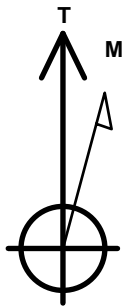


PDC Energy Inc. DJ Basin

Well Name: **Jagged 3N (Nio C)**
 Surface Location: Jagged 4N64W08 Pad Sec.8-T4N-R64W
 North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
 Ground Elevation: 4772.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1362799.14 3257757.90 40.325596 -104.575510
 Original Well Elev WELL @ 4795.0ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2166'FSL, 2365'FWL, SEC.8	1.0	0.0	0.0	Point
BHL 2410'FSL, 150'FWL, SEC.7	6895.0	165.6	-7247.6	Point
LPL 2410'FSL,1908'FWL, SEC.8	6895.0	241.7	-456.3	Point



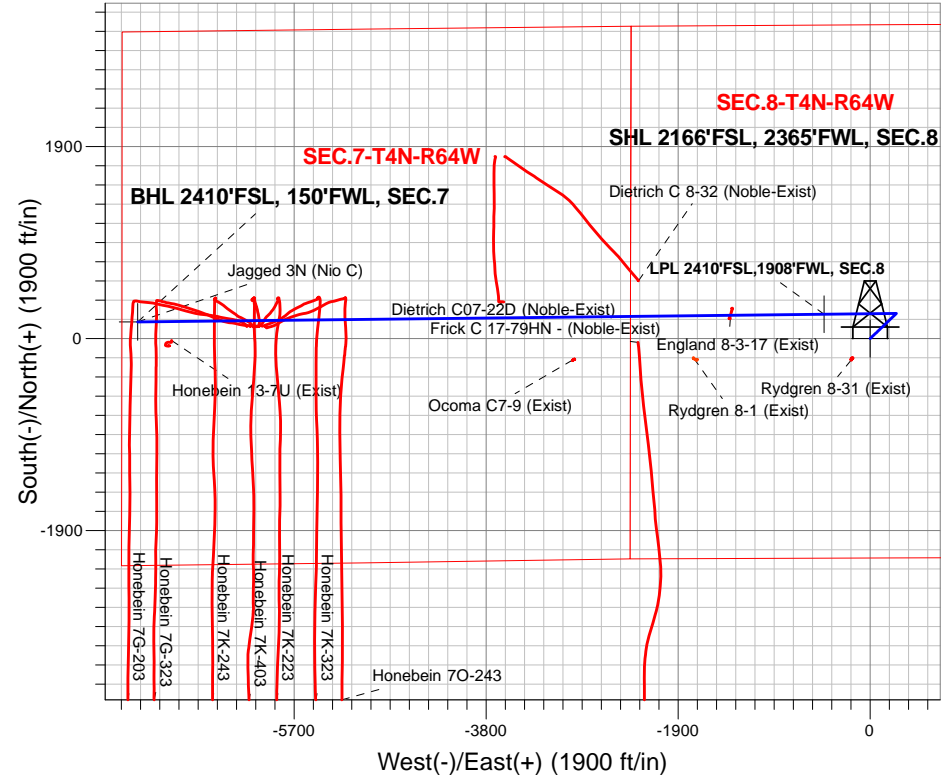
Azimuths to True North
 Magnetic North: 7.94°

Magnetic Field
 Strength: 52476.4snT
 Dip Angle: 66.81°
 Date: 6/28/2017
 Model: IGRF2010

Jagged 4N64W08 Pad Sec.8-T4N-R64W
 Jagged 3N (Nio C)
 Plan #4 (6-20-18)
 16:13, July 11 2018

ANNOTATIONS

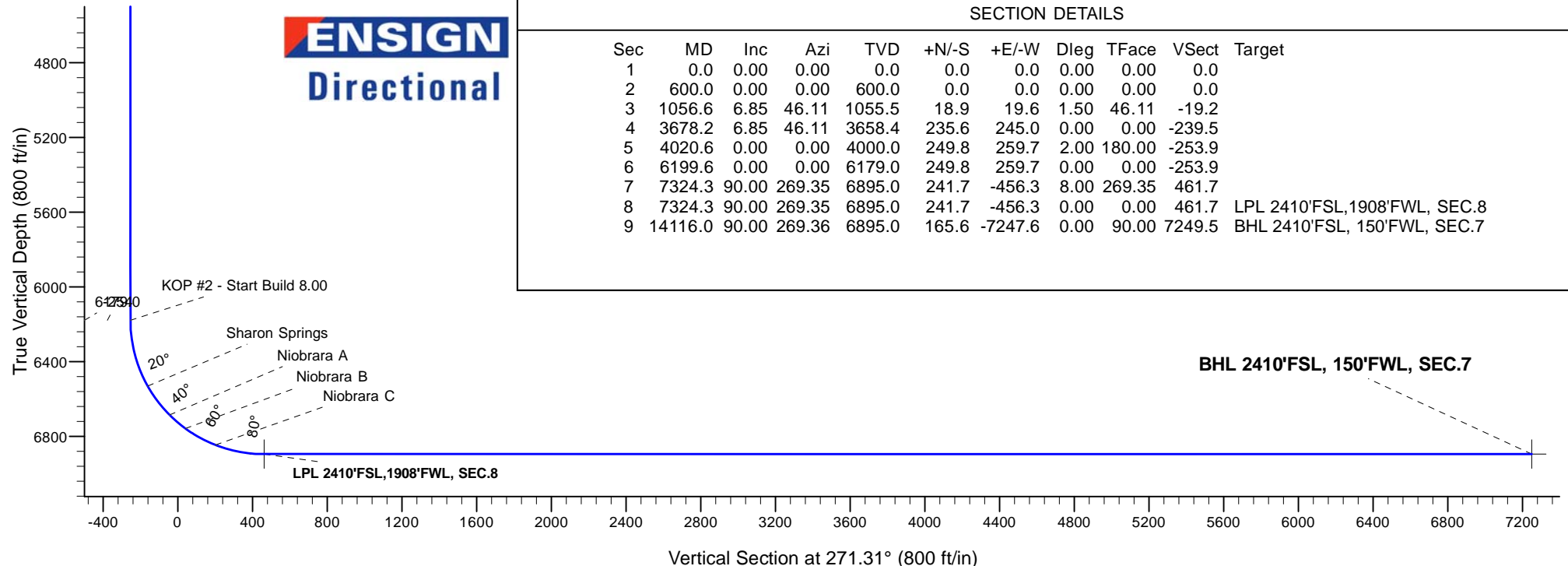
TVD	MD	Annotation
600.0	600.0	KOP - Start Build 1.50
3658.4	3678.2	Start Drop -2.00
6179.0	6199.6	KOP #2 - Start Build 8.00
6895.0	14116.0	TD at 14116.0



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	600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.0	
3	1056.6	6.85	46.11	1055.5	18.9	19.6	1.50	46.11	-19.2	
4	3678.2	6.85	46.11	3658.4	235.6	245.0	0.00	0.00	-239.5	
5	4020.6	0.00	0.00	4000.0	249.8	259.7	2.00	180.00	-253.9	
6	6199.6	0.00	0.00	6179.0	249.8	259.7	0.00	0.00	-253.9	
7	7324.3	90.00	269.35	6895.0	241.7	-456.3	8.00	269.35	461.7	
8	7324.3	90.00	269.35	6895.0	241.7	-456.3	0.00	0.00	461.7	LPL 2410'FSL,1908'FWL, SEC.8
9	14116.0	90.00	269.36	6895.0	165.6	-7247.6	0.00	90.00	7249.5	BHL 2410'FSL, 150'FWL, SEC.7

ENSIGN
 Directional





PDC Energy Inc. DJ Basin

SEC.8-T4N-R64W

Jagged 4N64W08 Pad Sec.8-T4N-R64W

Jagged 3N (Nio C)

Wellbore #1

Plan: Plan #4 (6-20-18)

Standard Planning Report

11 July, 2018

Database:	US_EDM	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Company:	PDC Energy Inc. DJ Basin	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Project:	SEC.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	North Reference:	True
Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4 (6-20-18)		

Project	SEC.8-T4N-R64W, Weld County, Colorado		
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	Jagged 4N64W08 Pad Sec.8-T4N-R64W				
Site Position:		Northing:	1,362,819.46 usft	Latitude:	40.325651
From:	Lat/Long	Easting:	3,257,787.75 usft	Longitude:	-104.575403
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.60

Well	Jagged 3N (Nio C)					
Well Position	+N/-S	-20.0 ft	Northing:	1,362,799.14 usft	Latitude:	40.325596
	+E/-W	-30.1 ft	Easting:	3,257,757.90 usft	Longitude:	-104.575510
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,772.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/28/2017	7.94	66.81	52,476

Design	Plan #4 (6-20-18)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	271.31

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	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,056.6	6.85	46.11	1,055.5	18.9	19.6	1.50	1.50	0.00	46.11	
3,678.2	6.85	46.11	3,658.4	235.6	245.0	0.00	0.00	0.00	0.00	
4,020.6	0.00	0.00	4,000.0	249.8	259.7	2.00	-2.00	0.00	180.00	
6,199.6	0.00	0.00	6,179.0	249.8	259.7	0.00	0.00	0.00	0.00	
7,324.3	90.00	269.35	6,895.0	241.7	-456.3	8.00	8.00	0.00	269.35	
7,324.3	90.00	269.35	6,895.0	241.7	-456.3	0.00	0.00	0.00	0.00	LPL 2410'FSL, 1908'F
14,116.0	90.00	269.36	6,895.0	165.6	-7,247.6	0.00	0.00	0.00	90.00	BHL 2410'FSL, 150'F

Database:	US_EDM	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Company:	PDC Energy Inc. DJ Basin	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Project:	SEC.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	North Reference:	True
Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4 (6-20-18)		

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 2166'FSL, 2365'FWL, SEC.8									
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
KOP - Start Build 1.50									
700.0	1.50	46.11	700.0	0.9	0.9	-0.9	1.50	1.50	0.00
800.0	3.00	46.11	799.9	3.6	3.8	-3.7	1.50	1.50	0.00
900.0	4.50	46.11	899.7	8.2	8.5	-8.3	1.50	1.50	0.00
1,000.0	6.00	46.11	999.3	14.5	15.1	-14.7	1.50	1.50	0.00
1,056.6	6.85	46.11	1,055.5	18.9	19.6	-19.2	1.50	1.50	0.00
1,100.0	6.85	46.11	1,098.6	22.5	23.4	-22.9	0.00	0.00	0.00
1,200.0	6.85	46.11	1,197.9	30.8	32.0	-31.3	0.00	0.00	0.00
1,300.0	6.85	46.11	1,297.2	39.0	40.6	-39.7	0.00	0.00	0.00
1,400.0	6.85	46.11	1,396.5	47.3	49.2	-48.1	0.00	0.00	0.00
1,500.0	6.85	46.11	1,495.7	55.6	57.8	-56.5	0.00	0.00	0.00
1,600.0	6.85	46.11	1,595.0	63.8	66.3	-64.9	0.00	0.00	0.00
1,700.0	6.85	46.11	1,694.3	72.1	74.9	-73.3	0.00	0.00	0.00
1,800.0	6.85	46.11	1,793.6	80.4	83.5	-81.7	0.00	0.00	0.00
1,900.0	6.85	46.11	1,892.9	88.6	92.1	-90.1	0.00	0.00	0.00
2,000.0	6.85	46.11	1,992.2	96.9	100.7	-98.5	0.00	0.00	0.00
2,100.0	6.85	46.11	2,091.5	105.2	109.3	-106.9	0.00	0.00	0.00
2,200.0	6.85	46.11	2,190.8	113.4	117.9	-115.3	0.00	0.00	0.00
2,300.0	6.85	46.11	2,290.0	121.7	126.5	-123.7	0.00	0.00	0.00
2,400.0	6.85	46.11	2,389.3	130.0	135.1	-132.1	0.00	0.00	0.00
2,500.0	6.85	46.11	2,488.6	138.2	143.7	-140.5	0.00	0.00	0.00
2,600.0	6.85	46.11	2,587.9	146.5	152.3	-148.9	0.00	0.00	0.00
2,700.0	6.85	46.11	2,687.2	154.8	160.9	-157.3	0.00	0.00	0.00
2,800.0	6.85	46.11	2,786.5	163.0	169.5	-165.7	0.00	0.00	0.00
2,900.0	6.85	46.11	2,885.8	171.3	178.1	-174.1	0.00	0.00	0.00
3,000.0	6.85	46.11	2,985.0	179.6	186.7	-182.5	0.00	0.00	0.00
3,100.0	6.85	46.11	3,084.3	187.8	195.3	-190.9	0.00	0.00	0.00
3,200.0	6.85	46.11	3,183.6	196.1	203.9	-199.3	0.00	0.00	0.00
3,300.0	6.85	46.11	3,282.9	204.4	212.5	-207.7	0.00	0.00	0.00
3,400.0	6.85	46.11	3,382.2	212.6	221.1	-216.1	0.00	0.00	0.00
3,500.0	6.85	46.11	3,481.5	220.9	229.7	-224.5	0.00	0.00	0.00
3,600.0	6.85	46.11	3,580.8	229.2	238.2	-233.0	0.00	0.00	0.00
3,678.2	6.85	46.11	3,658.4	235.6	245.0	-239.5	0.00	0.00	0.00
Start Drop -2.00									
3,686.9	6.68	46.11	3,667.0	236.3	245.7	-240.2	2.01	-2.01	0.00
Parkman Sandstone									
3,700.0	6.41	46.11	3,680.1	237.4	246.8	-241.3	2.00	-2.00	0.00
3,800.0	4.41	46.11	3,779.6	243.9	253.6	-247.9	2.00	-2.00	0.00
3,900.0	2.41	46.11	3,879.4	248.0	257.9	-252.1	2.00	-2.00	0.00
4,000.0	0.41	46.11	3,979.4	249.7	259.6	-253.9	2.00	-2.00	0.00
4,020.6	0.00	0.00	4,000.0	249.8	259.7	-253.9	2.00	-2.00	0.00
4,100.0	0.00	0.00	4,079.4	249.8	259.7	-253.9	0.00	0.00	0.00
4,200.0	0.00	0.00	4,179.4	249.8	259.7	-253.9	0.00	0.00	0.00
4,300.0	0.00	0.00	4,279.4	249.8	259.7	-253.9	0.00	0.00	0.00
4,320.6	0.00	0.00	4,300.0	249.8	259.7	-253.9	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Company:	PDC Energy Inc. DJ Basin	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Project:	SEC.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	North Reference:	True
Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4 (6-20-18)		

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)
Sussex Sandstone									
4,400.0	0.00	0.00	4,379.4	249.8	259.7	-253.9	0.00	0.00	0.00
4,500.0	0.00	0.00	4,479.4	249.8	259.7	-253.9	0.00	0.00	0.00
4,600.0	0.00	0.00	4,579.4	249.8	259.7	-253.9	0.00	0.00	0.00
4,700.0	0.00	0.00	4,679.4	249.8	259.7	-253.9	0.00	0.00	0.00
4,800.0	0.00	0.00	4,779.4	249.8	259.7	-253.9	0.00	0.00	0.00
4,900.0	0.00	0.00	4,879.4	249.8	259.7	-253.9	0.00	0.00	0.00
5,000.0	0.00	0.00	4,979.4	249.8	259.7	-253.9	0.00	0.00	0.00
5,100.0	0.00	0.00	5,079.4	249.8	259.7	-253.9	0.00	0.00	0.00
5,200.0	0.00	0.00	5,179.4	249.8	259.7	-253.9	0.00	0.00	0.00
5,300.0	0.00	0.00	5,279.4	249.8	259.7	-253.9	0.00	0.00	0.00
5,400.0	0.00	0.00	5,379.4	249.8	259.7	-253.9	0.00	0.00	0.00
5,500.0	0.00	0.00	5,479.4	249.8	259.7	-253.9	0.00	0.00	0.00
5,600.0	0.00	0.00	5,579.4	249.8	259.7	-253.9	0.00	0.00	0.00
5,700.0	0.00	0.00	5,679.4	249.8	259.7	-253.9	0.00	0.00	0.00
5,800.0	0.00	0.00	5,779.4	249.8	259.7	-253.9	0.00	0.00	0.00
5,900.0	0.00	0.00	5,879.4	249.8	259.7	-253.9	0.00	0.00	0.00
6,000.0	0.00	0.00	5,979.4	249.8	259.7	-253.9	0.00	0.00	0.00
6,100.0	0.00	0.00	6,079.4	249.8	259.7	-253.9	0.00	0.00	0.00
6,199.6	0.00	0.00	6,179.0	249.8	259.7	-253.9	0.00	0.00	0.00
KOP #2 - Start Build 8.00									
6,200.0	0.03	269.35	6,179.4	249.8	259.7	-253.9	8.28	8.28	0.00
6,300.0	8.04	269.35	6,279.1	249.7	252.7	-246.9	8.00	8.00	0.00
6,400.0	16.04	269.35	6,376.8	249.5	231.8	-226.1	8.00	8.00	0.00
6,500.0	24.04	269.35	6,470.7	249.1	197.6	-191.9	8.00	8.00	0.00
6,567.6	29.45	269.35	6,531.0	248.8	167.2	-161.5	8.00	8.00	0.00
Sharon Springs									
6,600.0	32.04	269.35	6,558.8	248.6	150.6	-144.9	8.00	8.00	0.00
6,700.0	40.04	269.35	6,639.6	247.9	91.8	-86.2	8.00	8.00	0.00
6,761.6	44.97	269.35	6,685.0	247.4	50.3	-44.6	8.00	8.00	0.00
Niobrara A									
6,800.0	48.04	269.35	6,711.5	247.1	22.4	-16.7	8.00	8.00	0.00
6,874.0	53.97	269.35	6,758.0	246.5	-35.1	40.7	8.00	8.00	0.00
Niobrara B									
6,900.0	56.05	269.35	6,772.9	246.2	-56.4	62.0	8.00	8.00	0.00
7,000.0	64.05	269.35	6,822.8	245.2	-143.0	148.5	8.00	8.00	0.00
7,057.9	68.68	269.35	6,846.0	244.6	-196.0	201.5	8.00	8.00	0.00
Niobrara C									
7,100.0	72.05	269.35	6,860.2	244.2	-235.6	241.1	8.00	8.00	0.00
7,200.0	80.05	269.35	6,884.2	243.1	-332.6	338.1	8.00	8.00	0.00
7,300.0	88.05	269.35	6,894.6	242.0	-432.0	437.4	8.00	8.00	0.00
7,324.3	90.00	269.35	6,895.0	241.7	-456.3	461.7	8.00	8.00	0.00
LPL 2410'FSL,1908'FWL, SEC.8									
7,400.0	90.00	269.35	6,895.0	240.8	-532.0	537.3	0.00	0.00	0.00
7,500.0	90.00	269.35	6,895.0	239.7	-632.0	637.3	0.00	0.00	0.00
7,600.0	90.00	269.35	6,895.0	238.6	-731.9	737.2	0.00	0.00	0.00
7,700.0	90.00	269.35	6,895.0	237.4	-831.9	837.1	0.00	0.00	0.00
7,800.0	90.00	269.35	6,895.0	236.3	-931.9	937.1	0.00	0.00	0.00
7,900.0	90.00	269.35	6,895.0	235.2	-1,031.9	1,037.0	0.00	0.00	0.00
8,000.0	90.00	269.35	6,895.0	234.1	-1,131.9	1,137.0	0.00	0.00	0.00
8,100.0	90.00	269.35	6,895.0	232.9	-1,231.9	1,236.9	0.00	0.00	0.00
8,200.0	90.00	269.35	6,895.0	231.8	-1,331.9	1,336.9	0.00	0.00	0.00
8,300.0	90.00	269.35	6,895.0	230.7	-1,431.9	1,436.8	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Company:	PDC Energy Inc. DJ Basin	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Project:	SEC.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	North Reference:	True
Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4 (6-20-18)		

