PDC Energy Inc. DJ Basin

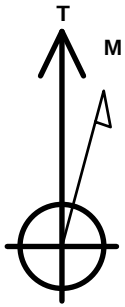
Well Name: **Jagged 2N (Nio B)**
Surface Location: Jagged 4N64W08 Pad Sec.8-T4N-R64W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4772.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1362799.33	3257772.87	40.325596	-104.575457	

Original Well Elev WELL @ 4795.0ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2166'FSL, 2380'FWL, SEC.8	1.0	0.0	0.0	Point
BHL 2612'FNL, 150'FWL, SEC.7	6830.0	428.7	-7262.3	Point
LPL 2612'FNL, 1908'FWL, SEC.8	6830.0	492.7	-470.7	Point



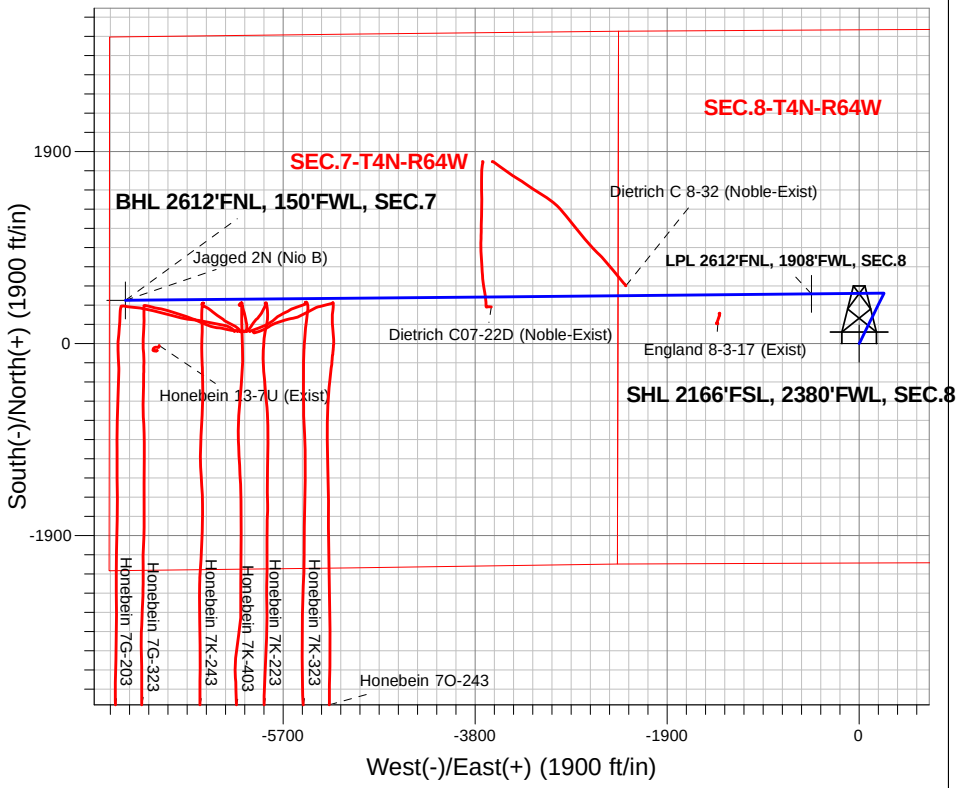
Azimuths to True North
Magnetic North: 7.94°

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

Jagged 4N64W08 Pad Sec.8-T4N-R64W
Jagged 2N (Nio B)
Plan #4 (6-20-18)
16:04, July 11 2018

ANNOTATIONS

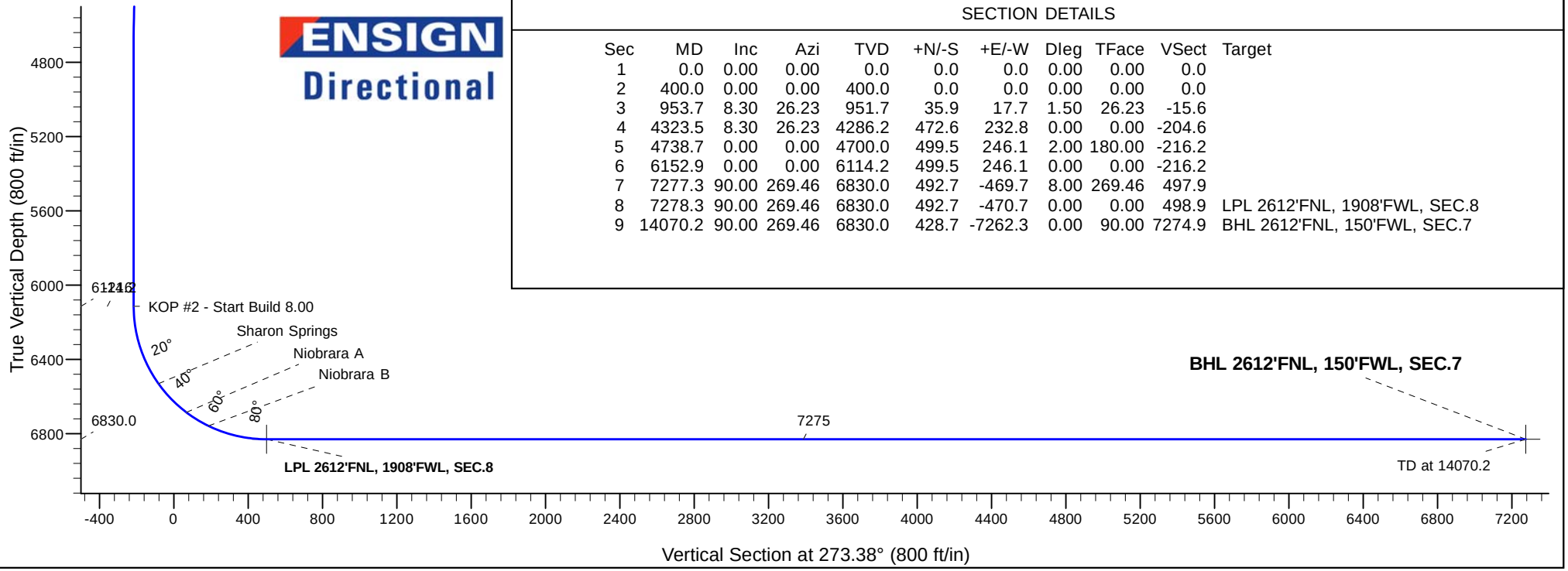
TVD	MD	Annotation
400.0	400.0	KOP - Start Build 1.50
4286.2	4323.5	Start Drop -2.00
6114.2	6152.9	KOP #2 - Start Build 8.00
6830.0	14070.2	TD at 14070.2



ENSIGN Directional

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.0	
3	953.7	8.30	26.23	951.7	35.9	17.7	1.50	26.23	-15.6	
4	4323.5	8.30	26.23	4286.2	472.6	232.8	0.00	0.00	-204.6	
5	4738.7	0.00	0.00	4700.0	499.5	246.1	2.00	180.00	-216.2	
6	6152.9	0.00	0.00	6114.2	499.5	246.1	0.00	0.00	-216.2	
7	7277.3	90.00	269.46	6830.0	492.7	-469.7	8.00	269.46	497.9	
8	7278.3	90.00	269.46	6830.0	492.7	-470.7	0.00	0.00	498.9	LPL 2612'FNL, 1908'FWL, SEC.8
9	14070.2	90.00	269.46	6830.0	428.7	-7262.3	0.00	90.00	7274.9	BHL 2612'FNL, 150'FWL, SEC.7



ENSIGN Directional

PDC Energy Inc. DJ Basin

SEC.8-T4N-R64W
Jagged 4N64W08 Pad Sec.8-T4N-R64W
Jagged 2N (Nio B)

Wellbore #1

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

Standard Planning Report

11 July, 2018

PDC ENERGY
Growing E&P Value

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 2N (Nio B)

Well Position	**+N/-S**	-20.0 ft	**Northing:**	1,362,799.33 usft	**Latitude:**	40.325596
	+E/-W	-15.1 ft	**Easting:**	3,257,772.87 usft	**Longitude:**	-104.575457
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) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	273.38

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	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
953.7	8.30	26.23	951.7	35.9	17.7	1.50	1.50	0.00	26.23	
4,323.5	8.30	26.23	4,286.2	472.6	232.8	0.00	0.00	0.00	0.00	
4,738.7	0.00	0.00	4,700.0	499.5	246.1	2.00	-2.00	0.00	180.00	
6,152.9	0.00	0.00	6,114.2	499.5	246.1	0.00	0.00	0.00	0.00	
7,277.3	90.00	269.46	6,830.0	492.7	-469.7	8.00	8.00	0.00	269.46	
7,278.3	90.00	269.46	6,830.0	492.7	-470.7	0.00	0.00	0.00	0.00	LPL 2612'FNL, 1908'F
14,070.2	90.00	269.46	6,830.0	428.7	-7,262.3	0.00	0.00	0.00	90.00	BHL 2612'FNL, 150'F'

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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, 2380'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
KOP - Start Build 1.50									
500.0	1.50	26.23	500.0	1.2	0.6	-0.5	1.50	1.50	0.00
600.0	3.00	26.23	599.9	4.7	2.3	-2.0	1.50	1.50	0.00
700.0	4.50	26.23	699.7	10.6	5.2	-4.6	1.50	1.50	0.00
800.0	6.00	26.23	799.3	18.8	9.2	-8.1	1.50	1.50	0.00
900.0	7.50	26.23	898.6	29.3	14.4	-12.7	1.50	1.50	0.00
953.7	8.30	26.23	951.7	35.9	17.7	-15.6	1.50	1.50	0.00
1,000.0	8.30	26.23	997.6	41.9	20.7	-18.2	0.00	0.00	0.00
1,100.0	8.30	26.23	1,096.5	54.9	27.0	-23.8	0.00	0.00	0.00
1,200.0	8.30	26.23	1,195.5	67.8	33.4	-29.4	0.00	0.00	0.00
1,300.0	8.30	26.23	1,294.4	80.8	39.8	-35.0	0.00	0.00	0.00
1,400.0	8.30	26.23	1,393.4	93.8	46.2	-40.6	0.00	0.00	0.00
1,500.0	8.30	26.23	1,492.3	106.7	52.6	-46.2	0.00	0.00	0.00
1,600.0	8.30	26.23	1,591.3	119.7	59.0	-51.8	0.00	0.00	0.00
1,700.0	8.30	26.23	1,690.2	132.6	65.3	-57.4	0.00	0.00	0.00
1,800.0	8.30	26.23	1,789.2	145.6	71.7	-63.0	0.00	0.00	0.00
1,900.0	8.30	26.23	1,888.1	158.5	78.1	-68.6	0.00	0.00	0.00
2,000.0	8.30	26.23	1,987.1	171.5	84.5	-74.2	0.00	0.00	0.00
2,100.0	8.30	26.23	2,086.0	184.5	90.9	-79.9	0.00	0.00	0.00
2,200.0	8.30	26.23	2,185.0	197.4	97.3	-85.5	0.00	0.00	0.00
2,300.0	8.30	26.23	2,283.9	210.4	103.6	-91.1	0.00	0.00	0.00
2,400.0	8.30	26.23	2,382.9	223.3	110.0	-96.7	0.00	0.00	0.00
2,500.0	8.30	26.23	2,481.8	236.3	116.4	-102.3	0.00	0.00	0.00
2,600.0	8.30	26.23	2,580.8	249.2	122.8	-107.9	0.00	0.00	0.00
2,700.0	8.30	26.23	2,679.8	262.2	129.2	-113.5	0.00	0.00	0.00
2,800.0	8.30	26.23	2,778.7	275.2	135.6	-119.1	0.00	0.00	0.00
2,900.0	8.30	26.23	2,877.7	288.1	142.0	-124.7	0.00	0.00	0.00
3,000.0	8.30	26.23	2,976.6	301.1	148.3	-130.3	0.00	0.00	0.00
3,100.0	8.30	26.23	3,075.6	314.0	154.7	-135.9	0.00	0.00	0.00
3,200.0	8.30	26.23	3,174.5	327.0	161.1	-141.6	0.00	0.00	0.00
3,300.0	8.30	26.23	3,273.5	339.9	167.5	-147.2	0.00	0.00	0.00
3,400.0	8.30	26.23	3,372.4	352.9	173.9	-152.8	0.00	0.00	0.00
3,500.0	8.30	26.23	3,471.4	365.9	180.3	-158.4	0.00	0.00	0.00
3,600.0	8.30	26.23	3,570.3	378.8	186.6	-164.0	0.00	0.00	0.00
3,697.7	8.30	26.23	3,667.0	391.5	192.9	-169.5	0.00	0.00	0.00
Parkman Sandstone									
3,700.0	8.30	26.23	3,669.3	391.8	193.0	-169.6	0.00	0.00	0.00
3,800.0	8.30	26.23	3,768.2	404.7	199.4	-175.2	0.00	0.00	0.00
3,900.0	8.30	26.23	3,867.2	417.7	205.8	-180.8	0.00	0.00	0.00
4,000.0	8.30	26.23	3,966.1	430.6	212.2	-186.4	0.00	0.00	0.00
4,100.0	8.30	26.23	4,065.1	443.6	218.6	-192.0	0.00	0.00	0.00
4,200.0	8.30	26.23	4,164.0	456.6	224.9	-197.6	0.00	0.00	0.00
4,300.0	8.30	26.23	4,263.0	469.5	231.3	-203.3	0.00	0.00	0.00
4,323.5	8.30	26.23	4,286.2	472.6	232.8	-204.6	0.00	0.00	0.00
Start Drop -2.00									
4,337.4	8.03	26.23	4,300.0	474.3	233.7	-205.3	2.00	-2.00	0.00
Sussex Sandstone									

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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)
4,400.0	6.77	26.23	4,362.1	481.6	237.3	-208.5	2.00	-2.00	0.00
4,500.0	4.77	26.23	4,461.5	490.6	241.7	-212.4	2.00	-2.00	0.00
4,600.0	2.77	26.23	4,561.3	496.5	244.6	-214.9	2.00	-2.00	0.00
4,700.0	0.77	26.23	4,661.3	499.3	246.0	-216.1	2.00	-2.00	0.00
4,738.7	0.00	0.00	4,700.0	499.5	246.1	-216.2	2.00	-2.00	0.00
4,800.0	0.00	0.00	4,761.3	499.5	246.1	-216.2	0.00	0.00	0.00
4,900.0	0.00	0.00	4,861.3	499.5	246.1	-216.2	0.00	0.00	0.00
5,000.0	0.00	0.00	4,961.3	499.5	246.1	-216.2	0.00	0.00	0.00
5,100.0	0.00	0.00	5,061.3	499.5	246.1	-216.2	0.00	0.00	0.00
5,200.0	0.00	0.00	5,161.3	499.5	246.1	-216.2	0.00	0.00	0.00
5,300.0	0.00	0.00	5,261.3	499.5	246.1	-216.2	0.00	0.00	0.00
5,400.0	0.00	0.00	5,361.3	499.5	246.1	-216.2	0.00	0.00	0.00
5,500.0	0.00	0.00	5,461.3	499.5	246.1	-216.2	0.00	0.00	0.00
5,600.0	0.00	0.00	5,561.3	499.5	246.1	-216.2	0.00	0.00	0.00
5,700.0	0.00	0.00	5,661.3	499.5	246.1	-216.2	0.00	0.00	0.00
5,800.0	0.00	0.00	5,761.3	499.5	246.1	-216.2	0.00	0.00	0.00
5,900.0	0.00	0.00	5,861.3	499.5	246.1	-216.2	0.00	0.00	0.00
6,000.0	0.00	0.00	5,961.3	499.5	246.1	-216.2	0.00	0.00	0.00
6,100.0	0.00	0.00	6,061.3	499.5	246.1	-216.2	0.00	0.00	0.00
6,152.9	0.00	0.00	6,114.2	499.5	246.1	-216.2	0.00	0.00	0.00
KOP #2 - Start Build 8.00									
6,200.0	3.77	269.46	6,161.2	499.5	244.6	-214.7	8.00	8.00	0.00
6,300.0	11.77	269.46	6,260.2	499.4	231.0	-201.2	8.00	8.00	0.00
6,400.0	19.78	269.46	6,356.4	499.1	203.9	-174.1	8.00	8.00	0.00
6,500.0	27.78	269.46	6,447.8	498.7	163.6	-133.9	8.00	8.00	0.00
6,597.8	35.61	269.46	6,531.0	498.2	112.2	-82.7	8.00	8.00	0.00
Sharon Springs									
6,600.0	35.79	269.46	6,532.8	498.2	111.0	-81.4	8.00	8.00	0.00
6,700.0	43.79	269.46	6,609.5	497.6	47.0	-17.6	8.00	8.00	0.00
6,800.0	51.79	269.46	6,676.7	496.9	-27.0	56.2	8.00	8.00	0.00
6,813.6	52.89	269.46	6,685.0	496.8	-37.8	67.0	8.00	8.00	0.00
Niobrara A									
6,900.0	59.80	269.46	6,732.8	496.1	-109.6	138.7	8.00	8.00	0.00
6,953.5	64.08	269.46	6,758.0	495.7	-156.8	185.7	8.00	8.00	0.00
Niobrara B									
7,000.0	67.80	269.46	6,777.0	495.3	-199.3	228.1	8.00	8.00	0.00
7,100.0	75.81	269.46	6,808.2	494.4	-294.2	322.8	8.00	8.00	0.00
7,200.0	83.81	269.46	6,825.8	493.4	-392.5	420.9	8.00	8.00	0.00
7,277.3	90.00	269.46	6,830.0	492.7	-469.7	497.9	8.00	8.00	0.00
7,278.3	90.00	269.46	6,830.0	492.7	-470.7	498.9	0.00	0.00	0.00
LPL 2612'FNL, 1908'FWL, SEC.8									
7,300.0	90.00	269.46	6,830.0	492.5	-492.4	520.5	0.00	0.00	0.00
7,400.0	90.00	269.46	6,830.0	491.5	-592.4	620.3	0.00	0.00	0.00
7,500.0	90.00	269.46	6,830.0	490.6	-692.4	720.1	0.00	0.00	0.00
7,600.0	90.00	269.46	6,830.0	489.7	-792.4	819.8	0.00	0.00	0.00
7,700.0	90.00	269.46	6,830.0	488.7	-892.3	919.6	0.00	0.00	0.00
7,800.0	90.00	269.46	6,830.0	487.8	-992.3	1,019.4	0.00	0.00	0.00
7,900.0	90.00	269.46	6,830.0	486.8	-1,092.3	1,119.1	0.00	0.00	0.00
8,000.0	90.00	269.46	6,830.0	485.9	-1,192.3	1,218.9	0.00	0.00	0.00
8,100.0	90.00	269.46	6,830.0	484.9	-1,292.3	1,318.7	0.00	0.00	0.00
8,200.0	90.00	269.46	6,830.0	484.0	-1,392.3	1,418.4	0.00	0.00	0.00
8,300.0	90.00	269.46	6,830.0	483.0	-1,492.3	1,518.2	0.00	0.00	0.00
8,400.0	90.00	269.46	6,830.0	482.1	-1,592.3	1,618.0	0.00	0.00	0.00

