

# PDC Energy Inc. DJ Basin

Well Name: **Challenger 7N (Nio B)**

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

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

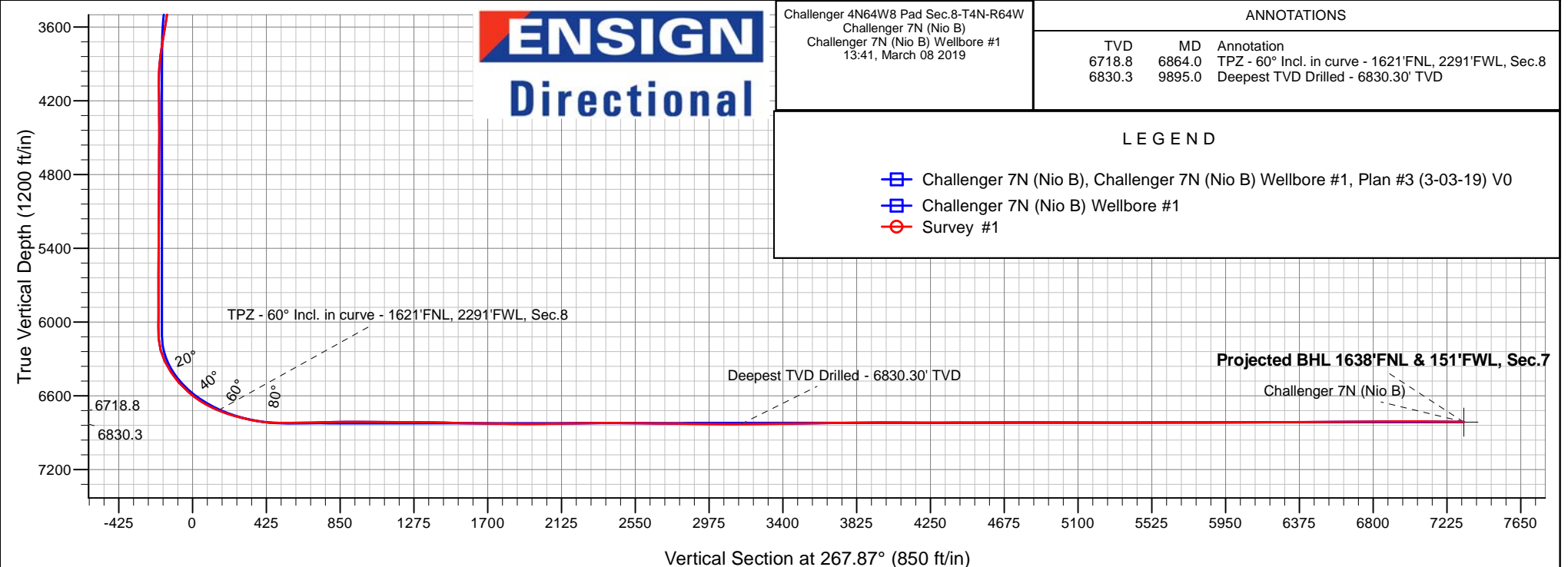
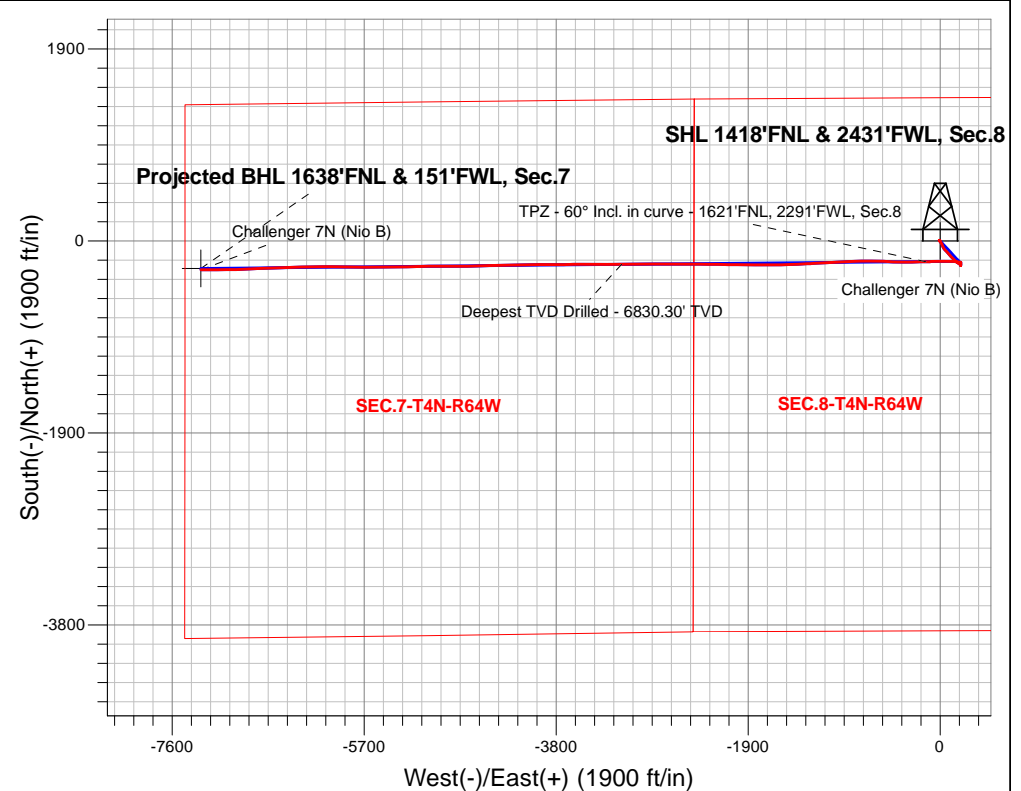
Ground Elevation: 4775.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1364487.86	3257810.05	40.330230	-104.575260	