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	90.00	269.35	6,895.0	229.5	-1,531.9	1,536.7	0.00	0.00	0.00	
8,500.0	90.00	269.35	6,895.0	228.4	-1,631.9	1,636.7	0.00	0.00	0.00	
8,600.0	90.00	269.35	6,895.0	227.3	-1,731.9	1,736.6	0.00	0.00	0.00	
8,700.0	90.00	269.35	6,895.0	226.2	-1,831.9	1,836.6	0.00	0.00	0.00	
8,800.0	90.00	269.35	6,895.0	225.0	-1,931.9	1,936.5	0.00	0.00	0.00	
8,900.0	90.00	269.35	6,895.0	223.9	-2,031.9	2,036.4	0.00	0.00	0.00	
9,000.0	90.00	269.35	6,895.0	222.8	-2,131.9	2,136.4	0.00	0.00	0.00	
9,100.0	90.00	269.35	6,895.0	221.7	-2,231.9	2,236.3	0.00	0.00	0.00	
9,200.0	90.00	269.36	6,895.0	220.5	-2,331.8	2,336.3	0.00	0.00	0.00	
9,300.0	90.00	269.36	6,895.0	219.4	-2,431.8	2,436.2	0.00	0.00	0.00	
9,400.0	90.00	269.36	6,895.0	218.3	-2,531.8	2,536.2	0.00	0.00	0.00	
9,500.0	90.00	269.36	6,895.0	217.2	-2,631.8	2,636.1	0.00	0.00	0.00	
9,600.0	90.00	269.36	6,895.0	216.0	-2,731.8	2,736.0	0.00	0.00	0.00	
9,700.0	90.00	269.36	6,895.0	214.9	-2,831.8	2,836.0	0.00	0.00	0.00	
9,800.0	90.00	269.36	6,895.0	213.8	-2,931.8	2,935.9	0.00	0.00	0.00	
9,900.0	90.00	269.36	6,895.0	212.7	-3,031.8	3,035.9	0.00	0.00	0.00	
10,000.0	90.00	269.36	6,895.0	211.5	-3,131.8	3,135.8	0.00	0.00	0.00	
10,100.0	90.00	269.36	6,895.0	210.4	-3,231.8	3,235.7	0.00	0.00	0.00	
10,200.0	90.00	269.36	6,895.0	209.3	-3,331.8	3,335.7	0.00	0.00	0.00	
10,300.0	90.00	269.36	6,895.0	208.2	-3,431.8	3,435.6	0.00	0.00	0.00	
10,400.0	90.00	269.36	6,895.0	207.0	-3,531.8	3,535.6	0.00	0.00	0.00	
10,500.0	90.00	269.36	6,895.0	205.9	-3,631.8	3,635.5	0.00	0.00	0.00	
10,600.0	90.00	269.36	6,895.0	204.8	-3,731.8	3,735.5	0.00	0.00	0.00	
10,700.0	90.00	269.36	6,895.0	203.7	-3,831.7	3,835.4	0.00	0.00	0.00	
10,800.0	90.00	269.36	6,895.0	202.6	-3,931.7	3,935.3	0.00	0.00	0.00	
10,900.0	90.00	269.36	6,895.0	201.4	-4,031.7	4,035.3	0.00	0.00	0.00	
11,000.0	90.00	269.36	6,895.0	200.3	-4,131.7	4,135.2	0.00	0.00	0.00	
11,100.0	90.00	269.36	6,895.0	199.2	-4,231.7	4,235.2	0.00	0.00	0.00	
11,200.0	90.00	269.36	6,895.0	198.1	-4,331.7	4,335.1	0.00	0.00	0.00	
11,300.0	90.00	269.36	6,895.0	197.0	-4,431.7	4,435.1	0.00	0.00	0.00	
11,400.0	90.00	269.36	6,895.0	195.8	-4,531.7	4,535.0	0.00	0.00	0.00	
11,500.0	90.00	269.36	6,895.0	194.7	-4,631.7	4,634.9	0.00	0.00	0.00	
11,600.0	90.00	269.36	6,895.0	193.6	-4,731.7	4,734.9	0.00	0.00	0.00	
11,700.0	90.00	269.36	6,895.0	192.5	-4,831.7	4,834.8	0.00	0.00	0.00	
11,800.0	90.00	269.36	6,895.0	191.4	-4,931.7	4,934.8	0.00	0.00	0.00	
11,900.0	90.00	269.36	6,895.0	190.2	-5,031.7	5,034.7	0.00	0.00	0.00	
12,000.0	90.00	269.36	6,895.0	189.1	-5,131.7	5,134.6	0.00	0.00	0.00	
12,100.0	90.00	269.36	6,895.0	188.0	-5,231.7	5,234.6	0.00	0.00	0.00	
12,200.0	90.00	269.36	6,895.0	186.9	-5,331.7	5,334.5	0.00	0.00	0.00	
12,300.0	90.00	269.36	6,895.0	185.8	-5,431.6	5,434.5	0.00	0.00	0.00	
12,400.0	90.00	269.36	6,895.0	184.7	-5,531.6	5,534.4	0.00	0.00	0.00	
12,500.0	90.00	269.36	6,895.0	183.5	-5,631.6	5,634.4	0.00	0.00	0.00	
12,600.0	90.00	269.36	6,895.0	182.4	-5,731.6	5,734.3	0.00	0.00	0.00	
12,700.0	90.00	269.36	6,895.0	181.3	-5,831.6	5,834.2	0.00	0.00	0.00	
12,800.0	90.00	269.36	6,895.0	180.2	-5,931.6	5,934.2	0.00	0.00	0.00	
12,900.0	90.00	269.36	6,895.0	179.1	-6,031.6	6,034.1	0.00	0.00	0.00	
13,000.0	90.00	269.36	6,895.0	178.0	-6,131.6	6,134.1	0.00	0.00	0.00	
13,100.0	90.00	269.36	6,895.0	176.9	-6,231.6	6,234.0	0.00	0.00	0.00	
13,200.0	90.00	269.36	6,895.0	175.7	-6,331.6	6,334.0	0.00	0.00	0.00	
13,300.0	90.00	269.36	6,895.0	174.6	-6,431.6	6,433.9	0.00	0.00	0.00	
13,400.0	90.00	269.36	6,895.0	173.5	-6,531.6	6,533.8	0.00	0.00	0.00	
13,500.0	90.00	269.36	6,895.0	172.4	-6,631.6	6,633.8	0.00	0.00	0.00	
13,600.0	90.00	269.36	6,895.0	171.3	-6,731.6	6,733.7	0.00	0.00	0.00	
13,700.0	90.00	269.36	6,895.0	170.2	-6,831.6	6,833.7	0.00	0.00	0.00	

Database:	US_EDM	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Company:	PDC Energy Inc. DJ Basin	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Project:	SEC.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	North Reference:	True
Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4 (6-20-18)		

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)	
13,800.0	90.00	269.36	6,895.0	169.1	-6,931.6	6,933.6	0.00	0.00	0.00	
13,900.0	90.00	269.36	6,895.0	168.0	-7,031.6	7,033.6	0.00	0.00	0.00	
14,000.0	90.00	269.36	6,895.0	166.8	-7,131.5	7,133.5	0.00	0.00	0.00	
14,100.0	90.00	269.36	6,895.0	165.7	-7,231.5	7,233.4	0.00	0.00	0.00	
14,116.0	90.00	269.36	6,895.0	165.6	-7,247.5	7,249.4	0.00	0.00	0.00	
TD at 14116.0 - BHL 2410'FSL, 150'FWL, SEC.7										

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 2166'FSL, 2365'FW - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,362,799.15	3,257,757.90	40.325596	-104.575510	
BHL 2410'FSL, 150'FWL - plan hits target center - Point	0.00	0.00	6,895.0	165.6	-7,247.6	1,362,889.13	3,250,509.33	40.326048	-104.601504	
LPL 2410'FSL, 1908'FWL - plan hits target center - Point	0.00	0.00	6,895.0	241.7	-456.3	1,363,036.06	3,257,299.13	40.326260	-104.577147	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,686.9	3,667.0	Parkman Sandstone				
4,320.6	4,300.0	Sussex Sandstone				
6,567.6	6,531.0	Sharon Springs				
6,761.6	6,685.0	Niobrara A				
6,874.0	6,758.0	Niobrara B				
7,057.9	6,846.0	Niobrara C				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
600.0	600.0	0.0	0.0	KOP - Start Build 1.50	
3,678.2	3,658.4	18.9	19.6	Start Drop -2.00	
6,199.6	6,179.0	235.6	245.0	KOP #2 - Start Build 8.00	
14,116.0	6,895.0	249.8	259.7	TD at 14116.0	



PDC Energy Inc. DJ Basin

SEC.8-T4N-R64W

Jagged 4N64W08 Pad Sec.8-T4N-R64W

Jagged 3N (Nio C)

Wellbore #1

Plan #4 (6-20-18)

Anticollision Report

11 July, 2018



Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Reference	Plan #4 (6-20-18)		
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 500.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.45 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	7/11/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	14,115.9	Plan #4 (6-20-18) (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						
Dietrich C Pad Sec.7-T4N-R64W						
Dietrich C 8-32 (Noble-Exist) - Dietrich C 8-32 - Dietrich C	9,159.0	7,228.5	353.8	234.1	2.956	CC, ES
Dietrich C 8-32 (Noble-Exist) - Dietrich C 8-32 - Dietrich C	9,200.0	7,228.1	356.1	235.1	2.942	SF
Dietrich C07-18 Pad Sec.7-T4N-R64W						
Dietrich C07-22D (Noble-Exist) - Wellbore #1 - Wellbore	10,506.5	7,166.9	158.6	8.3	1.055	Level 2, CC, ES, SF
Existing Wells Sec.7-T4N-R64W						
Honebein 13-7U (Exist) - Wellbore #1 - Wellbore #1	13,789.1	6,941.3	206.1	-50.2	0.804	Level 1, CC
Honebein 13-7U (Exist) - Wellbore #1 - Wellbore #1	13,800.0	6,941.0	206.4	-50.3	0.804	Level 1, ES, SF
Ocoma C7-9 (Exist) - Wellbore #1 - Wellbore #1	9,818.7	6,945.1	425.5	304.2	3.506	CC, ES
Ocoma C7-9 (Exist) - Wellbore #1 - Wellbore #1	9,900.0	6,945.5	433.2	309.1	3.491	SF
Existing Wells Sec.8-T4N-R64W						
Rydgren 8-1 (Exist) - Wellbore #1 - Wellbore #1	8,618.1	6,918.2	419.2	337.5	5.130	CC, ES
Rydgren 8-1 (Exist) - Wellbore #1 - Wellbore #1	8,700.0	6,917.7	427.1	342.7	5.061	SF
Existing Wells Sec.8-T4N-R64W (GRID)						
England 8-3-17 (Exist) - Wellbore #1 - Wellbore #1	8,253.6	6,905.9	30.7	-38.9	0.441	Level 1, CC, ES, SF
Rydgren 8-31 (Exist) - Wellbore #1 - Wellbore #1	100.0	75.3	264.4	264.1	1,015.580	CC
Rydgren 8-31 (Exist) - Wellbore #1 - Wellbore #1	610.8	588.5	265.3	262.3	88.035	ES
Rydgren 8-31 (Exist) - Wellbore #1 - Wellbore #1	7,200.0	6,863.4	479.4	439.9	12.149	SF
Frick Pad 18-4N-64W						
Frick C 17-79HN - (Noble-Exist) - API #05-123-33279 - M	9,168.2	10,735.0	259.1	151.2	2.403	CC, ES
Frick C 17-79HN - (Noble-Exist) - API #05-123-33279 - M	9,200.0	10,735.0	261.0	152.1	2.397	SF
Honebein 4N64W7K Pad Sec.7-T4N-R64W						
Honebein 7G-203 - Wellbore #1 - Wellbore #1	14,116.0	7,072.0	144.7	-21.8	0.869	Level 1, CC, ES, SF
Honebein 7G-323 - Wellbore #1 - Wellbore #1	13,938.2	7,042.1	146.5	-42.1	0.777	Level 1, CC, ES, SF
Honebein 7K-223 - Wellbore #1 - Wellbore #1	12,738.7	6,945.7	177.0	37.2	1.266	Level 3, CC, ES, SF
Honebein 7K-243 - Wellbore #1 - Wellbore #1	13,357.1	6,998.6	127.4	-26.3	0.829	Level 1, CC, ES, SF
Honebein 7K-323 - Wellbore #1 - Wellbore #1	12,335.4	7,010.2	123.0	-2.9	0.977	Level 1, CC, ES, SF
Honebein 7K-403 - Wellbore #1 - Wellbore #1	12,963.6	7,025.5	54.7	-104.3	0.344	Level 1, CC, ES, SF
Honebein 7O-243 - Wellbore #1 - Wellbore #1	12,057.3	7,035.5	153.5	16.0	1.116	Level 2, CC, ES, SF

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Jagged 4N64W08 Pad Sec.8-T4N-R64W						
Jagged 10N (Nio B) - Wellbore #1 - Plan #3 (6-21-18)	601.1	603.2	105.0	101.9	34.539	CC, ES
Jagged 10N (Nio B) - Wellbore #1 - Plan #3 (6-21-18)	1,100.0	1,099.3	131.5	125.8	23.090	SF
Jagged 1N (Nio C) - Wellbore #1 - Plan #4 (6-20-18)	200.0	199.0	29.9	29.1	36.375	CC
Jagged 1N (Nio C) - Wellbore #1 - Plan #4 (6-20-18)	300.0	298.8	30.3	29.0	22.086	ES
Jagged 1N (Nio C) - Wellbore #1 - Plan #4 (6-20-18)	8,400.0	8,458.0	500.0	382.2	4.243	SF
Jagged 2N (Nio B) - Wellbore #1 - Plan #4 (6-20-18)	400.0	400.0	15.0	13.0	7.769	CC
Jagged 2N (Nio B) - Wellbore #1 - Plan #4 (6-20-18)	14,116.0	14,070.2	271.1	-221.5	0.550	Level 1, ES, SF
Jagged 4N (Nio B) - Wellbore #1 - Plan #3 (7-9-18)	600.0	600.0	15.0	11.9	4.944	CC
Jagged 4N (Nio B) - Wellbore #1 - Plan #3 (7-9-18)	12,000.0	11,886.9	273.9	-71.9	0.792	Level 1, ES, SF
Jagged 5N (Nio C) - Wellbore #1 - Plan #3 (7-9-18)	600.0	601.0	30.0	27.0	9.906	CC, ES
Jagged 5N (Nio C) - Wellbore #1 - Plan #3 (7-9-18)	800.0	800.9	34.0	29.9	8.239	SF
Jagged 6N (Nio B) - Wellbore #1 - Plan #3 (7-9-18)	600.0	601.0	44.9	41.9	14.827	CC, ES
Jagged 6N (Nio B) - Wellbore #1 - Plan #3 (7-9-18)	900.0	900.7	54.0	49.4	11.558	SF
Jagged 7N (Nio C) - Wellbore #1 - Plan #4 (7-9-18)	600.0	601.0	60.0	57.0	19.794	CC, ES
Jagged 7N (Nio C) - Wellbore #1 - Plan #4 (7-9-18)	1,000.0	1,000.3	76.4	71.2	14.618	SF
Jagged 8N (Nio B) - Wellbore #1 - Plan #3 (7-3-18)	600.0	601.0	75.0	72.0	24.742	CC, ES
Jagged 8N (Nio B) - Wellbore #1 - Plan #3 (7-3-18)	1,000.0	1,000.3	91.2	86.0	17.443	SF
Jagged 9N (Nio C) - Wellbore #1 - Plan #4 (7-3-18)	600.0	601.0	90.0	87.0	29.691	CC, ES
Jagged 9N (Nio C) - Wellbore #1 - Plan #4 (7-3-18)	1,100.0	1,099.9	114.9	109.3	20.318	SF

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 599- Dietrich C Pad Sec.7-T4N-R64W - Dietrich C 8-32 (Noble-Exist) - Dietrich C 8-32 - Dietrich C 8-32												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance				Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
8,900.0	6,895.0	7,230.9	6,934.2	75.2	44.7	91.08	574.7	-2,294.8	438.5	327.4	111.05	3.948	
9,000.0	6,895.0	7,230.0	6,933.2	78.5	44.7	90.93	574.7	-2,294.9	387.9	273.5	114.37	3.391	
9,100.0	6,895.0	7,229.1	6,932.3	81.9	44.7	90.78	574.7	-2,294.9	358.7	240.9	117.71	3.047	
9,159.0	6,895.0	7,228.5	6,931.8	83.8	44.7	90.69	574.7	-2,294.9	353.8	234.1	119.68	2.956	CC, ES
9,200.0	6,895.0	7,228.1	6,931.4	85.2	44.7	90.63	574.7	-2,294.9	356.1	235.1	121.05	2.942	SF
9,300.0	6,895.0	7,227.2	6,930.4	88.5	44.7	90.47	574.7	-2,294.9	380.8	256.4	124.40	3.061	
9,400.0	6,895.0	7,226.2	6,929.4	91.9	44.7	90.31	574.7	-2,294.9	428.0	300.3	127.76	3.350	
9,500.0	6,895.0	7,225.2	6,928.4	95.3	44.6	90.15	574.7	-2,294.9	491.3	360.2	131.12	3.747	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 286- Dietrich C07-18 Pad Sec.7-T4N-R64W - Dietrich C07-22D (Noble-Exist) - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	6,895.0	7,185.9	6,948.9	115.5	35.8	96.78	364.5	-3,639.2	436.0	299.8	136.16	3.202	
10,200.0	6,895.0	7,181.2	6,944.2	118.9	35.8	95.11	364.5	-3,639.4	344.8	205.0	139.80	2.467	
10,300.0	6,895.0	7,176.5	6,939.5	122.3	35.8	93.43	364.5	-3,639.6	260.2	116.9	143.34	1.816	
10,400.0	6,895.0	7,171.8	6,934.9	125.7	35.7	91.75	364.5	-3,639.8	191.0	44.2	146.77	1.301	Level 3
10,500.0	6,895.0	7,167.2	6,930.2	129.1	35.7	90.08	364.5	-3,640.0	158.8	8.7	150.10	1.058	Level 2
10,506.5	6,895.0	7,166.9	6,929.9	129.4	35.7	89.97	364.5	-3,640.1	158.6	8.3	150.32	1.055	Level 2, CC, ES, SF
10,600.0	6,895.0	7,162.6	6,925.6	132.5	35.7	88.41	364.5	-3,640.3	184.1	30.8	153.32	1.201	Level 2
10,700.0	6,895.0	7,157.9	6,921.0	135.9	35.7	86.74	364.5	-3,640.5	250.0	93.6	156.41	1.599	
10,800.0	6,895.0	7,153.3	6,916.4	139.3	35.7	85.09	364.5	-3,640.7	333.3	174.0	159.37	2.092	
10,900.0	6,895.0	7,148.8	6,911.8	142.7	35.7	83.45	364.5	-3,640.9	423.9	261.7	162.20	2.613	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Existing Wells Sec.7-T4N-R64W - Honebein 13-7U (Exist) - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Survey Program: 600-NS-GYRO-MS													
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
13,400.0	6,895.0	6,953.1	6,951.8	228.2	14.8	-93.56	-36.9	-6,918.0	440.2	197.5	242.67	1.814	
13,500.0	6,895.0	6,950.1	6,948.8	231.7	14.8	-92.71	-36.9	-6,918.1	355.0	108.7	246.25	1.442	Level 3
13,600.0	6,895.0	6,947.0	6,945.7	235.1	14.8	-91.86	-36.9	-6,918.2	279.7	29.9	249.79	1.120	Level 2
13,700.0	6,895.0	6,944.0	6,942.7	238.5	14.8	-91.02	-36.9	-6,918.3	224.6	-28.7	253.28	0.887	Level 1
13,789.1	6,895.0	6,941.3	6,940.0	241.6	14.8	-90.28	-36.9	-6,918.4	206.1	-50.2	256.35	0.804	Level 1, CC
13,800.0	6,895.0	6,941.0	6,939.7	241.9	14.8	-90.19	-36.9	-6,918.4	206.4	-50.3	256.72	0.804	Level 1, ES, SF
13,900.0	6,895.0	6,938.0	6,936.7	245.4	14.8	-89.36	-36.9	-6,918.5	234.0	-26.1	260.11	0.900	Level 1
14,000.0	6,895.0	6,935.0	6,933.7	248.8	14.8	-88.53	-36.9	-6,918.6	294.8	31.4	263.45	1.119	Level 2
14,100.0	6,895.0	6,932.1	6,930.7	252.2	14.8	-87.71	-37.0	-6,918.7	372.9	106.1	266.74	1.398	Level 3
14,116.0	6,895.0	6,931.6	6,930.3	252.8	14.8	-87.58	-37.0	-6,918.7	386.3	119.1	267.26	1.446	Level 3

