

PDC Energy Inc. DJ Basin

Well Name: **Challenger 2N (Nio C)**

Surface Location: Challenger 4N64W8 Pad Sec.8-T4N-R64W

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

Ground Elevation: 4775.0

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

0.0 0.0 1364564.36 3257809.25 40.330440 -104.575260

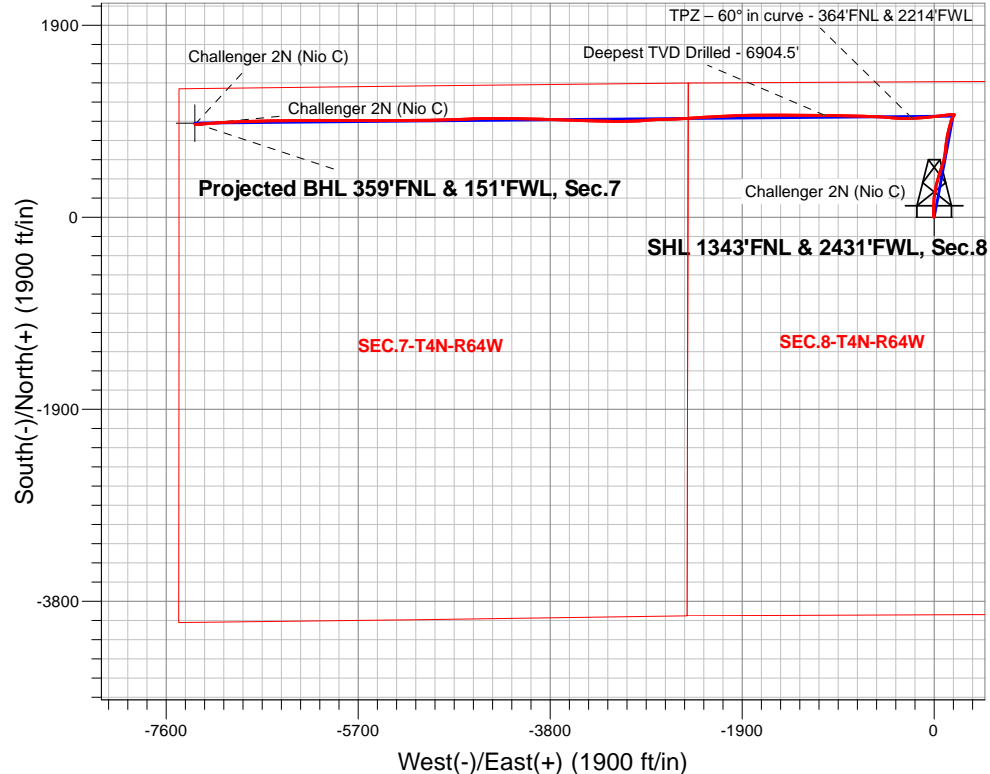
Original Well Elev WELL @ 4798.0ft (Original Well Elev)

FINAL SURVEY

Projected Bottom Hole Location

14,200'MD 6893'TVD 916'N & 7316'W of SHL

90.26 degree Incl @ 265.64 degree AZM



Challenger 4N64W8 Pad Sec.8-T4N-R64W
Challenger 2N (Nio C)
Challenger 2N (Nio C) Wellbore #1
11:28, February 06 2019