WELL @ 4798.0ft

## FINAL SURVEY

**Projected Bottom Hole Location**  
**14,060'MD 6812'TVD 286'S & 7316'W of SHL**  
**89.24 degree Incl @ 269.55 degree AZM**





## **PDC Energy Inc. DJ Basin**

**SEC.8-T4N-R64W**

**Challenger 4N64W8 Pad Sec.8-T4N-R64W**

**Challenger 7N (Nio B)**

**Challenger 7N (Nio B) Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**08 March, 2019**

<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Challenger 7N (Nio B)
<b>Project:</b>	SEC.8-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4798.0ft
<b>Site:</b>	Challenger 4N64W8 Pad Sec.8-T4N-R64W	<b>MD Reference:</b>	WELL @ 4798.0ft
<b>Well:</b>	Challenger 7N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Challenger 7N (Nio B) Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Challenger 7N (Nio B) Wellbore #1	<b>Database:</b>	US_EDM

<b>Project</b>	SEC.8-T4N-R64W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	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 7N (Nio B)					
Well Position	+N/-S	0.0 ft	Northing:	1,364,487.86 usft	Latitude:	40.330230
	+E/-W	0.0 ft	Easting:	3,257,810.05 usft	Longitude:	-104.575260
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,775.0 ft

<b>Wellbore</b>	Challenger 7N (Nio B) Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	3/3/2019	7.71	66.75	52,302

<b>Design</b>	Challenger 7N (Nio B) Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	267.87	

<b>Survey Program</b>	<b>Date</b>	3/8/2019			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
155.0	14,060.0	Survey #1 (Challenger 7N (Nio B) Wellbor	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
1.0	0.00	269.30	1.0	0.0	0.0	0.0	0.32	0.32	0.00	
<b>SHL 1418'FNL &amp; 2431'FWL, Sec.8</b>										
155.0	0.50	269.30	155.0	0.0	-0.7	0.7	0.32	0.32	0.00	
250.0	0.50	247.10	250.0	-0.2	-1.5	1.5	0.20	0.00	-23.37	
345.0	0.50	248.40	345.0	-0.5	-2.2	2.3	0.01	0.00	1.37	
441.0	0.80	277.70	441.0	-0.6	-3.3	3.3	0.46	0.31	30.52	
536.0	0.70	283.30	536.0	-0.3	-4.5	4.5	0.13	-0.11	5.89	
631.0	0.70	288.30	631.0	0.0	-5.6	5.6	0.06	0.00	5.26	
726.0	0.80	297.30	726.0	0.5	-6.8	6.7	0.16	0.11	9.47	
821.0	0.80	315.50	821.0	1.2	-7.8	7.8	0.27	0.00	19.16	

