

PDC Energy Inc. DJ Basin

Well Name: **Jagged 6N (Nio B)**

Surface Location: Jagged 4N64W08 Pad Sec.8-T4N-R64W

North American Datum 1983 , US State Plane 1983, Colorado Northern Zone

Ground Elevation: 4773.0

+N/-S +E/-W Northing Easting Latitude Longitude Slot

0.0 0.0 1362798.853257712.96 40.325597 -104.575671

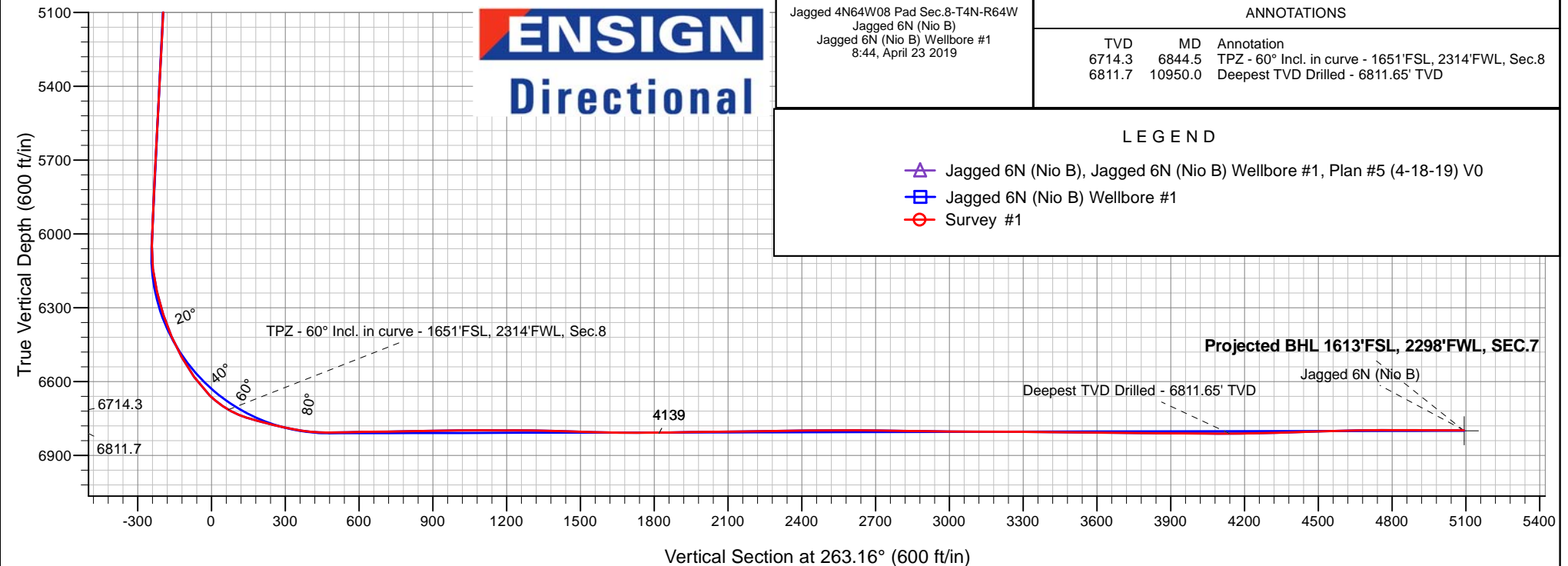
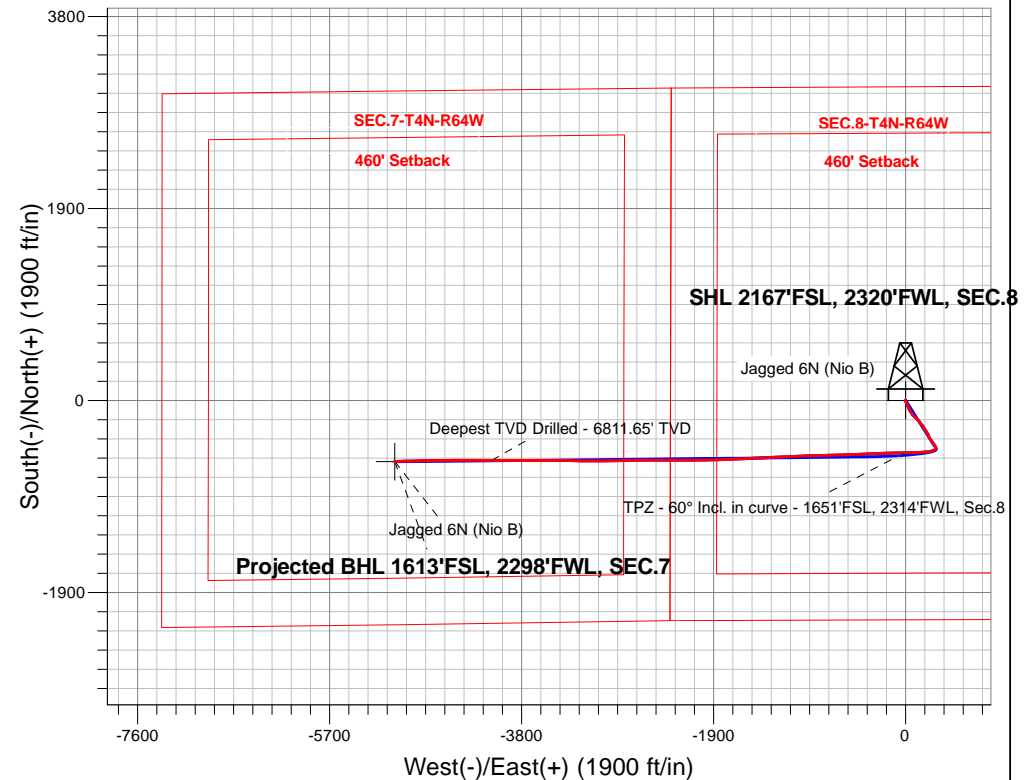
Original Well Elev WELL @ 4796.0ft (Original Well Elev)

