

PDC Energy Inc. DJ Basin

Well Name: **Pharaoh 5N (Nio B)**

Pharaoh 5N64W36 Pad Sec.36-T5N-R64W

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

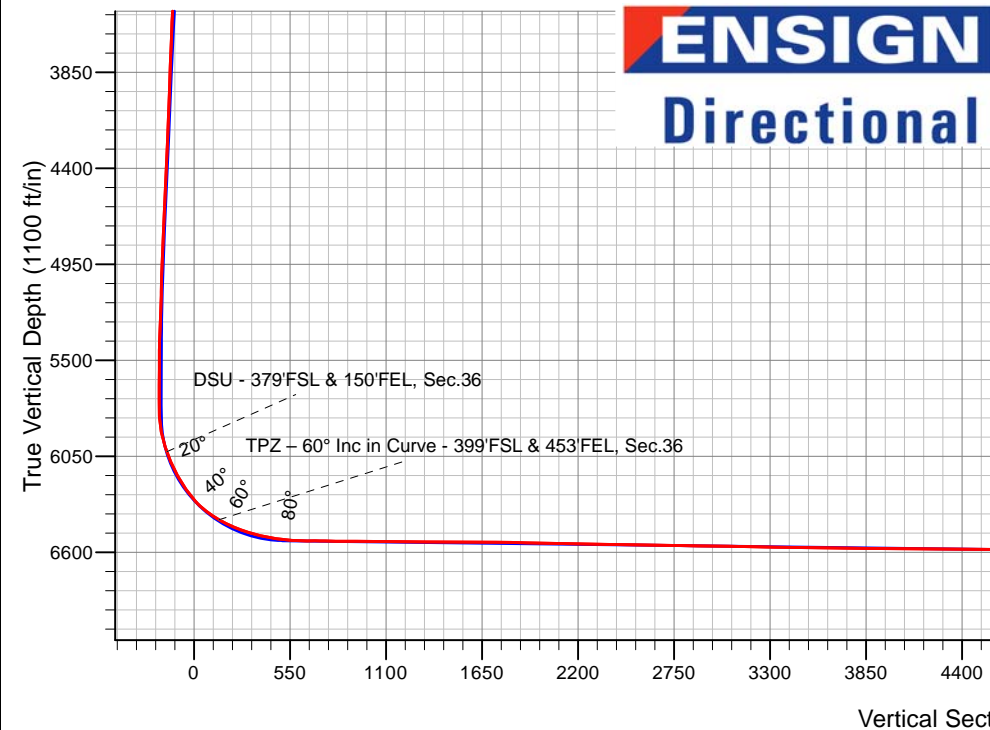
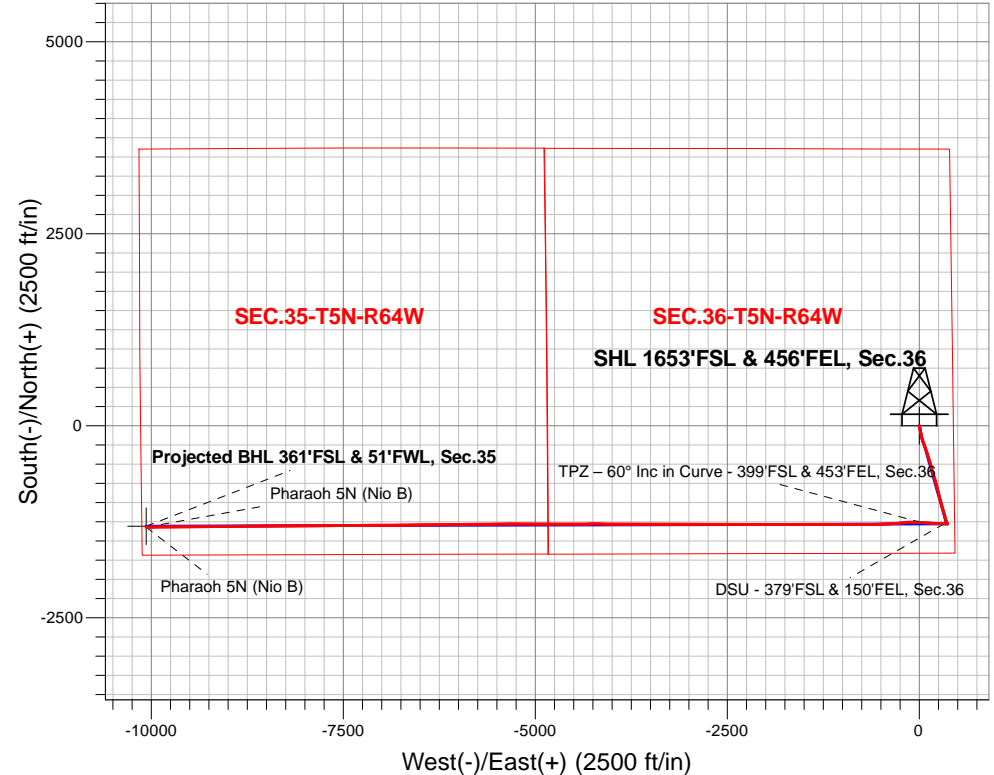
Ground Elevation: 4593.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.01373122	35	3281507.16	40.353221	-104.489915	
Ensign 142 RKB - 28' WELL @ 4621.0ft (Ensign 142 RKB - 28')						