<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Challenger 7N (Nio B)
<b>Project:</b>	SEC.8-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4798.0ft
<b>Site:</b>	Challenger 4N64W8 Pad Sec.8-T4N-R64W	<b>MD Reference:</b>	WELL @ 4798.0ft
<b>Well:</b>	Challenger 7N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Challenger 7N (Nio B) Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Challenger 7N (Nio B) Wellbore #1	<b>Database:</b>	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)
916.0	0.50	323.00	915.9	2.1	-8.5	8.5	0.33	-0.32	7.89
1,011.0	0.60	334.10	1,010.9	2.8	-9.0	8.9	0.15	0.11	11.68
1,106.0	0.70	351.80	1,105.9	3.9	-9.3	9.2	0.23	0.11	18.63
1,202.0	0.30	337.40	1,201.9	4.7	-9.5	9.3	0.43	-0.42	-15.00
1,297.0	0.60	180.90	1,296.9	4.4	-9.6	9.4	0.93	0.32	-164.74
1,392.0	2.00	134.80	1,391.9	2.7	-8.4	8.3	1.73	1.47	-48.53
1,487.0	2.50	138.20	1,486.8	0.0	-5.9	5.9	0.54	0.53	3.58
1,630.0	2.40	138.90	1,629.7	-4.6	-1.8	2.0	0.07	-0.07	0.49
1,771.0	2.81	127.31	1,770.6	-8.9	2.9	-2.5	0.47	0.29	-8.22
1,866.0	1.55	168.19	1,865.5	-11.6	5.0	-4.6	2.03	-1.33	43.03
1,961.0	4.87	156.82	1,960.3	-16.5	6.8	-6.2	3.54	3.49	-11.97
2,055.0	6.00	143.21	2,053.9	-24.1	11.4	-10.4	1.82	1.20	-14.48
2,149.0	6.54	157.14	2,147.4	-33.0	16.4	-15.1	1.71	0.57	14.82
2,244.0	6.69	156.22	2,241.7	-43.0	20.7	-19.1	0.19	0.16	-0.97
2,339.0	8.53	157.90	2,335.9	-54.6	25.6	-23.5	1.95	1.94	1.77
2,434.0	8.26	157.85	2,429.9	-67.5	30.8	-28.3	0.28	-0.28	-0.05
2,528.0	8.36	137.83	2,522.9	-78.8	37.9	-35.0	3.06	0.11	-21.30
2,624.0	8.14	136.66	2,617.9	-88.9	47.3	-44.0	0.29	-0.23	-1.22
2,719.0	7.86	135.71	2,712.0	-98.5	56.4	-52.8	0.33	-0.29	-1.00
2,814.0	9.57	138.55	2,805.9	-109.0	66.2	-62.1	1.86	1.80	2.99
2,909.0	11.36	138.83	2,899.3	-122.0	77.6	-73.0	1.88	1.88	0.29
3,005.0	11.04	137.76	2,993.5	-135.9	90.0	-84.9	0.40	-0.33	-1.11
3,101.0	10.93	137.27	3,087.7	-149.4	102.4	-96.7	0.15	-0.11	-0.51
3,196.0	10.38	137.87	3,181.1	-162.4	114.2	-108.1	0.59	-0.58	0.63
3,292.0	10.22	134.92	3,275.5	-174.8	126.0	-119.5	0.57	-0.17	-3.07
3,387.0	10.07	133.18	3,369.0	-186.4	138.1	-131.1	0.36	-0.16	-1.83
3,483.0	9.33	129.21	3,463.7	-197.1	150.2	-142.8	1.04	-0.77	-4.14
3,579.0	9.36	131.49	3,558.4	-207.2	162.1	-154.3	0.39	0.03	2.38
3,674.0	9.10	132.21	3,652.2	-217.3	173.4	-165.3	0.30	-0.27	0.76
3,770.0	7.37	117.02	3,747.2	-225.2	184.6	-176.1	2.88	-1.80	-15.82
3,866.0	5.32	105.83	3,842.6	-229.3	194.3	-185.7	2.48	-2.14	-11.66
3,962.0	2.80	98.63	3,938.3	-230.8	200.9	-192.2	2.67	-2.63	-7.50
4,058.0	1.01	189.57	4,034.3	-232.0	203.1	-194.4	3.12	-1.86	94.73
4,152.0	1.21	194.17	4,128.3	-233.8	202.7	-193.9	0.23	0.21	4.89
4,247.0	1.08	196.02	4,223.3	-235.6	202.2	-193.4	0.14	-0.14	1.95
4,343.0	0.92	188.13	4,319.2	-237.3	201.9	-192.9	0.22	-0.17	-8.22
4,438.0	0.86	179.95	4,414.2	-238.7	201.8	-192.8	0.15	-0.06	-8.61
4,533.0	0.73	177.16	4,509.2	-240.0	201.8	-192.8	0.14	-0.14	-2.94
4,629.0	0.79	168.37	4,605.2	-241.3	202.0	-192.9	0.14	0.06	-9.16
4,725.0	0.96	167.11	4,701.2	-242.7	202.3	-193.1	0.18	0.18	-1.31
4,820.0	1.13	171.32	4,796.2	-244.4	202.6	-193.4	0.20	0.18	4.43
4,915.0	2.22	11.75	4,891.2	-243.6	203.1	-193.9	3.48	1.15	-167.97
5,011.0	1.96	359.43	4,987.1	-240.1	203.5	-194.4	0.54	-0.27	-12.83