FINAL SURVEY

Projected Bottom Hole Location

11,909'MD 6798'TVD 604'S & 5056'W of SHL

89.73 degree Incl @ 268.12 degree AZM





PDC Energy Inc. DJ Basin

SEC.8-T4N-R64W

Jagged 4N64W08 Pad Sec.8-T4N-R64W

Jagged 6N (Nio B)

Jagged 6N (Nio B) Wellbore #1

Survey: Survey #1

Standard Survey Report

23 April, 2019

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 6N (Nio B)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4796.0ft (Original Well Elev)
Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4796.0ft (Original Well Elev)
Well:	Jagged 6N (Nio B)	North Reference:	True
Wellbore:	Jagged 6N (Nio B) Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Jagged 6N (Nio B) Wellbore #1	Database:	US_EDM

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 6N (Nio B)					
Well Position	+N/-S	0.0 ft	Northing:	1,362,798.85 usft	Latitude:	40.325597
	+E/-W	0.0 ft	Easting:	3,257,712.96 usft	Longitude:	-104.575672
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,773.0 ft

Wellbore	Jagged 6N (Nio B) Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	4/18/2019	8.17	66.82	52,154

Design	Jagged 6N (Nio B) Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	263.16	

Survey Program	Date	4/23/2019			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
155.0	11,909.0	Survey #1 (Jagged 6N (Nio B) Wellbore #1	MWD	MWD - Standard	

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	
155.0	0.65	347.00	155.0	0.9	-0.2	0.1	0.42	0.42	0.00	
250.0	0.44	323.05	250.0	1.7	-0.5	0.3	0.32	-0.22	-25.21	
345.0	0.29	280.49	345.0	2.0	-1.0	0.7	0.32	-0.16	-44.80	
440.0	0.20	271.00	440.0	2.1	-1.4	1.1	0.10	-0.09	-9.99	
536.0	0.27	356.51	536.0	2.3	-1.6	1.3	0.34	0.07	89.07	
725.0	0.38	212.13	725.0	2.2	-1.9	1.7	0.33	0.06	-76.39	
821.0	1.01	188.75	821.0	1.1	-2.2	2.1	0.71	0.66	-24.35	
915.0	2.73	170.53	914.9	-1.9	-2.0	2.2	1.91	1.83	-19.38	
1,011.0	4.44	161.44	1,010.7	-7.7	-0.4	1.4	1.87	1.78	-9.47	

