	7,582.4	7,581.5	19.4	15.6	75.24	204.4	-458.8	141.5	107.8	33.75	4.193		
7,900.0	7,603.9	7,599.9	7,599.0	19.2	15.6	85.00	204.5	-458.5	119.7	85.4	34.22	3.497		
7,939.1	7,615.6	7,611.5	7,610.5	19.2	15.6	90.99	204.5	-458.3	113.7	79.6	34.13	3.331	CC, ES, SF	
7,950.0	7,618.6	7,614.4	7,613.4	19.1	15.6	92.35	204.5	-458.3	114.2	80.1	34.07	3.351		
8,000.0	7,630.1	7,625.6	7,624.7	19.1	15.6	96.74	204.6	-458.1	128.2	94.5	33.79	3.795		
8,050.0	7,638.4	7,633.7	7,632.7	19.0	15.6	98.01	204.6	-458.0	157.3	123.6	33.75	4.662		
8,100.0	7,643.5	7,638.5	7,637.5	19.0	15.6	96.06	204.7	-457.9	195.1	161.1	34.06	5.728		
8,150.0	7,645.3	7,640.1	7,639.1	19.1	15.6	90.79	204.7	-457.9	237.6	203.0	34.54	6.878		
8,158.9	7,645.3	7,640.0	7,639.0	19.1	15.6	89.50	204.7	-457.9	245.4	210.8	34.61	7.091		
8,200.0	7,645.0	7,639.5	7,638.5	19.2	15.6	89.22	204.7	-457.9	282.5	247.7	34.79	8.122		

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

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilius 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilius 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilius 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.6-T1S-R67W - Sack 11-6 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
8,300.0	7,644.1	7,638.1	7,637.2	19.7	15.6	88.55	204.7	-457.9	376.3	341.0	35.34	10.649	
8,400.0	7,643.3	7,636.8	7,635.8	20.4	15.6	87.88	204.7	-457.9	472.6	436.6	36.05	13.110	
8,500.0	7,642.5	7,635.5	7,634.5	21.3	15.6	87.20	204.6	-457.9	570.2	533.3	36.91	15.449	
8,600.0	7,641.7	7,634.1	7,633.2	22.4	15.6	86.53	204.6	-458.0	668.5	630.6	37.89	17.642	
8,700.0	7,640.9	7,632.8	7,631.8	23.5	15.6	85.86	204.6	-458.0	767.2	728.2	38.99	19.679	
8,800.0	7,640.1	7,631.5	7,630.5	24.7	15.6	85.18	204.6	-458.0	866.3	826.1	40.17	21.562	
8,900.0	7,639.3	7,630.1	7,629.1	26.0	15.6	84.51	204.6	-458.0	965.5	924.0	41.44	23.298	

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilius 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilius 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilius 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.6-T1S-R67W - Sack 12-6 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
8,300.0	7,644.1	7,621.5	7,613.1	19.7	16.4	87.19	-1,135.5	-410.1	983.6	947.5	36.11	27.237		
8,400.0	7,643.3	7,622.0	7,613.6	20.4	16.4	87.64	-1,135.5	-410.1	883.8	847.0	36.81	24.007		
8,500.0	7,642.5	7,622.5	7,614.1	21.3	16.4	88.07	-1,135.5	-410.1	784.1	746.5	37.66	20.819		
8,600.0	7,641.7	7,623.0	7,614.6	22.4	16.4	88.49	-1,135.5	-410.1	684.5	645.9	38.64	17.714		
8,700.0	7,640.9	7,623.5	7,615.0	23.5	16.4	88.90	-1,135.5	-410.1	585.1	545.3	39.74	14.723		
8,800.0	7,640.1	7,623.9	7,615.5	24.7	16.4	89.30	-1,135.6	-410.1	485.8	444.9	40.93	11.870		
8,900.0	7,639.3	7,624.3	7,615.9	26.0	16.4	89.68	-1,135.6	-410.1	387.0	344.8	42.21	9.169		
9,000.0	7,638.5	7,624.8	7,616.3	27.4	16.4	90.05	-1,135.6	-410.0	288.9	245.3	43.56	6.633		
9,100.0	7,637.7	7,625.2	7,616.7	28.8	16.4	90.42	-1,135.6	-410.0	192.8	147.9	44.97	4.288		
9,200.0	7,636.9	7,625.6	7,617.1	30.3	16.4	90.77	-1,135.6	-410.0	104.4	58.0	46.43	2.249		
9,281.4	7,636.3	7,625.9	7,617.5	31.6	16.4	91.05	-1,135.6	-410.0	65.4	17.7	47.66	1.372	Level 3, CC, ES, SF	
9,300.0	7,636.1	7,626.0	7,617.5	31.9	16.4	91.11	-1,135.6	-410.0	68.0	20.0	47.94	1.418	Level 3	
9,400.0	7,635.3	7,626.4	7,617.9	33.4	16.4	91.44	-1,135.6	-410.0	135.4	85.9	49.49	2.736		
9,500.0	7,634.5	7,626.7	7,618.3	35.0	16.4	91.76	-1,135.6	-410.0	228.2	177.1	51.08	4.467		
9,600.0	7,633.7	7,627.1	7,618.6	36.7	16.4	92.08	-1,135.6	-410.0	325.2	272.5	52.69	6.173		
9,700.0	7,632.9	7,627.4	7,619.0	38.3	16.4	92.38	-1,135.6	-410.0	423.7	369.3	54.33	7.799		
9,800.0	7,632.1	7,627.8	7,619.3	40.0	16.4	92.68	-1,135.6	-410.0	522.7	466.7	55.98	9.336		
9,900.0	7,631.3	7,628.1	7,619.7	41.7	16.4	92.97	-1,135.6	-410.0	622.0	564.4	57.66	10.787		
10,000.0	7,630.5	7,628.4	7,620.0	43.4	16.4	93.25	-1,135.6	-410.0	721.6	662.2	59.36	12.156		
10,100.0	7,629.7	7,628.7	7,620.3	45.1	16.4	93.53	-1,135.6	-410.0	821.2	760.1	61.07	13.447		
10,200.0	7,628.9	7,629.0	7,620.6	46.9	16.4	93.79	-1,135.6	-410.0	920.9	858.1	62.79	14.666		