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<b>Site:</b>	Challenger 4N64W8 Pad Sec.8-T4N-R64W	<b>MD Reference:</b>	WELL @ 4798.0ft
<b>Well:</b>	Challenger 7N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Challenger 7N (Nio B) Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Challenger 7N (Nio B) Wellbore #1	<b>Database:</b>	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)
5,106.0	1.96	356.96	5,082.1	-236.8	203.4	-194.4	0.09	0.00	-2.60
5,202.0	1.93	2.17	5,178.0	-233.6	203.3	-194.5	0.19	-0.03	5.43
5,297.0	1.66	17.52	5,272.9	-230.7	203.8	-195.1	0.58	-0.28	16.16
5,393.0	1.64	8.55	5,368.9	-228.0	204.4	-195.8	0.27	-0.02	-9.34
5,489.0	1.49	12.31	5,464.9	-225.4	204.9	-196.4	0.19	-0.16	3.92
5,584.0	1.65	5.86	5,559.8	-222.9	205.3	-196.9	0.25	0.17	-6.79
5,680.0	1.39	357.74	5,655.8	-220.3	205.4	-197.1	0.35	-0.27	-8.46
5,775.0	1.64	347.93	5,750.8	-217.8	205.1	-196.9	0.38	0.26	-10.33
5,870.0	1.46	3.84	5,845.7	-215.3	204.9	-196.7	0.49	-0.19	16.75
5,966.0	0.90	2.43	5,941.7	-213.3	205.0	-196.9	0.58	-0.58	-1.47
6,061.0	0.61	13.66	6,036.7	-212.1	205.1	-197.1	0.34	-0.31	11.82
6,157.0	2.62	300.68	6,132.7	-210.5	203.4	-195.4	2.61	2.09	-76.02
6,253.0	10.93	272.51	6,227.9	-208.9	192.4	-184.5	9.07	8.66	-29.34
6,348.0	18.66	277.67	6,319.7	-206.5	168.3	-160.5	8.25	8.14	5.43
6,444.0	25.50	270.59	6,408.6	-204.3	132.3	-124.7	7.63	7.13	-7.38
6,539.0	31.97	271.35	6,491.9	-203.5	86.7	-79.1	6.82	6.81	0.80
6,634.0	38.72	271.44	6,569.3	-202.1	31.8	-24.3	7.11	7.11	0.09
6,729.0	46.86	267.49	6,639.0	-202.9	-32.7	40.2	9.02	8.57	-4.16
6,825.0	56.71	269.55	6,698.3	-204.7	-108.0	115.5	10.40	10.26	2.15
6,864.0	60.00	269.02	6,718.8	-205.2	-141.2	148.7	8.51	8.43	-1.36
TPZ - 60° Incl. in curve - 1621'FNL, 2291'FWL, Sec.8									
6,920.0	64.72	268.32	6,744.8	-206.3	-190.7	198.3	8.51	8.43	-1.25
7,016.0	70.58	268.48	6,781.3	-208.8	-279.4	287.0	6.11	6.10	0.17
7,111.0	77.36	270.53	6,807.5	-209.5	-370.7	378.2	7.43	7.14	2.16
7,206.0	87.43	272.99	6,820.0	-206.6	-464.7	472.0	10.91	10.60	2.59
7,273.8	89.97	272.99	6,821.6	-203.1	-532.3	539.5	3.75	3.75	0.00
LPL 1624'FNL & 1900'FWL, Sec.8									
7,302.0	91.03	272.99	6,821.3	-201.6	-560.5	567.6	3.75	3.75	0.00
7,426.0	91.75	269.43	6,818.3	-199.0	-684.4	691.4	2.93	0.58	-2.87
7,521.0	91.75	268.48	6,815.4	-200.7	-779.4	786.3	1.00	0.00	-1.00
7,616.0	91.53	267.36	6,812.7	-204.2	-874.3	881.3	1.20	-0.23	-1.18
7,710.0	89.31	267.76	6,812.0	-208.2	-968.2	975.2	2.40	-2.36	0.43
7,805.0	88.98	267.28	6,813.4	-212.3	-1,063.1	1,070.2	0.61	-0.35	-0.51
7,900.0	89.31	267.07	6,814.8	-217.0	-1,158.0	1,165.2	0.41	0.35	-0.22
7,995.0	90.06	266.63	6,815.4	-222.2	-1,252.8	1,260.2	0.92	0.79	-0.46
8,090.0	88.52	267.95	6,816.5	-226.7	-1,347.7	1,355.2	2.13	-1.62	1.39
8,185.0	88.34	266.94	6,819.1	-230.9	-1,442.6	1,450.1	1.08	-0.19	-1.06
8,280.0	88.36	267.18	6,821.9	-235.8	-1,537.4	1,545.1	0.25	0.02	0.25
8,375.0	88.38	270.89	6,824.6	-237.4	-1,632.3	1,640.0	3.90	0.02	3.91
8,469.0	88.56	270.47	6,827.1	-236.3	-1,726.3	1,733.9	0.49	0.19	-0.45
8,565.0	89.43	270.43	6,828.8	-235.5	-1,822.3	1,829.8	0.91	0.91	-0.04
8,659.0	89.92	270.64	6,829.3	-234.7	-1,916.3	1,923.7	0.57	0.52	0.22
8,754.0	90.83	270.40	6,828.7	-233.8	-2,011.3	2,018.5	0.99	0.96	-0.25
8,849.0	91.05	270.30	6,827.1	-233.2	-2,106.2	2,113.4	0.25	0.23	-0.11