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Wellbore:	Jagged 6N (Nio B) Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Jagged 6N (Nio B) Wellbore #1	Database:	US_EDM

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)
1,106.0	5.75	154.98	1,105.4	-15.5	2.7	-0.9	1.50	1.38	-6.80
1,201.0	7.44	155.07	1,199.7	-25.4	7.4	-4.3	1.78	1.78	0.09
1,296.0	7.53	156.43	1,293.9	-36.7	12.4	-8.0	0.21	0.09	1.43
1,391.0	7.83	154.52	1,388.1	-48.2	17.7	-11.8	0.41	0.32	-2.01
1,485.0	8.09	156.34	1,481.2	-60.1	23.1	-15.8	0.39	0.28	1.94
1,636.0	7.45	158.79	1,630.8	-78.9	30.9	-21.3	0.48	-0.42	1.62
1,771.0	6.85	148.85	1,764.7	-94.0	38.3	-26.8	1.02	-0.44	-7.36
1,866.0	6.66	149.02	1,859.1	-103.6	44.0	-31.4	0.20	-0.20	0.18
1,960.0	6.45	148.47	1,952.5	-112.7	49.6	-35.8	0.23	-0.22	-0.59
2,055.0	6.05	147.14	2,046.9	-121.5	55.1	-40.2	0.45	-0.42	-1.40
2,151.0	5.81	145.67	2,142.4	-129.7	60.6	-44.7	0.30	-0.25	-1.53
2,246.0	5.74	145.15	2,236.9	-137.6	66.0	-49.1	0.09	-0.07	-0.55
2,341.0	6.59	141.04	2,331.3	-145.7	72.1	-54.3	1.01	0.89	-4.33
2,437.0	6.84	135.37	2,426.7	-154.1	79.6	-60.7	0.74	0.26	-5.91
2,532.0	6.49	131.76	2,521.0	-161.7	87.6	-67.7	0.57	-0.37	-3.80
2,627.0	6.04	134.52	2,615.5	-168.8	95.2	-74.4	0.57	-0.47	2.91
2,723.0	5.83	132.04	2,711.0	-175.6	102.4	-80.8	0.35	-0.22	-2.58
2,913.0	5.43	130.06	2,900.0	-187.8	116.4	-93.2	0.23	-0.21	-1.04
3,030.0	7.43	145.53	3,016.3	-197.6	125.0	-100.5	2.25	1.71	13.22
3,125.0	6.87	144.26	3,110.6	-207.3	131.8	-106.1	0.61	-0.59	-1.34
3,221.0	6.40	142.89	3,205.9	-216.2	138.3	-111.6	0.52	-0.49	-1.43
3,316.0	5.77	138.30	3,300.4	-224.0	144.7	-117.0	0.84	-0.66	-4.83
3,411.0	5.38	133.94	3,394.9	-230.7	151.1	-122.5	0.61	-0.41	-4.59
3,506.0	5.52	138.57	3,489.5	-237.2	157.3	-128.0	0.49	0.15	4.87
3,601.0	5.46	145.15	3,584.1	-244.3	162.9	-132.7	0.67	-0.06	6.93
3,697.0	5.14	145.17	3,679.7	-251.6	168.0	-136.8	0.33	-0.33	0.02
3,792.0	6.82	148.36	3,774.2	-259.9	173.4	-141.2	1.80	1.77	3.36
3,887.0	7.39	149.40	3,868.4	-270.0	179.5	-146.0	0.62	0.60	1.09
3,981.0	7.43	148.71	3,961.6	-280.4	185.7	-151.0	0.10	0.04	-0.73
4,077.0	7.06	145.95	4,056.9	-290.6	192.2	-156.2	0.53	-0.39	-2.88
4,172.0	6.47	146.54	4,151.2	-299.9	198.4	-161.3	0.63	-0.62	0.62
4,268.0	5.99	146.13	4,246.6	-308.5	204.2	-166.0	0.50	-0.50	-0.43
4,364.0	5.71	145.53	4,342.1	-316.6	209.7	-170.5	0.30	-0.29	-0.63
4,459.0	5.35	146.10	4,436.7	-324.2	214.9	-174.7	0.38	-0.38	0.60
4,555.0	5.83	154.15	4,532.2	-332.3	219.5	-178.3	0.96	0.50	8.39
4,649.0	5.60	162.11	4,625.8	-341.0	223.0	-180.8	0.88	-0.24	8.47
4,744.0	5.16	162.91	4,720.4	-349.5	225.6	-182.4	0.47	-0.46	0.84
4,839.0	4.99	162.14	4,815.0	-357.5	228.2	-184.0	0.19	-0.18	-0.81
4,934.0	5.62	147.49	4,909.6	-365.3	231.9	-186.8	1.57	0.66	-15.42
5,029.0	6.52	148.52	5,004.1	-373.9	237.3	-191.0	0.95	0.95	1.08
5,125.0	6.42	145.36	5,099.4	-382.9	243.2	-195.8	0.39	-0.10	-3.29
5,220.0	5.75	143.89	5,193.9	-391.1	249.0	-200.6	0.72	-0.71	-1.55
5,316.0	6.11	143.72	5,289.4	-399.1	254.8	-205.5	0.38	0.38	-0.18
5,412.0	6.11	141.81	5,384.8	-407.3	261.0	-210.6	0.21	0.00	-1.99