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Existing Wells Sec.7-T4N-R64W - Ocoma C7-9 (Exist) - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													
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
9,600.0	6,895.0	6,943.9	6,943.5	98.6	15.4	-89.94	-211.9	-2,945.7	478.5	364.5	113.97	4.198	
9,700.0	6,895.0	6,944.4	6,944.1	102.0	15.4	-90.01	-211.9	-2,945.7	441.8	324.4	117.35	3.765	
9,800.0	6,895.0	6,945.0	6,944.6	105.4	15.4	-90.09	-211.9	-2,945.7	426.0	305.2	120.73	3.528	
9,818.7	6,895.0	6,945.1	6,944.7	106.0	15.4	-90.10	-211.9	-2,945.7	425.5	304.2	121.36	3.506 CC, ES	
9,900.0	6,895.0	6,945.5	6,945.2	108.8	15.4	-90.16	-211.9	-2,945.7	433.2	309.1	124.12	3.491 SF	
10,000.0	6,895.0	6,946.1	6,945.7	112.2	15.4	-90.23	-211.9	-2,945.7	462.5	335.0	127.50	3.628	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.8-T4N-R64W - Rydgren 8-1 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (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	6,895.0	6,919.6	6,919.1	58.8	15.9	-89.88	-192.1	-1,745.2	472.5	397.9	74.59	6.335	
8,500.0	6,895.0	6,918.9	6,918.5	62.0	15.9	-89.79	-192.1	-1,745.2	435.5	357.7	77.84	5.595	
8,600.0	6,895.0	6,918.3	6,917.8	65.3	15.9	-89.70	-192.1	-1,745.2	419.6	338.5	81.11	5.173	
8,618.1	6,895.0	6,918.2	6,917.7	65.9	15.9	-89.69	-192.1	-1,745.2	419.2	337.5	81.71	5.130 CC, ES	
8,700.0	6,895.0	6,917.7	6,917.2	68.6	15.9	-89.62	-192.1	-1,745.2	427.1	342.7	84.40	5.061 SF	
8,800.0	6,895.0	6,917.0	6,916.6	71.9	15.9	-89.53	-192.1	-1,745.2	457.0	369.3	87.70	5.210	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Existing Wells Sec.8-T4N-R64W (GRID) - England 8-3-17 (Exist) - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													
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	
7,800.0	6,895.0	6,909.5	6,907.2	39.9	15.7	-95.99	200.5	-1,385.2	454.6	399.4	55.24	8.231	
7,900.0	6,895.0	6,908.7	6,906.4	42.9	15.7	-94.55	200.5	-1,385.2	354.9	296.6	58.36	6.082	
8,000.0	6,895.0	6,907.9	6,905.7	46.0	15.7	-93.09	200.5	-1,385.2	255.5	193.9	61.52	4.152	
8,100.0	6,895.0	6,907.1	6,904.9	49.1	15.7	-91.63	200.5	-1,385.2	156.7	92.0	64.70	2.421	
8,200.0	6,895.0	6,906.3	6,904.1	52.3	15.7	-90.15	200.5	-1,385.2	61.8	-6.1	67.88	0.910	Level 1
8,253.6	6,895.0	6,905.9	6,903.7	54.0	15.7	-89.36	200.5	-1,385.2	30.7	-38.9	69.59	0.441	Level 1, CC, ES, SF
8,300.0	6,895.0	6,905.6	6,903.3	55.5	15.7	-88.67	200.5	-1,385.2	55.6	-15.5	71.06	0.783	Level 1
8,400.0	6,895.0	6,904.8	6,902.5	58.8	15.7	-87.18	200.5	-1,385.2	149.5	75.3	74.20	2.015	
8,500.0	6,895.0	6,903.9	6,901.7	62.0	15.6	-85.68	200.5	-1,385.2	248.3	170.9	77.32	3.211	
8,600.0	6,895.0	6,903.1	6,900.9	65.3	15.6	-84.18	200.6	-1,385.2	347.7	267.3	80.39	4.325	
8,700.0	6,895.0	6,902.3	6,900.1	68.6	15.6	-82.68	200.6	-1,385.2	447.4	364.0	83.41	5.364	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.8-T4N-R64W (GRID) - Rydgren 8-31 (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	-136.18	-190.6	-182.9	265.2					
100.0	100.0	75.3	75.3	0.1	0.1	-136.20	-190.8	-183.0	264.4	264.1	0.26	1,015.580 CC		
200.0	200.0	175.4	175.4	0.4	0.4	-136.24	-191.5	-183.4	265.1	264.3	0.82	322.967		
300.0	300.0	276.5	276.5	0.7	0.7	-136.26	-191.9	-183.6	265.5	264.1	1.41	188.238		
400.0	400.0	377.2	377.2	1.0	1.0	-136.29	-192.0	-183.5	265.6	263.7	1.93	137.925		
500.0	500.0	477.2	477.2	1.2	1.2	-136.35	-192.1	-183.3	265.5	263.1	2.42	109.669		
600.0	600.0	577.7	577.7	1.5	1.4	-136.46	-192.4	-182.8	265.3	262.4	2.96	89.781		
610.8	610.8	588.5	588.5	1.5	1.5	177.41	-192.4	-182.7	265.3	262.3	3.01	88.035 ES		
700.0	700.0	677.9	677.9	1.8	1.7	177.32	-192.5	-182.1	266.3	262.8	3.49	76.364		
800.0	799.9	777.7	777.7	2.1	2.0	177.24	-192.6	-181.5	269.9	265.9	4.03	66.939		
900.0	899.7	877.2	877.2	2.3	2.3	177.13	-193.0	-180.8	276.2	271.6	4.61	59.932		
1,000.0	999.3	976.6	976.6	2.6	2.6	177.02	-193.6	-180.0	285.2	280.0	5.19	54.928		
1,056.6	1,055.5	1,032.9	1,032.9	2.8	2.8	176.96	-193.9	-179.5	291.5	285.9	5.52	52.762		
1,100.0	1,098.6	1,076.1	1,076.1	2.9	2.9	176.93	-194.2	-179.1	296.6	290.8	5.78	51.296		
1,200.0	1,197.9	1,175.5	1,175.5	3.3	3.2	176.84	-194.8	-178.2	308.3	301.9	6.38	48.343		
1,300.0	1,297.2	1,275.4	1,275.4	3.6	3.6	176.72	-195.5	-177.0	319.9	313.0	6.97	45.868		
1,400.0	1,396.5	1,374.8	1,374.8	4.0	3.9	176.65	-196.0	-175.9	331.4	323.9	7.57	43.778		
1,500.0	1,495.7	1,473.6	1,473.6	4.3	4.2	176.61	-196.3	-175.0	343.0	334.8	8.17	41.992		
1,600.0	1,595.0	1,573.0	1,573.0	4.7	4.5	176.58	-196.8	-174.2	354.7	345.9	8.77	40.434		
1,700.0	1,694.3	1,670.8	1,670.8	5.1	4.8	176.55	-197.2	-173.5	366.4	357.1	9.36	39.166		
1,800.0	1,793.6	1,769.0	1,769.0	5.4	5.1	176.58	-197.9	-173.4	378.7	368.8	9.93	38.137		
1,900.0	1,892.9	1,868.3	1,868.2	5.8	5.4	176.56	-198.8	-173.1	391.1	380.6	10.49	37.281		
2,000.0	1,992.2	1,967.9	1,967.8	6.2	5.6	176.60	-199.4	-173.0	403.4	392.3	11.04	36.524		
2,100.0	2,091.5	2,069.6	2,069.5	6.5	5.8	176.70	-199.5	-173.1	415.4	403.9	11.51	36.078		
2,200.0	2,190.8	2,170.2	2,170.1	6.9	5.9	176.86	-198.8	-173.1	426.8	414.9	11.88	35.925		
2,300.0	2,290.0	2,269.8	2,269.7	7.3	5.9	177.04	-197.9	-173.2	438.2	425.9	12.22	35.849		
2,400.0	2,389.3	2,368.3	2,368.2	7.7	6.0	177.20	-197.0	-173.4	449.5	436.9	12.58	35.739		
2,500.0	2,488.6	2,466.7	2,466.6	8.1	6.1	177.34	-196.4	-173.5	461.1	448.2	12.94	35.633		
2,600.0	2,587.9	2,566.9	2,566.8	8.4	6.1	177.50	-195.7	-173.9	472.8	459.5	13.31	35.519		
2,700.0	2,687.2	2,667.5	2,667.4	8.8	6.2	177.69	-194.6	-174.3	484.1	470.4	13.70	35.332		
2,800.0	2,786.5	2,768.4	2,768.3	9.2	6.4	177.85	-193.3	-174.4	495.3	481.1	14.13	35.059		
6,850.0	6,743.6	6,721.6	6,721.1	19.1	15.3	-76.80	-213.9	-186.2	491.1	457.4	33.64	14.600		
6,900.0	6,772.9	6,751.0	6,750.5	19.5	15.3	-80.71	-213.8	-186.4	478.1	443.7	34.39	13.901		
6,950.0	6,799.4	6,777.6	6,777.1	20.0	15.3	-84.30	-213.8	-186.5	467.8	432.6	35.16	13.305		
7,000.0	6,822.8	6,801.2	6,800.7	20.6	15.4	-87.43	-213.7	-186.6	461.0	425.1	35.93	12.831		
7,050.0	6,843.1	6,821.6	6,821.1	21.4	15.4	-89.97	-213.7	-186.7	458.4	421.7	36.72	12.483		
7,054.0	6,844.6	6,823.1	6,822.6	21.4	15.4	-90.14	-213.7	-186.7	458.4	421.6	36.79	12.460		
7,100.0	6,860.2	6,838.9	6,838.4	22.2	15.4	-91.82	-213.6	-186.8	460.4	422.9	37.56	12.260		
7,150.0	6,873.9	6,852.8	6,852.3	23.1	15.4	-92.93	-213.6	-186.9	467.4	428.9	38.46	12.153		
7,200.0	6,884.2	6,863.4	6,862.9	24.1	15.5	-93.23	-213.6	-186.9	479.4	439.9	39.46	12.149 SF		
7,250.0	6,891.1	6,870.5	6,870.0	25.1	15.5	-92.69	-213.6	-186.9	496.1	455.6	40.54	12.236		

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 744- Frick Pad 18-4N-64W - Frick C 17-79HN - (Noble-Exist) - API #05-123-33279 - MWD Survey												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
8,800.0	6,895.0	10,735.0	6,869.3	71.9	97.4	-89.41	-38.2	-2,297.2	450.2	354.7	95.56	4.712	
8,900.0	6,895.0	10,735.0	6,869.3	75.2	97.4	-89.41	-38.2	-2,297.2	372.9	274.0	98.87	3.772	
9,000.0	6,895.0	10,735.0	6,869.3	78.5	97.4	-89.41	-38.2	-2,297.2	308.9	206.7	102.20	3.022	
9,100.0	6,895.0	10,735.0	6,869.3	81.9	97.4	-89.41	-38.2	-2,297.2	267.9	162.4	105.54	2.538	
9,168.2	6,895.0	10,735.0	6,869.3	84.1	97.4	-89.41	-38.2	-2,297.2	259.1	151.2	107.82	2.403 CC, ES	
9,200.0	6,895.0	10,735.0	6,869.3	85.2	97.4	-89.41	-38.2	-2,297.2	261.0	152.1	108.88	2.397 SF	
9,300.0	6,895.0	10,735.0	6,869.3	88.5	97.4	-89.41	-38.2	-2,297.2	290.7	178.4	112.24	2.590	
9,400.0	6,895.0	10,735.0	6,869.3	91.9	97.4	-89.41	-38.2	-2,297.2	347.6	232.0	115.59	3.007	
9,500.0	6,895.0	10,735.0	6,869.3	95.3	97.4	-89.41	-38.2	-2,297.2	420.9	302.0	118.96	3.539	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Honebein 4N64W7K Pad Sec.7-T4N-R64W - Honebein 7G-203 - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Survey Program: 267-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
13,700.0	6,895.0	7,047.3	6,837.7	238.5	31.1	-22.88	112.8	-7,310.0	497.4	376.0	121.38	4.098	
13,800.0	6,895.0	7,052.9	6,841.3	241.9	31.1	-25.18	108.6	-7,310.4	401.9	270.8	131.07	3.066	
13,900.0	6,895.0	7,072.0	6,853.2	245.4	31.2	-33.40	93.7	-7,312.0	309.5	147.4	162.17	1.909	
14,000.0	6,895.0	7,072.0	6,853.2	248.8	31.2	-33.40	93.7	-7,312.0	222.6	58.4	164.20	1.356 Level 3	
14,100.0	6,895.0	7,072.0	6,853.2	252.2	31.2	-33.40	93.7	-7,312.0	152.6	-13.6	166.23	0.918 Level 1	
14,116.0	6,895.0	7,072.0	6,853.2	252.8	31.2	-33.40	93.7	-7,312.0	144.7	-21.8	166.55	0.869 Level 1, CC, ES, SF	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Honebein 4N64W7K Pad Sec.7-T4N-R64W - Honebein 7G-323 - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Survey Program: 168-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
13,500.0	6,895.0	7,019.7	6,837.7	231.7	27.0	-33.04	86.7	-7,067.8	461.6	311.0	150.54	3.066	
13,600.0	6,895.0	7,025.0	6,841.2	235.1	27.0	-35.05	82.8	-7,068.0	368.2	209.0	159.25	2.312	
13,700.0	6,895.0	7,030.1	6,844.7	238.5	27.0	-37.05	79.0	-7,068.2	279.4	111.5	167.98	1.664	
13,800.0	6,895.0	7,035.2	6,848.1	241.9	27.0	-39.03	75.2	-7,068.4	201.3	24.6	176.69	1.139 Level 2	
13,900.0	6,895.0	7,040.2	6,851.4	245.4	27.0	-40.99	71.4	-7,068.6	151.4	-33.9	185.36	0.817 Level 1	
13,938.2	6,895.0	7,042.1	6,852.7	246.7	27.1	-41.73	70.0	-7,068.7	146.5	-42.1	188.66	0.777 Level 1, CC, ES, SF	
14,000.0	6,895.0	7,045.2	6,854.7	248.8	27.1	-42.92	67.7	-7,068.8	159.0	-35.0	193.96	0.820 Level 1	
14,100.0	6,895.0	7,050.1	6,857.9	252.2	27.1	-44.82	64.1	-7,069.0	218.1	15.7	202.44	1.077 Level 2	
14,116.0	6,895.0	7,050.8	6,858.4	252.8	27.1	-45.13	63.5	-7,069.1	230.2	26.4	203.79	1.130 Level 2	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Honebein 4N64W7K Pad Sec.7-T4N-R64W - Honebein 7K-223 - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Survey Program: 166-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
12,300.0	6,895.0	6,888.9	6,784.9	190.6	17.7	-19.08	119.7	-5,861.6	469.6	385.7	83.93	5.596	
12,400.0	6,895.0	6,903.8	6,794.3	194.0	17.7	-23.38	108.4	-5,863.7	379.7	282.9	96.82	3.922	
12,500.0	6,895.0	6,917.4	6,802.7	197.4	17.7	-27.53	97.9	-5,865.6	295.7	185.8	109.93	2.690	
12,600.0	6,895.0	6,929.9	6,810.3	200.8	17.7	-31.46	88.1	-5,867.2	224.2	101.4	122.80	1.826	
12,700.0	6,895.0	6,941.4	6,817.3	204.3	17.7	-35.14	79.0	-5,868.7	181.1	45.9	135.14	1.340	Level 3
12,738.7	6,895.0	6,945.7	6,819.8	205.6	17.7	-36.50	75.6	-5,869.2	177.0	37.2	139.74	1.266	Level 3, CC, ES, SF
12,800.0	6,895.0	6,952.1	6,823.5	207.7	17.8	-38.57	70.5	-5,869.9	187.1	40.3	146.79	1.275	Level 3
12,900.0	6,895.0	6,962.0	6,829.3	211.1	17.8	-41.73	62.5	-5,871.1	238.7	81.0	157.69	1.514	
13,000.0	6,895.0	6,973.0	6,835.5	214.5	17.8	-45.19	53.5	-5,872.3	314.2	144.9	169.28	1.856	
13,100.0	6,895.0	6,973.0	6,835.5	218.0	17.8	-45.19	53.5	-5,872.3	400.4	228.6	171.79	2.331	
13,200.0	6,895.0	6,973.0	6,835.5	221.4	17.8	-45.19	53.5	-5,872.3	491.8	317.5	174.30	2.822	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Honebein 4N64W7K Pad Sec.7-T4N-R64W - Honebein 7K-243 - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Survey Program: 166-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	
12,900.0	6,895.0	6,989.6	6,855.1	211.1	19.3	-32.38	105.6	-6,487.7	474.4	342.2	132.17	3.589	
13,000.0	6,895.0	6,991.5	6,856.3	214.5	19.3	-33.23	104.1	-6,487.7	379.0	242.3	136.67	2.773	
13,100.0	6,895.0	6,993.4	6,857.4	218.0	19.3	-34.09	102.5	-6,487.7	286.8	145.5	141.28	2.030	
13,200.0	6,895.0	6,995.4	6,858.6	221.4	19.3	-34.97	101.0	-6,487.7	202.2	56.2	146.01	1.385 Level 3	
13,300.0	6,895.0	6,997.4	6,859.8	224.8	19.3	-35.87	99.4	-6,487.8	139.6	-11.3	150.86	0.925 Level 1	
13,357.1	6,895.0	6,998.6	6,860.5	226.8	19.3	-36.39	98.4	-6,487.8	127.4	-26.3	153.67	0.829 Level 1, CC, ES, SF	
13,400.0	6,895.0	6,999.4	6,861.0	228.2	19.3	-36.79	97.7	-6,487.8	134.4	-21.4	155.81	0.863 Level 1	
13,500.0	6,895.0	7,001.5	6,862.2	231.7	19.3	-37.73	96.0	-6,487.9	191.4	30.5	160.88	1.190 Level 2	
13,600.0	6,895.0	7,003.7	6,863.5	235.1	19.3	-38.68	94.3	-6,487.9	274.2	108.2	166.06	1.651	
13,700.0	6,895.0	7,005.8	6,864.7	238.5	19.3	-39.65	92.6	-6,487.9	365.7	194.4	171.34	2.135	
13,800.0	6,895.0	7,008.0	6,866.0	241.9	19.3	-40.64	90.7	-6,488.0	460.8	284.1	176.71	2.607	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Honebein 4N64W7K Pad Sec.7-T4N-R64W - Honebein 7K-323 - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Survey Program: 168-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	
11,900.0	6,895.0	6,975.5	6,839.9	176.9	21.3	-18.23	145.2	-5,463.4	451.0	373.4	77.56	5.814	
12,000.0	6,895.0	6,983.9	6,844.8	180.3	21.3	-21.81	138.5	-5,464.1	356.1	268.2	87.92	4.051	
12,100.0	6,895.0	6,992.0	6,849.5	183.7	21.3	-25.42	132.0	-5,464.8	264.9	165.9	98.93	2.677	
12,200.0	6,895.0	6,999.8	6,854.0	187.1	21.3	-29.00	125.5	-5,465.5	182.6	72.2	110.31	1.655	
12,300.0	6,895.0	7,007.5	6,858.3	190.6	21.3	-32.54	119.2	-5,466.1	127.9	6.1	121.80	1.050 Level 2	
12,335.4	6,895.0	7,010.2	6,859.8	191.8	21.3	-33.78	117.0	-5,466.3	123.0	-2.9	125.85	0.977 Level 1, CC, ES, SF	
12,400.0	6,895.0	7,014.9	6,862.4	194.0	21.3	-36.00	113.1	-5,466.7	138.8	5.6	133.18	1.042 Level 2	
12,500.0	6,895.0	7,022.2	6,866.4	197.4	21.3	-39.34	107.0	-5,467.2	205.0	60.7	144.29	1.421 Level 3	
12,600.0	6,895.0	7,029.2	6,870.1	200.8	21.3	-42.54	101.1	-5,467.8	291.0	136.0	155.00	1.877	
12,700.0	6,895.0	7,036.1	6,873.7	204.3	21.3	-45.59	95.3	-5,468.3	383.7	218.4	165.22	2.322	
12,800.0	6,895.0	7,042.7	6,877.2	207.7	21.3	-48.47	89.6	-5,468.8	479.2	304.3	174.92	2.739	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Honebein 4N64W7K Pad Sec.7-T4N-R64W - Honebein 7K-403 - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Survey Program: 175-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
12,500.0	6,895.0	7,024.8	6,920.8	197.4	17.8	-41.06	142.5	-6,094.8	466.8	320.6	146.20	3.193	
12,600.0	6,895.0	7,025.0	6,920.9	200.8	17.8	-41.23	142.3	-6,094.8	367.7	218.7	148.98	2.468	
12,700.0	6,895.0	7,025.1	6,921.0	204.3	17.8	-41.38	142.2	-6,094.8	269.2	117.4	151.75	1.774	
12,800.0	6,895.0	7,025.3	6,921.1	207.7	17.8	-41.53	142.1	-6,094.8	172.5	18.0	154.50	1.116	Level 2
12,900.0	6,895.0	7,025.4	6,921.1	211.1	17.8	-41.67	142.0	-6,094.8	83.9	-73.4	157.24	0.533	Level 1
12,963.6	6,895.0	7,025.5	6,921.2	213.3	17.8	-41.75	142.0	-6,094.8	54.7	-104.3	158.97	0.344	Level 1, CC, ES, SF
13,000.0	6,895.0	7,025.5	6,921.2	214.5	17.8	-41.80	141.9	-6,094.8	65.7	-94.2	159.96	0.411	Level 1
13,100.0	6,895.0	7,025.7	6,921.3	218.0	17.8	-41.92	141.8	-6,094.8	147.0	-15.7	162.68	0.904	Level 1
13,200.0	6,895.0	7,025.8	6,921.4	221.4	17.8	-42.04	141.8	-6,094.8	242.7	77.3	165.38	1.467	Level 3
13,300.0	6,895.0	7,025.9	6,921.4	224.8	17.8	-42.15	141.7	-6,094.8	340.9	172.8	168.08	2.028	
13,400.0	6,895.0	7,026.0	6,921.5	228.2	17.8	-42.25	141.6	-6,094.8	439.9	269.1	170.77	2.576	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Honebein 4N64W7K Pad Sec.7-T4N-R64W - Honebein 7O-243 - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Survey Program: 136-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
11,600.0	6,895.0	7,058.0	6,858.9	166.6	25.0	-47.97	73.1	-5,186.6	482.0	336.7	145.30	3.317	
11,700.0	6,895.0	7,058.0	6,858.9	170.0	25.0	-47.97	73.1	-5,186.6	388.6	240.7	147.91	2.628	
11,800.0	6,895.0	7,046.0	6,851.5	173.5	25.0	-43.57	82.4	-5,187.2	299.4	158.6	140.80	2.126	
11,900.0	6,895.0	7,042.1	6,849.0	176.9	25.0	-42.13	85.4	-5,187.5	219.7	79.8	139.87	1.570	
12,000.0	6,895.0	7,038.0	6,846.4	180.3	24.9	-40.59	88.6	-5,187.7	163.8	25.3	138.52	1.183 Level 2	
12,057.3	6,895.0	7,035.5	6,844.8	182.3	24.9	-39.67	90.5	-5,187.8	153.5	16.0	137.55	1.116 Level 2, CC, ES, SF	
12,100.0	6,895.0	7,033.6	6,843.6	183.7	24.9	-38.95	92.0	-5,188.0	159.3	22.6	136.72	1.165 Level 2	
12,200.0	6,895.0	7,028.9	6,840.6	187.1	24.9	-37.20	95.6	-5,188.3	209.5	75.1	134.42	1.558	
12,300.0	6,895.0	7,023.9	6,837.3	190.6	24.9	-35.34	99.4	-5,188.6	286.9	155.4	131.59	2.181	
12,400.0	6,895.0	7,018.5	6,833.8	194.0	24.9	-33.35	103.5	-5,188.9	375.1	247.0	128.18	2.927	
12,500.0	6,895.0	7,012.7	6,830.0	197.4	24.9	-31.23	107.9	-5,189.3	468.0	343.9	124.15	3.770	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 10N (Nio B) - Wellbore #1 - Plan #3 (6-21-18)													Offset Site Error: 0.0 ft		
Survey Program: 0-MWD														Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	2.0	2.0	0.0	0.0	-89.84	0.3	-105.0	105.0	105.0	0.00	N/A			
100.0	100.0	102.0	102.0	0.1	0.1	-89.84	0.3	-105.0	105.0	104.7	0.28	373.798			
200.0	200.0	202.0	202.0	0.4	0.4	-89.84	0.3	-105.0	105.0	104.1	0.83	126.250			
300.0	300.0	302.0	302.0	0.7	0.7	-89.84	0.3	-105.0	105.0	103.6	1.38	75.951			
400.0	400.0	402.0	402.0	1.0	1.0	-89.84	0.3	-105.0	105.0	103.0	1.93	54.312			
500.0	500.0	502.0	502.0	1.2	1.2	-89.84	0.3	-105.0	105.0	102.5	2.48	42.270			
600.0	600.0	602.0	602.0	1.5	1.5	-89.84	0.3	-105.0	105.0	101.9	3.03	34.605			
601.1	601.1	603.2	603.2	1.5	1.5	-135.95	0.3	-105.0	105.0	101.9	3.04	34.539 CC, ES			
700.0	700.0	702.7	702.7	1.8	1.8	-137.17	-1.0	-104.6	105.6	102.0	3.55	29.764			
800.0	799.9	803.0	802.9	2.1	2.0	-140.64	-4.9	-103.6	107.7	103.7	4.04	26.646			
900.0	899.7	902.8	902.5	2.3	2.2	-146.05	-11.3	-101.9	112.1	107.5	4.56	24.562			
1,000.0	999.3	1,001.6	1,000.9	2.6	2.5	-152.77	-20.1	-99.6	119.7	114.6	5.11	23.410			
1,056.6	1,055.5	1,057.0	1,055.9	2.8	2.7	-156.87	-26.1	-98.0	125.9	120.5	5.44	23.129			
1,100.0	1,098.6	1,099.3	1,097.8	2.9	2.8	-160.04	-31.2	-96.6	131.5	125.8	5.69	23.090 SF			
1,200.0	1,197.9	1,195.9	1,193.5	3.3	3.1	-167.01	-44.5	-93.0	146.1	139.8	6.30	23.205			
1,300.0	1,297.2	1,291.5	1,287.8	3.6	3.5	-173.43	-60.0	-88.9	163.4	156.5	6.92	23.617			
1,400.0	1,396.5	1,386.0	1,380.4	4.0	3.9	-179.20	-77.6	-84.3	183.6	176.0	7.56	24.276			
1,500.0	1,495.7	1,479.2	1,471.4	4.3	4.4	175.67	-97.0	-79.1	206.6	198.4	8.22	25.133			
1,600.0	1,595.0	1,571.1	1,560.6	4.7	4.9	171.15	-118.3	-73.4	232.5	223.6	8.89	26.145			
1,700.0	1,694.3	1,662.3	1,648.7	5.1	5.4	167.17	-141.5	-67.2	261.0	251.4	9.57	27.273			
1,800.0	1,793.6	1,756.3	1,739.2	5.4	6.0	163.74	-166.0	-60.7	291.0	280.8	10.26	28.367			
1,900.0	1,892.9	1,850.4	1,829.8	5.8	6.6	160.95	-190.6	-54.2	321.9	310.9	10.94	29.411			
2,000.0	1,992.2	1,944.4	1,920.3	6.2	7.2	158.65	-215.1	-47.6	353.3	341.7	11.63	30.384			
2,100.0	2,091.5	2,038.4	2,010.8	6.5	7.8	156.71	-239.7	-41.1	385.2	372.9	12.31	31.286			
2,200.0	2,190.8	2,132.5	2,101.4	6.9	8.4	155.07	-264.2	-34.6	417.4	404.4	13.00	32.118			
2,300.0	2,290.0	2,226.5	2,191.9	7.3	9.0	153.66	-288.8	-28.0	449.9	436.2	13.68	32.886			
2,400.0	2,389.3	2,320.5	2,282.4	7.7	9.7	152.44	-313.3	-21.5	482.6	468.2	14.36	33.594			