FINAL SURVEY

Projected Bottom Hole Location

16,827'MD 6555'TVD 1320'S & 10067'W of SHL
90.84 degree Incl @ 268.56 degree AZM



ENSIGN
Directional

Pharaoh 5N64W36 Pad Sec.36-T5N-R64W
Pharaoh 5N (Nio B)
Pharaoh 5N Wellbore #1
16:47, January 19 2021

ANNOTATIONS

TVD	MD	Annotation
6024.0	6211.8	DSU - 379'FSL & 150'FEL, Sec.36
6414.1	6717.2	TPZ - 60° Inc in Curve - 399'FSL & 453'FEL, Sec.36

LEGEND

- Pharaoh 5N (Nio B), Pharaoh 5N Wellbore #1, Plan #3 (1-13-21) V0
- Pharaoh 5N Wellbore #1
- Survey #1

Projected BHL 361'FSL & 51'FWL, Sec.35

Pharaoh 5N (Nio B)



PDC Energy Inc. DJ Basin

SEC.36-T5N-R64W

Pharaoh 5N64W36 Pad Sec.36-T5N-R64W

Pharaoh 5N (Nio B)

Pharaoh 5N Wellbore #1

Survey: Survey #1

Standard Survey Report

19 January, 2021

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Pharaoh 5N (Nio B)
Project:	SEC.36-T5N-R64W	TVD Reference:	WELL @ 4621.0ft (Ensign 142 RKB - 28')
Site:	Pharaoh 5N64W36 Pad Sec.36-T5N-R64W	MD Reference:	WELL @ 4621.0ft (Ensign 142 RKB - 28')
Well:	Pharaoh 5N (Nio B)	North Reference:	True
Wellbore:	Pharaoh 5N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Pharaoh 5N Wellbore #1	Database:	US_EDM

Project	SEC.36-T5N-R64W		
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		Pharaoh 5N64W36 Pad Sec.36-T5N-R64W			
Site Position:		Northing:	1,373,122.36 usft	Latitude:	40.353221
From:	Lat/Long	Easting:	3,281,507.17 usft	Longitude:	-104.489915
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.65 °

Well	Pharaoh 5N (Nio B)					
Well Position	+N/-S	0.0 ft	Northing:	1,373,122.35 usft	Latitude:	40.353221
	+E/-W	0.0 ft	Easting:	3,281,507.17 usft	Longitude:	-104.489915
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,593.0 ft

Wellbore	Pharaoh 5N Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	01/13/2021	7.77	66.77	51,966

Design	Pharaoh 5N 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	262.61	

Survey Program	Date	01/19/2021			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
162.0	16,827.0	Survey #1 (Pharaoh 5N 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	
162.0	0.26	273.41	162.0	0.0	-0.4	0.4	0.16	0.16	0.00	
254.0	1.49	163.19	254.0	-1.1	-0.2	0.4	1.74	1.34	-119.80	
375.0	3.78	161.43	374.9	-6.4	1.5	-0.7	1.89	1.89	-1.45	
465.0	3.87	159.15	464.7	-12.0	3.5	-1.9	0.20	0.10	-2.53	
554.0	4.48	168.64	553.4	-18.3	5.3	-2.9	1.03	0.69	10.66	
643.0	6.95	167.76	642.0	-26.9	7.1	-3.6	2.78	2.78	-0.99	
733.0	8.27	169.87	731.2	-38.6	9.4	-4.3	1.50	1.47	2.34	
822.0	9.15	171.98	819.1	-51.9	11.5	-4.7	1.05	0.99	2.37	
912.0	10.82	172.33	907.8	-67.4	13.6	-4.9	1.86	1.86	0.39	