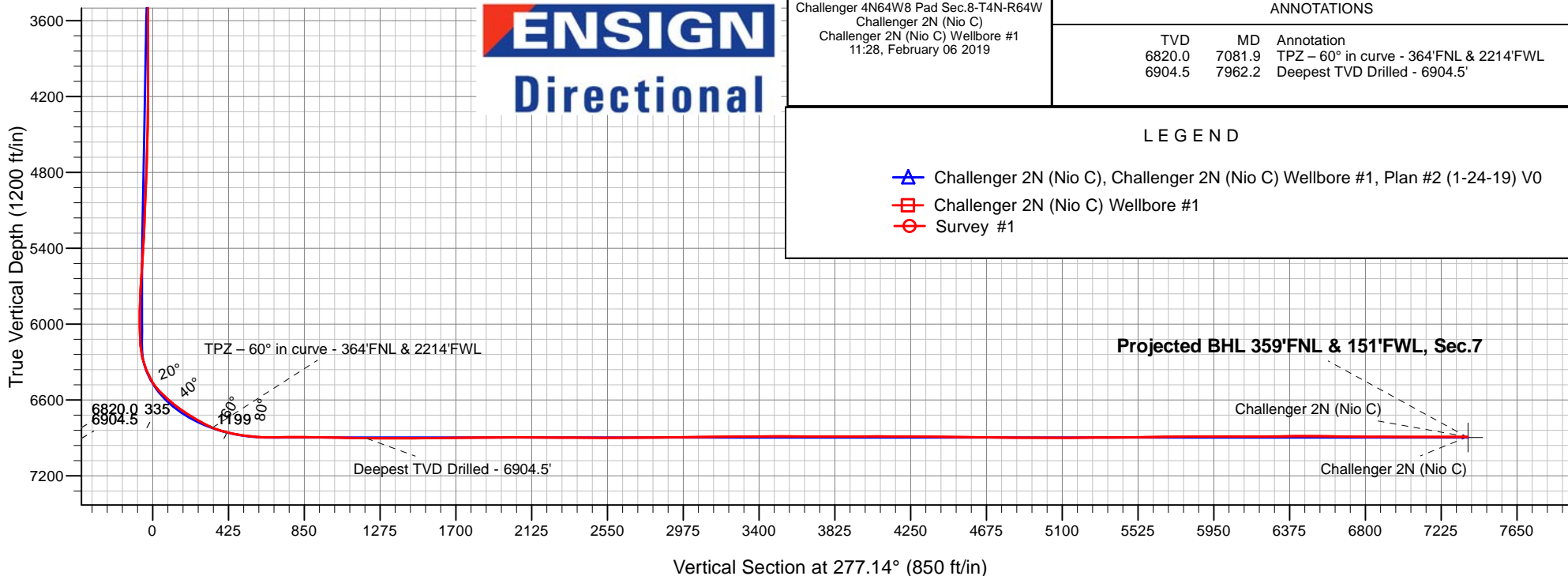
ANNOTATIONS

TVD	MD	Annotation
6820.0	7081.9	TPZ - 60° in curve - 364'FNL & 2214'FWL
6904.5	7962.2	Deepest TVD Drilled - 6904.5'

LEGEND

- Challenger 2N (Nio C), Challenger 2N (Nio C) Wellbore #1, Plan #2 (1-24-19) V0
- Challenger 2N (Nio C) Wellbore #1
- Survey #1

Projected BHL 359'FNL & 151'FWL, Sec.7





PDC Energy Inc. DJ Basin

SEC.8-T4N-R64W

Challenger 4N64W8 Pad Sec.8-T4N-R64W

Challenger 2N (Nio C)

Challenger 2N (Nio C) Wellbore #1

Survey: Survey #1

Standard Survey Report

06 February, 2019



Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Challenger 2N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4798.0ft (Original Well Elev)
Site:	Challenger 4N64W8 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4798.0ft (Original Well Elev)
Well:	Challenger 2N (Nio C)	North Reference:	True
Wellbore:	Challenger 2N (Nio C) Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Challenger 2N (Nio C) 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	Challenger 4N64W8 Pad Sec.8-T4N-R64W				
Site Position:		Northing:	1,364,578.94 usft	Latitude:	40.330480
From:	Lat/Long	Easting:	3,257,809.10 usft	Longitude:	-104.575260
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.60 °

Well	Challenger 2N (Nio C)					
Well Position	+N/-S	0.0 ft	Northing:	1,364,564.37 usft	Latitude:	40.330440
	+E/-W	0.0 ft	Easting:	3,257,809.26 usft	Longitude:	-104.575260
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,775.0 ft