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 1N (Nio C) - Wellbore #1 - Plan #4 (6-20-18)													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	90.06	0.0	29.9	30.0					
100.0	100.0	99.0	99.0	0.1	0.1	90.06	0.0	29.9	29.9	29.7	0.27	109.307		
200.0	200.0	199.0	199.0	0.4	0.4	90.06	0.0	29.9	29.9	29.1	0.82	36.375 CC		
300.0	300.0	298.8	298.7	0.7	0.7	87.76	1.2	30.3	30.3	29.0	1.37	22.086 ES		
400.0	400.0	398.4	398.3	1.0	1.0	81.17	4.9	31.5	31.8	29.9	1.93	16.496		
500.0	500.0	497.7	497.4	1.2	1.3	71.68	11.0	33.4	35.2	32.7	2.49	14.125		
600.0	600.0	596.7	595.9	1.5	1.6	61.40	19.6	36.0	41.1	38.1	3.05	13.473		
700.0	700.0	695.2	693.8	1.8	1.9	6.20	30.6	39.4	48.9	45.2	3.63	13.470		
800.0	799.9	793.4	791.0	2.1	2.3	-1.51	43.9	43.5	57.1	52.9	4.19	13.627		
900.0	899.7	891.9	888.2	2.3	2.7	-8.24	59.5	48.3	65.8	61.1	4.76	13.821		
1,000.0	999.3	991.4	986.2	2.6	3.1	-13.95	75.7	53.3	73.1	67.8	5.33	13.718		
1,056.6	1,055.5	1,047.8	1,041.8	2.8	3.4	-16.94	84.8	56.1	76.4	70.8	5.65	13.514		
1,100.0	1,098.6	1,091.0	1,084.4	2.9	3.6	-19.15	91.9	58.3	78.8	72.9	5.90	13.342		
1,200.0	1,197.9	1,190.6	1,182.6	3.3	4.0	-23.74	108.0	63.3	84.6	78.1	6.49	13.031		
1,300.0	1,297.2	1,290.3	1,280.7	3.6	4.5	-27.72	124.2	68.3	90.9	83.8	7.10	12.810		
1,400.0	1,396.5	1,389.9	1,378.9	4.0	4.9	-31.18	140.4	73.3	97.6	89.9	7.72	12.640		
1,500.0	1,495.7	1,489.5	1,477.0	4.3	5.4	-34.18	156.6	78.2	104.6	96.2	8.36	12.507		
1,600.0	1,595.0	1,589.1	1,575.2	4.7	5.8	-36.80	172.8	83.2	111.9	102.8	9.02	12.399		
1,700.0	1,694.3	1,688.7	1,673.4	5.1	6.3	-39.10	189.0	88.2	119.3	109.6	9.69	12.308		
1,800.0	1,793.6	1,788.3	1,771.5	5.4	6.8	-41.12	205.1	93.2	126.9	116.6	10.38	12.231		
1,900.0	1,892.9	1,888.0	1,869.7	5.8	7.2	-42.92	221.3	98.2	134.7	123.6	11.07	12.165		
2,000.0	1,992.2	1,987.6	1,967.9	6.2	7.7	-44.52	237.5	103.2	142.6	130.8	11.77	12.108		
2,100.0	2,091.5	2,087.2	2,066.0	6.5	8.2	-45.94	253.7	108.2	150.5	138.1	12.49	12.058		
2,200.0	2,190.8	2,186.8	2,164.2	6.9	8.6	-47.23	269.9	113.2	158.6	145.4	13.20	12.013		
2,300.0	2,290.0	2,286.4	2,262.4	7.3	9.1	-48.39	286.1	118.2	166.7	152.8	13.93	11.974		
2,400.0	2,389.3	2,386.0	2,360.5	7.7	9.5	-49.44	302.3	123.2	174.9	160.3	14.65	11.938		
2,500.0	2,488.6	2,485.6	2,458.7	8.1	10.0	-50.40	318.4	128.2	183.2	167.8	15.38	11.907		
2,600.0	2,587.9	2,585.3	2,556.9	8.4	10.5	-51.28	334.6	133.1	191.5	175.4	16.12	11.879		
2,700.0	2,687.2	2,684.9	2,655.0	8.8	10.9	-52.08	350.8	138.1	199.8	183.0	16.86	11.853		
2,800.0	2,786.5	2,784.5	2,753.2	9.2	11.4	-52.82	367.0	143.1	208.2	190.6	17.60	11.830		
2,900.0	2,885.8	2,884.1	2,851.3	9.6	11.9	-53.50	383.2	148.1	216.6	198.3	18.34	11.809		
3,000.0	2,985.0	2,983.7	2,949.5	9.9	12.3	-54.13	399.4	153.1	225.0	205.9	19.09	11.790		
3,100.0	3,084.3	3,083.3	3,047.7	10.3	12.8	-54.71	415.6	158.1	233.5	213.6	19.83	11.773		
3,200.0	3,183.6	3,182.9	3,145.8	10.7	13.3	-55.26	431.7	163.1	242.0	221.4	20.58	11.757		
3,300.0	3,282.9	3,282.6	3,244.0	11.1	13.8	-55.76	447.9	168.1	250.5	229.1	21.33	11.742		
3,400.0	3,382.2	3,382.2	3,342.2	11.5	14.2	-56.24	464.1	173.1	259.0	236.9	22.08	11.729		
3,500.0	3,481.5	3,481.8	3,440.3	11.9	14.7	-56.68	480.3	178.1	267.5	244.7	22.83	11.716		
3,600.0	3,580.8	3,581.4	3,538.5	12.2	15.2	-57.09	496.5	183.1	276.1	252.5	23.59	11.705		
3,678.2	3,658.4	3,659.2	3,615.2	12.5	15.5	-57.40	509.1	187.0	282.7	258.6	24.17	11.696		
3,700.0	3,680.1	3,681.0	3,636.7	12.6	15.6	-57.50	512.7	188.0	284.7	260.3	24.33	11.702		
3,800.0	3,779.6	3,780.5	3,734.7	12.9	16.1	-57.63	528.8	193.0	294.6	269.6	24.93	11.816		
3,900.0	3,879.4	3,879.8	3,832.5	13.1	16.6	-57.23	545.0	198.0	306.4	280.9	25.44	12.043		
4,000.0	3,979.4	3,978.6	3,929.9	13.3	17.0	-56.38	561.0	203.0	320.1	294.2	25.86	12.379		
4,020.6	4,000.0	3,999.0	3,950.0	13.4	17.1	-10.05	564.3	204.0	323.2	295.2	27.96	11.559		
4,100.0	4,079.4	4,077.2	4,027.1	13.5	17.5	-9.00	577.0	207.9	335.3	306.7	28.59	11.727		
4,200.0	4,179.4	4,175.7	4,124.2	13.7	18.0	-7.77	593.0	212.8	350.7	321.3	29.39	11.930		
4,300.0	4,279.4	4,274.3	4,221.3	13.9	18.4	-6.66	609.1	217.8	366.2	336.0	30.19	12.131		
4,400.0	4,379.4	4,372.8	4,318.4	14.2	18.9	-5.63	625.1	222.7	381.8	350.9	30.97	12.328		
4,500.0	4,479.4	4,471.4	4,415.5	14.4	19.3	-4.68	641.1	227.6	397.6	365.8	31.75	12.522		
4,600.0	4,579.4	4,569.9	4,512.6	14.6	19.8	-3.81	657.1	232.6	413.5	380.9	32.52	12.712		
4,700.0	4,679.4	4,668.5	4,609.7	14.8	20.3	-3.00	673.1	237.5	429.4	396.1	33.29	12.898		
4,800.0	4,779.4	4,767.0	4,706.8	15.1	20.7	-2.25	689.1	242.5	445.4	411.4	34.06	13.079		

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

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 1N (Nio C) - Wellbore #1 - Plan #4 (6-20-18)													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		
4,900.0	4,879.4	4,865.5	4,803.9	15.3	21.2	-1.55	705.1	247.4	461.5	426.7	34.82	13.256		
5,000.0	4,979.4	4,980.9	4,918.0	15.5	21.6	-0.86	722.0	252.6	476.1	440.6	35.54	13.398		
5,100.0	5,079.4	5,099.2	5,035.5	15.8	22.0	-0.37	734.8	256.5	486.9	450.7	36.17	13.459		
5,200.0	5,179.4	5,218.5	5,154.4	16.0	22.3	-0.07	742.9	259.1	493.7	457.0	36.73	13.442		
5,300.0	5,279.4	5,338.2	5,274.1	16.2	22.5	0.05	746.4	260.1	496.6	459.4	37.21	13.346		
5,400.0	5,379.4	5,442.5	5,378.4	16.5	22.6	0.05	746.5	260.1	496.7	459.0	37.62	13.201		
5,500.0	5,479.4	5,542.5	5,478.4	16.7	22.8	0.05	746.5	260.1	496.7	458.6	38.04	13.055		
5,600.0	5,579.4	5,642.5	5,578.4	16.9	23.0	0.05	746.5	260.1	496.7	458.2	38.47	12.912		
5,700.0	5,679.4	5,742.5	5,678.4	17.2	23.2	0.05	746.5	260.1	496.7	457.8	38.89	12.771		
5,800.0	5,779.4	5,842.5	5,778.4	17.4	23.3	0.05	746.5	260.1	496.7	457.3	39.32	12.632		
5,900.0	5,879.4	5,942.5	5,878.4	17.6	23.5	0.05	746.5	260.1	496.7	456.9	39.75	12.495		
6,000.0	5,979.4	6,042.5	5,978.4	17.9	23.7	0.05	746.5	260.1	496.7	456.5	40.18	12.360		
6,100.0	6,079.4	6,142.5	6,078.4	18.1	23.9	0.05	746.5	260.1	496.7	456.0	40.62	12.227		
6,199.6	6,179.0	6,242.1	6,178.0	18.4	24.0	0.05	746.5	260.1	496.7	455.6	41.06	12.097		
6,250.0	6,229.3	6,292.8	6,228.7	18.5	24.1	90.78	746.5	259.0	496.7	460.3	36.38	13.652		
6,300.0	6,279.1	6,343.2	6,278.9	18.6	24.2	90.86	746.4	254.5	496.7	460.2	36.54	13.593		
6,350.0	6,328.3	6,393.7	6,328.7	18.6	24.2	90.94	746.3	246.3	496.7	460.1	36.67	13.548		
6,400.0	6,376.8	6,444.3	6,377.9	18.7	24.3	91.01	746.2	234.7	496.8	460.0	36.77	13.511		
6,450.0	6,424.3	6,494.8	6,426.1	18.7	24.3	91.07	746.1	219.6	496.8	459.9	36.85	13.481		
6,500.0	6,470.7	6,545.4	6,473.2	18.7	24.3	91.14	745.9	201.2	496.8	459.9	36.93	13.453		
6,550.0	6,515.6	6,596.1	6,519.0	18.7	24.3	91.19	745.7	179.4	496.9	459.9	37.02	13.422		
6,600.0	6,558.8	6,646.8	6,563.1	18.7	24.3	91.24	745.5	154.4	496.9	459.8	37.14	13.380		
6,650.0	6,600.3	6,697.5	6,605.3	18.7	24.3	91.28	745.2	126.4	497.0	459.7	37.31	13.322		
6,700.0	6,639.6	6,748.3	6,645.5	18.8	24.3	91.32	744.9	95.4	497.1	459.5	37.55	13.237		
6,750.0	6,676.8	6,799.0	6,683.4	18.8	24.4	91.34	744.6	61.6	497.1	459.2	37.89	13.119		
6,800.0	6,711.5	6,849.8	6,718.8	18.9	24.4	91.36	744.2	25.2	497.2	458.8	38.36	12.961		
6,850.0	6,743.6	6,900.6	6,751.5	19.1	24.4	91.38	743.9	-13.6	497.3	458.3	38.98	12.756		
6,900.0	6,772.9	6,951.4	6,781.4	19.5	24.5	91.38	743.5	-54.7	497.3	457.6	39.78	12.502		
6,950.0	6,799.4	7,002.3	6,808.4	20.0	24.6	91.38	743.1	-97.8	497.4	456.7	40.77	12.200		
7,000.0	6,822.8	7,053.1	6,832.2	20.6	24.7	91.37	742.6	-142.6	497.5	455.5	41.97	11.855		
7,050.0	6,843.1	7,103.9	6,852.7	21.4	24.9	91.36	742.2	-189.1	497.6	454.2	43.37	11.474		
7,100.0	6,860.2	7,154.7	6,869.9	22.2	25.3	91.34	741.7	-236.9	497.7	452.7	44.97	11.067		
7,150.0	6,873.9	7,205.5	6,883.7	23.1	25.9	91.31	741.3	-285.8	497.7	451.0	46.76	10.644		
7,200.0	6,884.2	7,256.3	6,893.9	24.1	26.6	91.27	740.8	-335.5	497.8	449.1	48.73	10.216		
7,250.0	6,891.1	7,307.0	6,900.6	25.1	27.5	91.22	740.3	-385.8	497.9	447.1	50.85	9.791		
7,300.0	6,894.6	7,357.8	6,903.8	26.3	28.5	91.17	739.8	-436.4	498.0	444.9	53.10	9.379		
7,324.3	6,895.0	7,382.3	6,904.0	26.8	29.0	91.15	739.6	-461.0	498.0	443.8	54.23	9.184		
7,324.3	6,895.0	7,382.4	6,904.0	26.8	29.0	91.15	739.6	-461.0	498.0	443.8	54.23	9.184		
7,400.0	6,895.0	7,458.0	6,904.0	28.7	30.7	91.15	738.9	-536.7	498.2	440.3	57.92	8.602		
7,500.0	6,895.0	7,558.0	6,904.0	31.3	33.1	91.15	737.9	-636.7	498.4	435.3	63.10	7.898		
7,600.0	6,895.0	7,658.0	6,904.0	34.1	35.8	91.15	737.0	-736.7	498.5	430.0	68.58	7.270		
7,700.0	6,895.0	7,758.0	6,904.0	36.9	38.5	91.15	736.0	-836.7	498.7	424.4	74.29	6.713		
7,800.0	6,895.0	7,858.0	6,904.0	39.9	41.4	91.15	735.1	-936.7	498.9	418.7	80.19	6.222		
7,900.0	6,895.0	7,958.0	6,904.0	42.9	44.4	91.15	734.1	-1,036.7	499.1	412.9	86.23	5.788		
8,000.0	6,895.0	8,058.0	6,904.0	46.0	47.4	91.15	733.2	-1,136.7	499.3	406.9	92.39	5.404		
8,100.0	6,895.0	8,158.0	6,904.0	49.1	50.5	91.15	732.2	-1,236.7	499.4	400.8	98.64	5.063		
8,200.0	6,895.0	8,258.0	6,904.0	52.3	53.6	91.15	731.3	-1,336.6	499.6	394.6	104.98	4.759		
8,300.0	6,895.0	8,358.0	6,904.0	55.5	56.7	91.15	730.4	-1,436.6	499.8	388.4	111.38	4.488		
8,400.0	6,895.0	8,458.0	6,904.0	58.8	59.9	91.15	729.4	-1,536.6	500.0	382.2	117.83	4.243 SF		