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Site:	Pharaoh 5N64W36 Pad Sec.36-T5N-R64W	MD Reference:	WELL @ 4621.0ft (Ensign 142 RKB - 28')
Well:	Pharaoh 5N (Nio B)	North Reference:	True
Wellbore:	Pharaoh 5N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Pharaoh 5N 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)
1,002.0	12.13	167.94	996.0	-85.0	16.7	-5.7	1.75	1.46	-4.88
1,091.0	13.37	168.11	1,082.8	-104.2	20.8	-7.2	1.39	1.39	0.19
1,181.0	14.07	168.29	1,170.2	-125.1	25.2	-8.9	0.78	0.78	0.20
1,270.0	14.86	165.65	1,256.4	-146.8	30.2	-11.1	1.16	0.89	-2.97
1,359.0	16.00	163.37	1,342.2	-169.6	36.5	-14.4	1.45	1.28	-2.56
1,448.0	16.18	161.96	1,427.7	-193.1	43.9	-18.7	0.48	0.20	-1.58
1,538.0	14.68	160.73	1,514.5	-215.8	51.5	-23.3	1.71	-1.67	-1.37
1,665.0	15.83	162.49	1,637.0	-247.5	62.1	-29.7	0.98	0.91	1.39
1,791.0	14.71	160.70	1,758.5	-279.0	72.5	-36.0	0.96	-0.89	-1.42
1,880.0	14.64	158.23	1,844.6	-300.1	80.4	-41.2	0.71	-0.08	-2.78
1,970.0	16.57	159.59	1,931.3	-322.7	89.1	-46.9	2.18	2.14	1.51
2,060.0	17.38	156.60	2,017.4	-347.1	98.9	-53.5	1.32	0.90	-3.32
2,149.0	17.30	162.73	2,102.3	-371.9	108.1	-59.4	2.05	-0.09	6.89
2,238.0	16.14	162.33	2,187.6	-396.3	115.8	-63.9	1.31	-1.30	-0.45
2,328.0	16.42	165.35	2,274.0	-420.6	122.8	-67.7	0.99	0.31	3.36
2,418.0	17.39	164.38	2,360.1	-445.8	129.7	-71.3	1.12	1.08	-1.08
2,508.0	17.51	162.15	2,445.9	-471.7	137.4	-75.6	0.75	0.13	-2.48
2,598.0	17.44	166.53	2,531.8	-497.7	144.7	-79.5	1.46	-0.08	4.87
2,687.0	17.17	166.20	2,616.8	-523.4	151.0	-82.4	0.32	-0.30	-0.37
2,777.0	17.38	161.52	2,702.7	-549.1	158.4	-86.5	1.56	0.23	-5.20
2,867.0	16.87	165.11	2,788.7	-574.4	166.0	-90.8	1.30	-0.57	3.99
2,956.0	17.48	165.08	2,873.8	-599.8	172.8	-94.2	0.69	0.69	-0.03
3,046.0	17.07	163.28	2,959.7	-625.5	180.1	-98.1	0.75	-0.46	-2.00
3,136.0	16.07	163.27	3,046.0	-650.1	187.5	-102.3	1.11	-1.11	-0.01
3,227.0	16.90	161.88	3,133.2	-674.8	195.2	-106.8	1.01	0.91	-1.53
3,316.0	17.09	165.05	3,218.3	-699.7	202.6	-110.9	1.06	0.21	3.56
3,406.0	16.80	160.20	3,304.4	-724.7	210.4	-115.4	1.60	-0.32	-5.39
3,495.0	16.95	167.17	3,389.6	-749.4	217.6	-119.4	2.28	0.17	7.83
3,584.0	17.82	164.55	3,474.5	-775.2	224.2	-122.6	1.31	0.98	-2.94
3,674.0	17.78	165.03	3,560.2	-801.8	231.4	-126.3	0.17	-0.04	0.53
3,763.0	18.26	166.41	3,644.9	-828.5	238.2	-129.6	0.72	0.54	1.55
3,853.0	17.52	166.23	3,730.5	-855.3	244.7	-132.7	0.82	-0.82	-0.20
3,943.0	17.43	164.83	3,816.4	-881.5	251.5	-136.0	0.48	-0.10	-1.56
4,032.0	18.13	166.17	3,901.1	-907.8	258.2	-139.3	0.91	0.79	1.51
4,121.0	16.81	165.58	3,986.0	-933.7	264.8	-142.5	1.50	-1.48	-0.66
4,211.0	16.61	165.14	4,072.2	-958.7	271.3	-145.7	0.26	-0.22	-0.49
4,301.0	17.45	165.99	4,158.3	-984.3	277.9	-149.0	0.97	0.93	0.94
4,391.0	17.06	164.12	4,244.2	-1,010.1	284.7	-152.5	0.75	-0.43	-2.08
4,480.0	17.97	165.72	4,329.1	-1,035.9	291.7	-156.0	1.16	1.02	1.80
4,570.0	16.12	163.11	4,415.1	-1,061.3	298.8	-159.8	2.22	-2.06	-2.90
4,660.0	15.76	163.65	4,501.7	-1,085.0	305.8	-163.7	0.43	-0.40	0.60
4,749.0	15.57	163.44	4,587.4	-1,108.1	312.6	-167.5	0.22	-0.21	-0.24
4,839.0	16.19	162.96	4,673.9	-1,131.6	319.8	-171.5	0.70	0.69	-0.53
4,928.0	18.17	164.94	4,758.9	-1,156.9	327.0	-175.5	2.32	2.22	2.22