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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)
8,500.0	90.00	269.46	6,830.0	481.1	-1,692.3	1,717.7	0.00	0.00	0.00
8,600.0	90.00	269.46	6,830.0	480.2	-1,792.3	1,817.5	0.00	0.00	0.00
8,700.0	90.00	269.46	6,830.0	479.2	-1,892.3	1,917.3	0.00	0.00	0.00
8,800.0	90.00	269.46	6,830.0	478.3	-1,992.3	2,017.0	0.00	0.00	0.00
8,900.0	90.00	269.46	6,830.0	477.3	-2,092.3	2,116.8	0.00	0.00	0.00
9,000.0	90.00	269.46	6,830.0	476.4	-2,192.3	2,216.6	0.00	0.00	0.00
9,100.0	90.00	269.46	6,830.0	475.5	-2,292.3	2,316.3	0.00	0.00	0.00
9,200.0	90.00	269.46	6,830.0	474.5	-2,392.3	2,416.1	0.00	0.00	0.00
9,300.0	90.00	269.46	6,830.0	473.6	-2,492.3	2,515.9	0.00	0.00	0.00
9,400.0	90.00	269.46	6,830.0	472.6	-2,592.3	2,615.6	0.00	0.00	0.00
9,500.0	90.00	269.46	6,830.0	471.7	-2,692.3	2,715.4	0.00	0.00	0.00
9,600.0	90.00	269.46	6,830.0	470.7	-2,792.3	2,815.1	0.00	0.00	0.00
9,700.0	90.00	269.46	6,830.0	469.8	-2,892.3	2,914.9	0.00	0.00	0.00
9,800.0	90.00	269.46	6,830.0	468.8	-2,992.3	3,014.7	0.00	0.00	0.00
9,900.0	90.00	269.46	6,830.0	467.9	-3,092.2	3,114.4	0.00	0.00	0.00
10,000.0	90.00	269.46	6,830.0	467.0	-3,192.2	3,214.2	0.00	0.00	0.00
10,100.0	90.00	269.46	6,830.0	466.0	-3,292.2	3,314.0	0.00	0.00	0.00
10,200.0	90.00	269.46	6,830.0	465.1	-3,392.2	3,413.7	0.00	0.00	0.00
10,300.0	90.00	269.46	6,830.0	464.1	-3,492.2	3,513.5	0.00	0.00	0.00
10,400.0	90.00	269.46	6,830.0	463.2	-3,592.2	3,613.3	0.00	0.00	0.00
10,500.0	90.00	269.46	6,830.0	462.2	-3,692.2	3,713.0	0.00	0.00	0.00
10,600.0	90.00	269.46	6,830.0	461.3	-3,792.2	3,812.8	0.00	0.00	0.00
10,700.0	90.00	269.46	6,830.0	460.4	-3,892.2	3,912.6	0.00	0.00	0.00
10,800.0	90.00	269.46	6,830.0	459.4	-3,992.2	4,012.3	0.00	0.00	0.00
10,900.0	90.00	269.46	6,830.0	458.5	-4,092.2	4,112.1	0.00	0.00	0.00
11,000.0	90.00	269.46	6,830.0	457.5	-4,192.2	4,211.9	0.00	0.00	0.00
11,100.0	90.00	269.46	6,830.0	456.6	-4,292.2	4,311.6	0.00	0.00	0.00
11,200.0	90.00	269.46	6,830.0	455.6	-4,392.2	4,411.4	0.00	0.00	0.00
11,300.0	90.00	269.46	6,830.0	454.7	-4,492.2	4,511.2	0.00	0.00	0.00
11,400.0	90.00	269.46	6,830.0	453.8	-4,592.2	4,610.9	0.00	0.00	0.00
11,500.0	90.00	269.46	6,830.0	452.8	-4,692.2	4,710.7	0.00	0.00	0.00
11,600.0	90.00	269.46	6,830.0	451.9	-4,792.2	4,810.5	0.00	0.00	0.00
11,700.0	90.00	269.46	6,830.0	450.9	-4,892.2	4,910.2	0.00	0.00	0.00
11,800.0	90.00	269.46	6,830.0	450.0	-4,992.2	5,010.0	0.00	0.00	0.00
11,900.0	90.00	269.46	6,830.0	449.1	-5,092.2	5,109.8	0.00	0.00	0.00
12,000.0	90.00	269.46	6,830.0	448.1	-5,192.2	5,209.5	0.00	0.00	0.00
12,100.0	90.00	269.46	6,830.0	447.2	-5,292.2	5,309.3	0.00	0.00	0.00
12,200.0	90.00	269.46	6,830.0	446.2	-5,392.1	5,409.1	0.00	0.00	0.00
12,300.0	90.00	269.46	6,830.0	445.3	-5,492.1	5,508.8	0.00	0.00	0.00
12,400.0	90.00	269.46	6,830.0	444.4	-5,592.1	5,608.6	0.00	0.00	0.00
12,500.0	90.00	269.46	6,830.0	443.4	-5,692.1	5,708.4	0.00	0.00	0.00
12,600.0	90.00	269.46	6,830.0	442.5	-5,792.1	5,808.1	0.00	0.00	0.00
12,700.0	90.00	269.46	6,830.0	441.5	-5,892.1	5,907.9	0.00	0.00	0.00
12,800.0	90.00	269.46	6,830.0	440.6	-5,992.1	6,007.7	0.00	0.00	0.00
12,900.0	90.00	269.46	6,830.0	439.7	-6,092.1	6,107.4	0.00	0.00	0.00
13,000.0	90.00	269.46	6,830.0	438.7	-6,192.1	6,207.2	0.00	0.00	0.00
13,100.0	90.00	269.46	6,830.0	437.8	-6,292.1	6,307.0	0.00	0.00	0.00
13,200.0	90.00	269.46	6,830.0	436.9	-6,392.1	6,406.7	0.00	0.00	0.00
13,300.0	90.00	269.46	6,830.0	435.9	-6,492.1	6,506.5	0.00	0.00	0.00
13,400.0	90.00	269.46	6,830.0	435.0	-6,592.1	6,606.3	0.00	0.00	0.00
13,500.0	90.00	269.46	6,830.0	434.0	-6,692.1	6,706.0	0.00	0.00	0.00
13,600.0	90.00	269.46	6,830.0	433.1	-6,792.1	6,805.8	0.00	0.00	0.00
13,700.0	90.00	269.46	6,830.0	432.2	-6,892.1	6,905.6	0.00	0.00	0.00
13,800.0	90.00	269.46	6,830.0	431.2	-6,992.1	7,005.3	0.00	0.00	0.00

Database:	US_EDM	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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)
13,900.0	90.00	269.46	6,830.0	430.3	-7,092.1	7,105.1	0.00	0.00	0.00
14,000.0	90.00	269.46	6,830.0	429.4	-7,192.1	7,204.9	0.00	0.00	0.00
14,070.2	90.00	269.46	6,830.0	428.7	-7,262.3	7,274.9	0.00	0.00	0.00
TD at 14070.2 - BHL 2612'FNL, 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, 2380'FW - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,362,799.34	3,257,772.87	40.325596	-104.575457
LPL 2612'FNL, 1908'FW - plan hits target center - Point	0.00	0.00	6,830.0	492.7	-470.7	1,363,287.08	3,257,297.13	40.326949	-104.577145
BHL 2612'FNL, 150'FWL - plan hits target center - Point	0.00	0.00	6,830.0	428.7	-7,262.3	1,363,152.28	3,250,506.85	40.326770	-104.601503

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,697.7	3,667.0	Parkman Sandstone			
4,337.4	4,300.0	Sussex Sandstone			
6,597.8	6,531.0	Sharon Springs			
6,813.6	6,685.0	Niobrara A			
6,953.5	6,758.0	Niobrara B			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
400.0	400.0	0.0	0.0	KOP - Start Build 1.50
4,323.5	4,286.2	35.9	17.7	Start Drop -2.00
6,152.9	6,114.2	472.6	232.8	KOP #2 - Start Build 8.00
14,070.2	6,830.0	499.5	246.1	TD at 14070.2

ENSIGN Directional

PDC Energy Inc. DJ Basin

SEC.8-T4N-R64W
Jagged 4N64W08 Pad Sec.8-T4N-R64W
Jagged 2N (Nio B)

Wellbore #1
Plan #4 (6-20-18)

Anticollision Report

11 July, 2018

PDC ENERGY
Growing E&P Value

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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	14,070.2	Plan #4 (6-20-18) (Wellbore #1)	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Dietrich C Pad Sec.7-T4N-R64W						
Dietrich C 8-32 (Noble-Exist) - Dietrich C 8-32 - Dietrich C	9,117.4	7,161.0	100.3	-19.5	0.837	Level 1, CC, ES, SF
Dietrich C07-18 Pad Sec.7-T4N-R64W						
Dietrich C07-22D (Noble-Exist) - Wellbore #1 - Wellbore	10,466.7	7,101.7	98.1	-52.4	0.652	Level 1, CC, ES, SF
Existing Wells Sec.7-T4N-R64W						
Honebein 13-7U (Exist) - Wellbore #1 - Wellbore #1	13,747.5	6,877.0	469.0	212.5	1.829	CC, ES
Honebein 13-7U (Exist) - Wellbore #1 - Wellbore #1	13,800.0	6,875.5	471.9	213.7	1.827	SF
Existing Wells Sec.8-T4N-R64W (GRID)						
England 8-3-17 (Exist) - Wellbore #1 - Wellbore #1	8,211.2	6,837.0	282.5	212.9	4.060	CC, ES, SF
Honebein 4N64W7K Pad Sec.7-T4N-R64W						
Honebein 7G-203 - Wellbore #1 - Wellbore #1	14,070.2	6,903.5	280.1	50.3	1.219	Level 2, CC, ES, SF
Honebein 7G-323 - Wellbore #1 - Wellbore #1	13,887.7	6,861.5	290.9	68.3	1.307	Level 3, CC
Honebein 7G-323 - Wellbore #1 - Wellbore #1	13,900.0	6,861.7	291.2	68.1	1.305	Level 3, ES, SF
Honebein 7K-223 - Wellbore #1 - Wellbore #1	12,671.2	6,771.0	309.4	134.3	1.767	CC
Honebein 7K-223 - Wellbore #1 - Wellbore #1	12,700.0	6,773.1	310.7	134.0	1.758	ES, SF
Honebein 7K-243 - Wellbore #1 - Wellbore #1	13,313.8	6,821.3	269.4	71.6	1.362	Level 3, CC, ES, SF
Honebein 7K-323 - Wellbore #1 - Wellbore #1	12,277.6	6,838.1	257.7	86.2	1.502	CC
Honebein 7K-323 - Wellbore #1 - Wellbore #1	12,300.0	6,839.6	258.7	85.8	1.497	Level 3, ES, SF
Honebein 7K-403 - Wellbore #1 - Wellbore #1	12,917.8	6,835.7	209.1	17.2	1.090	Level 2, CC, ES, SF
Honebein 7O-243 - Wellbore #1 - Wellbore #1	12,023.7	6,878.0	298.3	124.4	1.715	CC, ES, SF

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Jagged 4N64W08 Pad Sec.8-T4N-R64W						
Jagged 10N (Nio B) - Wellbore #1 - Plan #3 (6-21-18)	400.0	402.0	120.0	118.0	62.059	CC, ES
Jagged 10N (Nio B) - Wellbore #1 - Plan #3 (6-21-18)	1,100.0	1,093.8	163.1	157.3	28.139	SF
Jagged 1N (Nio C) - Wellbore #1 - Plan #4 (6-20-18)	200.0	199.0	15.0	14.1	18.188	CC
Jagged 1N (Nio C) - Wellbore #1 - Plan #4 (6-20-18)	14,070.2	14,168.9	258.1	-226.2	0.533	Level 1, ES, SF
Jagged 3N (Nio C) - Wellbore #1 - Plan #4 (6-20-18)	400.0	400.0	15.0	13.0	7.769	CC
Jagged 3N (Nio C) - Wellbore #1 - Plan #4 (6-20-18)	14,070.2	14,112.8	271.1	-221.4	0.550	Level 1, ES, SF
Jagged 4N (Nio B) - Wellbore #1 - Plan #3 (7-9-18)	400.0	400.0	29.9	28.0	15.537	CC, ES
Jagged 4N (Nio B) - Wellbore #1 - Plan #3 (7-9-18)	700.0	699.7	36.7	33.1	10.217	SF
Jagged 5N (Nio C) - Wellbore #1 - Plan #3 (7-9-18)	400.0	401.0	45.0	43.1	23.316	CC, ES
Jagged 5N (Nio C) - Wellbore #1 - Plan #3 (7-9-18)	800.0	800.3	57.4	53.2	13.783	SF
Jagged 6N (Nio B) - Wellbore #1 - Plan #3 (7-9-18)	400.0	401.0	59.9	58.0	31.045	CC, ES
Jagged 6N (Nio B) - Wellbore #1 - Plan #3 (7-9-18)	900.0	899.6	79.9	75.1	16.849	SF
Jagged 7N (Nio C) - Wellbore #1 - Plan #4 (7-9-18)	400.0	401.0	75.0	73.0	38.846	CC, ES
Jagged 7N (Nio C) - Wellbore #1 - Plan #4 (7-9-18)	1,000.0	998.6	104.4	99.0	19.594	SF
Jagged 8N (Nio B) - Wellbore #1 - Plan #3 (7-3-18)	400.0	401.0	90.0	88.0	46.618	CC, ES
Jagged 8N (Nio B) - Wellbore #1 - Plan #3 (7-3-18)	1,100.0	1,097.2	129.3	123.4	21.993	SF
Jagged 9N (Nio C) - Wellbore #1 - Plan #4 (7-3-18)	400.0	401.0	105.0	103.0	54.390	CC, ES
Jagged 9N (Nio C) - Wellbore #1 - Plan #4 (7-3-18)	1,100.0	1,095.9	144.5	138.7	24.991	SF

Offset Design Dietrich C Pad Sec.7-T4N-R64W - Dietrich C 8-32 (Noble-Exist) - Dietrich C 8-32 - Dietrich C 8-32

Offset Site Error: 0.0 ft

Survey Program: 599- **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,700.0	6,830.0	7,166.1	6,869.3	70.3	44.6	93.89	575.5	-2,310.6	429.3	323.5	105.78	4.059	
8,800.0	6,830.0	7,164.8	6,868.1	73.6	44.6	93.18	575.6	-2,310.6	332.9	223.7	109.14	3.050	
8,900.0	6,830.0	7,163.6	6,866.8	77.0	44.6	92.48	575.6	-2,310.6	239.5	126.9	112.51	2.128	
9,000.0	6,830.0	7,162.4	6,865.6	80.3	44.6	91.79	575.6	-2,310.6	154.5	38.6	115.88	1.333	Level 3
9,100.0	6,830.0	7,161.2	6,864.4	83.6	44.6	91.09	575.6	-2,310.7	101.8	-17.4	119.24	0.854	Level 1
9,117.4	6,830.0	7,161.0	6,864.2	84.2	44.6	90.97	575.6	-2,310.7	100.3	-19.5	119.83	0.837	Level 1, CC, ES, SF
9,200.0	6,830.0	7,160.0	6,863.2	87.0	44.6	90.41	575.6	-2,310.7	129.9	7.3	122.59	1.060	Level 2
9,300.0	6,830.0	7,158.8	6,862.0	90.3	44.6	89.72	575.7	-2,310.7	208.3	82.4	125.94	1.654	
9,400.0	6,830.0	7,157.6	6,860.8	93.7	44.6	89.04	575.7	-2,310.7	299.8	170.6	129.27	2.319	
9,500.0	6,830.0	7,156.4	6,859.6	97.0	44.6	88.37	575.7	-2,310.7	395.5	262.9	132.60	2.983	
9,600.0	6,830.0	7,155.2	6,858.5	100.4	44.6	87.70	575.7	-2,310.7	492.9	356.9	135.91	3.626	