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 2N (Nio B) - Wellbore #1 - Plan #4 (6-20-18)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	89.84	0.0	15.0	15.0	15.0	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	89.84	0.0	15.0	15.0	14.7	0.28	54.381		
200.0	200.0	200.0	200.0	0.4	0.4	89.84	0.0	15.0	15.0	14.1	0.83	18.127		
300.0	300.0	300.0	300.0	0.7	0.7	89.84	0.0	15.0	15.0	13.6	1.38	10.876		
400.0	400.0	400.0	400.0	1.0	1.0	89.84	0.0	15.0	15.0	13.0	1.93	7.769 CC		
500.0	500.0	499.8	499.8	1.2	1.2	85.55	1.2	15.5	15.6	13.1	2.48	6.298		
600.0	600.0	599.5	599.4	1.5	1.5	74.74	4.7	17.3	17.9	14.9	3.03	5.914		
700.0	700.0	699.0	698.6	1.8	1.8	17.24	10.5	20.1	21.5	17.9	3.57	6.020		
800.0	799.9	798.3	797.6	2.1	2.1	7.45	18.6	24.1	25.4	21.3	4.13	6.160		
900.0	899.7	897.4	896.0	2.3	2.4	-1.26	29.1	29.3	29.7	25.0	4.68	6.341		
1,000.0	999.3	996.8	994.4	2.6	2.8	-9.08	41.6	35.4	34.2	29.0	5.25	6.520		
1,056.6	1,055.5	1,053.3	1,050.3	2.8	3.0	-13.09	48.9	39.0	36.1	30.5	5.57	6.481		
1,100.0	1,098.6	1,096.7	1,093.2	2.9	3.2	-16.02	54.5	41.8	37.3	31.5	5.82	6.418		
1,200.0	1,197.9	1,196.5	1,192.0	3.3	3.5	-22.04	67.4	48.2	40.5	34.1	6.41	6.327		
1,300.0	1,297.2	1,296.4	1,290.9	3.6	3.9	-27.14	80.4	54.6	44.1	37.1	7.02	6.287		
1,400.0	1,396.5	1,396.3	1,389.7	4.0	4.3	-31.44	93.3	60.9	48.0	40.3	7.65	6.274		
1,500.0	1,495.7	1,496.1	1,488.5	4.3	4.7	-35.09	106.3	67.3	52.1	43.8	8.30	6.275		
1,600.0	1,595.0	1,596.0	1,587.3	4.7	5.2	-38.19	119.2	73.7	56.4	47.4	8.97	6.285		
1,700.0	1,694.3	1,695.8	1,686.1	5.1	5.6	-40.84	132.1	80.1	60.8	51.2	9.66	6.298		
1,800.0	1,793.6	1,795.7	1,784.9	5.4	6.0	-43.13	145.1	86.4	65.4	55.0	10.35	6.314		
1,900.0	1,892.9	1,895.6	1,883.8	5.8	6.4	-45.13	158.0	92.8	70.0	58.9	11.06	6.330		
2,000.0	1,992.2	1,995.4	1,982.6	6.2	6.8	-46.87	171.0	99.2	74.7	62.9	11.77	6.346		
2,100.0	2,091.5	2,095.3	2,081.4	6.5	7.2	-48.40	183.9	105.6	79.5	67.0	12.49	6.362		
2,200.0	2,190.8	2,195.2	2,180.2	6.9	7.6	-49.76	196.8	111.9	84.3	71.1	13.22	6.377		
2,300.0	2,290.0	2,295.0	2,279.0	7.3	8.1	-50.98	209.8	118.3	89.1	75.2	13.95	6.392		
2,400.0	2,389.3	2,394.9	2,377.9	7.7	8.5	-52.06	222.7	124.7	94.0	79.4	14.68	6.406		
2,500.0	2,488.6	2,494.8	2,476.7	8.1	8.9	-53.04	235.6	131.1	99.0	83.5	15.42	6.419		
2,600.0	2,587.9	2,594.6	2,575.5	8.4	9.3	-53.93	248.6	137.4	103.9	87.8	16.16	6.432		
2,700.0	2,687.2	2,694.5	2,674.3	8.8	9.7	-54.73	261.5	143.8	108.9	92.0	16.90	6.444		
2,800.0	2,786.5	2,794.4	2,773.1	9.2	10.2	-55.47	274.5	150.2	113.9	96.2	17.64	6.455		
2,900.0	2,885.8	2,894.2	2,871.9	9.6	10.6	-56.14	287.4	156.6	118.9	100.5	18.39	6.466		
3,000.0	2,985.0	2,994.1	2,970.8	9.9	11.0	-56.76	300.3	162.9	123.9	104.8	19.13	6.476		
3,100.0	3,084.3	3,094.0	3,069.6	10.3	11.4	-57.33	313.3	169.3	129.0	109.1	19.88	6.486		
3,200.0	3,183.6	3,193.8	3,168.4	10.7	11.8	-57.86	326.2	175.7	134.0	113.4	20.63	6.495		
3,300.0	3,282.9	3,293.7	3,267.2	11.1	12.3	-58.34	339.2	182.1	139.1	117.7	21.38	6.504		
3,400.0	3,382.2	3,393.6	3,366.0	11.5	12.7	-58.80	352.1	188.4	144.1	122.0	22.13	6.513		
3,500.0	3,481.5	3,493.4	3,464.8	11.9	13.1	-59.22	365.0	194.8	149.2	126.3	22.89	6.521		
3,600.0	3,580.8	3,593.3	3,563.7	12.2	13.5	-59.62	378.0	201.2	154.3	130.7	23.64	6.528		
3,678.2	3,658.4	3,671.3	3,640.9	12.5	13.9	-59.91	388.1	206.2	158.3	134.1	24.23	6.534		
3,700.0	3,680.1	3,693.1	3,662.5	12.6	14.0	-59.98	390.9	207.6	159.4	135.1	24.38	6.541		
3,800.0	3,779.6	3,792.9	3,761.2	12.9	14.4	-59.69	403.9	213.9	165.8	140.8	24.96	6.643		
3,900.0	3,879.4	3,892.5	3,859.8	13.1	14.8	-58.46	416.8	220.3	174.0	148.6	25.41	6.846		
4,000.0	3,979.4	3,991.8	3,958.0	13.3	15.2	-56.48	429.6	226.6	184.1	158.4	25.75	7.151		
4,020.6	4,000.0	4,012.2	3,978.2	13.4	15.3	-9.88	432.3	227.9	186.5	160.6	25.89	7.203		
4,100.0	4,079.4	4,090.7	4,055.9	13.5	15.6	-7.91	442.4	232.9	195.9	169.3	26.56	7.376		
4,200.0	4,179.4	4,189.7	4,153.8	13.7	16.1	-5.68	455.3	239.3	208.0	180.6	27.40	7.593		
4,300.0	4,279.4	4,288.6	4,251.7	13.9	16.5	-3.70	468.1	245.6	220.5	192.3	28.22	7.813		
4,400.0	4,379.4	4,392.5	4,354.6	14.2	16.9	-1.95	480.8	251.8	232.5	203.5	29.00	8.016		
4,500.0	4,479.4	4,499.9	4,461.5	14.4	17.2	-0.72	490.6	256.7	241.5	211.9	29.65	8.145		
4,600.0	4,579.4	4,607.9	4,569.3	14.6	17.4	0.01	496.9	259.8	247.3	217.1	30.21	8.186		
4,700.0	4,679.4	4,716.4	4,677.6	14.8	17.7	0.31	499.5	261.0	249.7	219.0	30.68	8.137		
4,800.0	4,779.4	4,818.1	4,779.4	15.1	17.8	0.31	499.5	261.1	249.7	218.6	31.11	8.028		

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

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 2N (Nio B) - Wellbore #1 - Plan #4 (6-20-18)													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		
4,900.0	4,879.4	4,918.1	4,879.4	15.3	18.0	0.31	499.5	261.1	249.7	218.2	31.55	7.916		
5,000.0	4,979.4	5,018.1	4,979.4	15.5	18.2	0.31	499.5	261.1	249.7	217.8	31.99	7.806		
5,100.0	5,079.4	5,118.1	5,079.4	15.8	18.4	0.31	499.5	261.1	249.7	217.3	32.44	7.699		
5,200.0	5,179.4	5,218.1	5,179.4	16.0	18.6	0.31	499.5	261.1	249.7	216.9	32.89	7.594		
5,300.0	5,279.4	5,318.1	5,279.4	16.2	18.8	0.31	499.5	261.1	249.7	216.4	33.34	7.491		
5,400.0	5,379.4	5,418.1	5,379.4	16.5	19.0	0.31	499.5	261.1	249.7	215.9	33.79	7.390		
5,500.0	5,479.4	5,518.1	5,479.4	16.7	19.2	0.31	499.5	261.1	249.7	215.5	34.25	7.291		
5,600.0	5,579.4	5,618.1	5,579.4	16.9	19.4	0.31	499.5	261.1	249.7	215.0	34.71	7.195		
5,700.0	5,679.4	5,718.1	5,679.4	17.2	19.6	0.31	499.5	261.1	249.7	214.6	35.17	7.100		
5,800.0	5,779.4	5,818.1	5,779.4	17.4	19.8	0.31	499.5	261.1	249.7	214.1	35.64	7.007		
5,900.0	5,879.4	5,918.1	5,879.4	17.6	20.0	0.31	499.5	261.1	249.7	213.6	36.11	6.917		
6,000.0	5,979.4	6,018.1	5,979.4	17.9	20.3	0.31	499.5	261.1	249.7	213.2	36.58	6.828		
6,100.0	6,079.4	6,118.1	6,079.4	18.1	20.5	0.31	499.5	261.1	249.7	212.7	37.05	6.741		
6,199.6	6,179.0	6,217.9	6,179.0	18.4	20.7	-0.36	499.5	258.1	249.7	212.3	37.46	6.667		
6,207.8	6,187.2	6,226.0	6,187.2	18.4	20.7	90.12	499.5	257.3	249.7	214.0	35.75	6.984		
6,250.0	6,229.3	6,268.0	6,228.7	18.5	20.7	89.25	499.5	251.8	249.7	213.8	35.98	6.942		
6,300.0	6,279.1	6,317.4	6,277.2	18.6	20.8	88.22	499.4	242.3	249.9	213.7	36.20	6.902		
6,350.0	6,328.3	6,366.4	6,324.6	18.6	20.8	87.21	499.2	229.5	250.1	213.7	36.39	6.871		
6,400.0	6,376.8	6,415.2	6,370.7	18.7	20.8	86.21	499.1	213.5	250.3	213.8	36.55	6.849		
6,450.0	6,424.3	6,463.7	6,415.3	18.7	20.8	85.24	498.9	194.6	250.7	214.0	36.69	6.834		
6,500.0	6,470.7	6,512.0	6,458.4	18.7	20.8	84.29	498.7	172.9	251.1	214.3	36.80	6.823		
6,550.0	6,515.6	6,560.0	6,499.7	18.7	20.8	83.38	498.5	148.4	251.6	214.7	36.92	6.815		
6,600.0	6,558.8	6,607.7	6,539.0	18.7	20.8	82.50	498.2	121.4	252.1	215.1	37.05	6.806		
6,650.0	6,600.3	6,655.3	6,576.3	18.7	20.8	81.66	497.9	91.9	252.7	215.5	37.21	6.791		
6,700.0	6,639.6	6,702.6	6,611.4	18.8	20.8	80.86	497.6	60.2	253.3	215.9	37.43	6.767		
6,750.0	6,676.8	6,750.0	6,644.4	18.8	20.8	80.11	497.3	26.2	253.9	216.2	37.74	6.729		
6,800.0	6,711.5	6,796.6	6,674.5	18.9	20.8	79.41	497.0	-9.3	254.6	216.4	38.15	6.672		
6,850.0	6,743.6	6,843.3	6,702.4	19.1	20.9	78.77	496.6	-46.8	255.2	216.5	38.71	6.592		
6,900.0	6,772.9	6,889.9	6,727.7	19.5	20.9	78.17	496.2	-85.9	255.8	216.4	39.42	6.489		
6,950.0	6,799.4	6,936.3	6,750.3	20.0	21.2	77.63	495.9	-126.5	256.4	216.1	40.31	6.360		
7,000.0	6,822.8	6,982.6	6,770.2	20.6	21.6	77.15	495.5	-168.3	256.9	215.6	41.39	6.208		
7,050.0	6,843.1	7,028.8	6,787.3	21.4	22.3	76.73	495.1	-211.2	257.5	214.8	42.67	6.034		
7,100.0	6,860.2	7,074.9	6,801.6	22.2	23.1	76.36	494.6	-255.0	257.9	213.8	44.15	5.843		
7,150.0	6,873.9	7,120.9	6,813.0	23.1	23.9	76.06	494.2	-299.6	258.4	212.5	45.81	5.640		
7,200.0	6,884.2	7,166.9	6,821.5	24.1	24.8	75.82	493.8	-344.7	258.7	211.1	47.65	5.429		
7,250.0	6,891.1	7,212.8	6,827.1	25.1	25.8	75.63	493.4	-390.3	259.0	209.4	49.65	5.217		
7,300.0	6,894.6	7,258.6	6,829.8	26.3	26.9	75.52	492.9	-436.0	259.2	207.4	51.78	5.006		
7,324.3	6,895.0	7,281.3	6,830.0	26.8	27.4	75.48	492.7	-458.7	259.3	206.4	52.87	4.904		
7,324.3	6,895.0	7,281.3	6,830.0	26.8	27.4	75.48	492.7	-458.7	259.3	206.4	52.87	4.904		
7,400.0	6,895.0	7,357.0	6,830.0	28.7	29.3	75.49	492.0	-534.3	259.4	203.0	56.48	4.594		
7,500.0	6,895.0	7,457.0	6,830.0	31.3	31.8	75.50	491.0	-634.3	259.6	198.1	61.53	4.220		
7,600.0	6,895.0	7,556.9	6,830.0	34.1	34.6	75.51	490.1	-734.3	259.8	192.9	66.87	3.885		
7,700.0	6,895.0	7,656.9	6,830.0	36.9	37.4	75.52	489.2	-834.3	260.0	187.5	72.43	3.589		
7,800.0	6,895.0	7,756.9	6,830.0	39.9	40.4	75.53	488.2	-934.3	260.1	182.0	78.17	3.328		
7,900.0	6,895.0	7,856.9	6,830.0	42.9	43.4	75.54	487.3	-1,034.3	260.3	176.3	84.06	3.097		
8,000.0	6,895.0	7,956.9	6,830.0	46.0	46.5	75.55	486.3	-1,134.3	260.5	170.5	90.05	2.893		
8,100.0	6,895.0	8,056.9	6,830.0	49.1	49.6	75.56	485.4	-1,234.3	260.7	164.5	96.14	2.712		
8,200.0	6,895.0	8,156.9	6,830.0	52.3	52.7	75.57	484.4	-1,334.3	260.9	158.6	102.30	2.550		
8,300.0	6,895.0	8,256.9	6,830.0	55.5	55.9	75.58	483.5	-1,434.3	261.0	152.5	108.52	2.405		
8,400.0	6,895.0	8,356.9	6,830.0	58.8	59.1	75.59	482.5	-1,534.3	261.2	146.4	114.80	2.275		
8,500.0	6,895.0	8,456.9	6,830.0	62.0	62.4	75.60	481.6	-1,634.3	261.4	140.3	121.12	2.158		
8,600.0	6,895.0	8,556.9	6,830.0	65.3	65.7	75.61	480.6	-1,734.3	261.6	134.1	127.48	2.052		