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Survey									
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5,018.0	15.41	165.28	4,845.1	-1,182.0	333.7	-178.9	3.07	-3.07	0.38
5,107.0	13.38	162.54	4,931.3	-1,203.3	339.8	-182.2	2.41	-2.28	-3.08
5,197.0	12.38	163.35	5,019.0	-1,222.5	345.7	-185.6	1.13	-1.11	0.90
5,287.0	11.20	166.06	5,107.1	-1,240.2	350.5	-188.1	1.45	-1.31	3.01
5,377.0	8.38	159.67	5,195.8	-1,254.8	354.9	-190.6	3.35	-3.13	-7.10
5,467.0	7.16	155.43	5,285.0	-1,266.1	359.5	-193.7	1.50	-1.36	-4.71
5,556.0	3.78	141.59	5,373.6	-1,273.4	363.7	-196.9	4.05	-3.80	-15.55
5,646.0	0.73	79.33	5,463.5	-1,275.6	366.1	-199.0	3.89	-3.39	-69.18
5,735.0	0.13	53.76	5,552.5	-1,275.5	366.7	-199.6	0.69	-0.67	-28.73
5,825.0	0.18	79.39	5,642.5	-1,275.4	366.9	-199.8	0.09	0.06	28.48
5,915.0	0.16	66.02	5,732.5	-1,275.3	367.2	-200.1	0.05	-0.02	-14.86
6,005.0	2.09	269.10	5,822.5	-1,275.3	365.7	-198.6	2.49	2.14	-174.36
6,095.0	11.59	268.43	5,911.7	-1,275.6	355.0	-187.9	10.56	10.56	-0.74
6,185.0	18.13	270.37	5,998.7	-1,275.7	331.9	-165.0	7.29	7.27	2.16
6,211.8	19.79	270.71	6,024.0	-1,275.6	323.2	-156.4	6.20	6.19	1.28
DSU - 379°FSL & 150°FEL, Sec.36									
6,274.0	23.64	271.33	6,081.8	-1,275.2	300.2	-133.7	6.20	6.19	0.99
6,364.0	28.71	270.74	6,162.5	-1,274.5	260.5	-94.4	5.64	5.63	-0.66
6,454.0	34.86	272.97	6,239.0	-1,272.9	213.2	-47.7	6.96	6.83	2.48
6,544.0	43.45	276.03	6,308.7	-1,268.3	156.6	7.9	9.78	9.54	3.40
6,634.0	53.40	276.38	6,368.4	-1,261.0	89.7	73.2	11.06	11.06	0.39
6,717.2	60.00	273.15	6,414.1	-1,255.3	20.5	141.2	8.57	7.93	-3.88
TPZ - 60° Inc in Curve - 399°FSL & 453°FEL, Sec.36									
6,723.0	60.46	272.94	6,416.9	-1,255.1	15.5	146.1	8.57	7.98	-3.59
6,813.0	68.68	269.78	6,455.6	-1,253.2	-65.7	226.4	9.67	9.13	-3.51
6,902.0	73.16	265.58	6,484.7	-1,256.7	-149.7	310.1	6.72	5.03	-4.72
6,992.0	76.44	263.93	6,508.3	-1,264.6	-236.2	396.9	4.05	3.64	-1.83
7,082.0	81.90	265.84	6,525.2	-1,272.5	-324.2	485.2	6.41	6.07	2.12
7,171.0	87.14	267.58	6,533.7	-1,277.6	-412.6	573.5	6.20	5.89	1.96
7,260.0	90.95	267.65	6,535.1	-1,281.3	-501.5	662.1	4.28	4.28	0.08
7,350.0	88.19	268.43	6,535.8	-1,284.3	-591.4	751.7	3.19	-3.07	0.87
7,440.0	89.77	270.56	6,537.4	-1,285.1	-681.4	841.1	2.95	1.76	2.37
7,530.0	89.82	270.54	6,537.7	-1,284.3	-771.4	930.2	0.06	0.06	-0.02
7,619.0	89.38	269.38	6,538.4	-1,284.3	-860.4	1,018.5	1.39	-0.49	-1.30
7,709.0	89.73	270.45	6,539.1	-1,284.5	-950.4	1,107.7	1.25	0.39	1.19
7,798.0	89.22	268.80	6,539.9	-1,285.0	-1,039.4	1,196.0	1.94	-0.57	-1.85
7,888.0	89.52	269.52	6,540.9	-1,286.4	-1,129.4	1,285.5	0.87	0.33	0.80
7,977.0	89.68	270.54	6,541.5	-1,286.3	-1,218.4	1,373.7	1.16	0.18	1.15
8,066.0	89.78	270.81	6,541.9	-1,285.3	-1,307.4	1,461.8	0.32	0.11	0.30
8,157.0	89.63	270.70	6,542.4	-1,284.1	-1,398.4	1,551.9	0.20	-0.16	-0.12
8,246.0	89.93	270.87	6,542.7	-1,282.8	-1,487.3	1,640.0	0.39	0.34	0.19
8,336.0	89.26	269.28	6,543.4	-1,282.7	-1,577.3	1,729.2	1.92	-0.74	-1.77
8,426.0	89.13	269.92	6,544.6	-1,283.4	-1,667.3	1,818.5	0.73	-0.14	0.71