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Dietrich C07-18 Pad Sec.7-T4N-R64W - Dietrich C07-22D (Noble-Exist) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 286- **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,830.0	7,123.3	6,886.3	113.9	35.7	-102.27	364.4	-3,657.1	476.5	345.4	131.03	3.636	
10,100.0	6,830.0	7,118.6	6,881.7	117.3	35.7	-99.66	364.4	-3,657.3	379.3	243.7	135.61	2.797	
10,200.0	6,830.0	7,114.0	6,877.1	120.7	35.7	-97.01	364.4	-3,657.5	283.9	144.0	140.00	2.028	
10,300.0	6,830.0	7,109.4	6,872.5	124.1	35.7	-94.35	364.4	-3,657.7	193.3	49.2	144.15	1.341	Level 3
10,400.0	6,830.0	7,104.8	6,867.9	127.5	35.7	-91.67	364.5	-3,657.9	118.6	-29.4	148.03	0.801	Level 1
10,466.7	6,830.0	7,101.7	6,864.8	129.7	35.7	-89.88	364.5	-3,658.0	98.1	-52.4	150.46	0.652	Level 1, CC, ES, SF
10,500.0	6,830.0	7,100.2	6,863.3	130.9	35.7	-88.99	364.5	-3,658.1	103.6	-48.1	151.62	0.683	Level 1
10,600.0	6,830.0	7,095.6	6,858.7	134.3	35.6	-86.32	364.5	-3,658.3	165.4	10.5	154.90	1.067	Level 2
10,700.0	6,830.0	7,091.0	6,854.1	137.7	35.6	-83.67	364.5	-3,658.5	252.8	95.0	157.86	1.602	
10,800.0	6,830.0	7,086.5	6,849.6	141.1	35.6	-81.06	364.5	-3,658.7	347.1	186.6	160.49	2.163	
10,900.0	6,830.0	7,081.9	6,845.0	144.5	35.6	-78.50	364.5	-3,658.9	443.8	281.0	162.78	2.726	

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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.7-T4N-R64W - Honebein 13-7U (Exist) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 600-NS-GYRO-MS

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
13,600.0	6,830.0	6,881.2	6,879.9	236.8	14.7	-90.72	-37.2	-6,935.1	491.6	240.2	251.39	1.956	
13,700.0	6,830.0	6,878.3	6,877.0	240.2	14.7	-90.37	-37.2	-6,935.2	471.4	216.6	254.81	1.850	
13,747.5	6,830.0	6,877.0	6,875.7	241.9	14.7	-90.21	-37.2	-6,935.2	469.0	212.5	256.44	1.829	CC, ES
13,800.0	6,830.0	6,875.5	6,874.2	243.6	14.7	-90.02	-37.2	-6,935.3	471.9	213.7	258.23	1.827	SF
13,900.0	6,830.0	6,872.7	6,871.4	247.1	14.7	-89.68	-37.3	-6,935.4	493.1	231.5	261.64	1.885	

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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) - England 8-3-17 (Exist) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 100-NS-GYRO-MS

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,800.0	6,830.0	6,841.4	6,839.1	41.7	15.5	-90.03	201.3	-1,400.8	498.9	442.1	56.76	8.788	
7,900.0	6,830.0	6,840.4	6,838.1	44.7	15.5	-89.82	201.3	-1,400.8	420.3	360.5	59.81	7.027	
8,000.0	6,830.0	6,839.3	6,837.0	47.8	15.5	-89.60	201.3	-1,400.8	352.7	289.8	62.91	5.606	
8,100.0	6,830.0	6,838.2	6,836.0	50.9	15.5	-89.39	201.4	-1,400.8	303.6	237.6	66.06	4.596	
8,200.0	6,830.0	6,837.1	6,834.9	54.1	15.5	-89.17	201.4	-1,400.8	282.8	213.5	69.23	4.084	
8,211.2	6,830.0	6,837.0	6,834.8	54.5	15.5	-89.14	201.4	-1,400.8	282.5	212.9	69.59	4.060	CC, ES, SF
8,300.0	6,830.0	6,836.1	6,833.8	57.3	15.5	-88.95	201.4	-1,400.8	296.2	223.7	72.44	4.089	
8,400.0	6,830.0	6,835.0	6,832.7	60.5	15.5	-88.73	201.4	-1,400.8	339.8	264.2	75.66	4.491	
8,500.0	6,830.0	6,833.9	6,831.6	63.8	15.5	-88.50	201.4	-1,400.8	404.0	325.1	78.91	5.120	
8,600.0	6,830.0	6,832.8	6,830.5	67.1	15.5	-88.28	201.4	-1,400.9	480.6	398.5	82.18	5.849	

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Honebein 4N64W7K Pad Sec.7-T4N-R64W - Honebein 7G-203 - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 267-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
13,800.0	6,830.0	6,892.0	6,722.1	243.6	30.9	-50.70	215.8	-7,317.5	427.3	211.7	215.61	1.982	
13,900.0	6,830.0	6,892.0	6,722.1	247.1	30.9	-50.70	215.8	-7,317.5	356.5	138.2	218.32	1.633	
14,000.0	6,830.0	6,892.0	6,722.1	250.5	30.9	-50.70	215.8	-7,317.5	302.6	81.6	221.03	1.369	Level 3
14,070.2	6,830.0	6,903.5	6,731.5	252.9	30.9	-53.10	209.0	-7,318.1	280.1	50.3	229.75	1.219	Level 2, CC, ES, SF

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Honebein 4N64W7K Pad Sec.7-T4N-R64W - Honebein 7G-323 - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 168-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
13,500.0	6,830.0	6,855.7	6,719.6	233.4	26.8	-52.44	199.7	-7,077.5	484.7	275.8	208.84	2.321	
13,600.0	6,830.0	6,857.2	6,720.8	236.8	26.8	-52.73	198.8	-7,077.5	409.1	196.8	212.38	1.927	
13,700.0	6,830.0	6,858.7	6,722.0	240.2	26.8	-53.03	198.0	-7,077.6	346.2	130.3	215.93	1.603	
13,800.0	6,830.0	6,860.2	6,723.2	243.6	26.8	-53.32	197.1	-7,077.6	303.9	84.4	219.49	1.384	Level 3
13,887.7	6,830.0	6,861.5	6,724.3	246.7	26.8	-53.58	196.3	-7,077.6	290.9	68.3	222.63	1.307	Level 3, CC
13,900.0	6,830.0	6,861.7	6,724.4	247.1	26.8	-53.61	196.2	-7,077.6	291.2	68.1	223.06	1.305	Level 3, ES, SF
14,000.0	6,830.0	6,863.2	6,725.6	250.5	26.8	-53.91	195.3	-7,077.6	311.8	85.2	226.65	1.376	Level 3
14,070.2	6,830.0	6,864.2	6,726.4	252.9	26.8	-54.11	194.7	-7,077.7	343.4	114.2	229.18	1.498	Level 3

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Honebein 4N64W7K Pad Sec.7-T4N-R64W - Honebein 7K-223 - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 166-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,300.0	6,830.0	6,747.9	6,683.7	192.3	17.7	-46.65	215.9	-5,858.8	482.3	326.7	155.56	3.100	
12,400.0	6,830.0	6,753.5	6,688.2	195.7	17.7	-47.68	212.5	-5,859.4	410.8	250.3	160.52	2.559	
12,500.0	6,830.0	6,759.6	6,692.9	199.1	17.7	-48.79	208.8	-5,859.9	353.3	187.7	165.69	2.133	
12,600.0	6,830.0	6,766.1	6,698.0	202.5	17.7	-49.98	204.8	-5,860.6	317.5	146.4	171.09	1.856	
12,671.2	6,830.0	6,771.0	6,701.8	205.0	17.7	-50.89	201.7	-5,861.1	309.4	134.3	175.08	1.767	CC
12,700.0	6,830.0	6,773.1	6,703.4	206.0	17.7	-51.28	200.4	-5,861.3	310.7	134.0	176.73	1.758	ES, SF
12,800.0	6,830.0	6,794.0	6,719.2	209.4	17.7	-55.11	186.9	-5,863.7	335.3	147.4	187.91	1.785	
12,900.0	6,830.0	6,794.0	6,719.2	212.8	17.7	-55.11	186.9	-5,863.7	384.3	193.5	190.77	2.014	
13,000.0	6,830.0	6,794.0	6,719.2	216.2	17.7	-55.11	186.9	-5,863.7	450.4	256.8	193.62	2.326	

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Honebein 4N64W7K Pad Sec.7-T4N-R64W - Honebein 7K-243 - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 166-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,900.0	6,830.0	6,828.1	6,739.6	212.8	19.2	-54.01	217.8	-6,503.7	493.7	304.2	189.53	2.605	
13,000.0	6,830.0	6,826.6	6,738.4	216.2	19.2	-53.67	218.7	-6,503.8	413.5	221.9	191.60	2.158	
13,100.0	6,830.0	6,824.9	6,737.1	219.7	19.2	-53.33	219.7	-6,503.8	343.9	150.3	193.61	1.776	
13,200.0	6,830.0	6,823.3	6,735.8	223.1	19.2	-52.97	220.7	-6,503.9	292.4	96.9	195.57	1.495	Level 3
13,300.0	6,830.0	6,821.6	6,734.4	226.5	19.2	-52.61	221.8	-6,503.9	269.7	72.2	197.48	1.366	Level 3
13,313.8	6,830.0	6,821.3	6,734.2	227.0	19.2	-52.56	221.9	-6,503.9	269.4	71.6	197.74	1.362	Level 3, CC, ES, SF
13,400.0	6,830.0	6,819.8	6,733.0	229.9	19.2	-52.23	222.8	-6,504.0	282.8	83.5	199.34	1.419	Level 3
13,500.0	6,830.0	6,818.0	6,731.6	233.4	19.2	-51.85	223.9	-6,504.0	327.4	126.3	201.13	1.628	
13,600.0	6,830.0	6,816.1	6,730.1	236.8	19.2	-51.45	225.1	-6,504.1	393.0	190.1	202.86	1.937	
13,700.0	6,830.0	6,814.2	6,728.6	240.2	19.2	-51.04	226.2	-6,504.1	470.8	266.2	204.53	2.302	

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Honebein 4N64W7K Pad Sec.7-T4N-R64W - Honebein 7K-323 - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 168-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
11,900.0	6,830.0	6,813.8	6,722.2	178.6	21.4	-47.57	254.3	-5,466.1	456.4	306.4	149.99	3.043	
12,000.0	6,830.0	6,820.3	6,727.4	182.0	21.4	-49.00	250.5	-5,466.6	378.3	222.6	155.69	2.430	
12,100.0	6,830.0	6,826.8	6,732.6	185.4	21.4	-50.42	246.6	-5,467.0	312.8	151.4	161.41	1.938	
12,200.0	6,830.0	6,833.2	6,737.7	188.9	21.4	-51.84	242.8	-5,467.5	269.1	102.0	167.13	1.610	
12,277.6	6,830.0	6,838.1	6,741.7	191.5	21.4	-52.94	239.9	-5,467.8	257.7	86.2	171.57	1.502	CC
12,300.0	6,830.0	6,839.6	6,742.8	192.3	21.4	-53.25	239.0	-5,467.9	258.7	85.8	172.84	1.497	Level 3, ES, SF
12,400.0	6,830.0	6,845.9	6,747.8	195.7	21.4	-54.65	235.2	-5,468.4	285.2	106.6	178.54	1.597	
12,500.0	6,830.0	6,852.2	6,752.8	199.1	21.4	-56.04	231.4	-5,468.8	340.0	155.8	184.21	1.846	
12,600.0	6,830.0	6,858.4	6,757.7	202.5	21.4	-57.41	227.6	-5,469.3	412.1	222.3	189.85	2.171	
12,700.0	6,830.0	6,864.6	6,762.5	206.0	21.4	-58.77	223.7	-5,469.7	493.9	298.5	195.43	2.527	

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Honebein 4N64W7K Pad Sec.7-T4N-R64W - Honebein 7K-403 - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 175-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,500.0	6,830.0	6,832.7	6,776.4	199.1	17.6	-54.79	268.7	-6,108.2	467.2	288.9	178.28	2.620	
12,600.0	6,830.0	6,833.4	6,777.0	202.5	17.6	-54.97	268.3	-6,108.3	380.4	198.9	181.50	2.096	
12,700.0	6,830.0	6,834.1	6,777.5	206.0	17.6	-55.16	267.9	-6,108.3	301.9	117.1	184.75	1.634	
12,800.0	6,830.0	6,834.8	6,778.1	209.4	17.6	-55.36	267.5	-6,108.3	240.0	52.0	188.01	1.276	Level 3
12,900.0	6,830.0	6,835.5	6,778.7	212.8	17.6	-55.56	267.1	-6,108.3	209.9	18.6	191.30	1.097	Level 2
12,917.8	6,830.0	6,835.7	6,778.8	213.4	17.6	-55.59	267.0	-6,108.3	209.1	17.2	191.89	1.090	Level 2, CC, ES, SF
13,000.0	6,830.0	6,836.3	6,779.4	216.2	17.6	-55.76	266.6	-6,108.3	224.7	30.1	194.61	1.155	Level 2
13,100.0	6,830.0	6,837.0	6,780.0	219.7	17.6	-55.97	266.2	-6,108.3	277.4	79.4	197.94	1.401	Level 3
13,200.0	6,830.0	6,837.8	6,780.6	223.1	17.6	-56.19	265.8	-6,108.3	351.2	150.0	201.29	1.745	
13,300.0	6,830.0	6,838.6	6,781.3	226.5	17.6	-56.41	265.3	-6,108.3	435.7	231.0	204.66	2.129	

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Honebein 4N64W7K Pad Sec.7-T4N-R64W - Honebein 7O-243 - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 136-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
11,700.0	6,830.0	6,878.0	6,732.5	171.8	24.7	-56.29	199.8	-5,213.5	440.2	275.6	164.54	2.675	
11,800.0	6,830.0	6,878.0	6,732.5	175.2	24.7	-56.29	199.8	-5,213.5	372.8	205.4	167.42	2.227	
11,900.0	6,830.0	6,878.0	6,732.5	178.6	24.7	-56.29	199.8	-5,213.5	322.9	152.6	170.31	1.896	
12,000.0	6,830.0	6,878.0	6,732.5	182.0	24.7	-56.29	199.8	-5,213.5	299.2	126.0	173.19	1.728	
12,023.7	6,830.0	6,878.0	6,732.5	182.8	24.7	-56.29	199.8	-5,213.5	298.3	124.4	173.88	1.715	CC, ES, SF
12,100.0	6,830.0	6,878.0	6,732.5	185.4	24.7	-56.29	199.8	-5,213.5	307.9	131.8	176.08	1.749	
12,200.0	6,830.0	6,878.0	6,732.5	188.9	24.7	-56.29	199.8	-5,213.5	346.5	167.5	178.97	1.936	
12,300.0	6,830.0	6,878.0	6,732.5	192.3	24.7	-56.29	199.8	-5,213.5	406.6	224.7	181.86	2.236	
12,400.0	6,830.0	6,878.0	6,732.5	195.7	24.7	-56.29	199.8	-5,213.5	480.2	295.4	184.74	2.599	

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	2.0	2.0	0.0	0.0	-89.88	0.3	-120.0	120.0	119.9	0.00	N/A	
100.0	100.0	102.0	102.0	0.1	0.1	-89.88	0.3	-120.0	120.0	119.7	0.28	427.112	
200.0	200.0	202.0	202.0	0.4	0.4	-89.88	0.3	-120.0	120.0	119.1	0.83	144.256	
300.0	300.0	302.0	302.0	0.7	0.7	-89.88	0.3	-120.0	120.0	118.6	1.38	86.784	
400.0	400.0	402.0	402.0	1.0	1.0	-89.88	0.3	-120.0	120.0	118.0	1.93	62.059	CC, ES
500.0	500.0	502.0	502.0	1.2	1.2	-116.66	0.3	-120.0	120.5	118.1	2.48	48.555	
600.0	599.9	601.9	601.9	1.5	1.5	-118.28	0.3	-120.0	122.3	119.3	3.03	40.336	
700.0	699.7	702.3	702.3	1.8	1.8	-121.49	-1.1	-119.6	125.3	121.8	3.56	35.214	
800.0	799.3	801.9	801.8	2.1	2.0	-126.59	-4.9	-118.6	130.0	125.9	4.08	31.867	
900.0	898.6	900.5	900.2	2.4	2.2	-133.09	-11.2	-116.9	137.5	132.8	4.63	29.675	
953.7	951.7	952.8	952.3	2.6	2.4	-136.94	-15.5	-115.8	143.0	138.1	4.94	28.930	
1,000.0	997.6	997.7	997.0	2.8	2.5	-140.34	-19.7	-114.6	148.7	143.5	5.21	28.549	
1,100.0	1,096.5	1,093.8	1,092.4	3.2	2.8	-147.40	-30.5	-111.8	163.1	157.3	5.80	28.139	SF
1,200.0	1,195.5	1,188.8	1,186.4	3.6	3.1	-153.92	-43.5	-108.3	180.6	174.2	6.39	28.244	
1,300.0	1,294.4	1,282.4	1,278.8	4.0	3.5	-159.81	-58.5	-104.3	201.2	194.2	7.00	28.749	
1,400.0	1,393.4	1,374.8	1,369.5	4.4	3.9	-165.04	-75.4	-99.8	225.0	217.4	7.61	29.554	
1,500.0	1,492.3	1,465.7	1,458.3	4.8	4.3	-169.63	-94.1	-94.8	251.7	243.5	8.23	30.582	
1,600.0	1,591.3	1,555.1	1,545.2	5.2	4.8	-173.65	-114.5	-89.4	281.4	272.5	8.86	31.773	
1,700.0	1,690.2	1,643.0	1,630.1	5.6	5.3	-177.16	-136.5	-83.5	313.8	304.3	9.48	33.084	
1,800.0	1,789.2	1,735.3	1,718.9	6.0	5.9	179.69	-160.6	-77.1	348.0	337.9	10.13	34.351	
1,900.0	1,888.1	1,827.6	1,807.8	6.4	6.4	177.09	-184.7	-70.7	383.1	372.3	10.77	35.556	
2,000.0	1,987.1	1,919.9	1,896.7	6.8	7.0	174.92	-208.8	-64.3	418.7	407.3	11.42	36.675	
2,100.0	2,086.0	2,012.3	1,985.6	7.2	7.6	173.09	-232.9	-57.9	454.8	442.7	12.06	37.710	
2,200.0	2,185.0	2,104.6	2,074.5	7.7	8.2	171.52	-257.0	-51.5	491.2	478.5	12.70	38.665	