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

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 2N (Nio B) - Wellbore #1 - Plan #4 (6-20-18)												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
8,700.0	6,895.0	8,656.9	6,830.0	68.6	68.9	75.62	479.7	-1,834.3	261.7	127.9	133.87	1.955	
8,800.0	6,895.0	8,756.9	6,830.0	71.9	72.2	75.63	478.7	-1,934.3	261.9	121.6	140.29	1.867	
8,900.0	6,895.0	8,856.9	6,830.0	75.2	75.5	75.64	477.8	-2,034.3	262.1	115.4	146.73	1.786	
9,000.0	6,895.0	8,956.9	6,830.0	78.5	78.9	75.65	476.8	-2,134.3	262.3	109.1	153.20	1.712	
9,100.0	6,895.0	9,056.9	6,830.0	81.9	82.2	75.66	475.9	-2,234.3	262.4	102.8	159.68	1.644	
9,200.0	6,895.0	9,156.9	6,830.0	85.2	85.5	75.67	475.0	-2,334.2	262.6	96.4	166.18	1.580	
9,300.0	6,895.0	9,256.9	6,830.0	88.5	88.9	75.68	474.0	-2,434.2	262.8	90.1	172.70	1.522	
9,400.0	6,895.0	9,356.9	6,830.0	91.9	92.2	75.69	473.1	-2,534.2	263.0	83.7	179.23	1.467	Level 3
9,500.0	6,895.0	9,456.9	6,830.0	95.3	95.6	75.70	472.1	-2,634.2	263.1	77.4	185.77	1.416	Level 3
9,600.0	6,895.0	9,556.9	6,830.0	98.6	98.9	75.71	471.2	-2,734.2	263.3	71.0	192.32	1.369	Level 3
9,700.0	6,895.0	9,656.9	6,830.0	102.0	102.3	75.72	470.2	-2,834.2	263.5	64.6	198.88	1.325	Level 3
9,800.0	6,895.0	9,756.9	6,830.0	105.4	105.7	75.73	469.3	-2,934.2	263.7	58.2	205.45	1.283	Level 3
9,900.0	6,895.0	9,856.9	6,830.0	108.8	109.1	75.74	468.3	-3,034.2	263.8	51.8	212.03	1.244	Level 2
10,000.0	6,895.0	9,956.9	6,830.0	112.2	112.4	75.75	467.4	-3,134.2	264.0	45.4	218.62	1.208	Level 2
10,100.0	6,895.0	10,056.9	6,830.0	115.5	115.8	75.76	466.5	-3,234.2	264.2	39.0	225.21	1.173	Level 2
10,200.0	6,895.0	10,156.9	6,830.0	118.9	119.2	75.77	465.5	-3,334.2	264.4	32.5	231.81	1.140	Level 2
10,300.0	6,895.0	10,256.9	6,830.0	122.3	122.6	75.78	464.6	-3,434.2	264.5	26.1	238.42	1.109	Level 2
10,400.0	6,895.0	10,356.9	6,830.0	125.7	126.0	75.79	463.6	-3,534.2	264.7	19.7	245.03	1.080	Level 2
10,500.0	6,895.0	10,456.9	6,830.0	129.1	129.4	75.79	462.7	-3,634.2	264.9	13.2	251.65	1.053	Level 2
10,600.0	6,895.0	10,556.9	6,830.0	132.5	132.8	75.80	461.7	-3,734.2	265.0	6.8	258.27	1.026	Level 2
10,700.0	6,895.0	10,656.9	6,830.0	135.9	136.2	75.81	460.8	-3,834.2	265.2	0.3	264.89	1.001	Level 2
10,800.0	6,895.0	10,756.9	6,830.0	139.3	139.6	75.82	459.9	-3,934.2	265.4	-6.1	271.52	0.977	Level 1
10,900.0	6,895.0	10,856.9	6,830.0	142.7	143.0	75.83	458.9	-4,034.2	265.6	-12.6	278.16	0.955	Level 1
11,000.0	6,895.0	10,956.9	6,830.0	146.2	146.4	75.84	458.0	-4,134.2	265.7	-19.1	284.79	0.933	Level 1
11,100.0	6,895.0	11,056.9	6,830.0	149.6	149.8	75.85	457.0	-4,234.2	265.9	-25.5	291.43	0.912	Level 1
11,200.0	6,895.0	11,156.9	6,830.0	153.0	153.2	75.86	456.1	-4,334.1	266.1	-32.0	298.08	0.893	Level 1
11,300.0	6,895.0	11,256.9	6,830.0	156.4	156.6	75.87	455.1	-4,434.1	266.3	-38.5	304.72	0.874	Level 1
11,400.0	6,895.0	11,356.9	6,830.0	159.8	160.0	75.88	454.2	-4,534.1	266.4	-44.9	311.37	0.856	Level 1
11,500.0	6,895.0	11,456.9	6,830.0	163.2	163.5	75.89	453.3	-4,634.1	266.6	-51.4	318.02	0.838	Level 1
11,600.0	6,895.0	11,556.9	6,830.0	166.6	166.9	75.90	452.3	-4,734.1	266.8	-57.9	324.68	0.822	Level 1
11,700.0	6,895.0	11,656.9	6,830.0	170.0	170.3	75.91	451.4	-4,834.1	266.9	-64.4	331.34	0.806	Level 1
11,800.0	6,895.0	11,756.9	6,830.0	173.5	173.7	75.92	450.4	-4,934.1	267.1	-70.9	337.99	0.790	Level 1
11,900.0	6,895.0	11,856.9	6,830.0	176.9	177.1	75.93	449.5	-5,034.1	267.3	-77.4	344.66	0.776	Level 1
12,000.0	6,895.0	11,956.9	6,830.0	180.3	180.5	75.93	448.6	-5,134.1	267.5	-83.9	351.32	0.761	Level 1
12,100.0	6,895.0	12,056.9	6,830.0	183.7	184.0	75.94	447.6	-5,234.1	267.6	-90.3	357.98	0.748	Level 1
12,200.0	6,895.0	12,156.9	6,830.0	187.1	187.4	75.95	446.7	-5,334.1	267.8	-96.8	364.65	0.734	Level 1
12,300.0	6,895.0	12,256.9	6,830.0	190.6	190.8	75.96	445.7	-5,434.1	268.0	-103.3	371.32	0.722	Level 1
12,400.0	6,895.0	12,356.9	6,830.0	194.0	194.2	75.97	444.8	-5,534.1	268.1	-109.8	377.99	0.709	Level 1
12,500.0	6,895.0	12,456.9	6,830.0	197.4	197.6	75.98	443.9	-5,634.1	268.3	-116.3	384.66	0.698	Level 1
12,600.0	6,895.0	12,556.9	6,830.0	200.8	201.1	75.99	442.9	-5,734.1	268.5	-122.8	391.34	0.686	Level 1
12,700.0	6,895.0	12,656.9	6,830.0	204.3	204.5	76.00	442.0	-5,834.1	268.7	-129.4	398.01	0.675	Level 1
12,800.0	6,895.0	12,756.9	6,830.0	207.7	207.9	76.01	441.0	-5,934.1	268.8	-135.9	404.69	0.664	Level 1
12,900.0	6,895.0	12,856.9	6,830.0	211.1	211.3	76.02	440.1	-6,034.1	269.0	-142.4	411.37	0.654	Level 1
13,000.0	6,895.0	12,956.9	6,830.0	214.5	214.8	76.03	439.2	-6,134.1	269.2	-148.9	418.05	0.644	Level 1
13,100.0	6,895.0	13,056.9	6,830.0	218.0	218.2	76.04	438.2	-6,234.1	269.3	-155.4	424.73	0.634	Level 1
13,200.0	6,895.0	13,156.9	6,830.0	221.4	221.6	76.04	437.3	-6,334.0	269.5	-161.9	431.41	0.625	Level 1
13,300.0	6,895.0	13,256.9	6,830.0	224.8	225.0	76.05	436.4	-6,434.0	269.7	-168.4	438.10	0.616	Level 1
13,400.0	6,895.0	13,356.9	6,830.0	228.2	228.5	76.06	435.4	-6,534.0	269.9	-174.9	444.78	0.607	Level 1
13,500.0	6,895.0	13,456.9	6,830.0	231.7	231.9	76.07	434.5	-6,634.0	270.0	-181.4	451.47	0.598	Level 1
13,600.0	6,895.0	13,556.9	6,830.0	235.1	235.3	76.08	433.5	-6,734.0	270.2	-188.0	458.16	0.590	Level 1
13,700.0	6,895.0	13,656.9	6,830.0	238.5	238.7	76.09	432.6	-6,834.0	270.4	-194.5	464.84	0.582	Level 1
13,800.0	6,895.0	13,756.9	6,830.0	241.9	242.2	76.10	431.7	-6,934.0	270.5	-201.0	471.53	0.574	Level 1

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

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 2N (Nio B) - Wellbore #1 - Plan #4 (6-20-18)												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
13,900.0	6,895.0	13,856.9	6,830.0	245.4	245.6	76.11	430.7	-7,034.0	270.7	-207.5	478.22	0.566	Level 1
14,000.0	6,895.0	13,956.9	6,830.0	248.8	249.0	76.12	429.8	-7,134.0	270.9	-214.0	484.92	0.559	Level 1
14,100.0	6,895.0	14,056.9	6,830.0	252.2	252.5	76.12	428.9	-7,234.0	271.0	-220.6	491.61	0.551	Level 1
14,116.0	6,895.0	14,070.2	6,830.0	252.8	252.9	76.13	428.7	-7,247.3	271.1	-221.5	492.59	0.550	Level 1, ES, SF

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 4N (Nio B) - Wellbore #1 - Plan #3 (7-9-18)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-89.71	0.1	-15.0	15.0	15.0	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	-89.71	0.1	-15.0	15.0	14.7	0.28	54.381		
200.0	200.0	200.0	200.0	0.4	0.4	-89.71	0.1	-15.0	15.0	14.1	0.83	18.127		
300.0	300.0	300.0	300.0	0.7	0.7	-89.71	0.1	-15.0	15.0	13.6	1.38	10.876		
400.0	400.0	400.0	400.0	1.0	1.0	-89.71	0.1	-15.0	15.0	13.0	1.93	7.769		
500.0	500.0	500.0	500.0	1.2	1.2	-89.71	0.1	-15.0	15.0	12.5	2.48	6.042		
600.0	600.0	600.0	600.0	1.5	1.5	-89.71	0.1	-15.0	15.0	11.9	3.03	4.944 CC		
700.0	700.0	700.0	700.0	1.8	1.8	-139.09	0.1	-15.0	15.9	12.4	3.58	4.457		
800.0	799.9	799.9	799.9	2.1	2.1	-146.81	0.1	-15.0	19.1	15.0	4.12	4.628		
900.0	899.7	899.7	899.7	2.3	2.3	-155.06	0.1	-15.0	24.8	20.1	4.67	5.310		
1,000.0	999.3	999.3	999.3	2.6	2.6	-161.67	0.1	-15.0	33.3	28.1	5.23	6.380		
1,056.6	1,055.5	1,055.5	1,055.5	2.8	2.8	-164.54	0.1	-15.0	39.4	33.9	5.54	7.115		
1,100.0	1,098.6	1,098.6	1,098.6	2.9	2.9	-166.32	0.1	-15.0	44.4	38.6	5.77	7.691		
1,200.0	1,197.9	1,197.9	1,197.9	3.3	3.2	-169.20	0.1	-15.0	56.1	49.8	6.32	8.869		
1,300.0	1,297.2	1,297.2	1,297.2	3.6	3.4	-171.09	0.1	-15.0	67.8	61.0	6.87	9.868		
1,400.0	1,396.5	1,396.5	1,396.5	4.0	3.7	-172.42	0.1	-15.0	79.6	72.2	7.43	10.723		
1,500.0	1,495.7	1,495.7	1,495.7	4.3	4.0	-173.40	0.1	-15.0	91.5	83.5	7.98	11.461		
1,600.0	1,595.0	1,595.0	1,595.0	4.7	4.3	-174.16	0.1	-15.0	103.3	94.8	8.54	12.103		
1,700.0	1,694.3	1,694.3	1,694.3	5.1	4.5	-174.77	0.1	-15.0	115.2	106.1	9.09	12.667		
1,800.0	1,793.6	1,793.6	1,793.6	5.4	4.8	-175.26	0.1	-15.0	127.1	117.4	9.65	13.165		
1,900.0	1,892.9	1,892.9	1,892.9	5.8	5.1	-175.66	0.1	-15.0	139.0	128.8	10.21	13.608		
2,000.0	1,992.2	1,992.2	1,992.2	6.2	5.3	-176.01	0.1	-15.0	150.9	140.1	10.77	14.005		
2,100.0	2,091.5	2,094.3	2,094.3	6.5	5.6	-176.59	0.0	-13.8	162.0	150.6	11.32	14.304		
2,200.0	2,190.8	2,197.0	2,196.9	6.9	5.9	-177.76	-0.3	-9.9	171.2	159.3	11.86	14.436		
2,300.0	2,290.0	2,299.9	2,299.6	7.3	6.1	-179.44	-0.7	-3.2	178.6	166.2	12.40	14.402		
2,400.0	2,389.3	2,402.5	2,401.7	7.7	6.4	-178.38	-1.3	6.2	184.4	171.5	12.96	14.231		
2,500.0	2,488.6	2,502.1	2,500.8	8.1	6.7	-176.13	-2.0	16.4	189.8	176.3	13.53	14.031		
2,600.0	2,587.9	2,601.6	2,599.8	8.4	6.9	-174.01	-2.7	26.6	195.4	181.3	14.11	13.854		
2,700.0	2,687.2	2,701.2	2,698.9	8.8	7.2	-172.01	-3.4	36.8	201.3	186.6	14.70	13.696		
2,800.0	2,786.5	2,800.8	2,798.0	9.2	7.5	-170.12	-4.0	47.0	207.5	192.2	15.30	13.556		
2,900.0	2,885.8	2,900.4	2,897.0	9.6	7.8	-168.35	-4.7	57.3	213.8	197.9	15.92	13.431		
3,000.0	2,985.0	3,000.0	2,996.1	9.9	8.1	-166.67	-5.4	67.5	220.3	203.8	16.54	13.318		
3,100.0	3,084.3	3,099.6	3,095.1	10.3	8.4	-165.10	-6.1	77.7	227.0	209.8	17.18	13.217		
3,200.0	3,183.6	3,199.2	3,194.2	10.7	8.8	-163.61	-6.8	87.9	233.9	216.1	17.82	13.127		
3,300.0	3,282.9	3,298.7	3,293.2	11.1	9.1	-162.21	-7.4	98.2	240.9	222.4	18.47	13.045		
3,400.0	3,382.2	3,398.3	3,392.3	11.5	9.4	-160.89	-8.1	108.4	248.1	228.9	19.12	12.971		
3,500.0	3,481.5	3,497.9	3,491.4	11.9	9.7	-159.65	-8.8	118.6	255.3	235.5	19.79	12.905		
3,600.0	3,580.8	3,597.5	3,590.4	12.2	10.1	-158.47	-9.5	128.8	262.7	242.3	20.45	12.844		
3,678.2	3,658.4	3,675.3	3,667.8	12.5	10.3	-157.60	-10.0	136.8	268.6	247.6	20.98	12.801		
3,700.0	3,680.1	3,697.1	3,689.5	12.6	10.4	-157.37	-10.2	139.0	270.1	249.0	21.12	12.787		
3,800.0	3,779.6	3,796.8	3,788.6	12.9	10.7	-156.15	-10.8	149.3	275.4	253.7	21.75	12.665		
3,900.0	3,879.4	3,896.5	3,887.8	13.1	11.1	-154.65	-11.5	159.5	277.7	255.3	22.35	12.423		
4,000.0	3,979.4	3,996.1	3,986.9	13.3	11.4	-152.84	-12.2	169.7	277.0	254.1	22.95	12.073		
4,020.6	4,000.0	4,016.6	4,007.3	13.4	11.5	-161.47	-12.3	171.8	276.6	253.0	23.53	11.754		
4,100.0	4,079.4	4,095.5	4,085.8	13.5	11.7	-163.11	-12.9	179.9	274.6	250.7	23.85	11.515		
4,200.0	4,179.4	4,195.0	4,184.8	13.7	12.1	-165.21	-13.5	190.1	272.4	248.2	24.26	11.229		
4,300.0	4,279.4	4,294.5	4,283.7	13.9	12.4	-167.33	-14.2	200.4	270.6	246.0	24.68	10.967		
4,400.0	4,379.4	4,394.0	4,382.6	14.2	12.7	-169.48	-14.9	210.6	269.2	244.1	25.10	10.728		
4,500.0	4,479.4	4,493.4	4,481.6	14.4	13.1	-171.66	-15.6	220.8	268.2	242.7	25.52	10.510		
4,600.0	4,579.4	4,592.9	4,580.5	14.6	13.4	-173.84	-16.3	231.0	267.6	241.7	25.95	10.312		
4,700.0	4,679.4	4,692.4	4,679.5	14.8	13.8	-176.03	-16.9	241.2	267.4	241.0	26.39	10.133		
4,707.7	4,687.0	4,700.0	4,687.0	14.9	13.8	-176.20	-17.0	242.0	267.4	241.0	26.42	10.120		