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Design:	Pharaoh 5N Wellbore #1	Database:	US_EDM

Survey									
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8,516.0	88.46	269.94	6,546.5	-1,283.5	-1,757.3	1,907.8	0.74	-0.74	0.02
8,606.0	89.04	270.54	6,548.5	-1,283.1	-1,847.3	1,997.0	0.93	-0.64	0.67
8,696.0	89.01	270.24	6,550.0	-1,282.5	-1,937.3	2,086.1	0.33	-0.03	-0.33
8,785.0	88.63	269.02	6,551.8	-1,283.0	-2,026.2	2,174.4	1.44	-0.43	-1.37
8,874.0	89.09	270.51	6,553.6	-1,283.4	-2,115.2	2,262.7	1.75	0.52	1.67
8,964.0	89.33	270.75	6,554.8	-1,282.4	-2,205.2	2,351.8	0.38	0.27	0.27
9,054.0	89.01	269.66	6,556.2	-1,282.1	-2,295.2	2,441.0	1.26	-0.36	-1.21
9,144.0	89.28	270.20	6,557.5	-1,282.2	-2,385.2	2,530.3	0.67	0.30	0.60
9,233.0	88.47	269.51	6,559.2	-1,282.4	-2,474.2	2,618.6	1.20	-0.91	-0.78
9,323.0	89.28	270.00	6,561.0	-1,282.8	-2,564.2	2,707.9	1.05	0.90	0.54
9,413.0	89.15	270.52	6,562.2	-1,282.4	-2,654.1	2,797.0	0.60	-0.14	0.58
9,503.0	88.91	270.39	6,563.8	-1,281.7	-2,744.1	2,886.2	0.30	-0.27	-0.14
9,592.0	89.34	270.23	6,565.1	-1,281.2	-2,833.1	2,974.4	0.52	0.48	-0.18
9,682.0	88.98	269.54	6,566.4	-1,281.4	-2,923.1	3,063.6	0.86	-0.40	-0.77
9,772.0	89.24	270.36	6,567.8	-1,281.5	-3,013.1	3,152.9	0.96	0.29	0.91
9,861.0	89.45	270.93	6,568.9	-1,280.5	-3,102.1	3,241.0	0.68	0.24	0.64
9,951.0	88.63	269.47	6,570.4	-1,280.2	-3,192.1	3,330.2	1.86	-0.91	-1.62
10,041.0	89.00	269.93	6,572.2	-1,280.6	-3,282.0	3,419.5	0.66	0.41	0.51
10,130.0	88.95	270.15	6,573.8	-1,280.6	-3,371.0	3,507.7	0.25	-0.06	0.25
10,219.0	88.76	269.45	6,575.6	-1,280.9	-3,460.0	3,596.0	0.81	-0.21	-0.79
10,309.0	88.99	269.92	6,577.4	-1,281.4	-3,550.0	3,685.3	0.58	0.26	0.52
10,489.0	89.75	270.53	6,579.3	-1,280.7	-3,730.0	3,863.7	0.54	0.42	0.34
10,578.0	89.78	270.96	6,579.7	-1,279.5	-3,819.0	3,951.8	0.48	0.03	0.48
10,667.0	89.25	270.10	6,580.5	-1,278.7	-3,908.0	4,040.0	1.14	-0.60	-0.97
10,757.0	89.48	270.05	6,581.5	-1,278.6	-3,998.0	4,129.2	0.26	0.26	-0.06
10,847.0	89.72	270.50	6,582.1	-1,278.1	-4,088.0	4,218.4	0.57	0.27	0.50
10,936.0	89.84	270.21	6,582.4	-1,277.6	-4,176.9	4,306.6	0.35	0.13	-0.33
11,026.0	89.83	269.77	6,582.7	-1,277.6	-4,266.9	4,395.8	0.49	-0.01	-0.49
11,116.0	89.44	269.79	6,583.3	-1,277.9	-4,356.9	4,485.1	0.43	-0.43	0.02
11,206.0	89.51	269.75	6,584.1	-1,278.3	-4,446.9	4,574.4	0.09	0.08	-0.04
11,296.0	89.34	269.81	6,585.0	-1,278.7	-4,536.9	4,663.7	0.20	-0.19	0.07
11,386.0	89.20	268.99	6,586.1	-1,279.6	-4,626.9	4,753.1	0.92	-0.16	-0.91
11,476.0	89.74	270.60	6,587.0	-1,279.9	-4,716.9	4,842.4	1.89	0.60	1.79
11,566.0	89.38	269.54	6,587.7	-1,279.8	-4,806.9	4,931.6	1.24	-0.40	-1.18
11,655.0	89.64	270.07	6,588.4	-1,280.1	-4,895.9	5,019.9	0.66	0.29	0.60
11,745.0	89.96	271.12	6,588.7	-1,279.2	-4,985.9	5,109.0	1.22	0.36	1.17
11,834.0	89.79	270.93	6,588.9	-1,277.6	-5,074.9	5,197.1	0.29	-0.19	-0.21
11,924.0	89.70	270.09	6,589.3	-1,276.8	-5,164.9	5,286.2	0.94	-0.10	-0.93
12,013.0	89.72	269.26	6,589.8	-1,277.3	-5,253.9	5,374.5	0.93	0.02	-0.93
12,102.0	89.32	269.62	6,590.5	-1,278.2	-5,342.9	5,462.9	0.60	-0.45	0.40
12,191.0	89.31	269.74	6,591.6	-1,278.7	-5,431.9	5,551.2	0.14	-0.01	0.13
12,281.0	88.86	269.17	6,593.0	-1,279.5	-5,521.8	5,640.6	0.81	-0.50	-0.63
12,370.0	88.90	268.82	6,594.8	-1,281.1	-5,610.8	5,729.0	0.40	0.04	-0.39
12,461.0	89.14	270.20	6,596.3	-1,281.9	-5,701.8	5,819.3	1.54	0.26	1.52