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

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.28	-0.1	15.0	15.0	15.0	0.00	N/A	
100.0	100.0	99.0	99.0	0.1	0.1	90.28	-0.1	15.0	15.0	14.7	0.27	54.654	
200.0	200.0	199.0	199.0	0.4	0.4	90.28	-0.1	15.0	15.0	14.1	0.82	18.188	CC
300.0	300.0	298.9	298.9	0.7	0.7	85.72	1.1	15.4	15.4	14.0	1.37	11.207	
400.0	400.0	398.6	398.5	1.0	1.0	73.58	4.9	16.5	17.2	15.3	1.93	8.913	
500.0	500.0	498.1	497.8	1.2	1.3	34.76	11.0	18.4	20.4	17.9	2.49	8.206	
600.0	599.9	597.6	596.8	1.5	1.6	25.06	19.7	21.1	24.1	21.0	3.05	7.887	
700.0	699.7	696.8	695.4	1.8	1.9	17.33	30.8	24.5	28.1	24.5	3.63	7.747	
800.0	799.3	796.0	793.5	2.1	2.3	10.93	44.3	28.6	32.4	28.2	4.21	7.697	
900.0	898.6	895.3	891.5	2.4	2.7	5.53	60.0	33.5	36.6	31.8	4.79	7.650	
953.7	951.7	948.9	944.4	2.6	2.9	3.14	68.7	36.2	38.2	33.1	5.10	7.481	
1,000.0	997.6	995.3	990.0	2.8	3.1	1.23	76.2	38.5	39.2	33.9	5.37	7.305	
1,100.0	1,096.5	1,095.2	1,088.5	3.2	3.6	-2.53	92.5	43.5	41.6	35.7	5.96	6.993	
1,200.0	1,195.5	1,195.1	1,187.0	3.6	4.0	-5.88	108.7	48.5	44.2	37.7	6.55	6.751	
1,300.0	1,294.4	1,295.1	1,285.5	4.0	4.5	-8.84	125.0	53.5	46.9	39.8	7.15	6.559	
1,400.0	1,393.4	1,395.0	1,383.9	4.4	4.9	-11.48	141.2	58.5	49.7	42.0	7.77	6.399	
1,500.0	1,492.3	1,494.9	1,482.4	4.8	5.4	-13.83	157.4	63.5	52.7	44.2	8.40	6.266	
1,600.0	1,591.3	1,594.9	1,580.9	5.2	5.9	-15.93	173.7	68.6	55.6	46.6	9.05	6.151	
1,700.0	1,690.2	1,694.8	1,679.4	5.6	6.3	-17.81	189.9	73.6	58.7	49.0	9.70	6.052	
1,800.0	1,789.2	1,794.7	1,777.9	6.0	6.8	-19.51	206.1	78.6	61.8	51.4	10.36	5.964	
1,900.0	1,888.1	1,894.7	1,876.3	6.4	7.3	-21.04	222.4	83.6	65.0	53.9	11.04	5.887	
2,000.0	1,987.1	1,994.6	1,974.8	6.8	7.7	-22.43	238.6	88.6	68.2	56.5	11.72	5.818	
2,100.0	2,086.0	2,094.6	2,073.3	7.2	8.2	-23.69	254.9	93.6	71.4	59.0	12.41	5.755	
2,200.0	2,185.0	2,194.5	2,171.8	7.7	8.7	-24.85	271.1	98.6	74.7	61.6	13.11	5.699	
2,300.0	2,283.9	2,294.4	2,270.3	8.1	9.1	-25.90	287.3	103.6	78.0	64.2	13.81	5.648	
2,400.0	2,382.9	2,394.4	2,368.7	8.5	9.6	-26.87	303.6	108.6	81.3	66.8	14.52	5.601	
2,500.0	2,481.8	2,494.3	2,467.2	8.9	10.1	-27.77	319.8	113.6	84.7	69.4	15.23	5.559	
2,600.0	2,580.8	2,594.2	2,565.7	9.3	10.5	-28.59	336.0	118.6	88.0	72.1	15.95	5.520	
2,700.0	2,679.8	2,694.2	2,664.2	9.8	11.0	-29.36	352.3	123.6	91.4	74.8	16.67	5.484	
2,800.0	2,778.7	2,794.1	2,762.7	10.2	11.5	-30.07	368.5	128.6	94.8	77.4	17.40	5.451	
2,900.0	2,877.7	2,894.0	2,861.1	10.6	11.9	-30.73	384.8	133.6	98.2	80.1	18.12	5.420	
3,000.0	2,976.6	2,994.0	2,959.6	11.0	12.4	-31.34	401.0	138.7	101.7	82.8	18.85	5.392	
3,100.0	3,075.6	3,093.9	3,058.1	11.5	12.9	-31.92	417.2	143.7	105.1	85.5	19.59	5.365	
3,200.0	3,174.5	3,193.8	3,156.6	11.9	13.3	-32.46	433.5	148.7	108.5	88.2	20.32	5.341	
3,300.0	3,273.5	3,293.8	3,255.1	12.3	13.8	-32.97	449.7	153.7	112.0	90.9	21.06	5.318	
3,400.0	3,372.4	3,393.7	3,353.5	12.7	14.3	-33.44	465.9	158.7	115.5	93.7	21.80	5.296	
3,500.0	3,471.4	3,493.6	3,452.0	13.1	14.7	-33.89	482.2	163.7	118.9	96.4	22.54	5.276	
3,600.0	3,570.3	3,593.6	3,550.5	13.6	15.2	-34.31	498.4	168.7	122.4	99.1	23.28	5.258	
3,700.0	3,669.3	3,693.5	3,649.0	14.0	15.7	-34.71	514.7	173.7	125.9	101.9	24.02	5.240	
3,800.0	3,768.2	3,793.5	3,747.5	14.4	16.2	-35.09	530.9	178.7	129.4	104.6	24.77	5.223	
3,900.0	3,867.2	3,893.4	3,845.9	14.8	16.6	-35.45	547.1	183.7	132.9	107.4	25.52	5.207	
4,000.0	3,966.1	3,993.3	3,944.4	15.3	17.1	-35.79	563.4	188.7	136.4	110.1	26.26	5.193	
4,100.0	4,065.1	4,093.3	4,042.9	15.7	17.6	-36.11	579.6	193.7	139.9	112.9	27.01	5.179	
4,200.0	4,164.0	4,193.2	4,141.4	16.1	18.0	-36.42	595.8	198.7	143.4	115.6	27.76	5.165	
4,300.0	4,263.0	4,293.1	4,239.9	16.5	18.5	-36.71	612.1	203.7	146.9	118.4	28.51	5.153	
4,323.5	4,286.2	4,316.6	4,263.0	16.6	18.6	-36.78	615.9	204.9	147.7	119.0	28.68	5.150	
4,400.0	4,362.1	4,393.0	4,338.3	16.9	19.0	-36.80	628.3	208.8	151.2	122.0	29.18	5.182	
4,500.0	4,461.5	4,492.8	4,436.6	17.2	19.4	-36.19	644.5	213.7	158.3	128.6	29.65	5.339	
4,600.0	4,561.3	4,592.2	4,534.6	17.4	19.9	-34.97	660.7	218.7	168.2	138.2	29.96	5.613	
4,700.0	4,661.3	4,691.2	4,632.1	17.6	20.4	-33.32	676.8	223.7	181.1	150.9	30.16	6.004	
4,738.7	4,700.0	4,729.4	4,669.8	17.7	20.6	-6.37	683.0	225.6	186.9	150.7	36.24	5.157	
4,800.0	4,761.3	4,789.8	4,729.3	17.8	20.8	-5.16	692.8	228.6	196.5	159.7	36.79	5.342	

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

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,861.3	4,889.4	4,827.4	18.0	21.3	-3.41	708.9	233.6	212.4	174.7	37.66	5.639	
5,000.0	4,961.3	4,996.0	4,932.9	18.2	21.7	-2.01	723.9	238.2	226.2	187.8	38.39	5.891	
5,100.0	5,061.3	5,103.6	5,039.9	18.4	22.0	-1.07	735.1	241.7	236.5	197.5	39.01	6.064	
5,200.0	5,161.3	5,212.0	5,148.0	18.6	22.2	-0.50	742.6	244.0	243.4	203.9	39.54	6.156	
5,300.0	5,261.3	5,320.8	5,256.7	18.8	22.4	-0.24	746.1	245.1	246.6	206.7	39.98	6.170	
5,400.0	5,361.3	5,424.4	5,360.3	19.0	22.6	-0.22	746.4	245.2	246.9	206.6	40.35	6.119	
5,500.0	5,461.3	5,524.4	5,460.3	19.2	22.8	-0.22	746.4	245.2	246.9	206.2	40.73	6.062	
5,600.0	5,561.3	5,624.4	5,560.3	19.4	22.9	-0.22	746.4	245.2	246.9	205.8	41.12	6.005	
5,700.0	5,661.3	5,724.4	5,660.3	19.6	23.1	-0.22	746.4	245.2	246.9	205.4	41.51	5.949	
5,800.0	5,761.3	5,824.4	5,760.3	19.8	23.3	-0.22	746.4	245.2	246.9	205.0	41.90	5.894	
5,900.0	5,861.3	5,924.4	5,860.3	20.0	23.5	-0.22	746.4	245.2	246.9	204.6	42.29	5.839	
6,000.0	5,961.3	6,024.4	5,960.3	20.2	23.6	-0.22	746.4	245.2	246.9	204.2	42.69	5.784	
6,100.0	6,061.3	6,124.4	6,060.3	20.4	23.8	-0.22	746.4	245.2	246.9	203.8	43.09	5.731	
6,152.9	6,114.2	6,177.3	6,113.2	20.5	23.9	-0.22	746.4	245.2	246.9	203.6	43.30	5.702	
6,200.0	6,161.2	6,224.4	6,160.2	20.6	24.0	90.69	746.4	245.2	246.9	210.6	36.35	6.793	
6,250.0	6,211.0	6,274.3	6,210.2	20.7	24.1	91.77	746.4	244.9	247.0	210.6	36.41	6.785	
6,300.0	6,260.2	6,324.8	6,260.5	20.8	24.2	92.98	746.4	241.6	247.3	210.8	36.42	6.789	
6,350.0	6,308.8	6,375.6	6,310.9	20.8	24.2	94.18	746.3	234.7	247.6	211.2	36.41	6.800	
6,400.0	6,356.4	6,426.8	6,361.0	20.8	24.3	95.36	746.2	224.1	248.0	211.6	36.39	6.816	
6,450.0	6,402.8	6,478.4	6,410.6	20.8	24.3	96.51	746.1	209.9	248.5	212.2	36.36	6.835	
6,500.0	6,447.8	6,530.4	6,459.4	20.8	24.3	97.63	745.9	192.0	249.1	212.8	36.35	6.853	
6,550.0	6,491.2	6,582.8	6,507.1	20.8	24.3	98.71	745.7	170.4	249.8	213.5	36.37	6.869	
6,600.0	6,532.8	6,635.6	6,553.5	20.8	24.3	99.74	745.5	145.2	250.6	214.1	36.43	6.878	
6,650.0	6,572.3	6,688.7	6,598.1	20.8	24.3	100.72	745.2	116.5	251.3	214.8	36.54	6.878	
6,700.0	6,609.5	6,742.2	6,640.8	20.8	24.3	101.64	744.9	84.2	252.1	215.4	36.74	6.863	
6,750.0	6,644.4	6,796.0	6,681.2	20.8	24.4	102.51	744.6	48.7	253.0	215.9	37.04	6.829	
6,800.0	6,676.7	6,850.2	6,719.1	20.8	24.4	103.30	744.2	9.9	253.8	216.3	37.46	6.773	
6,850.0	6,706.2	6,904.7	6,754.0	20.9	24.4	104.02	743.8	-31.8	254.5	216.5	38.04	6.691	
6,900.0	6,732.8	6,959.5	6,785.9	21.0	24.5	104.67	743.4	-76.3	255.3	216.5	38.80	6.579	
6,950.0	6,756.5	7,014.5	6,814.4	21.3	24.6	105.24	742.9	-123.4	255.9	216.2	39.74	6.440	
7,000.0	6,777.0	7,069.7	6,839.3	21.9	24.8	105.73	742.5	-172.7	256.5	215.7	40.88	6.275	
7,050.0	6,794.2	7,125.1	6,860.3	22.6	25.1	106.14	742.0	-223.9	257.1	214.8	42.23	6.087	
7,100.0	6,808.2	7,180.7	6,877.4	23.5	25.6	106.46	741.5	-276.8	257.5	213.7	43.77	5.882	
7,150.0	6,818.7	7,236.5	6,890.4	24.5	26.3	106.70	741.0	-331.0	257.8	212.3	45.51	5.664	
7,200.0	6,825.8	7,292.3	6,899.1	25.5	27.2	106.84	740.4	-386.1	258.0	210.5	47.43	5.439	
7,250.0	6,829.5	7,348.1	6,903.4	26.7	28.3	106.90	739.9	-441.8	258.1	208.6	49.50	5.213	
7,277.3	6,830.0	7,378.4	6,904.0	27.3	28.9	106.90	739.6	-472.0	258.0	207.4	50.69	5.091	
7,278.3	6,830.0	7,379.4	6,904.0	27.3	28.9	106.90	739.6	-473.0	258.0	207.3	50.73	5.086	
7,300.0	6,830.0	7,401.1	6,904.0	27.8	29.4	106.90	739.4	-494.7	258.0	206.3	51.72	4.989	
7,400.0	6,830.0	7,501.1	6,904.0	30.3	31.7	106.90	738.4	-594.7	258.0	201.5	56.52	4.566	
7,500.0	6,830.0	7,601.1	6,904.0	33.0	34.2	106.90	737.5	-694.7	258.0	196.4	61.65	4.185	
7,600.0	6,830.0	7,701.1	6,904.0	35.8	36.9	106.90	736.5	-794.7	258.0	191.0	67.05	3.849	
7,700.0	6,830.0	7,801.1	6,904.0	38.7	39.8	106.90	735.6	-894.7	258.0	185.4	72.64	3.552	
7,800.0	6,830.0	7,901.1	6,904.0	41.7	42.7	106.90	734.6	-994.7	258.0	179.7	78.39	3.292	
7,900.0	6,830.0	8,001.1	6,904.0	44.7	45.7	106.90	733.7	-1,094.7	258.0	173.8	84.26	3.062	
8,000.0	6,830.0	8,101.1	6,904.0	47.8	48.7	106.90	732.7	-1,194.7	258.0	167.8	90.24	2.860	
8,100.0	6,830.0	8,201.1	6,904.0	50.9	51.8	106.90	731.8	-1,294.7	258.0	161.7	96.29	2.680	
8,200.0	6,830.0	8,301.1	6,904.0	54.1	54.9	106.90	730.9	-1,394.7	258.0	155.6	102.42	2.519	
8,300.0	6,830.0	8,401.1	6,904.0	57.3	58.1	106.90	729.9	-1,494.7	258.0	149.4	108.60	2.376	
8,400.0	6,830.0	8,501.1	6,904.0	60.5	61.3	106.90	729.0	-1,594.7	258.0	143.2	114.82	2.247	
8,500.0	6,830.0	8,601.1	6,904.0	63.8	64.5	106.90	728.0	-1,694.7	258.0	136.9	121.09	2.131	
8,600.0	6,830.0	8,701.1	6,904.0	67.1	67.8	106.90	727.1	-1,794.6	258.0	130.6	127.39	2.026	