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<b>Site:</b>	Challenger 4N64W8 Pad Sec.8-T4N-R64W	<b>MD Reference:</b>	WELL @ 4798.0ft
<b>Well:</b>	Challenger 7N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Challenger 7N (Nio B) Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Challenger 7N (Nio B) Wellbore #1	<b>Database:</b>	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)
8,944.0	91.58	270.50	6,824.9	-232.5	-2,201.2	2,208.3	0.60	0.56	0.21
9,039.0	91.88	270.34	6,822.1	-231.8	-2,296.2	2,303.2	0.36	0.32	-0.17
9,135.0	89.13	270.71	6,821.2	-231.0	-2,392.2	2,399.1	2.89	-2.86	0.39
9,229.0	89.14	270.36	6,822.6	-230.1	-2,486.1	2,493.0	0.37	0.01	-0.37
9,324.0	89.29	270.46	6,824.0	-229.4	-2,581.1	2,587.9	0.19	0.16	0.11
9,419.0	89.03	270.07	6,825.3	-229.0	-2,676.1	2,682.8	0.49	-0.27	-0.41
9,514.0	89.17	269.77	6,826.8	-229.1	-2,771.1	2,777.7	0.35	0.15	-0.32
9,610.0	89.15	269.64	6,828.2	-229.6	-2,867.1	2,873.6	0.14	-0.02	-0.14
9,705.0	89.43	269.34	6,829.4	-230.4	-2,962.1	2,968.6	0.43	0.29	-0.32
9,800.0	89.54	269.39	6,830.3	-231.5	-3,057.1	3,063.6	0.13	0.12	0.05
9,895.0	90.43	270.40	6,830.3	-231.7	-3,152.1	3,158.5	1.42	0.94	1.06
Deepest TVD Drilled - 6830.30' TVD									
9,991.0	90.73	270.07	6,829.3	-231.3	-3,248.1	3,254.4	0.46	0.31	-0.34
10,086.0	90.74	269.86	6,828.1	-231.3	-3,343.1	3,349.3	0.22	0.01	-0.22
10,181.0	90.71	269.73	6,826.9	-231.7	-3,438.0	3,444.3	0.14	-0.03	-0.14
10,276.0	91.20	269.72	6,825.3	-232.1	-3,533.0	3,539.2	0.52	0.52	-0.01
10,371.0	91.58	269.61	6,823.0	-232.7	-3,628.0	3,634.1	0.42	0.40	-0.12
10,467.0	91.92	269.44	6,820.1	-233.5	-3,724.0	3,730.1	0.40	0.35	-0.18
10,563.0	90.33	269.91	6,818.2	-234.0	-3,819.9	3,826.0	1.73	-1.66	0.49
10,658.0	89.82	269.77	6,818.1	-234.3	-3,914.9	3,920.9	0.56	-0.54	-0.15
10,753.0	89.62	269.49	6,818.5	-234.9	-4,009.9	4,015.9	0.36	-0.21	-0.29
10,848.0	89.87	269.17	6,819.0	-236.0	-4,104.9	4,110.8	0.43	0.26	-0.34
10,944.0	89.76	268.75	6,819.3	-237.8	-4,200.9	4,206.8	0.45	-0.11	-0.44
11,039.0	90.12	268.78	6,819.4	-239.8	-4,295.9	4,301.8	0.38	0.38	0.03
11,135.0	90.36	268.48	6,819.0	-242.1	-4,391.9	4,397.8	0.40	0.25	-0.31
11,231.0	90.29	267.98	6,818.4	-245.1	-4,487.8	4,493.8	0.53	-0.07	-0.52
11,326.0	90.64	267.84	6,817.7	-248.5	-4,582.7	4,588.8	0.40	0.37	-0.15
11,421.0	90.47	269.59	6,816.7	-250.7	-4,677.7	4,683.8	1.85	-0.18	1.84
11,516.0	89.50	270.18	6,816.8	-250.9	-4,772.7	4,778.7	1.20	-1.02	0.62
11,612.0	89.47	269.99	6,817.6	-250.7	-4,868.7	4,874.6	0.20	-0.03	-0.20
11,707.0	89.80	269.91	6,818.2	-250.8	-4,963.7	4,969.6	0.36	0.35	-0.08
11,803.0	89.73	269.67	6,818.6	-251.1	-5,059.7	5,065.5	0.26	-0.07	-0.25
11,898.0	89.98	269.16	6,818.9	-252.1	-5,154.7	5,160.5	0.60	0.26	-0.54
11,994.0	90.23	268.92	6,818.7	-253.7	-5,250.7	5,256.5	0.36	0.26	-0.25
12,089.0	90.39	268.18	6,818.2	-256.1	-5,345.6	5,351.5	0.80	0.17	-0.78
12,184.0	90.36	267.95	6,817.6	-259.3	-5,440.6	5,446.5	0.24	-0.03	-0.24
12,280.0	89.97	269.98	6,817.3	-261.1	-5,536.6	5,542.4	2.15	-0.41	2.11
12,375.0	89.82	271.03	6,817.5	-260.2	-5,631.6	5,637.3	1.12	-0.16	1.11
12,470.0	89.91	271.15	6,817.7	-258.4	-5,726.5	5,732.2	0.16	0.09	0.13
12,565.0	89.85	270.65	6,817.9	-256.9	-5,821.5	5,827.1	0.53	-0.06	-0.53
12,660.0	90.17	270.50	6,817.9	-256.0	-5,916.5	5,922.0	0.37	0.34	-0.16
12,755.0	90.10	270.10	6,817.6	-255.5	-6,011.5	6,016.9	0.43	-0.07	-0.42
12,850.0	90.82	269.70	6,816.9	-255.6	-6,106.5	6,111.8	0.87	0.76	-0.42