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Pharaoh 5N (Nio B)
Project:	SEC.36-T5N-R64W	TVD Reference:	WELL @ 4621.0ft (Ensign 142 RKB - 28')
Site:	Pharaoh 5N64W36 Pad Sec.36-T5N-R64W	MD Reference:	WELL @ 4621.0ft (Ensign 142 RKB - 28')
Well:	Pharaoh 5N (Nio B)	North Reference:	True
Wellbore:	Pharaoh 5N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Pharaoh 5N 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)
12,550.0	89.35	270.27	6,597.5	-1,281.5	-5,790.8	5,907.5	0.25	0.24	0.08
12,639.0	88.73	268.52	6,599.0	-1,282.4	-5,879.8	5,995.9	2.09	-0.70	-1.97
12,729.0	88.91	268.86	6,600.8	-1,284.5	-5,969.7	6,085.3	0.43	0.20	0.38
12,819.0	89.12	268.98	6,602.4	-1,286.2	-6,059.7	6,174.8	0.27	0.23	0.13
12,908.0	89.23	269.90	6,603.7	-1,287.0	-6,148.7	6,263.1	1.04	0.12	1.03
12,997.0	89.30	269.77	6,604.8	-1,287.3	-6,237.7	6,351.4	0.17	0.08	-0.15
13,087.0	89.37	269.16	6,605.9	-1,288.1	-6,327.7	6,440.8	0.68	0.08	-0.68
13,177.0	89.18	270.07	6,607.0	-1,288.7	-6,417.6	6,530.1	1.03	-0.21	1.01
13,266.0	89.09	269.03	6,608.3	-1,289.4	-6,506.6	6,618.4	1.17	-0.10	-1.17
13,356.0	88.72	269.03	6,610.1	-1,291.0	-6,596.6	6,707.9	0.41	-0.41	0.00
13,446.0	89.41	270.06	6,611.5	-1,291.7	-6,686.6	6,797.2	1.38	0.77	1.14
13,536.0	89.28	269.38	6,612.6	-1,292.1	-6,776.6	6,886.5	0.77	-0.14	-0.76
13,625.0	89.39	269.48	6,613.6	-1,293.0	-6,865.6	6,974.9	0.17	0.12	0.11
13,714.0	89.29	268.82	6,614.6	-1,294.3	-6,954.6	7,063.3	0.75	-0.11	-0.74
13,804.0	90.64	270.46	6,614.7	-1,294.9	-7,044.5	7,152.6	2.36	1.50	1.82
13,894.0	91.16	269.28	6,613.3	-1,295.1	-7,134.5	7,241.9	1.43	0.58	-1.31
13,984.0	91.40	269.94	6,611.2	-1,295.7	-7,224.5	7,331.2	0.78	0.27	0.73
14,074.0	91.00	269.00	6,609.4	-1,296.5	-7,314.5	7,420.5	1.13	-0.44	-1.04
14,163.0	91.13	269.21	6,607.7	-1,297.9	-7,403.5	7,508.9	0.28	0.15	0.24