Wellbore	Challenger 2N (Nio C) Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	1/24/2019	8.18	66.83	52,181

Design	Challenger 2N (Nio C) 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	277.14	

Survey Program	Date	2/6/2019			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
156.0	14,200.0	Survey #1 (Challenger 2N (Nio C) Wellbor	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	
156.0	0.70	219.00	156.0	-0.7	-0.6	0.5	0.45	0.45	0.00	
252.0	0.80	220.80	252.0	-1.7	-1.4	1.2	0.11	0.10	1.88	
347.0	0.60	238.00	347.0	-2.5	-2.3	1.9	0.30	-0.21	18.11	
442.0	2.00	345.40	442.0	-1.1	-3.1	2.9	2.37	1.47	113.05	
538.0	2.00	349.90	537.9	2.1	-3.8	4.1	0.16	0.00	4.69	
634.0	3.90	0.80	633.8	7.1	-4.1	4.9	2.05	1.98	11.35	
729.0	4.50	1.30	728.5	14.0	-3.9	5.6	0.63	0.63	0.53	
825.0	6.80	357.40	824.0	23.5	-4.1	7.0	2.43	2.40	-4.06	
920.0	7.80	355.60	918.3	35.5	-4.9	9.2	1.08	1.05	-1.89	

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Well:	Challenger 2N (Nio C)	North Reference:	True
Wellbore:	Challenger 2N (Nio C) Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Challenger 2N (Nio C) 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)	
1,016.0	9.20	355.90	1,013.2	49.7	-5.9	12.0	1.46	1.46	0.31	
1,112.0	10.30	358.10	1,107.8	65.9	-6.7	14.9	1.21	1.15	2.29	
1,207.0	12.00	359.50	1,201.0	84.3	-7.1	17.5	1.81	1.79	1.47	
1,303.0	12.70	2.90	1,294.8	104.8	-6.7	19.6	1.05	0.73	3.54	
1,399.0	13.30	3.30	1,388.4	126.3	-5.5	21.2	0.63	0.63	0.42	
1,495.0	14.40	4.00	1,481.6	149.3	-4.0	22.5	1.16	1.15	0.73	
1,590.0	13.20	6.00	1,573.8	171.8	-2.1	23.4	1.36	-1.26	2.11	
1,633.0	12.40	6.10	1,615.7	181.3	-1.1	23.6	1.86	-1.86	0.23	
1,776.0	12.06	2.92	1,755.5	211.5	1.3	25.0	0.53	-0.24	-2.22	
1,872.0	13.27	7.67	1,849.2	232.4	3.3	25.6	1.66	1.26	4.95	
1,968.0	12.76	7.24	1,942.7	253.9	6.1	25.5	0.54	-0.53	-0.45	
2,062.0	14.08	15.00	2,034.1	275.2	10.4	23.9	2.37	1.40	8.26	
2,158.0	13.94	15.41	2,127.3	297.6	16.5	20.6	0.18	-0.15	0.43	