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,700.0	6,830.0	8,801.1	6,904.0	70.3	71.0	106.90	726.1	-1,894.6	258.0	124.3	133.72	1.930	
8,800.0	6,830.0	8,901.1	6,904.0	73.6	74.3	106.90	725.2	-1,994.6	258.0	118.0	140.07	1.842	
8,900.0	6,830.0	9,001.1	6,904.0	77.0	77.6	106.90	724.2	-2,094.6	258.0	111.6	146.45	1.762	
9,000.0	6,830.0	9,101.1	6,904.0	80.3	80.9	106.90	723.3	-2,194.6	258.0	105.2	152.84	1.688	
9,100.0	6,830.0	9,201.1	6,904.0	83.6	84.2	106.90	722.3	-2,294.6	258.0	98.8	159.26	1.620	
9,200.0	6,830.0	9,301.1	6,904.0	87.0	87.5	106.90	721.4	-2,394.6	258.0	92.3	165.68	1.557	
9,300.0	6,830.0	9,401.1	6,904.0	90.3	90.9	106.90	720.4	-2,494.6	258.0	85.9	172.12	1.499	Level 3
9,400.0	6,830.0	9,501.1	6,904.0	93.7	94.2	106.90	719.5	-2,594.6	258.0	79.5	178.58	1.445	Level 3
9,500.0	6,830.0	9,601.1	6,904.0	97.0	97.6	106.90	718.5	-2,694.6	258.0	73.0	185.04	1.394	Level 3
9,600.0	6,830.0	9,701.1	6,904.0	100.4	100.9	106.90	717.6	-2,794.6	258.0	66.5	191.51	1.347	Level 3
9,700.0	6,830.0	9,801.1	6,904.0	103.8	104.3	106.90	716.7	-2,894.6	258.0	60.0	197.99	1.303	Level 3
9,791.1	6,830.0	9,892.2	6,904.0	106.8	107.3	106.90	715.8	-2,985.7	258.0	54.1	203.90	1.265	Level 3
9,800.0	6,830.0	9,901.1	6,904.0	107.1	107.6	106.90	715.7	-2,994.6	258.0	53.5	204.48	1.262	Level 3
9,878.0	6,830.0	9,979.1	6,904.0	109.8	110.3	106.90	715.0	-3,072.6	258.0	48.5	209.54	1.231	Level 2
9,900.0	6,830.0	10,001.1	6,904.0	110.5	111.0	106.90	714.8	-3,094.6	258.0	47.1	210.97	1.223	Level 2
10,000.0	6,830.0	10,101.1	6,904.0	113.9	114.4	106.90	713.8	-3,194.6	258.0	40.6	217.47	1.186	Level 2
10,100.0	6,830.0	10,201.1	6,904.0	117.3	117.8	106.90	712.9	-3,294.6	258.0	34.0	223.98	1.152	Level 2
10,200.0	6,830.0	10,301.1	6,904.0	120.7	121.1	106.90	711.9	-3,394.6	258.0	27.5	230.49	1.119	Level 2
10,300.0	6,830.0	10,401.1	6,904.0	124.1	124.5	106.90	711.0	-3,494.6	258.0	21.0	237.01	1.089	Level 2
10,400.0	6,830.0	10,501.1	6,904.0	127.5	127.9	106.90	710.1	-3,594.6	258.0	14.5	243.53	1.060	Level 2
10,500.0	6,830.0	10,601.1	6,904.0	130.9	131.3	106.90	709.1	-3,694.5	258.0	8.0	250.06	1.032	Level 2
10,600.0	6,830.0	10,701.1	6,904.0	134.3	134.7	106.90	708.2	-3,794.5	258.0	1.4	256.59	1.006	Level 2
10,700.0	6,830.0	10,801.1	6,904.0	137.7	138.1	106.90	707.2	-3,894.5	258.0	-5.1	263.12	0.981	Level 1
10,800.0	6,830.0	10,901.1	6,904.0	141.1	141.5	106.90	706.3	-3,994.5	258.0	-11.6	269.66	0.957	Level 1
10,900.0	6,830.0	11,001.0	6,904.0	144.5	144.9	106.90	705.3	-4,094.5	258.0	-18.2	276.20	0.934	Level 1
11,000.0	6,830.0	11,101.0	6,904.0	147.9	148.3	106.90	704.4	-4,194.5	258.0	-24.7	282.74	0.913	Level 1
11,100.0	6,830.0	11,201.0	6,904.0	151.3	151.7	106.90	703.5	-4,294.5	258.0	-31.3	289.29	0.892	Level 1
11,200.0	6,830.0	11,301.0	6,904.0	154.7	155.1	106.90	702.5	-4,394.5	258.0	-37.8	295.83	0.872	Level 1
11,300.0	6,830.0	11,401.0	6,904.0	158.1	158.5	106.90	701.6	-4,494.5	258.0	-44.4	302.38	0.853	Level 1
11,400.0	6,830.0	11,501.0	6,904.0	161.5	161.9	106.90	700.6	-4,594.5	258.0	-50.9	308.94	0.835	Level 1
11,500.0	6,830.0	11,601.0	6,904.0	164.9	165.3	106.90	699.7	-4,694.5	258.0	-57.5	315.49	0.818	Level 1
11,600.0	6,830.0	11,701.0	6,904.0	168.3	168.7	106.90	698.8	-4,794.5	258.0	-64.0	322.05	0.801	Level 1
11,700.0	6,830.0	11,801.0	6,904.0	171.8	172.1	106.90	697.8	-4,894.5	258.0	-70.6	328.61	0.785	Level 1
11,800.0	6,830.0	11,901.0	6,904.0	175.2	175.5	106.90	696.9	-4,994.5	258.0	-77.1	335.17	0.770	Level 1
11,900.0	6,830.0	12,001.0	6,904.0	178.6	179.0	106.90	695.9	-5,094.5	258.0	-83.7	341.73	0.755	Level 1
12,000.0	6,830.0	12,101.0	6,904.0	182.0	182.4	106.90	695.0	-5,194.5	258.0	-90.2	348.29	0.741	Level 1
12,100.0	6,830.0	12,201.0	6,904.0	185.4	185.8	106.90	694.1	-5,294.5	258.0	-96.8	354.85	0.727	Level 1
12,200.0	6,830.0	12,301.0	6,904.0	188.9	189.2	106.90	693.1	-5,394.5	258.0	-103.4	361.42	0.714	Level 1
12,300.0	6,830.0	12,401.0	6,904.0	192.3	192.6	106.90	692.2	-5,494.5	258.0	-109.9	367.99	0.701	Level 1
12,400.0	6,830.0	12,501.0	6,904.0	195.7	196.0	106.90	691.3	-5,594.5	258.0	-116.5	374.55	0.689	Level 1
12,500.0	6,830.0	12,601.0	6,904.0	199.1	199.5	106.90	690.3	-5,694.4	258.1	-123.1	381.12	0.677	Level 1
12,600.0	6,830.0	12,701.0	6,904.0	202.5	202.9	106.90	689.4	-5,794.4	258.1	-129.6	387.69	0.666	Level 1
12,700.0	6,830.0	12,801.0	6,904.0	206.0	206.3	106.90	688.4	-5,894.4	258.1	-136.2	394.27	0.655	Level 1
12,800.0	6,830.0	12,901.0	6,904.0	209.4	209.7	106.90	687.5	-5,994.4	258.1	-142.8	400.84	0.644	Level 1
12,900.0	6,830.0	13,001.0	6,904.0	212.8	213.1	106.90	686.6	-6,094.4	258.1	-149.4	407.41	0.633	Level 1
13,000.0	6,830.0	13,101.0	6,904.0	216.2	216.6	106.90	685.6	-6,194.4	258.1	-155.9	413.99	0.623	Level 1
13,100.0	6,830.0	13,201.0	6,904.0	219.7	220.0	106.90	684.7	-6,294.4	258.1	-162.5	420.56	0.614	Level 1
13,200.0	6,830.0	13,301.0	6,904.0	223.1	223.4	106.90	683.8	-6,394.4	258.1	-169.1	427.14	0.604	Level 1
13,300.0	6,830.0	13,401.0	6,904.0	226.5	226.8	106.90	682.8	-6,494.4	258.1	-175.6	433.71	0.595	Level 1
13,400.0	6,830.0	13,501.0	6,904.0	229.9	230.2	106.89	681.9	-6,594.4	258.1	-182.2	440.29	0.586	Level 1
13,500.0	6,830.0	13,601.0	6,904.0	233.4	233.7	106.89	681.0	-6,694.4	258.1	-188.8	446.87	0.578	Level 1
13,600.0	6,830.0	13,701.0	6,904.0	236.8	237.1	106.89	680.0	-6,794.4	258.1	-195.4	453.45	0.569	Level 1

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

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
13,700.0	6,830.0	13,801.0	6,904.0	240.2	240.5	106.89	679.1	-6,894.4	258.1	-201.9	460.03	0.561	Level 1
13,800.0	6,830.0	13,901.0	6,904.0	243.6	243.9	106.89	678.2	-6,994.4	258.1	-208.5	466.61	0.553	Level 1
13,900.0	6,830.0	14,001.0	6,904.0	247.1	247.4	106.89	677.2	-7,094.4	258.1	-215.1	473.19	0.545	Level 1
14,000.0	6,830.0	14,101.0	6,904.0	250.5	250.8	106.89	676.3	-7,194.4	258.1	-221.7	479.77	0.538	Level 1
14,040.3	6,830.0	14,141.3	6,904.0	251.9	252.2	106.89	675.9	-7,234.7	258.1	-224.3	482.43	0.535	Level 1
14,070.2	6,830.0	14,168.9	6,904.0	252.9	253.1	106.89	675.7	-7,262.2	258.1	-226.2	484.32	0.533	Level 1, ES, SF

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 3N (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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.16	0.0	-15.0	15.0	15.0	0.00	N/A	
100.0	100.0	100.0	100.0	0.1	0.1	-90.16	0.0	-15.0	15.0	14.7	0.28	54.381	
200.0	200.0	200.0	200.0	0.4	0.4	-90.16	0.0	-15.0	15.0	14.1	0.83	18.127	
300.0	300.0	300.0	300.0	0.7	0.7	-90.16	0.0	-15.0	15.0	13.6	1.38	10.876	
400.0	400.0	400.0	400.0	1.0	1.0	-90.16	0.0	-15.0	15.0	13.0	1.93	7.769	CC
500.0	500.0	500.0	500.0	1.2	1.2	-120.69	0.0	-15.0	15.6	13.1	2.48	6.297	
600.0	599.9	599.9	599.9	1.5	1.5	-131.51	0.0	-15.0	17.9	14.9	3.03	5.912	
700.0	699.7	700.2	700.2	1.8	1.8	-142.96	0.9	-14.0	21.5	18.0	3.59	6.003	
800.0	799.3	800.7	800.6	2.1	2.1	-152.83	3.6	-11.2	25.5	21.3	4.14	6.145	
900.0	898.6	901.2	900.9	2.4	2.3	-161.63	8.2	-6.4	29.8	25.1	4.70	6.331	
953.7	951.7	955.2	954.7	2.6	2.5	-166.00	11.4	-3.1	32.3	27.3	5.01	6.448	
1,000.0	997.6	1,001.9	1,001.1	2.8	2.6	-169.53	14.6	0.2	34.3	29.0	5.26	6.516	
1,100.0	1,096.5	1,102.2	1,100.8	3.2	3.0	-176.49	22.6	8.6	37.4	31.6	5.83	6.415	
1,200.0	1,195.5	1,202.1	1,200.0	3.6	3.3	177.52	30.9	17.2	40.6	34.2	6.42	6.328	
1,300.0	1,294.4	1,302.0	1,299.1	4.0	3.6	172.45	39.1	25.8	44.2	37.2	7.03	6.289	
1,400.0	1,393.4	1,401.8	1,398.3	4.4	4.0	168.16	47.4	34.3	48.1	40.4	7.66	6.277	
1,500.0	1,492.3	1,501.7	1,497.4	4.8	4.3	164.54	55.7	42.9	52.2	43.9	8.32	6.280	
1,600.0	1,591.3	1,601.5	1,596.6	5.2	4.7	161.45	63.9	51.5	56.5	47.5	8.98	6.290	
1,700.0	1,690.2	1,701.4	1,695.7	5.6	5.1	158.80	72.2	60.1	60.9	51.3	9.67	6.304	
1,800.0	1,789.2	1,801.3	1,794.9	6.0	5.4	156.52	80.4	68.7	65.5	55.1	10.36	6.319	
1,900.0	1,888.1	1,901.1	1,894.0	6.4	5.8	154.54	88.7	77.3	70.1	59.1	11.07	6.335	
2,000.0	1,987.1	2,001.0	1,993.2	6.8	6.2	152.80	96.9	85.8	74.8	63.0	11.78	6.351	
2,100.0	2,086.0	2,100.9	2,092.3	7.2	6.5	151.27	105.2	94.4	79.6	67.1	12.50	6.367	
2,200.0	2,185.0	2,200.7	2,191.5	7.7	6.9	149.92	113.4	103.0	84.4	71.2	13.23	6.382	
2,300.0	2,283.9	2,300.6	2,290.6	8.1	7.3	148.71	121.7	111.6	89.3	75.3	13.96	6.397	
2,400.0	2,382.9	2,400.5	2,389.8	8.5	7.7	147.62	130.0	120.2	94.2	79.5	14.69	6.411	
2,500.0	2,481.8	2,500.3	2,488.9	8.9	8.1	146.65	138.2	128.8	99.1	83.7	15.43	6.424	
2,600.0	2,580.8	2,600.2	2,588.1	9.3	8.4	145.77	146.5	137.3	104.1	87.9	16.17	6.436	
2,700.0	2,679.8	2,700.1	2,687.3	9.8	8.8	144.96	154.7	145.9	109.0	92.1	16.91	6.448	
2,800.0	2,778.7	2,799.9	2,786.4	10.2	9.2	144.23	163.0	154.5	114.0	96.4	17.65	6.460	
2,900.0	2,877.7	2,899.8	2,885.6	10.6	9.6	143.56	171.2	163.1	119.0	100.6	18.40	6.470	
3,000.0	2,976.6	2,999.7	2,984.7	11.0	9.9	142.94	179.5	171.7	124.1	104.9	19.14	6.480	
3,100.0	3,075.6	3,099.5	3,083.9	11.5	10.3	142.37	187.7	180.3	129.1	109.2	19.89	6.490	
3,200.0	3,174.5	3,199.4	3,183.0	11.9	10.7	141.85	196.0	188.8	134.2	113.5	20.64	6.499	
3,300.0	3,273.5	3,299.3	3,282.2	12.3	11.1	141.36	204.3	197.4	139.2	117.8	21.39	6.508	
3,400.0	3,372.4	3,399.1	3,381.3	12.7	11.5	140.90	212.5	206.0	144.3	122.1	22.14	6.516	
3,500.0	3,471.4	3,499.0	3,480.5	13.1	11.9	140.48	220.8	214.6	149.4	126.5	22.89	6.524	
3,600.0	3,570.3	3,598.9	3,579.6	13.6	12.2	140.09	229.0	223.2	154.5	130.8	23.65	6.532	
3,700.0	3,669.3	3,698.2	3,678.2	14.0	12.6	139.74	237.2	231.7	159.6	135.2	24.39	6.544	
3,800.0	3,768.2	3,795.2	3,774.8	14.4	12.9	140.10	243.6	238.3	165.9	140.9	24.97	6.644	
3,900.0	3,867.2	3,891.8	3,871.3	14.8	13.1	141.36	247.8	242.6	173.9	148.5	25.43	6.840	
4,000.0	3,966.1	3,987.9	3,967.3	15.3	13.3	143.36	249.6	244.6	183.9	158.1	25.79	7.131	
4,100.0	4,065.1	4,085.7	4,065.1	15.7	13.5	145.80	249.8	244.7	195.6	169.5	26.09	7.497	
4,200.0	4,164.0	4,184.6	4,164.0	16.1	13.7	148.03	249.8	244.7	207.7	181.3	26.43	7.859	
4,300.0	4,263.0	4,283.6	4,263.0	16.5	13.9	150.02	249.8	244.7	220.2	193.4	26.80	8.215	
4,323.5	4,286.2	4,306.8	4,286.2	16.6	14.0	150.45	249.8	244.7	223.1	196.2	26.89	8.297	
4,400.0	4,362.1	4,382.7	4,362.1	16.9	14.1	151.76	249.8	244.7	231.9	204.7	27.17	8.534	
4,500.0	4,461.5	4,482.2	4,461.5	17.2	14.4	152.97	249.8	244.7	240.8	213.3	27.53	8.749	
4,600.0	4,561.3	4,581.9	4,561.3	17.4	14.6	153.72	249.8	244.7	246.7	218.8	27.89	8.847	
4,700.0	4,661.3	4,681.9	4,661.3	17.6	14.8	154.06	249.8	244.7	249.5	221.3	28.25	8.832	
4,738.7	4,700.0	4,720.6	4,700.0	17.7	14.9	-179.69	249.8	244.7	249.7	219.0	30.76	8.118	
4,800.0	4,761.3	4,781.9	4,761.3	17.8	15.0	-179.69	249.8	244.7	249.7	218.7	31.02	8.051	