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

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design		Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 4N (Nio B) - Wellbore #1 - Plan #3 (7-9-18)											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)				
4,800.0	4,779.4	4,792.1	4,778.7	15.1	14.1	-178.03	-17.6	250.5	267.5	240.7	26.82	9.974			
4,900.0	4,879.4	4,892.3	4,878.8	15.3	14.3	-179.31	-18.0	256.5	267.8	240.5	27.26	9.824			
5,000.0	4,979.4	4,992.8	4,979.3	15.5	14.6	-179.84	-18.1	259.0	267.9	240.2	27.71	9.667			
5,100.0	5,079.4	5,092.9	5,079.4	15.8	14.8	-179.86	-18.1	259.0	267.9	239.7	28.20	9.501			
5,200.0	5,179.4	5,192.9	5,179.4	16.0	15.0	-179.86	-18.1	259.0	267.9	239.2	28.70	9.334			
5,300.0	5,279.4	5,292.9	5,279.4	16.2	15.3	-179.86	-18.1	259.0	267.9	238.7	29.21	9.172			
5,400.0	5,379.4	5,392.9	5,379.4	16.5	15.5	-179.86	-18.1	259.0	267.9	238.2	29.72	9.016			
5,500.0	5,479.4	5,492.9	5,479.4	16.7	15.7	-179.86	-18.1	259.0	267.9	237.7	30.23	8.864			
5,600.0	5,579.4	5,592.9	5,579.4	16.9	16.0	-179.86	-18.1	259.0	267.9	237.2	30.74	8.716			
5,700.0	5,679.4	5,692.9	5,679.4	17.2	16.2	-179.86	-18.1	259.0	267.9	236.7	31.25	8.574			
5,800.0	5,779.4	5,792.9	5,779.4	17.4	16.5	-179.86	-18.1	259.0	267.9	236.2	31.76	8.435			
5,900.0	5,879.4	5,892.9	5,879.4	17.6	16.7	-179.86	-18.1	259.0	267.9	235.6	32.28	8.301			
6,000.0	5,979.4	5,992.9	5,979.4	17.9	17.0	-179.86	-18.1	259.0	267.9	235.1	32.79	8.170			
6,100.0	6,079.4	6,092.9	6,079.4	18.1	17.2	-179.86	-18.1	259.0	267.9	234.6	33.31	8.043			
6,122.3	6,101.7	6,115.3	6,101.7	18.2	17.3	-179.86	-18.1	259.0	267.9	234.5	33.43	8.016			
6,199.6	6,179.0	6,191.9	6,178.3	18.4	17.4	-179.03	-18.2	255.2	268.0	234.2	33.82	7.924			
6,250.0	6,229.3	6,241.4	6,227.3	18.5	17.5	-87.28	-18.2	248.3	268.2	232.9	35.26	7.606			
6,300.0	6,279.1	6,290.2	6,275.0	18.6	17.6	-86.20	-18.3	238.3	268.4	233.1	35.36	7.591			
6,350.0	6,328.3	6,338.6	6,321.6	18.6	17.6	-85.15	-18.4	225.2	268.8	233.3	35.44	7.585			
6,400.0	6,376.8	6,386.7	6,366.9	18.7	17.6	-84.12	-18.6	209.0	269.2	233.7	35.49	7.585			
6,450.0	6,424.3	6,434.5	6,410.7	18.7	17.7	-83.13	-18.7	190.0	269.7	234.1	35.53	7.590			
6,500.0	6,470.7	6,482.1	6,453.0	18.7	17.7	-82.17	-18.9	168.2	270.2	234.6	35.57	7.596			
6,550.0	6,515.6	6,529.3	6,493.5	18.7	17.8	-81.26	-19.1	143.8	270.7	235.1	35.62	7.600			
6,600.0	6,558.8	6,576.4	6,532.0	18.7	17.9	-80.39	-19.3	117.0	271.3	235.6	35.71	7.599			
6,650.0	6,600.3	6,623.1	6,568.6	18.7	18.0	-79.57	-19.6	87.8	271.9	236.1	35.84	7.587			
6,700.0	6,639.6	6,669.7	6,603.0	18.8	18.2	-78.80	-19.9	56.5	272.6	236.5	36.04	7.562			
6,750.0	6,676.8	6,716.1	6,635.2	18.8	18.4	-78.08	-20.1	23.1	273.2	236.8	36.34	7.516			
6,800.0	6,711.5	6,762.2	6,665.0	18.9	18.7	-77.42	-20.4	-12.1	273.7	237.0	36.75	7.448			
6,850.0	6,743.6	6,808.3	6,692.5	19.1	19.0	-76.82	-20.8	-49.1	274.3	237.0	37.30	7.354			
6,900.0	6,772.9	6,854.1	6,717.4	19.5	19.5	-76.28	-21.1	-87.6	274.8	236.8	38.00	7.231			
6,950.0	6,799.4	6,900.0	6,739.8	20.0	20.0	-75.80	-21.4	-127.6	275.3	236.4	38.87	7.081			
7,000.0	6,822.8	6,945.4	6,759.4	20.6	20.6	-75.38	-21.8	-168.6	275.6	235.7	39.93	6.903			
7,050.0	6,843.1	6,991.0	6,776.4	21.4	21.3	-75.03	-22.1	-210.8	276.0	234.8	41.18	6.702			
7,100.0	6,860.2	7,036.4	6,790.6	22.2	22.1	-74.74	-22.5	-253.9	276.2	233.6	42.61	6.483			
7,150.0	6,873.9	7,081.7	6,802.1	23.1	22.9	-74.51	-22.9	-297.8	276.4	232.2	44.21	6.252			
7,200.0	6,884.2	7,127.0	6,810.8	24.1	23.9	-74.35	-23.3	-342.2	276.5	230.5	45.97	6.014			
7,250.0	6,891.1	7,172.3	6,816.6	25.1	24.8	-74.26	-23.6	-387.1	276.5	228.6	47.89	5.773			
7,300.0	6,894.6	7,217.6	6,819.6	26.3	25.9	-74.24	-24.0	-432.3	276.4	226.5	49.93	5.536			
7,324.3	6,895.0	7,239.6	6,820.0	26.8	26.4	-74.25	-24.2	-454.3	276.3	225.3	50.96	5.422			
7,324.3	6,895.0	7,239.6	6,820.0	26.8	26.4	-74.25	-24.2	-454.3	276.3	225.3	50.96	5.422			
7,400.0	6,895.0	7,315.0	6,820.0	28.7	28.2	-74.24	-24.9	-529.7	276.1	221.6	54.52	5.064			
7,500.0	6,895.0	7,414.9	6,820.0	31.3	30.8	-74.22	-25.7	-629.6	275.8	216.3	59.54	4.633			
7,600.0	6,895.0	7,514.9	6,820.0	34.1	33.6	-74.21	-26.6	-729.6	275.6	210.8	64.85	4.250			
7,700.0	6,895.0	7,614.9	6,820.0	36.9	36.4	-74.19	-27.5	-829.6	275.4	205.0	70.38	3.913			
7,800.0	6,895.0	7,714.9	6,820.0	39.9	39.4	-74.18	-28.4	-929.6	275.1	199.0	76.08	3.616			
7,900.0	6,895.0	7,814.9	6,820.0	42.9	42.4	-74.17	-29.3	-1,029.5	274.9	193.0	81.93	3.355			
8,000.0	6,895.0	7,914.8	6,820.0	46.0	45.5	-74.15	-30.2	-1,129.5	274.7	186.8	87.88	3.126			
8,100.0	6,895.0	8,014.8	6,820.0	49.1	48.6	-74.14	-31.1	-1,229.5	274.5	180.5	93.93	2.922			
8,200.0	6,895.0	8,114.8	6,820.0	52.3	51.8	-74.13	-32.0	-1,329.5	274.3	174.2	100.05	2.741			
8,300.0	6,895.0	8,214.8	6,820.0	55.5	55.0	-74.12	-32.9	-1,429.4	274.1	167.9	106.23	2.580			
8,400.0	6,895.0	8,314.8	6,820.0	58.8	58.2	-74.11	-33.9	-1,529.4	273.9	161.4	112.46	2.436			
8,500.0	6,895.0	8,414.7	6,820.0	62.0	61.5	-74.10	-34.8	-1,629.4	273.7	155.0	118.73	2.305			

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

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 4N (Nio B) - Wellbore #1 - Plan #3 (7-9-18)													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		
8,600.0	6,895.0	8,514.7	6,820.0	65.3	64.7	-74.09	-35.8	-1,729.4	273.6	148.5	125.04	2.188		
8,700.0	6,895.0	8,614.7	6,820.0	68.6	68.0	-74.08	-36.7	-1,829.3	273.4	142.0	131.38	2.081		
8,800.0	6,895.0	8,714.7	6,820.0	71.9	71.3	-74.07	-37.7	-1,929.3	273.2	135.5	137.75	1.984		
8,900.0	6,895.0	8,814.6	6,820.0	75.2	74.6	-74.06	-38.7	-2,029.3	273.1	129.0	144.14	1.895		
9,000.0	6,895.0	8,914.6	6,820.0	78.5	78.0	-74.05	-39.7	-2,129.3	273.0	122.4	150.55	1.813		
9,100.0	6,895.0	9,014.6	6,820.0	81.9	81.3	-74.04	-40.7	-2,229.2	272.8	115.9	156.97	1.738		
9,200.0	6,895.0	9,114.6	6,820.0	85.2	84.6	-74.04	-41.7	-2,329.2	272.7	109.3	163.42	1.669		
9,300.0	6,895.0	9,214.6	6,820.0	88.5	88.0	-74.03	-42.7	-2,429.2	272.6	102.7	169.87	1.605		
9,400.0	6,895.0	9,314.5	6,820.0	91.9	91.3	-74.02	-43.7	-2,529.2	272.5	96.2	176.34	1.545		
9,500.0	6,895.0	9,414.5	6,820.0	95.3	94.7	-74.02	-44.7	-2,629.1	272.4	89.6	182.82	1.490 Level 3		
9,600.0	6,895.0	9,514.5	6,820.0	98.6	98.1	-74.01	-45.7	-2,729.1	272.3	83.0	189.31	1.438 Level 3		
9,700.0	6,895.0	9,614.5	6,820.0	102.0	101.5	-74.01	-46.8	-2,829.1	272.2	76.4	195.81	1.390 Level 3		
9,800.0	6,895.0	9,714.5	6,820.0	105.4	104.8	-74.00	-47.8	-2,929.1	272.2	69.8	202.32	1.345 Level 3		
9,900.0	6,895.0	9,814.4	6,820.0	108.8	108.2	-74.00	-48.9	-3,029.0	272.1	63.3	208.83	1.303 Level 3		
10,000.0	6,895.0	9,914.4	6,820.0	112.2	111.6	-74.00	-49.9	-3,129.0	272.0	56.7	215.36	1.263 Level 3		
10,100.0	6,895.0	10,014.4	6,820.0	115.5	115.0	-73.99	-51.0	-3,229.0	272.0	50.1	221.88	1.226 Level 2		
10,200.0	6,895.0	10,114.4	6,820.0	118.9	118.4	-73.99	-52.1	-3,328.9	272.0	43.5	228.42	1.191 Level 2		
10,300.0	6,895.0	10,214.4	6,820.0	122.3	121.8	-73.99	-53.2	-3,428.9	271.9	37.0	234.96	1.157 Level 2		
10,400.0	6,895.0	10,314.3	6,820.0	125.7	125.2	-73.99	-54.3	-3,528.9	271.9	30.4	241.50	1.126 Level 2		
10,500.0	6,895.0	10,414.3	6,820.0	129.1	128.6	-73.99	-55.4	-3,628.9	271.9	23.8	248.05	1.096 Level 2		
10,600.0	6,895.0	10,514.3	6,820.0	132.5	132.0	-73.99	-56.5	-3,728.8	271.9	17.3	254.61	1.068 Level 2		
10,662.5	6,895.0	10,576.8	6,820.0	134.7	134.1	-73.99	-57.2	-3,791.3	271.9	13.2	258.70	1.051 Level 2		
10,700.0	6,895.0	10,614.3	6,820.0	135.9	135.4	-73.99	-57.6	-3,828.8	271.9	10.7	261.16	1.041 Level 2		
10,800.0	6,895.0	10,714.3	6,820.0	139.3	138.8	-73.99	-58.8	-3,928.8	271.9	4.1	267.73	1.015 Level 2		
10,900.0	6,895.0	10,814.2	6,820.0	142.7	142.2	-73.99	-59.9	-4,028.8	271.9	-2.4	274.29	0.991 Level 1		
11,000.0	6,895.0	10,914.2	6,820.0	146.2	145.6	-73.99	-61.0	-4,128.7	271.9	-8.9	280.86	0.968 Level 1		
11,100.0	6,895.0	11,014.2	6,820.0	149.6	149.0	-73.99	-62.2	-4,228.7	271.9	-15.5	287.43	0.946 Level 1		
11,200.0	6,895.0	11,114.2	6,820.0	153.0	152.4	-73.99	-63.3	-4,328.7	272.0	-22.0	294.01	0.925 Level 1		
11,300.0	6,895.0	11,214.1	6,820.0	156.4	155.8	-74.00	-64.5	-4,428.6	272.0	-28.6	300.59	0.905 Level 1		
11,400.0	6,895.0	11,314.1	6,820.0	159.8	159.2	-74.00	-65.7	-4,528.6	272.1	-35.1	307.17	0.886 Level 1		
11,500.0	6,895.0	11,414.1	6,820.0	163.2	162.6	-74.00	-66.9	-4,628.6	272.1	-41.6	313.76	0.867 Level 1		
11,600.0	6,895.0	11,514.1	6,820.0	166.6	166.1	-74.01	-68.1	-4,728.6	272.2	-48.1	320.35	0.850 Level 1		
11,700.0	6,895.0	11,614.1	6,820.0	170.0	169.5	-74.01	-69.3	-4,828.5	272.3	-54.6	326.94	0.833 Level 1		
11,800.0	6,895.0	11,714.0	6,820.0	173.5	172.9	-74.02	-70.5	-4,928.5	272.4	-61.1	333.53	0.817 Level 1		
11,900.0	6,895.0	11,814.0	6,820.0	176.9	176.3	-74.02	-71.7	-5,028.5	272.5	-67.7	340.13	0.801 Level 1		
11,947.8	6,895.0	11,861.8	6,820.0	178.5	177.9	-74.03	-72.3	-5,076.3	272.5	-70.8	343.28	0.794 Level 1		
12,000.0	6,895.0	11,886.9	6,820.0	180.3	178.8	-74.03	-72.6	-5,101.3	273.9	-71.9	345.83	0.792 Level 1, ES, SF		
12,100.0	6,895.0	11,886.9	6,820.0	183.7	178.8	-74.03	-72.6	-5,101.3	300.9	-48.3	349.13	0.862 Level 1		
12,200.0	6,895.0	11,886.9	6,820.0	187.1	178.8	-74.03	-72.6	-5,101.3	355.0	2.5	352.42	1.007 Level 2		
12,300.0	6,895.0	11,886.9	6,820.0	190.6	178.8	-74.03	-72.6	-5,101.3	426.0	70.3	355.72	1.198 Level 2		

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 5N (Nio C) - Wellbore #1 - Plan #3 (7-9-18)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	-89.71	0.1	-30.0	30.0	30.0	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-89.71	0.1	-30.0	30.0	29.8	0.28	107.987		
200.0	200.0	201.0	201.0	0.4	0.4	-89.71	0.1	-30.0	30.0	29.2	0.83	36.235		
300.0	300.0	301.0	301.0	0.7	0.7	-89.71	0.1	-30.0	30.0	28.7	1.38	21.770		
400.0	400.0	401.0	401.0	1.0	1.0	-89.71	0.1	-30.0	30.0	28.1	1.93	15.559		
500.0	500.0	501.0	501.0	1.2	1.2	-89.71	0.1	-30.0	30.0	27.5	2.48	12.105		
600.0	600.0	601.0	601.0	1.5	1.5	-89.71	0.1	-30.0	30.0	27.0	3.03	9.906 CC, ES		
700.0	700.0	701.0	701.0	1.8	1.8	-137.50	0.1	-30.0	31.0	27.4	3.58	8.658		
800.0	799.9	800.9	800.9	2.1	2.1	-141.95	0.1	-30.0	34.0	29.9	4.12	8.239 SF		
900.0	899.7	900.7	900.7	2.3	2.3	-147.79	0.1	-30.0	39.3	34.7	4.67	8.415		
1,000.0	999.3	1,000.3	1,000.3	2.6	2.6	-153.64	0.1	-30.0	47.3	42.1	5.23	9.055		
1,056.6	1,055.5	1,056.5	1,056.5	2.8	2.8	-156.64	0.1	-30.0	53.1	47.6	5.54	9.582		
1,100.0	1,098.6	1,099.6	1,099.6	2.9	2.9	-158.67	0.1	-30.0	57.9	52.1	5.78	10.016		
1,200.0	1,197.9	1,198.9	1,198.9	3.3	3.2	-162.26	0.1	-30.0	69.1	62.8	6.33	10.924		
1,300.0	1,297.2	1,298.2	1,298.2	3.6	3.4	-164.85	0.1	-30.0	80.6	73.7	6.88	11.712		
1,400.0	1,396.5	1,397.5	1,397.5	4.0	3.7	-166.78	0.1	-30.0	92.2	84.7	7.43	12.396		
1,500.0	1,495.7	1,496.7	1,496.7	4.3	4.0	-168.29	0.1	-30.0	103.8	95.8	7.99	12.993		
1,600.0	1,595.0	1,596.0	1,596.0	4.7	4.3	-169.49	0.1	-30.0	115.5	107.0	8.55	13.518		
1,700.0	1,694.3	1,695.9	1,695.9	5.1	4.5	-171.01	-0.7	-29.2	127.1	118.0	9.07	14.002		
1,800.0	1,793.6	1,795.6	1,795.6	5.4	4.7	-173.35	-3.4	-26.5	138.3	128.7	9.58	14.439		
1,900.0	1,892.9	1,895.1	1,894.8	5.8	5.0	-176.32	-7.9	-22.0	149.5	139.4	10.09	14.814		
2,000.0	1,992.2	1,994.2	1,993.5	6.2	5.2	-179.78	-14.3	-15.7	161.0	150.4	10.63	15.153		
2,100.0	2,091.5	2,093.0	2,091.8	6.5	5.5	176.89	-21.4	-8.7	173.1	161.9	11.18	15.478		
2,200.0	2,190.8	2,191.8	2,190.1	6.9	5.7	173.99	-28.4	-1.8	185.6	173.8	11.75	15.794		
2,300.0	2,290.0	2,290.6	2,288.4	7.3	6.0	171.47	-35.5	5.2	198.5	186.2	12.33	16.097		
2,400.0	2,389.3	2,389.4	2,386.7	7.7	6.3	169.25	-42.6	12.2	211.8	198.9	12.93	16.383		
2,500.0	2,488.6	2,488.2	2,485.0	8.1	6.6	167.30	-49.6	19.2	225.4	211.9	13.53	16.654		
2,600.0	2,587.9	2,587.0	2,583.3	8.4	6.9	165.57	-56.7	26.2	239.2	225.0	14.15	16.908		
2,700.0	2,687.2	2,685.8	2,681.6	8.8	7.2	164.03	-63.8	33.2	253.2	238.4	14.76	17.147		
2,800.0	2,786.5	2,784.6	2,779.9	9.2	7.5	162.65	-70.8	40.2	267.3	251.9	15.39	17.372		
2,900.0	2,885.8	2,883.4	2,878.2	9.6	7.8	161.41	-77.9	47.2	281.6	265.6	16.02	17.582		
3,000.0	2,985.0	2,982.2	2,976.5	9.9	8.1	160.28	-85.0	54.2	296.0	279.3	16.65	17.779		
3,100.0	3,084.3	3,081.0	3,074.8	10.3	8.5	159.27	-92.0	61.2	310.5	293.2	17.28	17.965		
3,200.0	3,183.6	3,179.8	3,173.0	10.7	8.8	158.34	-99.1	68.2	325.1	307.2	17.92	18.139		
3,300.0	3,282.9	3,278.6	3,271.3	11.1	9.1	157.49	-106.2	75.2	339.7	321.2	18.56	18.303		
3,400.0	3,382.2	3,377.4	3,369.6	11.5	9.4	156.72	-113.2	82.2	354.5	335.3	19.20	18.458		
3,500.0	3,481.5	3,476.2	3,467.9	11.9	9.8	156.00	-120.3	89.2	369.3	349.4	19.85	18.604		
3,600.0	3,580.8	3,575.0	3,566.2	12.2	10.1	155.34	-127.4	96.2	384.1	363.6	20.49	18.742		
3,678.2	3,658.4	3,652.2	3,643.1	12.5	10.4	154.86	-132.9	101.6	395.7	374.7	21.00	18.844		
3,700.0	3,680.1	3,673.8	3,664.5	12.6	10.4	154.76	-134.4	103.2	398.9	377.8	21.14	18.869		
3,800.0	3,779.6	3,772.8	3,763.1	12.9	10.8	154.15	-141.5	110.2	411.6	389.9	21.74	18.935		
3,900.0	3,879.4	3,872.1	3,861.9	13.1	11.1	153.34	-148.6	117.2	421.3	399.0	22.31	18.881		
4,000.0	3,979.4	3,971.6	3,960.9	13.3	11.5	152.34	-155.7	124.3	427.9	405.1	22.86	18.721		
4,020.6	4,000.0	3,992.1	3,981.3	13.4	11.5	-161.78	-157.2	125.7	428.9	405.5	23.49	18.259		
4,100.0	4,079.4	4,071.1	4,059.9	13.5	11.8	-162.72	-162.9	131.3	432.7	408.8	23.87	18.126		
4,200.0	4,179.4	4,170.6	4,158.8	13.7	12.2	-163.87	-170.0	138.3	437.5	413.1	24.37	17.954		
4,300.0	4,279.4	4,270.1	4,257.8	13.9	12.5	-165.01	-177.1	145.4	442.5	417.6	24.87	17.792		
4,400.0	4,379.4	4,369.6	4,356.8	14.2	12.9	-166.12	-184.2	152.4	447.7	422.3	25.38	17.638		
4,500.0	4,479.4	4,469.1	4,455.8	14.4	13.2	-167.20	-191.3	159.5	453.0	427.1	25.90	17.492		
4,600.0	4,579.4	4,568.6	4,554.8	14.6	13.6	-168.26	-198.4	166.5	458.5	432.1	26.42	17.354		
4,700.0	4,679.4	4,668.1	4,653.8	14.8	13.9	-169.29	-205.6	173.6	464.2	437.2	26.95	17.224		
4,800.0	4,779.4	4,767.5	4,752.8	15.1	14.3	-170.29	-212.7	180.6	470.0	442.5	27.48	17.100		