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilus 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilus 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilus 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5074.0ft (RKB - 13')

Offset Depths are relative to Offset Datum

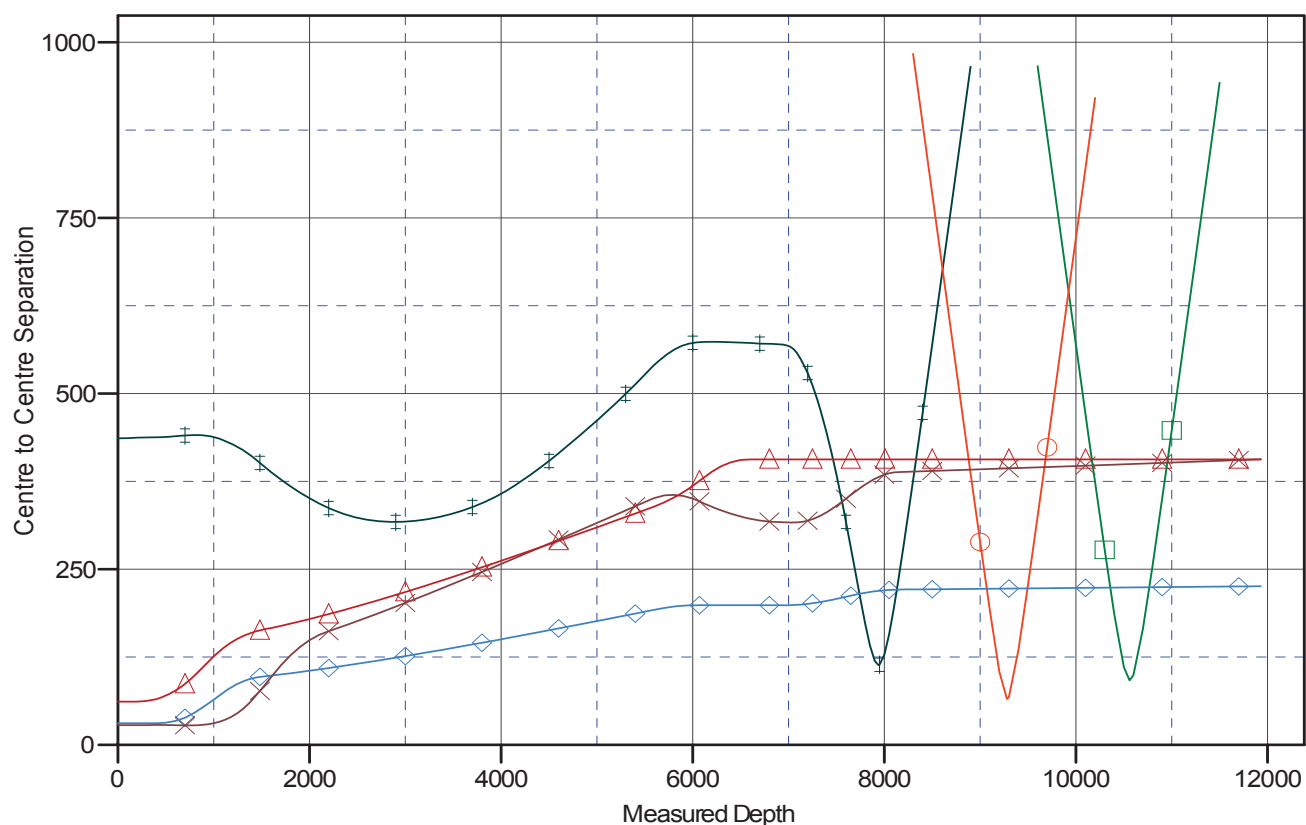
Central Meridian is -105.500000

Coordinates are relative to: Corcilus 6E-223

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.36°

Ladder Plot



LEGEND

Sack 11-6 (Exist), Wellbore #1, Wellbore #1 V0
 Sack 12-6 (Exist), Wellbore #1, Wellbore #1 V0
 Corcilus 6J-443, Wellbore #1, Plan #1 (4-29-15)

Bredehoft 13-6 (Exist), Wellbore #1, Wellbore #1 V0
 Corcilus 6E-323, Wellbore #1, Plan #1 (4-29-15) V0
 Corcilus 6E-203, Wellbore #1, Plan #1 (4-29-15)

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Corcilus 6E-223
Project:	SEC.6-T1S-R67W	TVD Reference:	WELL @ 5074.0ft (RKB - 13')
Reference Site:	Corcilus 1S67W6J Pad Sec.6-T1S-R67W	MD Reference:	WELL @ 5074.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Corcilus 6E-223	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-29-15)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5074.0ft (RKB - 13')
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000

Coordinates are relative to: Corcilus 6E-223
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.36°