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

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 3N (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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,861.3	4,881.9	4,861.3	18.0	15.3	-179.69	249.8	244.7	249.7	218.3	31.46	7.938	
5,000.0	4,961.3	4,981.9	4,961.3	18.2	15.5	-179.69	249.8	244.7	249.7	217.8	31.90	7.828	
5,100.0	5,061.3	5,081.9	5,061.3	18.4	15.7	-179.69	249.8	244.7	249.7	217.4	32.35	7.720	
5,200.0	5,161.3	5,181.9	5,161.3	18.6	15.9	-179.69	249.8	244.7	249.7	216.9	32.80	7.615	
5,300.0	5,261.3	5,281.9	5,261.3	18.8	16.2	-179.69	249.8	244.7	249.7	216.5	33.25	7.511	
5,400.0	5,361.3	5,381.9	5,361.3	19.0	16.4	-179.69	249.8	244.7	249.7	216.0	33.70	7.410	
5,500.0	5,461.3	5,481.9	5,461.3	19.2	16.6	-179.69	249.8	244.7	249.7	215.6	34.16	7.311	
5,600.0	5,561.3	5,581.9	5,561.3	19.4	16.9	-179.69	249.8	244.7	249.7	215.1	34.62	7.214	
5,700.0	5,661.3	5,681.9	5,661.3	19.6	17.1	-179.69	249.8	244.7	249.7	214.7	35.08	7.119	
5,800.0	5,761.3	5,781.9	5,761.3	19.8	17.4	-179.69	249.8	244.7	249.7	214.2	35.55	7.026	
5,900.0	5,861.3	5,881.9	5,861.3	20.0	17.6	-179.69	249.8	244.7	249.7	213.7	36.01	6.935	
6,000.0	5,961.3	5,981.9	5,961.3	20.2	17.8	-179.69	249.8	244.7	249.7	213.3	36.48	6.845	
6,100.0	6,061.3	6,081.9	6,061.3	20.4	18.1	-179.69	249.8	244.7	249.7	212.8	36.96	6.758	
6,152.9	6,114.2	6,134.8	6,114.2	20.5	18.2	-179.69	249.8	244.7	249.7	212.5	37.21	6.713	
6,200.0	6,161.2	6,181.8	6,161.2	20.6	18.3	-89.50	249.8	244.7	249.7	214.1	35.61	7.013	
6,226.0	6,187.2	6,207.8	6,187.2	20.7	18.4	-89.99	249.8	244.7	249.7	214.0	35.75	6.984	
6,250.0	6,211.0	6,231.7	6,211.1	20.7	18.4	-90.48	249.8	244.0	249.7	213.8	35.89	6.959	
6,300.0	6,260.2	6,281.7	6,260.9	20.8	18.5	-91.52	249.7	240.0	249.8	213.7	36.13	6.915	
6,350.0	6,308.8	6,332.1	6,310.8	20.8	18.6	-92.55	249.6	232.5	250.0	213.7	36.33	6.881	
6,400.0	6,356.4	6,382.8	6,360.2	20.8	18.6	-93.57	249.5	221.4	250.2	213.7	36.50	6.856	
6,450.0	6,402.8	6,433.9	6,409.1	20.8	18.7	-94.57	249.3	206.7	250.6	213.9	36.64	6.839	
6,500.0	6,447.8	6,485.3	6,457.1	20.8	18.7	-95.55	249.1	188.5	251.0	214.2	36.76	6.828	
6,550.0	6,491.2	6,537.0	6,504.0	20.8	18.7	-96.50	248.9	166.7	251.5	214.6	36.88	6.820	
6,600.0	6,532.8	6,589.0	6,549.5	20.8	18.7	-97.42	248.6	141.4	252.0	215.0	37.00	6.812	
6,650.0	6,572.3	6,641.4	6,593.2	20.8	18.7	-98.30	248.3	112.7	252.6	215.5	37.16	6.798	
6,700.0	6,609.5	6,694.0	6,635.0	20.8	18.8	-99.14	247.9	80.7	253.3	215.9	37.38	6.775	
6,750.0	6,644.4	6,747.0	6,674.6	20.8	18.8	-99.94	247.5	45.5	253.9	216.2	37.70	6.736	
6,800.0	6,676.7	6,800.2	6,711.6	20.8	18.9	-100.68	247.1	7.2	254.6	216.4	38.14	6.675	
6,850.0	6,706.2	6,853.8	6,745.9	20.9	19.2	-101.36	246.6	-33.9	255.2	216.5	38.75	6.587	
6,900.0	6,732.8	6,907.6	6,777.1	21.0	19.6	-101.98	246.1	-77.7	255.9	216.4	39.55	6.471	
6,950.0	6,756.5	6,961.6	6,805.1	21.3	20.2	-102.55	245.6	-123.9	256.5	216.0	40.56	6.324	
7,000.0	6,777.0	7,015.8	6,829.6	21.9	20.9	-103.04	245.0	-172.2	257.1	215.3	41.81	6.150	
7,050.0	6,794.2	7,070.3	6,850.4	22.6	21.7	-103.47	244.5	-222.5	257.7	214.4	43.29	5.952	
7,100.0	6,808.2	7,124.9	6,867.4	23.5	22.6	-103.83	243.9	-274.4	258.2	213.2	45.00	5.737	
7,150.0	6,818.7	7,179.6	6,880.4	24.5	23.7	-104.12	243.3	-327.6	258.6	211.6	46.93	5.510	
7,200.0	6,825.8	7,234.5	6,889.4	25.5	24.8	-104.33	242.7	-381.7	258.9	209.9	49.06	5.277	
7,250.0	6,829.5	7,289.4	6,894.2	26.7	26.0	-104.47	242.1	-436.4	259.2	207.8	51.36	5.046	
7,277.3	6,830.0	7,319.5	6,895.0	27.3	26.7	-104.51	241.7	-466.4	259.3	206.6	52.68	4.922	
7,278.3	6,830.0	7,320.5	6,895.0	27.3	26.8	-104.52	241.7	-467.5	259.3	206.6	52.73	4.918	
7,300.0	6,830.0	7,342.6	6,895.0	27.8	27.3	-104.52	241.5	-489.5	259.3	205.6	53.74	4.826	
7,400.0	6,830.0	7,442.6	6,895.0	30.3	29.8	-104.51	240.3	-589.5	259.5	200.9	58.61	4.428	
7,500.0	6,830.0	7,542.6	6,895.0	33.0	32.5	-104.50	239.2	-689.5	259.7	195.9	63.79	4.071	
7,600.0	6,830.0	7,642.6	6,895.0	35.8	35.3	-104.48	238.1	-789.5	259.9	190.6	69.24	3.753	
7,700.0	6,830.0	7,742.6	6,895.0	38.7	38.2	-104.47	236.9	-889.5	260.0	185.2	74.88	3.473	
7,800.0	6,830.0	7,842.6	6,895.0	41.7	41.2	-104.46	235.8	-989.5	260.2	179.5	80.69	3.225	
7,900.0	6,830.0	7,942.6	6,895.0	44.7	44.2	-104.45	234.7	-1,089.5	260.4	173.8	86.62	3.006	
8,000.0	6,830.0	8,042.6	6,895.0	47.8	47.3	-104.44	233.5	-1,189.5	260.6	167.9	92.66	2.812	
8,100.0	6,830.0	8,142.6	6,895.0	50.9	50.5	-104.43	232.4	-1,289.5	260.8	162.0	98.78	2.640	
8,200.0	6,830.0	8,242.6	6,895.0	54.1	53.7	-104.42	231.3	-1,389.5	260.9	156.0	104.97	2.486	
8,300.0	6,830.0	8,342.6	6,895.0	57.3	56.9	-104.41	230.2	-1,489.5	261.1	149.9	111.22	2.348	
8,400.0	6,830.0	8,442.6	6,895.0	60.5	60.1	-104.41	229.0	-1,589.5	261.3	143.8	117.51	2.223	
8,500.0	6,830.0	8,542.6	6,895.0	63.8	63.4	-104.40	227.9	-1,689.5	261.5	137.6	123.85	2.111	

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

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 3N (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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,600.0	6,830.0	8,642.6	6,895.0	67.1	66.7	-104.39	226.8	-1,789.5	261.6	131.4	130.22	2.009	
8,700.0	6,830.0	8,742.6	6,895.0	70.3	70.0	-104.38	225.6	-1,889.4	261.8	125.2	136.63	1.916	
8,800.0	6,830.0	8,842.6	6,895.0	73.6	73.3	-104.37	224.5	-1,989.4	262.0	118.9	143.06	1.831	
8,900.0	6,830.0	8,942.6	6,895.0	77.0	76.6	-104.36	223.4	-2,089.4	262.2	112.6	149.51	1.753	
9,000.0	6,830.0	9,042.6	6,895.0	80.3	79.9	-104.35	222.3	-2,189.4	262.3	106.3	155.98	1.682	
9,100.0	6,830.0	9,142.6	6,895.0	83.6	83.3	-104.34	221.1	-2,289.4	262.5	100.0	162.48	1.616	
9,200.0	6,830.0	9,242.6	6,895.0	87.0	86.6	-104.33	220.0	-2,389.4	262.7	93.7	168.98	1.554	
9,300.0	6,830.0	9,342.6	6,895.0	90.3	90.0	-104.32	218.9	-2,489.4	262.9	87.4	175.51	1.498	Level 3
9,400.0	6,830.0	9,442.6	6,895.0	93.7	93.3	-104.31	217.8	-2,589.4	263.0	81.0	182.04	1.445	Level 3
9,500.0	6,830.0	9,542.6	6,895.0	97.0	96.7	-104.30	216.6	-2,689.4	263.2	74.6	188.59	1.396	Level 3
9,600.0	6,830.0	9,642.6	6,895.0	100.4	100.1	-104.29	215.5	-2,789.4	263.4	68.2	195.15	1.350	Level 3
9,700.0	6,830.0	9,742.6	6,895.0	103.8	103.5	-104.28	214.4	-2,889.4	263.6	61.8	201.71	1.307	Level 3
9,800.0	6,830.0	9,842.6	6,895.0	107.1	106.8	-104.27	213.3	-2,989.4	263.7	55.4	208.29	1.266	Level 3
9,900.0	6,830.0	9,942.6	6,895.0	110.5	110.2	-104.26	212.1	-3,089.4	263.9	49.0	214.87	1.228	Level 2
10,000.0	6,830.0	10,042.6	6,895.0	113.9	113.6	-104.25	211.0	-3,189.4	264.1	42.6	221.46	1.192	Level 2
10,100.0	6,830.0	10,142.6	6,895.0	117.3	117.0	-104.24	209.9	-3,289.4	264.3	36.2	228.06	1.159	Level 2
10,200.0	6,830.0	10,242.6	6,895.0	120.7	120.4	-104.23	208.8	-3,389.4	264.4	29.8	234.66	1.127	Level 2
10,300.0	6,830.0	10,342.6	6,895.0	124.1	123.8	-104.22	207.6	-3,489.4	264.6	23.3	241.27	1.097	Level 2
10,400.0	6,830.0	10,442.6	6,895.0	127.5	127.2	-104.21	206.5	-3,589.3	264.8	16.9	247.88	1.068	Level 2
10,500.0	6,830.0	10,542.6	6,895.0	130.9	130.6	-104.20	205.4	-3,689.3	264.9	10.4	254.50	1.041	Level 2
10,600.0	6,830.0	10,642.6	6,895.0	134.3	134.0	-104.19	204.3	-3,789.3	265.1	4.0	261.12	1.015	Level 2
10,700.0	6,830.0	10,742.6	6,895.0	137.7	137.4	-104.18	203.2	-3,889.3	265.3	-2.5	267.75	0.991	Level 1
10,800.0	6,830.0	10,842.6	6,895.0	141.1	140.8	-104.17	202.0	-3,989.3	265.5	-8.9	274.38	0.968	Level 1
10,900.0	6,830.0	10,942.6	6,895.0	144.5	144.2	-104.16	200.9	-4,089.3	265.6	-15.4	281.01	0.945	Level 1
11,000.0	6,830.0	11,042.6	6,895.0	147.9	147.6	-104.15	199.8	-4,189.3	265.8	-21.8	287.65	0.924	Level 1
11,100.0	6,830.0	11,142.6	6,895.0	151.3	151.0	-104.14	198.7	-4,289.3	266.0	-28.3	294.29	0.904	Level 1
11,200.0	6,830.0	11,242.6	6,895.0	154.7	154.4	-104.14	197.6	-4,389.3	266.2	-34.8	300.94	0.884	Level 1
11,300.0	6,830.0	11,342.6	6,895.0	158.1	157.8	-104.13	196.4	-4,489.3	266.3	-41.3	307.59	0.866	Level 1
11,400.0	6,830.0	11,442.6	6,895.0	161.5	161.3	-104.12	195.3	-4,589.3	266.5	-47.7	314.24	0.848	Level 1
11,500.0	6,830.0	11,542.6	6,895.0	164.9	164.7	-104.11	194.2	-4,689.3	266.7	-54.2	320.89	0.831	Level 1
11,600.0	6,830.0	11,642.6	6,895.0	168.3	168.1	-104.10	193.1	-4,789.3	266.8	-60.7	327.55	0.815	Level 1
11,700.0	6,830.0	11,742.6	6,895.0	171.8	171.5	-104.09	192.0	-4,889.3	267.0	-67.2	334.20	0.799	Level 1
11,800.0	6,830.0	11,842.6	6,895.0	175.2	174.9	-104.08	190.9	-4,989.3	267.2	-73.7	340.86	0.784	Level 1
11,900.0	6,830.0	11,942.6	6,895.0	178.6	178.3	-104.07	189.7	-5,089.3	267.4	-80.2	347.52	0.769	Level 1
12,000.0	6,830.0	12,042.6	6,895.0	182.0	181.8	-104.06	188.6	-5,189.3	267.5	-86.7	354.19	0.755	Level 1
12,100.0	6,830.0	12,142.6	6,895.0	185.4	185.2	-104.05	187.5	-5,289.3	267.7	-93.1	360.86	0.742	Level 1
12,200.0	6,830.0	12,242.6	6,895.0	188.9	188.6	-104.04	186.4	-5,389.2	267.9	-99.6	367.52	0.729	Level 1
12,300.0	6,830.0	12,342.6	6,895.0	192.3	192.0	-104.03	185.3	-5,489.2	268.1	-106.1	374.19	0.716	Level 1
12,400.0	6,830.0	12,442.6	6,895.0	195.7	195.4	-104.02	184.2	-5,589.2	268.2	-112.6	380.86	0.704	Level 1
12,500.0	6,830.0	12,542.6	6,895.0	199.1	198.9	-104.02	183.0	-5,689.2	268.4	-119.1	387.54	0.693	Level 1
12,600.0	6,830.0	12,642.6	6,895.0	202.5	202.3	-104.01	181.9	-5,789.2	268.6	-125.6	394.21	0.681	Level 1
12,700.0	6,830.0	12,742.6	6,895.0	206.0	205.7	-104.00	180.8	-5,889.2	268.7	-132.2	400.89	0.670	Level 1
12,800.0	6,830.0	12,842.6	6,895.0	209.4	209.1	-103.99	179.7	-5,989.2	268.9	-138.7	407.57	0.660	Level 1
12,900.0	6,830.0	12,942.6	6,895.0	212.8	212.6	-103.98	178.6	-6,089.2	269.1	-145.2	414.25	0.650	Level 1
13,000.0	6,830.0	13,042.6	6,895.0	216.2	216.0	-103.97	177.5	-6,189.2	269.2	-151.7	420.93	0.640	Level 1
13,100.0	6,830.0	13,142.6	6,895.0	219.7	219.4	-103.96	176.3	-6,289.2	269.4	-158.2	427.61	0.630	Level 1
13,200.0	6,830.0	13,242.6	6,895.0	223.1	222.8	-103.95	175.2	-6,389.2	269.6	-164.7	434.29	0.621	Level 1
13,300.0	6,830.0	13,342.6	6,895.0	226.5	226.3	-103.94	174.1	-6,489.2	269.8	-171.2	440.98	0.612	Level 1
13,400.0	6,830.0	13,442.6	6,895.0	229.9	229.7	-103.93	173.0	-6,589.2	269.9	-177.7	447.66	0.603	Level 1
13,500.0	6,830.0	13,542.6	6,895.0	233.4	233.1	-103.93	171.9	-6,689.2	270.1	-184.3	454.35	0.594	Level 1
13,600.0	6,830.0	13,642.6	6,895.0	236.8	236.6	-103.92	170.8	-6,789.2	270.3	-190.8	461.04	0.586	Level 1
13,700.0	6,830.0	13,742.6	6,895.0	240.2	240.0	-103.91	169.7	-6,889.2	270.4	-197.3	467.73	0.578	Level 1

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 3N (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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
13,800.0	6,830.0	13,842.6	6,895.0	243.6	243.4	-103.90	168.6	-6,989.2	270.6	-203.8	474.42	0.570	Level 1
13,900.0	6,830.0	13,942.6	6,895.0	247.1	246.8	-103.89	167.4	-7,089.2	270.8	-210.3	481.11	0.563	Level 1
14,000.0	6,830.0	14,042.6	6,895.0	250.5	250.3	-103.88	166.3	-7,189.1	270.9	-216.9	487.80	0.555	Level 1
14,070.2	6,830.0	14,112.8	6,895.0	252.9	252.7	-103.87	165.6	-7,259.3	271.1	-221.4	492.50	0.550	Level 1, ES, SF