14,253.0	91.11	269.99	6,605.9	-1,298.6	-7,493.4	7,598.2	0.87	-0.02	0.87
14,342.0	91.23	270.05	6,604.1	-1,298.5	-7,582.4	7,686.5	0.15	0.13	0.07
14,432.0	91.05	268.67	6,602.3	-1,299.5	-7,672.4	7,775.8	1.55	-0.20	-1.53
14,521.0	90.85	269.39	6,600.9	-1,301.0	-7,761.4	7,864.2	0.84	-0.22	0.81
14,611.0	91.53	270.49	6,599.0	-1,301.1	-7,851.3	7,953.5	1.44	0.76	1.22
14,701.0	91.24	269.44	6,596.8	-1,301.2	-7,941.3	8,042.7	1.21	-0.32	-1.17
14,791.0	90.71	269.57	6,595.3	-1,302.0	-8,031.3	8,132.1	0.61	-0.59	0.14
14,881.0	91.42	269.92	6,593.6	-1,302.4	-8,121.3	8,221.3	0.88	0.79	0.39
14,971.0	91.36	270.16	6,591.4	-1,302.3	-8,211.3	8,310.6	0.27	-0.07	0.27
15,061.0	90.75	268.84	6,589.8	-1,303.1	-8,301.2	8,399.9	1.62	-0.68	-1.47
15,150.0	91.21	269.84	6,588.3	-1,304.1	-8,390.2	8,488.3	1.24	0.52	1.12
15,240.0	91.13	269.03	6,586.4	-1,305.0	-8,480.2	8,577.6	0.90	-0.09	-0.90
15,330.0	90.84	268.98	6,584.9	-1,306.6	-8,570.2	8,667.0	0.33	-0.32	-0.06
15,420.0	90.99	269.97	6,583.4	-1,307.4	-8,660.2	8,756.4	1.11	0.17	1.10
15,510.0	91.30	269.08	6,581.6	-1,308.1	-8,750.1	8,845.7	1.05	0.34	-0.99
15,600.0	91.39	270.08	6,579.5	-1,308.8	-8,840.1	8,935.0	1.12	0.10	1.11
15,690.0	91.01	269.54	6,577.6	-1,309.1	-8,930.1	9,024.3	0.73	-0.42	-0.60
15,780.0	91.31	269.35	6,575.8	-1,310.0	-9,020.1	9,113.6	0.39	0.33	-0.21
15,869.0	91.46	269.42	6,573.7	-1,310.9	-9,109.0	9,202.0	0.19	0.17	0.08
15,959.0	91.09	269.06	6,571.7	-1,312.1	-9,199.0	9,291.4	0.57	-0.41	-0.40
16,049.0	91.12	270.00	6,569.9	-1,312.9	-9,289.0	9,380.7	1.04	0.03	1.04
16,138.0	91.42	270.21	6,568.0	-1,312.7	-9,378.0	9,468.9	0.41	0.34	0.24
16,227.0	90.89	269.27	6,566.2	-1,313.1	-9,466.9	9,557.2	1.21	-0.60	-1.06
16,317.0	91.08	269.80	6,564.6	-1,313.8	-9,556.9	9,646.5	0.63	0.21	0.59