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5,507.0	6.73	146.20	5,479.2	-415.9	267.2	-215.8	0.83	0.65	4.62
5,602.0	6.19	145.39	5,573.6	-424.7	273.2	-220.7	0.58	-0.57	-0.85
5,698.0	5.61	141.84	5,669.1	-432.7	279.1	-225.6	0.71	-0.60	-3.70
5,793.0	6.40	147.45	5,763.6	-440.8	284.8	-230.3	1.04	0.83	5.91
5,888.0	6.00	148.15	5,858.1	-449.5	290.3	-234.7	0.43	-0.42	0.74
5,983.0	5.78	148.98	5,952.6	-457.8	295.4	-238.7	0.25	-0.23	0.87
6,079.0	5.20	149.50	6,048.1	-465.7	300.1	-242.4	0.61	-0.60	0.54
6,174.0	11.92	212.37	6,142.2	-477.7	297.0	-238.0	11.15	7.07	66.18
6,269.0	13.58	237.88	6,234.9	-491.9	282.3	-221.7	6.12	1.75	26.85
6,365.0	18.65	260.13	6,327.2	-500.6	257.6	-196.1	8.23	5.28	23.18
6,460.0	22.98	260.31	6,416.0	-506.3	224.3	-162.4	4.56	4.56	0.19
6,555.0	29.67	265.19	6,501.1	-511.4	182.5	-120.3	7.40	7.04	5.14
6,650.0	34.16	267.37	6,581.7	-514.6	132.4	-70.2	4.88	4.73	2.29
6,746.0	45.89	269.55	6,655.1	-516.1	70.8	-8.8	12.30	12.22	2.27
6,842.0	59.61	269.15	6,713.0	-517.0	-5.4	66.9	14.30	14.29	-0.42
6,844.5	59.99	269.15	6,714.3	-517.0	-7.6	69.1	15.32	15.32	0.18
TPZ - 60° Incl. in curve - 1651'FSL, 2314'FWL, Sec.8									
6,937.0	74.16	269.30	6,750.2	-518.2	-92.5	153.6	15.32	15.32	0.16
7,032.0	76.10	266.85	6,774.6	-521.3	-184.3	245.1	3.22	2.04	-2.58
7,128.0	79.55	267.60	6,794.9	-525.8	-278.0	338.7	3.67	3.59	0.78
7,224.0	86.52	267.70	6,806.5	-529.7	-373.2	433.6	7.26	7.26	0.10
7,265.2	89.29	268.04	6,808.0	-531.2	-414.3	474.6	6.79	6.74	0.82
LPL 1610'FSL, 1908'FWL, SEC.8									
7,319.0	92.92	268.48	6,807.0	-532.9	-468.0	528.2	6.79	6.74	0.82
7,414.0	89.99	268.69	6,804.6	-535.2	-563.0	622.7	3.09	-3.08	0.22
7,509.0	90.74	267.86	6,803.9	-538.1	-657.9	717.3	1.18	0.79	-0.87
7,605.0	91.43	268.22	6,802.1	-541.3	-753.9	813.0	0.81	0.72	0.38
7,700.0	90.82	268.20	6,800.3	-544.3	-848.8	907.6	0.64	-0.64	-0.02
7,796.0	90.67	267.69	6,799.0	-547.8	-944.7	1,003.2	0.55	-0.16	-0.53
7,892.0	89.91	268.05	6,798.5	-551.3	-1,040.7	1,098.9	0.88	-0.79	0.38
7,987.0	89.80	267.71	6,798.8	-554.8	-1,135.6	1,193.6	0.38	-0.12	-0.36
8,083.0	89.90	267.27	6,799.0	-559.0	-1,231.5	1,289.3	0.47	0.10	-0.46
8,179.0	88.10	267.32	6,800.7	-563.6	-1,327.4	1,385.1	1.88	-1.88	0.05
8,274.0	88.37	267.40	6,803.6	-567.9	-1,422.2	1,479.8	0.30	0.28	0.08
8,370.0	88.45	266.85	6,806.3	-572.8	-1,518.1	1,575.5	0.58	0.08	-0.57
8,466.0	89.52	267.17	6,808.0	-577.8	-1,613.9	1,671.3	1.16	1.11	0.33
8,561.0	90.43	268.72	6,808.0	-581.2	-1,708.9	1,765.9	1.89	0.96	1.63
8,657.0	90.70	268.45	6,807.1	-583.5	-1,804.8	1,861.5	0.40	0.28	-0.28
8,752.0	90.90	267.71	6,805.8	-586.7	-1,899.8	1,956.1	0.81	0.21	-0.78
8,847.0	90.74	269.44	6,804.4	-589.1	-1,994.7	2,050.7	1.83	-0.17	1.82
8,943.0	90.66	269.73	6,803.2	-589.8	-2,090.7	2,146.1	0.31	-0.08	0.30
9,039.0	91.04	269.87	6,801.8	-590.1	-2,186.7	2,241.4	0.42	0.40	0.15
9,135.0	90.83	269.30	6,800.2	-590.8	-2,282.7	2,336.8	0.63	-0.22	-0.59