<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Challenger 7N (Nio B)
<b>Project:</b>	SEC.8-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4798.0ft
<b>Site:</b>	Challenger 4N64W8 Pad Sec.8-T4N-R64W	<b>MD Reference:</b>	WELL @ 4798.0ft
<b>Well:</b>	Challenger 7N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Challenger 7N (Nio B) Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Challenger 7N (Nio B) Wellbore #1	<b>Database:</b>	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)	
12,946.0	91.05	268.86	6,815.3	-256.9	-6,202.5	6,207.8	0.91	0.24	-0.88	
13,041.0	91.35	268.71	6,813.3	-258.9	-6,297.5	6,302.7	0.35	0.32	-0.16	
13,137.0	89.45	268.56	6,812.6	-261.2	-6,393.4	6,398.7	1.99	-1.98	-0.16	
13,232.0	89.98	268.20	6,813.1	-263.8	-6,488.4	6,493.7	0.67	0.56	-0.38	
13,328.0	90.29	268.01	6,812.9	-267.0	-6,584.3	6,589.7	0.38	0.32	-0.20	
13,424.0	90.49	267.96	6,812.2	-270.4	-6,680.3	6,685.7	0.21	0.21	-0.05	
13,519.0	90.73	267.23	6,811.2	-274.4	-6,775.2	6,780.7	0.81	0.25	-0.77	
13,614.0	90.80	266.90	6,810.0	-279.2	-6,870.0	6,875.7	0.36	0.07	-0.35	
13,710.0	90.17	269.20	6,809.1	-282.5	-6,966.0	6,971.7	2.48	-0.66	2.40	
13,806.0	89.49	269.62	6,809.4	-283.5	-7,062.0	7,067.6	0.83	-0.71	0.44	
13,900.0	89.38	269.26	6,810.4	-284.4	-7,156.0	7,161.6	0.40	-0.12	-0.38	
13,996.0	89.24	269.55	6,811.5	-285.4	-7,252.0	7,257.5	0.34	-0.15	0.30	
14,060.0	89.24	269.55	6,812.4	-285.9	-7,315.9	7,321.5	0.00	0.00	0.00	
Projected BHL 1638'FNL & 151'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 1418'FNL & 2431'F'	0.00	0.00	1.0	0.0	0.0	1,364,487.88	3,257,810.05	40.330230	-104.575260	
- survey hits target center										
- Point										
Projected BHL 1638'FNL	0.00	0.00	6,815.0	-271.6	-7,316.9	1,364,140.04	3,250,496.68	40.329482	-104.601503	
- survey misses target center by 14.6ft at 14060.0ft MD (6812.4 TVD, -285.9 N, -7315.9 E)										
- Point										

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
6,864.0	6,718.8	-205.2	-141.2	TPZ - 60° Incl. in curve - 1621'FNL, 2291'FWL, Sec.8	
9,895.0	6,830.3	-231.7	-3,152.1	Deepest TVD Drilled - 6830.30' TVD	

Checked By: _____	Approved By: _____	Date: _____
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