2,253.0	13.47	14.75	2,219.6	319.4	22.3	17.5	0.52	-0.49	-0.69	
2,348.0	13.07	13.77	2,312.0	340.5	27.7	14.8	0.48	-0.42	-1.03	
2,443.0	12.54	12.09	2,404.7	361.0	32.4	12.7	0.68	-0.56	-1.77	
2,539.0	11.76	12.46	2,498.5	380.8	36.7	10.9	0.82	-0.81	0.39	
2,635.0	12.54	16.17	2,592.4	400.3	41.7	8.3	1.15	0.81	3.86	
2,730.0	13.02	19.36	2,685.0	420.3	48.2	4.5	0.90	0.51	3.36	
2,826.0	13.05	19.26	2,778.6	440.8	55.3	-0.1	0.04	0.03	-0.10	
2,921.0	13.17	18.60	2,871.1	461.2	62.3	-4.5	0.20	0.13	-0.69	
3,042.0	12.57	17.60	2,989.0	486.8	70.7	-9.6	0.53	-0.50	-0.83	
3,137.0	12.08	18.40	3,081.8	506.1	76.9	-13.5	0.55	-0.52	0.84	
3,233.0	11.62	17.50	3,175.8	524.8	83.0	-17.2	0.52	-0.48	-0.94	
3,328.0	10.80	17.78	3,269.0	542.4	88.6	-20.5	0.87	-0.86	0.29	
3,424.0	10.18	17.89	3,363.4	559.0	94.0	-23.8	0.65	-0.65	0.11	
3,520.0	10.60	13.46	3,457.8	575.7	98.6	-26.3	0.94	0.44	-4.61	
3,615.0	10.82	7.79	3,551.2	593.0	101.9	-27.4	1.13	0.23	-5.97	
3,711.0	12.93	7.26	3,645.1	612.6	104.5	-27.5	2.20	2.20	-0.55	
3,806.0	13.37	5.21	3,737.6	634.1	106.8	-27.2	0.67	0.46	-2.16	
3,901.0	13.54	6.00	3,830.0	656.1	109.0	-26.6	0.26	0.18	0.83	
3,997.0	13.37	5.85	3,923.4	678.3	111.3	-26.1	0.18	-0.18	-0.16	
4,092.0	13.04	5.40	4,015.9	699.9	113.4	-25.5	0.36	-0.35	-0.47	
4,188.0	13.02	10.32	4,109.4	721.3	116.3	-25.8	1.16	-0.02	5.13	
4,284.0	12.62	8.81	4,203.0	742.3	119.9	-26.7	0.54	-0.42	-1.57	
4,379.0	12.10	8.35	4,295.8	762.4	122.9	-27.2	0.56	-0.55	-0.48	
4,474.0	12.55	8.71	4,388.6	782.5	125.9	-27.7	0.48	0.47	0.38	
4,665.0	12.01	14.62	4,575.2	822.2	134.1	-30.9	0.72	-0.28	3.09	
4,760.0	10.64	13.04	4,668.4	840.4	138.6	-33.0	1.48	-1.44	-1.66	
4,855.0	9.95	10.71	4,761.9	857.0	142.1	-34.5	0.85	-0.73	-2.45	
4,951.0	12.24	15.82	4,856.1	874.9	146.4	-36.5	2.59	2.39	5.32	
5,046.0	12.51	16.32	4,948.8	894.5	152.0	-39.7	0.31	0.28	0.53	
5,142.0	12.31	14.66	5,042.6	914.3	157.5	-42.7	0.43	-0.21	-1.73	
5,237.0	12.10	13.03	5,135.5	933.8	162.3	-45.0	0.42	-0.22	-1.72	