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.93	0.0	-29.9	29.9				
100.0	100.0	100.0	100.0	0.1	0.1	-89.93	0.0	-29.9	29.9	29.7	0.28	108.761	
200.0	200.0	200.0	200.0	0.4	0.4	-89.93	0.0	-29.9	29.9	29.1	0.83	36.254	
300.0	300.0	300.0	300.0	0.7	0.7	-89.93	0.0	-29.9	29.9	28.6	1.38	21.752	
400.0	400.0	400.0	400.0	1.0	1.0	-89.93	0.0	-29.9	29.9	28.0	1.93	15.537	CC, ES
500.0	500.0	500.0	500.0	1.2	1.2	-118.36	0.0	-29.9	30.5	28.1	2.48	12.332	
600.0	599.9	599.9	599.9	1.5	1.5	-124.41	0.0	-29.9	32.6	29.6	3.03	10.758	
700.0	699.7	699.7	699.7	1.8	1.8	-132.81	0.0	-29.9	36.7	33.1	3.59	10.217	SF
800.0	799.3	799.3	799.3	2.1	2.1	-141.62	0.0	-29.9	43.4	39.3	4.16	10.442	
900.0	898.6	898.6	898.6	2.4	2.3	-149.42	0.0	-29.9	53.2	48.4	4.73	11.238	
953.7	951.7	951.7	951.7	2.6	2.5	-152.98	0.0	-29.9	59.7	54.6	5.04	11.842	
1,000.0	997.6	997.6	997.6	2.8	2.6	-155.62	0.0	-29.9	65.7	60.4	5.30	12.405	
1,100.0	1,096.5	1,096.5	1,096.5	3.2	2.9	-159.94	0.0	-29.9	79.1	73.2	5.85	13.512	
1,200.0	1,195.5	1,195.5	1,195.5	3.6	3.2	-163.00	0.0	-29.9	92.8	86.4	6.41	14.475	
1,300.0	1,294.4	1,294.4	1,294.4	4.0	3.4	-165.26	0.0	-29.9	106.7	99.8	6.97	15.309	
1,400.0	1,393.4	1,393.4	1,393.4	4.4	3.7	-167.01	0.0	-29.9	120.8	113.2	7.53	16.033	
1,500.0	1,492.3	1,492.3	1,492.3	4.8	4.0	-168.39	0.0	-29.9	134.9	126.8	8.09	16.665	
1,600.0	1,591.3	1,591.3	1,591.3	5.2	4.2	-169.50	0.0	-29.9	149.1	140.4	8.66	17.220	
1,700.0	1,690.2	1,690.2	1,690.2	5.6	4.5	-170.43	0.0	-29.9	163.3	154.1	9.22	17.710	
1,800.0	1,789.2	1,789.2	1,789.2	6.0	4.8	-171.20	0.0	-29.9	177.5	167.8	9.78	18.145	
1,900.0	1,888.1	1,888.1	1,888.1	6.4	5.1	-171.86	0.0	-29.9	191.8	181.5	10.35	18.534	
2,000.0	1,987.1	1,987.1	1,987.1	6.8	5.3	-172.43	0.0	-29.9	206.2	195.2	10.92	18.884	
2,100.0	2,086.0	2,088.5	2,088.5	7.2	5.6	-173.17	0.0	-28.9	220.0	208.5	11.47	19.176	
2,200.0	2,185.0	2,190.5	2,190.4	7.7	5.8	-174.41	-0.3	-25.2	232.6	220.6	12.01	19.366	
2,300.0	2,283.9	2,292.5	2,292.2	8.1	6.1	-176.09	-0.7	-18.8	244.2	231.6	12.56	19.443	
2,400.0	2,382.9	2,394.4	2,393.7	8.5	6.4	-178.17	-1.3	-9.6	254.8	241.6	13.12	19.425	
2,500.0	2,481.8	2,493.4	2,492.2	8.9	6.6	179.71	-2.0	0.5	265.2	251.5	13.68	19.378	
2,600.0	2,580.8	2,592.4	2,590.6	9.3	6.9	177.75	-2.7	10.7	275.9	261.6	14.27	19.339	
2,700.0	2,679.8	2,691.4	2,689.1	9.8	7.2	175.94	-3.3	20.8	286.9	272.1	14.86	19.307	
2,800.0	2,778.7	2,790.4	2,787.6	10.2	7.5	174.27	-4.0	31.0	298.2	282.8	15.47	19.279	
2,900.0	2,877.7	2,889.4	2,886.0	10.6	7.8	172.72	-4.7	41.2	309.8	293.7	16.09	19.255	
3,000.0	2,976.6	2,988.4	2,984.5	11.0	8.1	171.28	-5.4	51.3	321.5	304.8	16.72	19.235	
3,100.0	3,075.6	3,087.4	3,083.0	11.5	8.4	169.94	-6.0	61.5	333.5	316.1	17.35	19.218	
3,200.0	3,174.5	3,186.4	3,181.5	11.9	8.7	168.70	-6.7	71.6	345.5	327.6	17.99	19.204	
3,300.0	3,273.5	3,285.3	3,279.9	12.3	9.0	167.53	-7.4	81.8	357.8	339.2	18.64	19.192	
3,400.0	3,372.4	3,384.3	3,378.4	12.7	9.4	166.45	-8.1	92.0	370.2	350.9	19.30	19.181	
3,500.0	3,471.4	3,483.3	3,476.9	13.1	9.7	165.44	-8.7	102.1	382.7	362.7	19.96	19.173	
3,600.0	3,570.3	3,582.3	3,575.3	13.6	10.0	164.49	-9.4	112.3	395.3	374.7	20.63	19.166	
3,700.0	3,669.3	3,681.3	3,673.8	14.0	10.3	163.59	-10.1	122.4	408.0	386.7	21.30	19.160	
3,800.0	3,768.2	3,780.3	3,772.3	14.4	10.7	162.76	-10.8	132.6	420.8	398.9	21.97	19.156	
3,900.0	3,867.2	3,879.3	3,870.7	14.8	11.0	161.97	-11.4	142.8	433.7	411.1	22.65	19.153	
4,000.0	3,966.1	3,978.3	3,969.2	15.3	11.3	161.23	-12.1	152.9	446.7	423.4	23.33	19.150	
4,100.0	4,065.1	4,077.3	4,067.7	15.7	11.7	160.53	-12.8	163.1	459.7	435.7	24.01	19.149	
4,200.0	4,164.0	4,176.3	4,166.1	16.1	12.0	159.86	-13.5	173.3	472.9	448.2	24.69	19.149	
4,300.0	4,263.0	4,275.3	4,264.6	16.5	12.3	159.24	-14.1	183.4	486.0	460.6	25.38	19.149	
4,323.5	4,286.2	4,298.5	4,287.7	16.6	12.4	159.10	-14.3	185.8	489.1	463.6	25.54	19.149	
4,400.0	4,362.1	4,374.4	4,363.2	16.9	12.7	158.67	-14.8	193.6	498.3	472.2	26.07	19.111	

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

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-89.86	0.1	-45.0	45.0	45.0	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-89.86	0.1	-45.0	45.0	44.7	0.28	161.828	
200.0	200.0	201.0	201.0	0.4	0.4	-89.86	0.1	-45.0	45.0	44.2	0.83	54.301	
300.0	300.0	301.0	301.0	0.7	0.7	-89.86	0.1	-45.0	45.0	43.6	1.38	32.624	
400.0	400.0	401.0	401.0	1.0	1.0	-89.86	0.1	-45.0	45.0	43.1	1.93	23.316	CC, ES
500.0	500.0	501.0	501.0	1.2	1.2	-117.56	0.1	-45.0	45.6	43.1	2.48	18.387	
600.0	599.9	600.9	600.9	1.5	1.5	-121.73	0.1	-45.0	47.5	44.5	3.03	15.680	
700.0	699.7	700.7	700.7	1.8	1.8	-127.90	0.1	-45.0	51.3	47.7	3.59	14.276	
800.0	799.3	800.3	800.3	2.1	2.1	-135.05	0.1	-45.0	57.4	53.2	4.16	13.783	SF
900.0	898.6	899.6	899.6	2.4	2.3	-142.15	0.1	-45.0	66.2	61.5	4.74	13.979	
953.7	951.7	952.7	952.7	2.6	2.5	-145.69	0.1	-45.0	72.2	67.2	5.05	14.307	
1,000.0	997.6	998.6	998.6	2.8	2.6	-148.46	0.1	-45.0	77.9	72.5	5.31	14.662	
1,100.0	1,096.5	1,097.5	1,097.5	3.2	2.9	-153.24	0.1	-45.0	90.5	84.6	5.87	15.410	
1,200.0	1,195.5	1,196.5	1,196.5	3.6	3.2	-156.83	0.1	-45.0	103.6	97.2	6.44	16.104	
1,300.0	1,294.4	1,295.4	1,295.4	4.0	3.4	-159.61	0.1	-45.0	117.1	110.1	7.00	16.732	
1,400.0	1,393.4	1,394.4	1,394.4	4.4	3.7	-161.81	0.1	-45.0	130.7	123.2	7.56	17.295	
1,500.0	1,492.3	1,493.3	1,493.3	4.8	4.0	-163.60	0.1	-45.0	144.5	136.4	8.12	17.797	
1,600.0	1,591.3	1,592.3	1,592.3	5.2	4.2	-165.07	0.1	-45.0	158.4	149.8	8.68	18.247	
1,700.0	1,690.2	1,690.8	1,690.8	5.6	4.5	-166.66	-0.7	-44.2	172.6	163.3	9.22	18.722	
1,800.0	1,789.2	1,789.0	1,788.9	6.0	4.7	-168.78	-3.2	-41.7	187.1	177.4	9.72	19.245	
1,900.0	1,888.1	1,886.6	1,886.4	6.4	4.9	-171.29	-7.5	-37.4	202.3	192.1	10.23	19.773	
2,000.0	1,987.1	1,983.7	1,983.1	6.8	5.2	-174.08	-13.6	-31.5	218.5	207.7	10.75	20.313	
2,100.0	2,086.0	2,081.7	2,080.5	7.2	5.4	-176.81	-20.6	-24.5	235.4	224.1	11.30	20.836	
2,200.0	2,185.0	2,179.6	2,178.0	7.7	5.7	-179.18	-27.6	-17.6	252.8	240.9	11.85	21.325	
2,300.0	2,283.9	2,277.6	2,275.5	8.1	6.0	178.76	-34.6	-10.7	270.5	258.1	12.42	21.778	
2,400.0	2,382.9	2,375.6	2,372.9	8.5	6.2	176.96	-41.6	-3.7	288.5	275.5	13.00	22.196	
2,500.0	2,481.8	2,473.6	2,470.4	8.9	6.5	175.36	-48.6	3.2	306.8	293.2	13.59	22.585	
2,600.0	2,580.8	2,571.5	2,567.9	9.3	6.8	173.95	-55.6	10.2	325.3	311.1	14.18	22.943	
2,700.0	2,679.8	2,669.5	2,665.4	9.8	7.1	172.69	-62.6	17.1	344.0	329.2	14.78	23.275	
2,800.0	2,778.7	2,767.5	2,762.8	10.2	7.4	171.55	-69.6	24.0	362.8	347.4	15.38	23.583	
2,900.0	2,877.7	2,865.4	2,860.3	10.6	7.8	170.53	-76.6	31.0	381.7	365.7	15.99	23.868	
3,000.0	2,976.6	2,963.4	2,957.8	11.0	8.1	169.61	-83.7	37.9	400.8	384.1	16.61	24.134	
3,100.0	3,075.6	3,061.4	3,055.3	11.5	8.4	168.76	-90.7	44.8	419.9	402.7	17.22	24.382	
3,200.0	3,174.5	3,159.4	3,152.8	11.9	8.7	168.00	-97.7	51.8	439.1	421.3	17.84	24.613	
3,300.0	3,273.5	3,257.3	3,250.2	12.3	9.0	167.29	-104.7	58.7	458.4	439.9	18.46	24.830	
3,400.0	3,372.4	3,355.3	3,347.7	12.7	9.4	166.65	-111.7	65.6	477.7	458.6	19.08	25.032	
3,500.0	3,471.4	3,453.3	3,445.2	13.1	9.7	166.05	-118.7	72.6	497.1	477.4	19.71	25.223	

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

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-89.86	0.1	-59.9	59.9	59.9	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-89.86	0.1	-59.9	59.9	59.6	0.28	215.470	
200.0	200.0	201.0	201.0	0.4	0.4	-89.86	0.1	-59.9	59.9	59.1	0.83	72.301	
300.0	300.0	301.0	301.0	0.7	0.7	-89.86	0.1	-59.9	59.9	58.5	1.38	43.438	
400.0	400.0	401.0	401.0	1.0	1.0	-89.86	0.1	-59.9	59.9	58.0	1.93	31.045	CC, ES
500.0	500.0	501.0	501.0	1.2	1.2	-117.19	0.1	-59.9	60.5	58.0	2.48	24.401	
600.0	599.9	600.9	600.9	1.5	1.5	-120.38	0.1	-59.9	62.4	59.4	3.03	20.584	
700.0	699.7	700.7	700.7	1.8	1.8	-125.23	0.1	-59.9	66.0	62.4	3.59	18.363	
800.0	799.3	800.3	800.3	2.1	2.1	-131.14	0.1	-59.9	71.6	67.5	4.16	17.211	
900.0	898.6	899.6	899.6	2.4	2.3	-137.40	0.1	-59.9	79.9	75.1	4.74	16.849	SF
953.7	951.7	952.7	952.7	2.6	2.5	-140.68	0.1	-59.9	85.5	80.4	5.05	16.915	
1,000.0	997.6	998.6	998.6	2.8	2.6	-143.35	0.1	-59.9	90.8	85.5	5.32	17.067	
1,100.0	1,096.5	1,097.5	1,097.5	3.2	2.9	-148.15	0.1	-59.9	102.8	96.9	5.89	17.451	
1,200.0	1,195.5	1,196.5	1,196.5	3.6	3.2	-151.93	0.1	-59.9	115.3	108.9	6.46	17.863	
1,300.0	1,294.4	1,295.4	1,295.4	4.0	3.4	-154.96	0.1	-59.9	128.3	121.2	7.02	18.270	
1,400.0	1,393.4	1,394.4	1,394.4	4.4	3.7	-157.43	0.1	-59.9	141.5	133.9	7.58	18.657	
1,500.0	1,492.3	1,492.6	1,492.6	4.8	3.9	-159.88	-0.8	-59.3	155.2	147.1	8.11	19.124	
1,600.0	1,591.3	1,590.3	1,590.2	5.2	4.2	-162.75	-3.8	-57.4	169.7	161.1	8.61	19.700	
1,700.0	1,690.2	1,687.4	1,687.1	5.6	4.4	-165.89	-9.0	-54.1	185.3	176.2	9.12	20.327	
1,800.0	1,789.2	1,783.7	1,783.0	6.0	4.6	-169.19	-16.1	-49.5	202.2	192.6	9.63	21.004	
1,900.0	1,888.1	1,879.2	1,877.9	6.4	4.9	-172.54	-25.1	-43.7	220.7	210.6	10.16	21.734	
2,000.0	1,987.1	1,976.4	1,974.4	6.8	5.1	-175.69	-35.4	-37.2	240.4	229.7	10.71	22.455	
2,100.0	2,086.0	2,073.6	2,070.8	7.2	5.4	-178.37	-45.7	-30.6	260.7	249.5	11.27	23.131	
2,200.0	2,185.0	2,170.8	2,167.3	7.7	5.7	179.34	-55.9	-24.0	281.5	269.7	11.85	23.761	
2,300.0	2,283.9	2,268.1	2,263.8	8.1	6.0	177.37	-66.2	-17.5	302.7	290.2	12.44	24.338	
2,400.0	2,382.9	2,365.3	2,360.2	8.5	6.4	175.65	-76.5	-10.9	324.1	311.1	13.03	24.875	
2,500.0	2,481.8	2,462.5	2,456.7	8.9	6.7	174.14	-86.7	-4.3	345.9	332.2	13.63	25.371	
2,600.0	2,580.8	2,559.8	2,553.2	9.3	7.0	172.81	-97.0	2.2	367.8	353.5	14.24	25.830	
2,700.0	2,679.8	2,657.0	2,649.6	9.8	7.4	171.63	-107.3	8.8	389.8	375.0	14.85	26.255	
2,800.0	2,778.7	2,754.2	2,746.1	10.2	7.7	170.58	-117.5	15.4	412.1	396.6	15.46	26.650	
2,900.0	2,877.7	2,851.5	2,842.6	10.6	8.1	169.63	-127.8	21.9	434.4	418.3	16.08	27.017	
3,000.0	2,976.6	2,948.7	2,939.0	11.0	8.4	168.78	-138.1	28.5	456.8	440.1	16.70	27.358	
3,100.0	3,075.6	3,045.9	3,035.5	11.5	8.8	168.01	-148.3	35.1	479.4	462.0	17.32	27.677	

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

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-89.86	0.2	-75.0	75.0	75.0	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-89.86	0.2	-75.0	75.0	74.7	0.28	269.613	
200.0	200.0	201.0	201.0	0.4	0.4	-89.86	0.2	-75.0	75.0	74.1	0.83	90.468	
300.0	300.0	301.0	301.0	0.7	0.7	-89.86	0.2	-75.0	75.0	73.6	1.38	54.353	
400.0	400.0	401.0	401.0	1.0	1.0	-89.86	0.2	-75.0	75.0	73.0	1.93	38.846	CC, ES
500.0	500.0	501.0	501.0	1.2	1.2	-116.97	0.2	-75.0	75.6	73.1	2.48	30.472	
600.0	599.9	600.9	600.9	1.5	1.5	-119.54	0.2	-75.0	77.4	74.4	3.03	25.541	
700.0	699.7	700.7	700.7	1.8	1.8	-123.52	0.2	-75.0	80.9	77.3	3.59	22.514	
800.0	799.3	800.3	800.3	2.1	2.1	-128.52	0.2	-75.0	86.3	82.1	4.16	20.724	
900.0	898.6	899.6	899.6	2.4	2.3	-134.03	0.2	-75.0	94.0	89.3	4.74	19.829	
953.7	951.7	952.7	952.7	2.6	2.5	-137.02	0.2	-75.0	99.3	94.3	5.06	19.642	
1,000.0	997.6	998.6	998.6	2.8	2.6	-139.52	0.2	-75.0	104.4	99.0	5.33	19.594	SF
1,100.0	1,096.5	1,097.5	1,097.5	3.2	2.9	-144.15	0.2	-75.0	115.8	109.9	5.90	19.615	
1,200.0	1,195.5	1,196.5	1,196.5	3.6	3.2	-147.93	0.2	-75.0	127.8	121.3	6.47	19.738	
1,300.0	1,294.4	1,294.8	1,294.7	4.0	3.4	-151.51	-0.9	-74.5	140.5	133.5	7.01	20.048	
1,400.0	1,393.4	1,392.4	1,392.3	4.4	3.6	-155.38	-4.2	-73.0	154.3	146.8	7.51	20.551	
1,500.0	1,492.3	1,489.4	1,489.1	4.8	3.8	-159.40	-9.8	-70.5	169.5	161.5	8.01	21.161	
1,600.0	1,591.3	1,585.5	1,584.8	5.2	4.1	-163.42	-17.5	-67.0	186.4	177.9	8.52	21.874	
1,700.0	1,690.2	1,680.7	1,679.4	5.6	4.3	-167.35	-27.4	-62.6	205.2	196.1	9.05	22.680	
1,800.0	1,789.2	1,774.8	1,772.7	6.0	4.6	-171.12	-39.2	-57.3	226.0	216.4	9.59	23.570	
1,900.0	1,888.1	1,868.9	1,865.5	6.4	4.9	-174.69	-53.0	-51.1	249.0	238.8	10.15	24.522	
2,000.0	1,987.1	1,964.9	1,960.2	6.8	5.2	-177.82	-67.6	-44.5	273.1	262.3	10.74	25.435	
2,100.0	2,086.0	2,061.0	2,054.9	7.2	5.6	179.55	-82.2	-37.9	297.8	286.5	11.33	26.288	
2,200.0	2,185.0	2,157.0	2,149.6	7.7	6.0	177.32	-96.7	-31.4	323.1	311.2	11.93	27.075	
2,300.0	2,283.9	2,253.1	2,244.3	8.1	6.3	175.41	-111.3	-24.8	348.8	336.2	12.54	27.806	
2,400.0	2,382.9	2,349.1	2,339.0	8.5	6.7	173.77	-125.9	-18.3	374.8	361.6	13.16	28.481	
2,500.0	2,481.8	2,445.1	2,433.7	8.9	7.1	172.33	-140.5	-11.7	401.0	387.2	13.78	29.106	
2,600.0	2,580.8	2,541.2	2,528.4	9.3	7.6	171.07	-155.1	-5.1	427.4	413.0	14.40	29.684	
2,700.0	2,679.8	2,637.2	2,623.1	9.8	8.0	169.96	-169.7	1.4	454.0	439.0	15.02	30.220	
2,800.0	2,778.7	2,733.2	2,717.8	10.2	8.4	168.97	-184.3	8.0	480.8	465.1	15.65	30.718	