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9,230.0	90.55	270.49	6,799.1	-591.0	-2,377.7	2,431.1	1.29	-0.29	1.25
9,326.0	90.10	270.43	6,798.5	-590.2	-2,473.7	2,526.4	0.47	-0.47	-0.06
9,422.0	89.66	269.95	6,798.7	-589.9	-2,569.7	2,621.6	0.68	-0.46	-0.50
9,517.0	89.45	268.92	6,799.5	-590.8	-2,664.7	2,716.1	1.11	-0.22	-1.08
9,613.0	89.34	267.94	6,800.5	-593.5	-2,760.6	2,811.6	1.03	-0.11	-1.02
9,708.0	89.15	267.80	6,801.7	-597.0	-2,855.5	2,906.3	0.25	-0.20	-0.15
9,803.0	89.52	269.69	6,802.9	-599.1	-2,950.5	3,000.9	2.03	0.39	1.99
9,899.0	89.78	271.06	6,803.4	-598.4	-3,046.5	3,096.1	1.45	0.27	1.43
9,994.0	89.80	270.95	6,803.8	-596.8	-3,141.5	3,190.2	0.12	0.02	-0.12
10,090.0	89.56	270.55	6,804.3	-595.5	-3,237.5	3,285.4	0.49	-0.25	-0.42
10,185.0	89.27	270.53	6,805.3	-594.6	-3,332.5	3,379.6	0.31	-0.31	-0.02
10,281.0	89.55	270.36	6,806.3	-593.9	-3,428.5	3,474.8	0.34	0.29	-0.18
10,376.0	89.45	269.96	6,807.1	-593.6	-3,523.5	3,569.1	0.43	-0.11	-0.42
10,472.0	89.34	269.83	6,808.1	-593.8	-3,619.4	3,664.4	0.18	-0.11	-0.14
10,567.0	89.22	269.69	6,809.3	-594.2	-3,714.4	3,758.8	0.19	-0.13	-0.15
10,663.0	89.45	269.73	6,810.4	-594.7	-3,810.4	3,854.1	0.24	0.24	0.04
10,759.0	89.84	270.79	6,811.0	-594.2	-3,906.4	3,949.4	1.18	0.41	1.10
10,854.0	89.92	270.24	6,811.2	-593.4	-4,001.4	4,043.6	0.59	0.08	-0.58
10,950.0	89.57	269.91	6,811.7	-593.3	-4,097.4	4,138.9	0.50	-0.36	-0.34
Deepest TVD Drilled - 6811.65' TVD									
11,046.0	91.15	269.87	6,811.0	-593.4	-4,193.4	4,234.2	1.65	1.65	-0.04
11,142.0	91.74	270.42	6,808.6	-593.2	-4,289.4	4,329.5	0.84	0.61	0.57
11,238.0	91.90	270.16	6,805.6	-592.7	-4,385.3	4,424.7	0.32	0.17	-0.27
11,334.0	91.76	269.62	6,802.5	-592.9	-4,481.3	4,520.0	0.58	-0.15	-0.56
11,429.0	91.71	269.50	6,799.6	-593.6	-4,576.2	4,614.4	0.14	-0.05	-0.13
11,525.0	90.15	269.39	6,798.1	-594.6	-4,672.2	4,709.8	1.63	-1.63	-0.11
11,620.0	90.03	268.99	6,797.9	-595.9	-4,767.2	4,804.2	0.44	-0.13	-0.42
11,715.0	90.01	268.71	6,797.9	-597.8	-4,862.2	4,898.8	0.30	-0.02	-0.29
11,811.0	89.85	267.98	6,798.0	-600.6	-4,958.1	4,994.4	0.78	-0.17	-0.76
11,851.0	89.73	268.12	6,798.2	-601.9	-4,998.1	5,034.2	0.46	-0.30	0.35
11,909.0	89.73	268.12	6,798.4	-603.8	-5,056.1	5,092.0	0.00	0.00	0.00
Projected BHL 1613'FSL, 2298'FWL, SEC.7									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
SHL 2167'FSL, 2320'FW	0.00	0.00	0.0	0.0	0.0	1,362,798.86	3,257,712.96	40.325597	-104.575672
- survey hits target center									
- Point									
Projected BHL 1613'FSL	0.00	0.00	6,800.0	-606.7	-5,057.0	1,362,139.50	3,252,662.80	40.323930	-104.593808
- survey misses target center by 3.4ft at 11909.0ft MD (6798.4 TVD, -603.8 N, -5056.1 E)									
- Point									

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 6N (Nio B)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4796.0ft (Original Well Elev)
Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4796.0ft (Original Well Elev)
Well:	Jagged 6N (Nio B)	North Reference:	True
Wellbore:	Jagged 6N (Nio B) Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Jagged 6N (Nio B) Wellbore #1	Database:	US_EDM

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
6,844.5	6,714.3	-517.0	-7.6	TPZ - 60° Incl. in curve - 1651'FSL, 2314'FWL, Sec.8
10,950.0	6,811.7	-593.3	-4,097.4	Deepest TVD Drilled - 6811.65' TVD

Checked By: _____	Approved By: _____	Date: _____
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