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5,332.0	11.58	12.70	5,228.4	952.8	166.7	-47.0	0.55	-0.55	-0.35	
5,428.0	7.95	27.07	5,323.0	968.2	171.8	-50.2	4.53	-3.78	14.97	
5,522.0	6.28	33.82	5,416.3	978.2	177.6	-54.7	1.98	-1.78	7.18	
5,617.0	5.97	32.66	5,510.8	986.7	183.2	-59.1	0.35	-0.33	-1.22	
5,712.0	5.47	32.94	5,605.3	994.7	188.3	-63.2	0.53	-0.53	0.29	
5,806.0	4.78	34.83	5,698.9	1,001.6	193.0	-67.0	0.76	-0.73	2.01	
5,901.0	4.55	33.82	5,793.6	1,008.0	197.4	-70.5	0.26	-0.24	-1.06	
5,996.0	1.06	18.97	5,888.5	1,012.0	199.8	-72.4	3.72	-3.67	-15.63	
6,091.0	0.59	314.75	5,983.5	1,013.2	199.7	-72.2	1.01	-0.49	-67.60	
6,187.0	0.46	329.76	6,079.5	1,013.8	199.1	-71.6	0.20	-0.14	15.64	
6,281.0	2.87	263.98	6,173.4	1,013.9	196.6	-69.1	2.89	2.56	-69.98	
6,376.0	10.82	275.03	6,267.7	1,014.4	185.3	-57.8	8.44	8.37	11.63	
6,471.0	14.75	268.70	6,360.3	1,015.0	164.4	-36.9	4.39	4.14	-6.66	
6,566.0	23.98	260.09	6,449.9	1,011.4	133.2	-6.4	10.14	9.72	-9.06	
6,660.0	35.12	262.32	6,531.5	1,004.4	87.4	38.1	11.91	11.85	2.37	
6,756.0	40.18	264.84	6,607.5	997.9	29.2	95.1	5.51	5.27	2.63	
6,851.0	45.91	265.45	6,676.9	992.5	-35.4	158.5	6.05	6.03	0.64	
6,946.0	50.50	264.17	6,740.2	986.0	-105.9	227.7	4.93	4.83	-1.35	
7,041.0	54.70	264.12	6,797.9	978.3	-181.0	301.2	4.42	4.42	-0.05	
7,081.9	59.96	267.07	6,820.0	975.7	-215.3	334.9	14.21	12.85	7.21	
TPZ - 60° in curve - 364'FNL & 2214'FWL										
7,136.0	67.00	270.52	6,844.1	974.8	-263.6	382.8	14.21	13.02	6.38	
7,231.0	77.17	273.88	6,873.3	978.3	-353.8	472.7	11.22	10.71	3.54	
7,326.0	81.39	275.02	6,891.0	985.5	-446.9	565.9	4.60	4.44	1.20	
7,421.0	91.39	272.98	6,896.9	992.1	-541.3	660.5	10.74	10.53	-2.15	
7,516.0	91.78	272.64	6,894.3	996.8	-636.2	755.2	0.54	0.41	-0.36	
7,611.0	88.63	271.51	6,894.0	1,000.2	-731.1	849.8	3.52	-3.32	-1.19	
7,706.0	88.41	271.44	6,896.4	1,002.7	-826.0	944.3	0.24	-0.23	-0.07	
7,802.0	88.01	271.21	6,899.4	1,004.9	-922.0	1,039.7	0.48	-0.42	-0.24	
7,897.0	87.72	271.36	6,903.0	1,007.0	-1,016.9	1,134.2	0.34	-0.31	0.16	
7,962.2	89.57	270.71	6,904.5	1,008.2	-1,082.0	1,199.0	3.00	2.83	-0.99	
Deepest TVD Drilled - 6904.5'										
7,992.0	90.41	270.42	6,904.5	1,008.5	-1,111.8	1,228.6	3.00	2.83	-0.99	
8,088.0	90.67	270.08	6,903.6	1,008.9	-1,207.8	1,323.9	0.45	0.27	-0.35	
8,183.0	90.52	270.18	6,902.6	1,009.1	-1,302.8	1,418.2	0.19	-0.16	0.11	
8,277.0	90.45	270.04	6,901.8	1,009.3	-1,396.8	1,511.5	0.17	-0.07	-0.15	
8,373.0	90.69	270.44	6,900.9	1,009.7	-1,492.8	1,606.8	0.49	0.25	0.42	
8,469.0	90.57	270.62	6,899.8	1,010.6	-1,588.8	1,702.1	0.23	-0.13	0.19	
8,564.0	90.61	270.47	6,898.8	1,011.5	-1,683.8	1,796.5	0.16	0.04	-0.16	
8,659.0	90.13	268.47	6,898.2	1,010.6	-1,778.8	1,890.6	2.17	-0.51	-2.11	
8,755.0	90.17	268.18	6,898.0	1,007.8	-1,874.8	1,985.5	0.30	0.04	-0.30	
8,850.0	90.01	267.81	6,897.8	1,004.5	-1,969.7	2,079.3	0.42	-0.17	-0.39	
8,945.0	89.71	267.34	6,898.0	1,000.5	-2,064.6	2,173.0	0.59	-0.32	-0.49	