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

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-89.86	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	323.556	
200.0	200.0	201.0	201.0	0.4	0.4	-89.86	0.2	-90.0	90.0	89.1	0.83	108.569	
300.0	300.0	301.0	301.0	0.7	0.7	-89.86	0.2	-90.0	90.0	88.6	1.38	65.228	
400.0	400.0	401.0	401.0	1.0	1.0	-89.86	0.2	-90.0	90.0	88.0	1.93	46.618	CC, ES
500.0	500.0	501.0	501.0	1.2	1.2	-116.83	0.2	-90.0	90.6	88.1	2.48	36.522	
600.0	599.9	600.9	600.9	1.5	1.5	-118.97	0.2	-90.0	92.4	89.4	3.03	30.483	
700.0	699.7	700.7	700.7	1.8	1.8	-122.35	0.2	-90.0	95.7	92.2	3.59	26.664	
800.0	799.3	800.3	800.3	2.1	2.1	-126.67	0.2	-90.0	100.9	96.8	4.16	24.255	
900.0	898.6	899.6	899.6	2.4	2.3	-131.55	0.2	-90.0	108.4	103.7	4.74	22.847	
953.7	951.7	952.7	952.7	2.6	2.5	-134.28	0.2	-90.0	113.4	108.4	5.06	22.417	
1,000.0	997.6	998.6	998.6	2.8	2.6	-136.59	0.2	-90.0	118.2	112.9	5.33	22.178	
1,100.0	1,096.5	1,097.2	1,097.2	3.2	2.9	-141.51	-0.9	-89.6	129.3	123.4	5.88	21.993	SF
1,200.0	1,195.5	1,195.2	1,195.1	3.6	3.1	-146.63	-4.5	-88.3	141.6	135.2	6.39	22.150	
1,300.0	1,294.4	1,292.5	1,292.2	4.0	3.3	-151.78	-10.3	-86.1	155.5	148.6	6.91	22.513	
1,400.0	1,393.4	1,388.8	1,388.2	4.4	3.5	-156.81	-18.3	-83.2	171.3	163.9	7.43	23.065	
1,500.0	1,492.3	1,484.2	1,482.9	4.8	3.8	-161.61	-28.6	-79.4	189.3	181.3	7.96	23.782	
1,600.0	1,591.3	1,578.5	1,576.3	5.2	4.1	-166.10	-40.8	-74.9	209.6	201.1	8.51	24.640	
1,700.0	1,690.2	1,671.6	1,668.2	5.6	4.4	-170.25	-55.1	-69.7	232.4	223.3	9.07	25.613	
1,800.0	1,789.2	1,763.5	1,758.4	6.0	4.7	-174.04	-71.2	-63.8	257.6	248.0	9.65	26.683	
1,900.0	1,888.1	1,858.1	1,851.2	6.4	5.1	-177.47	-89.0	-57.3	284.7	274.4	10.26	27.745	
2,000.0	1,987.1	1,953.1	1,944.2	6.8	5.6	179.67	-106.8	-50.7	312.6	301.7	10.87	28.744	
2,100.0	2,086.0	2,048.0	2,037.2	7.2	6.0	177.29	-124.7	-44.2	341.0	329.5	11.49	29.678	
2,200.0	2,185.0	2,143.0	2,130.2	7.7	6.4	175.26	-142.6	-37.6	370.0	357.9	12.11	30.542	
2,300.0	2,283.9	2,237.9	2,223.2	8.1	6.9	173.53	-160.4	-31.1	399.3	386.6	12.74	31.341	
2,400.0	2,382.9	2,332.9	2,316.3	8.5	7.4	172.03	-178.3	-24.6	428.9	415.5	13.37	32.079	
2,500.0	2,481.8	2,427.8	2,409.3	8.9	7.8	170.73	-196.1	-18.0	458.8	444.8	14.00	32.763	
2,600.0	2,580.8	2,522.8	2,502.3	9.3	8.3	169.58	-214.0	-11.5	488.8	474.2	14.64	33.395	

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

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-89.90	0.2	-105.0	105.0	105.0	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-89.90	0.2	-105.0	105.0	104.7	0.28	377.498	
200.0	200.0	201.0	201.0	0.4	0.4	-89.90	0.2	-105.0	105.0	104.2	0.83	126.669	
300.0	300.0	301.0	301.0	0.7	0.7	-89.90	0.2	-105.0	105.0	103.6	1.38	76.102	
400.0	400.0	401.0	401.0	1.0	1.0	-89.90	0.2	-105.0	105.0	103.0	1.93	54.390	CC, ES
500.0	500.0	501.0	501.0	1.2	1.2	-116.76	0.2	-105.0	105.6	103.1	2.48	42.571	
600.0	599.9	600.9	600.9	1.5	1.5	-118.60	0.2	-105.0	107.4	104.4	3.03	35.429	
700.0	699.7	700.7	700.7	1.8	1.8	-121.53	0.2	-105.0	110.7	107.1	3.59	30.823	
800.0	799.3	800.3	800.3	2.1	2.1	-125.32	0.2	-105.0	115.7	111.6	4.16	27.809	
900.0	898.6	899.7	899.7	2.4	2.3	-130.31	-1.1	-104.6	122.9	118.1	4.71	26.073	
953.7	951.7	952.7	952.7	2.6	2.4	-133.54	-2.7	-104.1	127.8	122.8	5.00	25.561	
1,000.0	997.6	998.2	998.2	2.8	2.5	-136.51	-4.7	-103.5	132.6	127.4	5.24	25.292	
1,100.0	1,096.5	1,095.9	1,095.6	3.2	2.8	-142.91	-10.8	-101.6	144.5	138.7	5.78	24.991	SF
1,200.0	1,195.5	1,192.6	1,191.9	3.6	3.0	-149.12	-19.1	-99.0	158.5	152.2	6.32	25.066	
1,300.0	1,294.4	1,288.3	1,287.0	4.0	3.3	-154.98	-29.6	-95.8	175.1	168.2	6.88	25.458	
1,400.0	1,393.4	1,382.9	1,380.6	4.4	3.6	-160.40	-42.2	-91.9	194.3	186.9	7.44	26.108	
1,500.0	1,492.3	1,476.3	1,472.7	4.8	3.9	-165.33	-56.9	-87.4	216.3	208.3	8.02	26.964	
1,600.0	1,591.3	1,568.3	1,563.1	5.2	4.3	-169.75	-73.4	-82.3	241.0	232.4	8.61	27.979	
1,700.0	1,690.2	1,659.0	1,651.7	5.6	4.7	-173.69	-91.7	-76.7	268.5	259.2	9.22	29.120	
1,800.0	1,789.2	1,751.2	1,741.5	6.0	5.2	-177.24	-112.0	-70.4	298.2	288.4	9.84	30.312	
1,900.0	1,888.1	1,845.0	1,832.7	6.4	5.6	179.77	-132.8	-64.0	329.1	318.6	10.47	31.423	
2,000.0	1,987.1	1,938.8	1,924.0	6.8	6.1	177.29	-153.6	-57.6	360.6	349.5	11.10	32.482	
2,100.0	2,086.0	2,032.6	2,015.3	7.2	6.7	175.20	-174.4	-51.2	392.6	380.8	11.73	33.460	
2,200.0	2,185.0	2,126.5	2,106.5	7.7	7.2	173.42	-195.2	-44.8	425.0	412.6	12.37	34.363	
2,300.0	2,283.9	2,220.3	2,197.8	8.1	7.7	171.89	-216.0	-38.4	457.8	444.8	13.01	35.198	
2,400.0	2,382.9	2,314.1	2,289.1	8.5	8.3	170.57	-236.8	-32.0	490.8	477.1	13.64	35.969	

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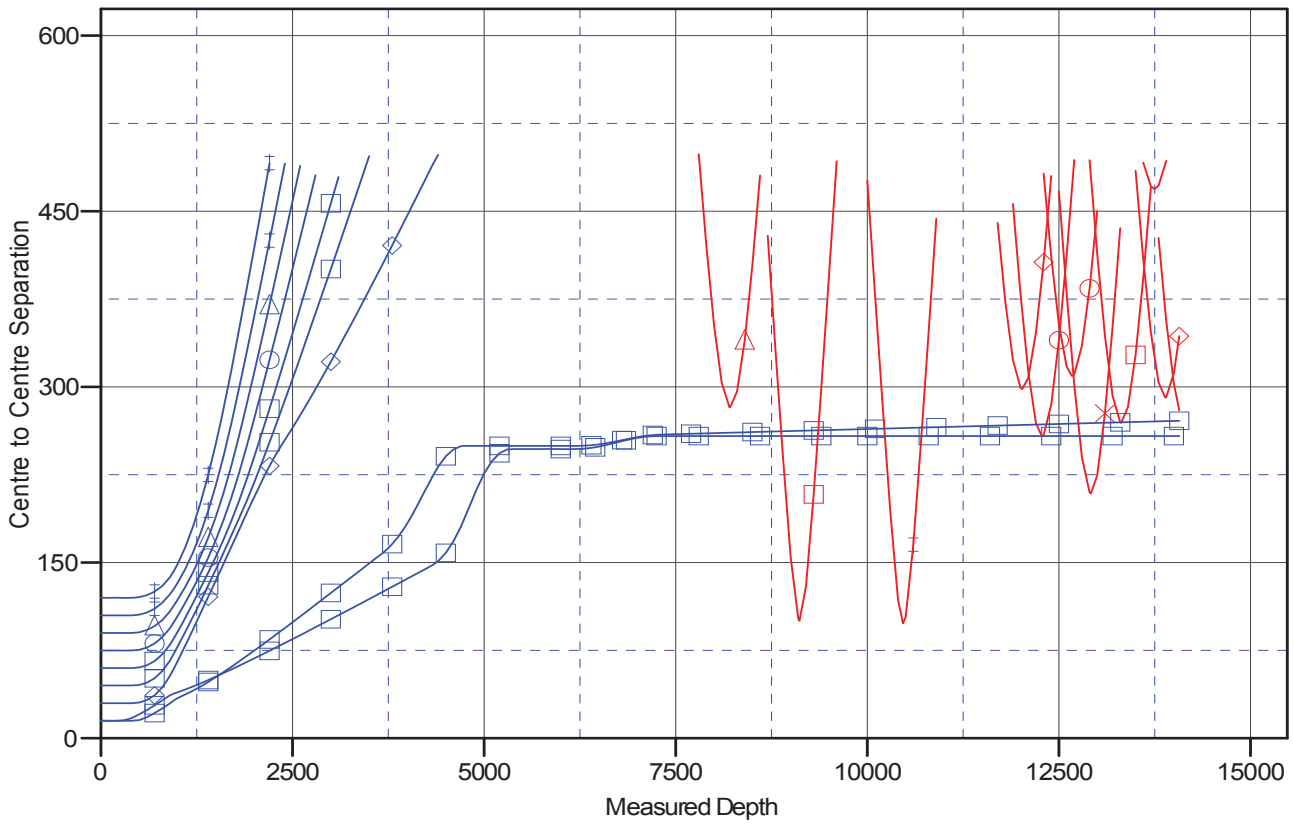
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	**MD Reference:**	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Jagged 2N (Nio B)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.45 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #4 (6-20-18)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4795.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Jagged 2N (Nio B)
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.60°

Ladder Plot



LEGEND

Noble-Exist), Wellbore #1, Wellbore #1 V0
ist), Wellbore #1, Wellbore #1 V0
Wellbore #1, Wellbore #1 V0
Wellbore #1, Wellbore #1 V0
Wellbore #1, Wellbore #1 V0
Wellbore #1, Wellbore #1 V0
Wellbore #1, Wellbore #1 V0

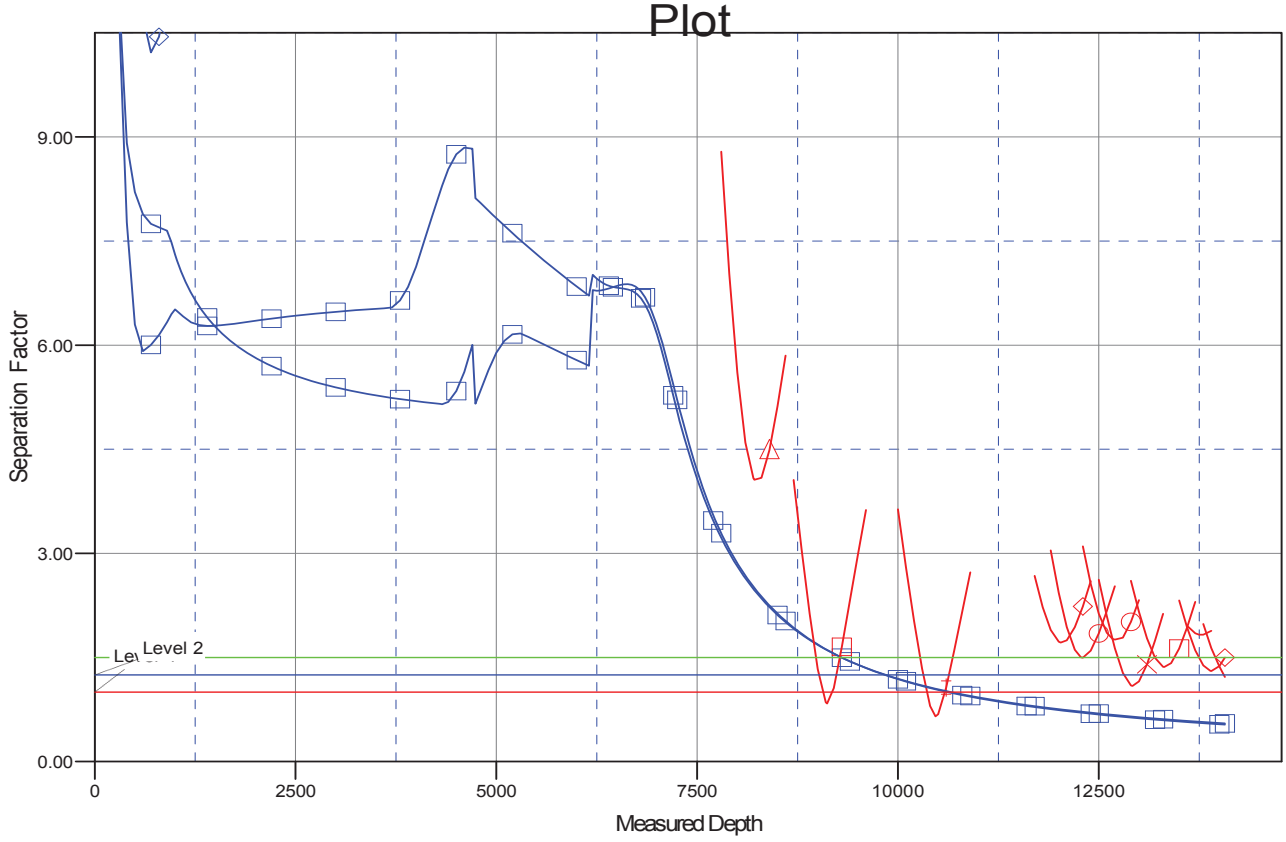
Honebein 7K-403, Wellbore #1, Wellbore #1 V0
Honebein 7K-223, Wellbore #1, Wellbore #1 V0
Jagged 9N (Nio C), Wellbore #1, Plan #4 (7-3-18) V0
Jagged 6N (Nio B), Wellbore #1, Plan #3 (7-9-18) V0
Jagged 1N (Nio C), Wellbore #1, Plan #4 (6-20-18) V0
Jagged 4N (Nio B), Wellbore #1, Plan #3 (7-9-18) V0
Jagged 3N (Nio C), Wellbore #1, Plan #4 (6-20-18) V0

Jagged 8N (Nio B), Wellbore #1, Plan #3
Jagged 5N (Nio C), Wellbore #1, Plan #3
Jagged 10N (Nio B), Wellbore #1, Plan #
Jagged 7N (Nio C), Wellbore #1, Plan #4
Honebein 13-7U (Exist), Wellbore #1, We
Dietrich C 8-32 (Noble-Exist), Dietrich C

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Jagged 2N (Nio B)
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 2N (Nio B)	**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 Depths are relative to WELL @ 4795.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: Jagged 2N (Nio B)
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.60°



LEGEND

Noble-Exist), Wellbore #1, Wellbore #1 V0
ist), Wellbore #1, Wellbore #1 V0
Wellbore #1, Wellbore #1 V0
Wellbore #1, Wellbore #1 V0
Wellbore #1, Wellbore #1 V0
Wellbore #1, Wellbore #1 V0
Wellbore #1, Wellbore #1 V0

Honebein 7K-403, Wellbore #1, Wellbore #1 V0
Honebein 7K-223, Wellbore #1, Wellbore #1 V0
Jagged 9N (Nio C), Wellbore #1, Plan #4 (7-3-18) V0
Jagged 6N (Nio B), Wellbore #1, Plan #3 (7-9-18) V0
Jagged 1N (Nio C), Wellbore #1, Plan #4 (6-20-18) V0
Jagged 4N (Nio B), Wellbore #1, Plan #3 (7-9-18) V0
Jagged 3N (Nio C), Wellbore #1, Plan #4 (6-20-18) V0

Jagged 8N (Nio B), Wellbore #1, Plan #3
Jagged 5N (Nio C), Wellbore #1, Plan #3
Jagged 10N (Nio B), Wellbore #1, Plan #
Jagged 7N (Nio C), Wellbore #1, Plan #4
Honebein 13-7U (Exist), Wellbore #1, We
Dietrich C 8-32 (Noble-Exist), Dietrich C