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

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 5N (Nio C) - Wellbore #1 - Plan #3 (7-9-18)												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	
4,900.0	4,879.4	4,867.0	4,851.8	15.3	14.6	-171.28	-219.8	187.6	475.9	447.9	28.02	16.983	
5,000.0	4,979.4	4,966.5	4,950.7	15.5	15.0	-172.23	-226.9	194.7	482.0	453.5	28.57	16.872	
5,100.0	5,079.4	5,066.0	5,049.7	15.8	15.3	-173.17	-234.0	201.7	488.2	459.1	29.12	16.766	
5,200.0	5,179.4	5,165.5	5,148.7	16.0	15.7	-174.08	-241.1	208.8	494.6	464.9	29.68	16.666	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 6N (Nio B) - Wellbore #1 - Plan #3 (7-9-18)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	-89.76	0.2	-44.9	44.9	44.9	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-89.76	0.2	-44.9	44.9	44.7	0.28	161.628		
200.0	200.0	201.0	201.0	0.4	0.4	-89.76	0.2	-44.9	44.9	44.1	0.83	54.234		
300.0	300.0	301.0	301.0	0.7	0.7	-89.76	0.2	-44.9	44.9	43.6	1.38	32.584		
400.0	400.0	401.0	401.0	1.0	1.0	-89.76	0.2	-44.9	44.9	43.0	1.93	23.287		
500.0	500.0	501.0	501.0	1.2	1.2	-89.76	0.2	-44.9	44.9	42.5	2.48	18.118		
600.0	600.0	601.0	601.0	1.5	1.5	-89.76	0.2	-44.9	44.9	41.9	3.03	14.827 CC, ES		
700.0	700.0	701.0	701.0	1.8	1.8	-137.00	0.2	-44.9	45.9	42.3	3.58	12.826		
800.0	799.9	800.9	800.9	2.1	2.1	-140.12	0.2	-44.9	48.8	44.7	4.12	11.843		
900.0	899.7	900.7	900.7	2.3	2.3	-144.52	0.2	-44.9	54.0	49.4	4.67	11.558 SF		
1,000.0	999.3	1,000.3	1,000.3	2.6	2.6	-149.39	0.2	-44.9	61.7	56.5	5.23	11.804		
1,056.6	1,055.5	1,056.5	1,056.5	2.8	2.8	-152.10	0.2	-44.9	67.2	61.7	5.54	12.133		
1,100.0	1,098.6	1,099.6	1,099.6	2.9	2.9	-154.03	0.2	-44.9	71.9	66.1	5.78	12.431		
1,200.0	1,197.9	1,198.9	1,198.9	3.3	3.2	-157.64	0.2	-44.9	82.8	76.4	6.33	13.068		
1,300.0	1,297.2	1,298.2	1,298.2	3.6	3.4	-160.41	0.2	-44.9	93.9	87.0	6.89	13.637		
1,400.0	1,396.5	1,397.5	1,397.5	4.0	3.7	-162.58	0.2	-44.9	105.2	97.8	7.44	14.142		
1,500.0	1,495.7	1,496.9	1,496.9	4.3	4.0	-164.95	-0.9	-44.3	116.6	108.6	7.96	14.639		
1,600.0	1,595.0	1,596.2	1,596.1	4.7	4.2	-168.04	-4.1	-42.2	128.1	119.6	8.46	15.135		
1,700.0	1,694.3	1,695.0	1,694.8	5.1	4.4	-171.67	-9.4	-38.8	139.9	131.0	8.97	15.606		
1,800.0	1,793.6	1,793.4	1,792.7	5.4	4.6	-175.66	-16.9	-34.0	152.6	143.1	9.49	16.077		
1,900.0	1,892.9	1,891.2	1,889.8	5.8	4.9	-179.87	-26.4	-28.0	166.3	156.3	10.04	16.568		
2,000.0	1,992.2	1,989.4	1,987.3	6.2	5.2	176.25	-36.7	-21.3	181.1	170.5	10.61	17.063		
2,100.0	2,091.5	2,087.6	2,084.7	6.5	5.5	172.97	-47.1	-14.7	196.5	185.3	11.20	17.544		
2,200.0	2,190.8	2,185.8	2,182.1	6.9	5.8	170.16	-57.5	-8.1	212.5	200.7	11.81	18.003		
2,300.0	2,290.0	2,284.0	2,279.6	7.3	6.1	167.75	-67.8	-1.4	229.0	216.5	12.42	18.436		
2,400.0	2,389.3	2,382.2	2,377.0	7.7	6.4	165.66	-78.2	5.2	245.7	232.7	13.04	18.844		
2,500.0	2,488.6	2,480.4	2,474.4	8.1	6.8	163.84	-88.6	11.9	262.8	249.1	13.67	19.225		
2,600.0	2,587.9	2,578.7	2,571.9	8.4	7.1	162.24	-99.0	18.5	280.1	265.8	14.30	19.583		
2,700.0	2,687.2	2,676.9	2,669.3	8.8	7.4	160.83	-109.3	25.1	297.6	282.6	14.94	19.917		
2,800.0	2,786.5	2,775.1	2,766.8	9.2	7.8	159.57	-119.7	31.8	315.2	299.6	15.58	20.230		
2,900.0	2,885.8	2,873.3	2,864.2	9.6	8.2	158.45	-130.1	38.4	332.9	316.7	16.22	20.522		
3,000.0	2,985.0	2,971.5	2,961.6	9.9	8.5	157.44	-140.4	45.0	350.8	333.9	16.87	20.796		
3,100.0	3,084.3	3,069.7	3,059.1	10.3	8.9	156.52	-150.8	51.7	368.8	351.3	17.52	21.053		
3,200.0	3,183.6	3,167.9	3,156.5	10.7	9.2	155.70	-161.2	58.3	386.8	368.7	18.17	21.294		
3,300.0	3,282.9	3,266.1	3,253.9	11.1	9.6	154.94	-171.6	64.9	404.9	386.1	18.82	21.520		
3,400.0	3,382.2	3,364.3	3,351.4	11.5	10.0	154.25	-181.9	71.6	423.1	403.7	19.47	21.733		
3,500.0	3,481.5	3,462.6	3,448.8	11.9	10.4	153.62	-192.3	78.2	441.4	421.2	20.12	21.934		
3,600.0	3,580.8	3,560.8	3,546.2	12.2	10.7	153.04	-202.7	84.8	459.7	438.9	20.78	22.123		
3,678.2	3,658.4	3,637.5	3,622.4	12.5	11.0	152.62	-210.8	90.0	474.0	452.7	21.29	22.264		
3,700.0	3,680.1	3,659.0	3,643.7	12.6	11.1	152.53	-213.0	91.5	477.9	456.5	21.43	22.297		
3,800.0	3,779.6	3,757.5	3,741.4	12.9	11.5	152.05	-223.4	98.1	494.1	472.0	22.04	22.416		

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 7N (Nio C) - Wellbore #1 - Plan #4 (7-9-18)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	-89.79	0.2	-60.0	60.0	60.0	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-89.79	0.2	-60.0	60.0	59.7	0.28	215.772		
200.0	200.0	201.0	201.0	0.4	0.4	-89.79	0.2	-60.0	60.0	59.2	0.83	72.402		
300.0	300.0	301.0	301.0	0.7	0.7	-89.79	0.2	-60.0	60.0	58.6	1.38	43.499		
400.0	400.0	401.0	401.0	1.0	1.0	-89.79	0.2	-60.0	60.0	58.1	1.93	31.088		
500.0	500.0	501.0	501.0	1.2	1.2	-89.79	0.2	-60.0	60.0	57.5	2.48	24.187		
600.0	600.0	601.0	601.0	1.5	1.5	-89.79	0.2	-60.0	60.0	57.0	3.03	19.794 CC, ES		
700.0	700.0	701.0	701.0	1.8	1.8	-136.75	0.2	-60.0	61.0	57.4	3.58	17.034		
800.0	799.9	800.9	800.9	2.1	2.1	-139.13	0.2	-60.0	63.9	59.7	4.12	15.487		
900.0	899.7	900.7	900.7	2.3	2.3	-142.64	0.2	-60.0	68.9	64.3	4.67	14.751		
1,000.0	999.3	1,000.3	1,000.3	2.6	2.6	-146.74	0.2	-60.0	76.4	71.2	5.23	14.618 SF		
1,056.6	1,055.5	1,056.5	1,056.5	2.8	2.8	-149.13	0.2	-60.0	81.8	76.3	5.54	14.758		
1,100.0	1,098.6	1,099.6	1,099.6	2.9	2.9	-150.89	0.2	-60.0	86.3	80.5	5.78	14.922		
1,200.0	1,197.9	1,198.9	1,198.9	3.3	3.2	-154.32	0.2	-60.0	96.9	90.6	6.34	15.292		
1,300.0	1,297.2	1,298.3	1,298.3	3.6	3.4	-157.74	-0.9	-59.5	107.7	100.9	6.86	15.708		
1,400.0	1,396.5	1,397.4	1,397.3	4.0	3.6	-161.77	-4.4	-57.9	118.9	111.6	7.35	16.173		
1,500.0	1,495.7	1,496.0	1,495.7	4.3	3.8	-166.20	-10.2	-55.3	130.8	123.0	7.86	16.651		
1,600.0	1,595.0	1,594.0	1,593.3	4.7	4.1	-170.86	-18.3	-51.7	143.8	135.4	8.38	17.168		
1,700.0	1,694.3	1,691.3	1,689.9	5.1	4.3	-175.58	-28.5	-47.1	158.2	149.3	8.92	17.742		
1,800.0	1,793.6	1,787.7	1,785.4	5.4	4.6	179.75	-40.9	-41.5	174.4	164.9	9.49	18.381		
1,900.0	1,892.9	1,884.2	1,880.5	5.8	5.0	175.29	-55.3	-35.0	192.5	182.4	10.09	19.077		
2,000.0	1,992.2	1,981.4	1,976.4	6.2	5.3	171.47	-70.0	-28.4	211.7	201.0	10.71	19.765		
2,100.0	2,091.5	2,078.6	2,072.3	6.5	5.7	168.29	-84.8	-21.8	231.7	220.3	11.34	20.424		
2,200.0	2,190.8	2,175.8	2,168.2	6.9	6.0	165.62	-99.6	-15.1	252.2	240.2	11.98	21.048		
2,300.0	2,290.0	2,273.1	2,264.0	7.3	6.4	163.35	-114.3	-8.5	273.2	260.6	12.63	21.635		
2,400.0	2,389.3	2,370.3	2,359.9	7.7	6.8	161.40	-129.1	-1.8	294.6	281.3	13.28	22.185		
2,500.0	2,488.6	2,467.5	2,455.8	8.1	7.2	159.71	-143.9	4.8	316.2	302.3	13.93	22.697		
2,600.0	2,587.9	2,564.8	2,551.7	8.4	7.7	158.24	-158.6	11.5	338.1	323.5	14.59	23.176		
2,700.0	2,687.2	2,662.0	2,647.5	8.8	8.1	156.95	-173.4	18.1	360.2	344.9	15.25	23.622		
2,800.0	2,786.5	2,759.2	2,743.4	9.2	8.5	155.81	-188.2	24.7	382.4	366.5	15.91	24.038		
2,900.0	2,885.8	2,856.5	2,839.3	9.6	8.9	154.79	-202.9	31.4	404.7	388.2	16.57	24.427		
3,000.0	2,985.0	2,953.7	2,935.2	9.9	9.4	153.88	-217.7	38.0	427.2	410.0	17.23	24.790		
3,100.0	3,084.3	3,050.9	3,031.0	10.3	9.8	153.06	-232.5	44.7	449.8	431.9	17.90	25.130		
3,200.0	3,183.6	3,148.2	3,126.9	10.7	10.3	152.32	-247.2	51.3	472.4	453.8	18.56	25.449		
3,300.0	3,282.9	3,245.4	3,222.8	11.1	10.7	151.64	-262.0	58.0	495.1	475.8	19.23	25.748		

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 8N (Nio B) - Wellbore #1 - Plan #3 (7-3-18)													Offset Site Error: 0.0 ft	
Survey Program: 0-MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	1.0	1.0	0.0	0.0	-89.80	0.3	-75.0	75.0	75.0	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-89.80	0.3	-75.0	75.0	74.7	0.28	269.714		
200.0	200.0	201.0	201.0	0.4	0.4	-89.80	0.3	-75.0	75.0	74.2	0.83	90.502		
300.0	300.0	301.0	301.0	0.7	0.7	-89.80	0.3	-75.0	75.0	73.6	1.38	54.374		
400.0	400.0	401.0	401.0	1.0	1.0	-89.80	0.3	-75.0	75.0	73.1	1.93	38.860		
500.0	500.0	501.0	501.0	1.2	1.2	-89.80	0.3	-75.0	75.0	72.5	2.48	30.234		
600.0	600.0	601.0	601.0	1.5	1.5	-89.80	0.3	-75.0	75.0	72.0	3.03	24.742 CC, ES		
700.0	700.0	701.0	701.0	1.8	1.8	-136.59	0.3	-75.0	76.0	72.4	3.58	21.226		
800.0	799.9	800.9	800.9	2.1	2.1	-138.52	0.3	-75.0	78.8	74.7	4.12	19.120		
900.0	899.7	900.7	900.7	2.3	2.3	-141.43	0.3	-75.0	83.9	79.2	4.67	17.943		
1,000.0	999.3	1,000.3	1,000.3	2.6	2.6	-144.95	0.3	-75.0	91.2	86.0	5.23	17.443 SF		
1,056.6	1,055.5	1,056.7	1,056.7	2.8	2.8	-147.32	-0.1	-74.9	96.4	90.9	5.53	17.447		
1,100.0	1,098.6	1,099.9	1,099.9	2.9	2.9	-149.41	-1.0	-74.6	100.7	94.9	5.75	17.510		
1,200.0	1,197.9	1,199.1	1,199.0	3.3	3.1	-154.54	-4.6	-73.2	111.0	104.7	6.25	17.767		
1,300.0	1,297.2	1,297.8	1,297.5	3.6	3.3	-159.96	-10.6	-71.0	122.1	115.4	6.75	18.083		
1,400.0	1,396.5	1,395.9	1,395.2	4.0	3.5	-165.49	-19.0	-68.0	134.6	127.3	7.28	18.490		
1,500.0	1,495.7	1,493.2	1,491.8	4.3	3.8	-170.97	-29.6	-64.1	148.7	140.9	7.83	19.003		
1,600.0	1,595.0	1,589.6	1,587.3	4.7	4.1	-176.25	-42.4	-59.4	164.8	156.4	8.40	19.623		
1,700.0	1,694.3	1,685.0	1,681.3	5.1	4.4	178.76	-57.3	-53.9	183.1	174.1	9.00	20.347		
1,800.0	1,793.6	1,779.6	1,774.2	5.4	4.8	174.12	-74.2	-47.7	203.8	194.1	9.63	21.169		
1,900.0	1,892.9	1,875.9	1,868.5	5.8	5.2	170.05	-92.3	-41.1	226.1	215.8	10.28	22.001		
2,000.0	1,992.2	1,972.2	1,962.9	6.2	5.7	166.71	-110.4	-34.4	249.3	238.4	10.93	22.804		
2,100.0	2,091.5	2,068.5	2,057.3	6.5	6.1	163.94	-128.5	-27.8	273.2	261.6	11.59	23.569		
2,200.0	2,190.8	2,164.8	2,151.6	6.9	6.6	161.61	-146.6	-21.2	297.6	285.4	12.26	24.286		
2,300.0	2,290.0	2,261.1	2,246.0	7.3	7.0	159.63	-164.7	-14.5	322.4	309.5	12.92	24.955		
2,400.0	2,389.3	2,357.5	2,340.3	7.7	7.5	157.94	-182.8	-7.9	347.6	334.0	13.59	25.578		
2,500.0	2,488.6	2,453.8	2,434.7	8.1	8.0	156.47	-201.0	-1.3	372.9	358.7	14.26	26.157		
2,600.0	2,587.9	2,550.1	2,529.1	8.4	8.5	155.19	-219.1	5.4	398.5	383.6	14.93	26.696		
2,700.0	2,687.2	2,646.4	2,623.4	8.8	9.0	154.06	-237.2	12.0	424.2	408.6	15.60	27.197		
2,800.0	2,786.5	2,742.7	2,717.8	9.2	9.5	153.06	-255.3	18.7	450.1	433.8	16.27	27.664		
2,900.0	2,885.8	2,839.0	2,812.1	9.6	10.0	152.17	-273.4	25.3	476.1	459.2	16.94	28.099		

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 3N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 3N (Nio C)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #4 (6-20-18)	Offset TVD Reference:	Offset Datum

Offset Design Jagged 4N64W08 Pad Sec.8-T4N-R64W - Jagged 9N (Nio C) - Wellbore #1 - Plan #4 (7-3-18)													Offset Site Error: 0.0 ft	
Survey Program: 0-MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance				Warning			
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses		Minimum Separation	Separation Factor	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)		(ft)		
0.0	0.0	1.0	1.0	0.0	0.0	-89.86	0.2	-90.0	90.0	90.0	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-89.86	0.2	-90.0	90.0	89.7	0.28	323.656		
200.0	200.0	201.0	201.0	0.4	0.4	-89.86	0.2	-90.0	90.0	89.2	0.83	108.602		
300.0	300.0	301.0	301.0	0.7	0.7	-89.86	0.2	-90.0	90.0	88.6	1.38	65.248		
400.0	400.0	401.0	401.0	1.0	1.0	-89.86	0.2	-90.0	90.0	88.1	1.93	46.632		
500.0	500.0	501.0	501.0	1.2	1.2	-89.86	0.2	-90.0	90.0	87.5	2.48	36.281		
600.0	600.0	601.0	601.0	1.5	1.5	-89.86	0.2	-90.0	90.0	87.0	3.03	29.691 CC, ES		
700.0	700.0	701.0	701.0	1.8	1.8	-136.53	0.2	-90.0	91.0	87.4	3.58	25.418		
800.0	799.9	800.9	800.9	2.1	2.1	-138.15	0.2	-90.0	93.8	89.7	4.12	22.757		
900.0	899.7	901.2	901.2	2.3	2.3	-141.41	-1.1	-89.6	98.5	93.9	4.64	21.234		
1,000.0	999.3	1,001.0	1,000.9	2.6	2.5	-146.57	-4.8	-88.5	105.3	100.2	5.14	20.494		
1,056.6	1,055.5	1,057.1	1,056.9	2.8	2.7	-150.07	-8.0	-87.5	110.4	105.0	5.43	20.329		
1,100.0	1,098.6	1,099.9	1,099.6	2.9	2.8	-152.90	-11.0	-86.5	114.9	109.3	5.66	20.318 SF		
1,200.0	1,197.9	1,198.1	1,197.4	3.3	3.0	-159.43	-19.6	-83.9	126.3	120.2	6.19	20.410		
1,300.0	1,297.2	1,295.6	1,294.2	3.6	3.3	-165.81	-30.5	-80.6	139.7	132.9	6.75	20.700		
1,400.0	1,396.5	1,392.0	1,389.7	4.0	3.6	-171.86	-43.5	-76.5	155.3	147.9	7.33	21.177		
1,500.0	1,495.7	1,487.5	1,483.8	4.3	4.0	-177.48	-58.8	-71.8	173.3	165.4	7.94	21.823		
1,600.0	1,595.0	1,581.9	1,576.4	4.7	4.4	177.38	-76.0	-66.5	193.9	185.3	8.57	22.617		
1,700.0	1,694.3	1,675.0	1,667.4	5.1	4.8	172.76	-95.1	-60.6	217.1	207.9	9.22	23.538		
1,800.0	1,793.6	1,769.7	1,759.5	5.4	5.3	168.65	-116.1	-54.2	242.5	232.6	9.89	24.511		
1,900.0	1,892.9	1,865.1	1,852.3	5.8	5.8	165.28	-137.2	-47.7	268.9	258.3	10.57	25.440		
2,000.0	1,992.2	1,960.4	1,945.0	6.2	6.3	162.51	-158.3	-41.2	296.0	284.7	11.24	26.332		
2,100.0	2,091.5	2,055.7	2,037.7	6.5	6.8	160.20	-179.5	-34.7	323.6	311.7	11.91	27.163		
2,200.0	2,190.8	2,151.1	2,130.5	6.9	7.3	158.25	-200.6	-28.2	351.7	339.1	12.59	27.936		
2,300.0	2,290.0	2,246.4	2,223.2	7.3	7.9	156.59	-221.7	-21.7	380.1	366.8	13.27	28.653		
2,400.0	2,389.3	2,341.7	2,315.9	7.7	8.4	155.15	-242.8	-15.2	408.8	394.8	13.94	29.318		
2,500.0	2,488.6	2,437.1	2,408.7	8.1	9.0	153.91	-264.0	-8.7	437.6	423.0	14.62	29.933		
2,600.0	2,587.9	2,532.4	2,501.4	8.4	9.5	152.82	-285.1	-2.2	466.7	451.4	15.30	30.504		
2,700.0	2,687.2	2,627.7	2,594.2	8.8	10.1	151.85	-306.2	4.3	495.8	479.8	15.98	31.033		

Reference Depths are relative to WELL @ 4795.0ft (Original Well Elev)	Coordinates are relative to: Jagged 3N (Nio C)
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: 0.60°



Reference Depths are relative to WELL @ 4795.0ft (Original Well Elev)	Coordinates are relative to: Jagged 3N (Nio C)
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: 0.60°