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9,041.0	89.55	266.83	6,898.7	995.6	-2,160.5	2,267.5	0.56	-0.17	-0.53
9,137.0	89.71	266.49	6,899.3	990.0	-2,256.3	2,361.9	0.39	0.17	-0.35
9,233.0	89.45	265.99	6,900.0	983.7	-2,352.1	2,456.1	0.59	-0.27	-0.52
9,328.0	89.41	265.68	6,900.9	976.8	-2,446.9	2,549.3	0.33	-0.04	-0.33
9,423.0	90.78	268.35	6,900.8	971.9	-2,541.7	2,642.8	3.16	1.44	2.81
9,518.0	91.30	268.24	6,899.1	969.0	-2,636.7	2,736.7	0.56	0.55	-0.12
9,613.0	91.26	267.27	6,896.9	965.3	-2,731.6	2,830.4	1.02	-0.04	-1.02
9,709.0	90.59	266.25	6,895.4	959.9	-2,827.4	2,924.8	1.27	-0.70	-1.06
9,804.0	90.82	265.69	6,894.2	953.2	-2,922.1	3,018.0	0.64	0.24	-0.59
9,900.0	91.20	268.92	6,892.5	948.7	-3,018.0	3,112.5	3.39	0.40	3.36
9,995.0	91.16	269.55	6,890.6	947.4	-3,113.0	3,206.6	0.66	-0.04	0.66
10,091.0	90.42	271.83	6,889.2	948.6	-3,209.0	3,302.0	2.50	-0.77	2.38
10,186.0	90.00	271.48	6,888.9	951.3	-3,303.9	3,396.5	0.58	-0.44	-0.37
10,281.0	89.85	271.63	6,889.0	953.9	-3,398.9	3,491.1	0.22	-0.16	0.16
10,376.0	89.82	272.03	6,889.3	957.0	-3,493.8	3,585.7	0.42	-0.03	0.42
10,472.0	89.52	271.12	6,889.8	959.6	-3,589.8	3,681.2	1.00	-0.31	-0.95
10,567.0	90.33	272.44	6,890.0	962.5	-3,684.7	3,775.8	1.63	0.85	1.39
10,661.0	90.26	272.20	6,889.5	966.3	-3,778.7	3,869.5	0.27	-0.07	-0.26
10,757.0	90.24	271.85	6,889.1	969.7	-3,874.6	3,965.1	0.37	-0.02	-0.36
10,852.0	90.50	271.25	6,888.5	972.3	-3,969.6	4,059.6	0.69	0.27	-0.63
10,947.0	90.30	270.84	6,887.8	974.0	-4,064.6	4,154.1	0.48	-0.21	-0.43
11,043.0	88.58	270.69	6,888.7	975.3	-4,160.5	4,249.5	1.80	-1.79	-0.16
11,139.0	88.64	270.31	6,891.1	976.2	-4,256.5	4,344.8	0.40	0.06	-0.40
11,234.0	88.67	269.61	6,893.3	976.1	-4,351.5	4,439.1	0.74	0.03	-0.74
11,330.0	89.01	269.24	6,895.2	975.1	-4,447.5	4,534.2	0.52	0.35	-0.39
11,426.0	88.85	268.74	6,897.0	973.4	-4,543.4	4,629.2	0.55	-0.17	-0.52
11,520.0	89.17	268.32	6,898.6	971.0	-4,637.4	4,722.1	0.56	0.34	-0.45
11,616.0	89.76	268.10	6,899.5	968.0	-4,733.3	4,816.9	0.66	0.61	-0.23
11,712.0	89.97	267.69	6,899.8	964.5	-4,829.3	4,911.7	0.48	0.22	-0.43
11,807.0	90.28	267.20	6,899.6	960.3	-4,924.2	5,005.3	0.61	0.33	-0.52
11,902.0	90.33	269.69	6,899.1	957.7	-5,019.1	5,099.2	2.62	0.05	2.62
11,998.0	90.20	270.14	6,898.6	957.5	-5,115.1	5,194.5	0.49	-0.14	0.47
12,094.0	90.42	269.85	6,898.1	957.5	-5,211.1	5,289.7	0.38	0.23	-0.30
12,190.0	90.63	269.56	6,897.2	957.0	-5,307.1	5,384.9	0.37	0.22	-0.30
12,285.0	90.82	269.80	6,896.0	956.5	-5,402.1	5,479.1	0.32	0.20	0.25
12,380.0	91.04	269.96	6,894.5	956.3	-5,497.1	5,573.3	0.29	0.23	0.17
12,476.0	91.33	270.09	6,892.5	956.4	-5,593.1	5,668.6	0.33	0.30	0.14
12,572.0	91.13	269.70	6,890.4	956.2	-5,689.0	5,763.8	0.46	-0.21	-0.41
12,668.0	89.96	269.76	6,889.5	955.7	-5,785.0	5,859.0	1.22	-1.22	0.06
12,858.0	90.45	269.20	6,888.8	954.0	-5,975.0	6,047.3	0.39	0.26	-0.29
12,953.0	89.54	270.69	6,888.8	953.9	-6,070.0	6,141.5	1.84	-0.96	1.57
13,049.0	90.01	270.78	6,889.2	955.1	-6,166.0	6,236.9	0.50	0.49	0.09
13,144.0	90.67	270.37	6,888.7	956.1	-6,261.0	6,331.3	0.82	0.69	-0.43
13,240.0	91.16	269.81	6,887.1	956.2	-6,357.0	6,426.6	0.78	0.51	-0.58