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Pharaoh 5N (Nio B)
Project:	SEC.36-T5N-R64W	TVD Reference:	WELL @ 4621.0ft (Ensign 142 RKB - 28')
Site:	Pharaoh 5N64W36 Pad Sec.36-T5N-R64W	MD Reference:	WELL @ 4621.0ft (Ensign 142 RKB - 28')
Well:	Pharaoh 5N (Nio B)	North Reference:	True
Wellbore:	Pharaoh 5N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Pharaoh 5N 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)	
16,407.0	91.50	270.64	6,562.6	-1,313.5	-9,646.9	9,735.7	1.04	0.47	0.93	
16,496.0	91.07	269.20	6,560.6	-1,313.6	-9,735.9	9,824.0	1.69	-0.48	-1.62	
16,585.0	91.10	269.53	6,558.9	-1,314.6	-9,824.8	9,912.3	0.37	0.03	0.37	
16,675.0	90.96	268.76	6,557.3	-1,315.9	-9,914.8	10,001.7	0.87	-0.16	-0.86	
16,765.0	90.72	268.36	6,556.0	-1,318.2	-10,004.8	10,091.2	0.52	-0.27	-0.44	
16,805.0	90.84	268.56	6,555.4	-1,319.3	-10,044.8	10,131.0	0.58	0.30	0.50	
16,827.0	90.84	268.56	6,555.1	-1,319.8	-10,066.8	10,152.9	0.00	0.00	0.00	

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 1653'FSL & 456'FE	0.00	0.00	1.0	0.0	0.0	1,373,122.36	3,281,507.17	40.353221	-104.489915	
- survey hits target center										
- Point										
BHL 375'FSL & 50'FWL,	0.00	0.00	6,557.2	-1,305.8	-10,067.7	1,371,702.01	3,271,455.42	40.349631	-104.526035	
- survey misses target center by 14.2ft at 16827.0ft MD (6555.1 TVD, -1319.8 N, -10066.8 E)										
- Point										

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
6,211.8	6,024.0	-1,275.6	323.2	DSU - 379'FSL & 150'FEL, Sec.36	
6,717.2	6,414.1	-1,255.3	20.5	TPZ - 60° Inc in Curve - 399'FSL & 453'FEL, Sec.36	

Checked By: _____	Approved By: _____	Date: _____
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