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Challenger 2N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4798.0ft (Original Well Elev)
Site:	Challenger 4N64W8 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4798.0ft (Original Well Elev)
Well:	Challenger 2N (Nio C)	North Reference:	True
Wellbore:	Challenger 2N (Nio C) Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Challenger 2N (Nio C) Wellbore #1	Database:	US_EDM

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)
13,335.0	88.94	269.68	6,887.0	955.8	-6,452.0	6,520.8	2.34	-2.34	-0.14
13,431.0	88.97	269.35	6,888.8	955.0	-6,548.0	6,615.9	0.35	0.03	-0.34
13,526.0	89.17	268.84	6,890.3	953.5	-6,642.9	6,709.9	0.58	0.21	-0.54
13,622.0	89.53	268.16	6,891.4	951.0	-6,738.9	6,804.9	0.80	0.38	-0.71
13,716.0	89.56	267.56	6,892.2	947.5	-6,832.8	6,897.6	0.64	0.03	-0.64
13,811.0	89.65	266.93	6,892.8	942.9	-6,927.7	6,991.2	0.67	0.09	-0.66
13,907.0	89.87	266.47	6,893.2	937.4	-7,023.6	7,085.6	0.53	0.23	-0.48
14,002.0	90.04	266.03	6,893.3	931.2	-7,118.4	7,178.9	0.50	0.18	-0.46
14,098.0	90.26	265.64	6,893.0	924.2	-7,214.1	7,273.0	0.47	0.23	-0.41
14,200.0	90.26	265.64	6,892.6	916.5	-7,315.8	7,373.0	0.00	0.00	0.00

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL 1343'FNL & 2431'F - hit/miss target - Shape - Point	0.00	0.00	1.0	0.0	0.0	1,364,564.37	3,257,809.26	40.330440	-104.575260
BHL 345'FNL & 150'FWL - survey misses target center by 15.3ft at 14199.9ft MD (6892.6 TVD, 916.5 N, -7315.7 E) - Point	0.00	0.00	6,898.0	930.7	-7,316.8	1,365,418.71	3,250,483.50	40.332992	-104.601504

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,081.9	6,820.0	975.7	-215.3	TPZ - 60° in curve - 364'FNL & 2214'FWL
7,962.2	6,904.5	1,008.2	-1,082.0	Deepest TVD Drilled - 6904.5'

Checked By: _____ Approved By: _____ Date: _____