

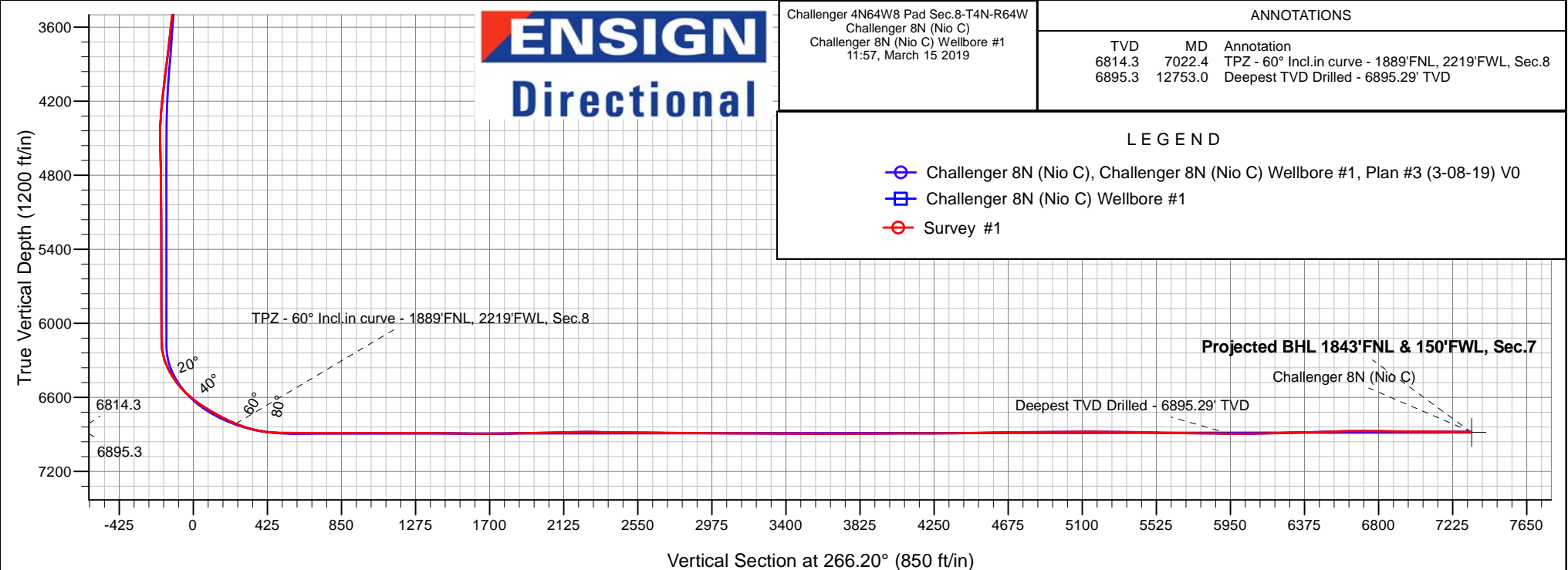
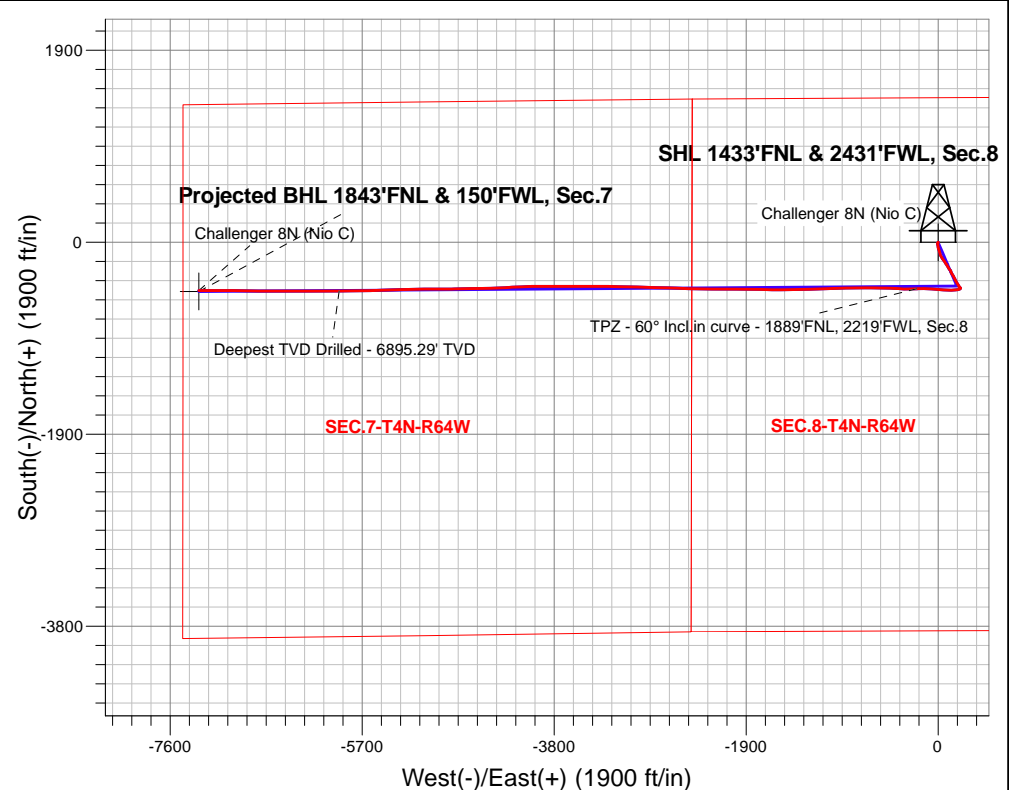
PDC Energy Inc. DJ Basin

Well Name: **Challenger 8N (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 0.0364473.23257810.20 40.330190 -104.575260
WELL @ 4798.0ft

FINAL SURVEY

Projected Bottom Hole Location
14,142'MD 6881'TVD 476'S & 7317'W of SHL
89.06 degree Incl @ 269.63 degree AZM





PDC Energy Inc. DJ Basin

SEC.8-T4N-R64W

Challenger 4N64W8 Pad Sec.8-T4N-R64W

Challenger 8N (Nio C)

Challenger 8N (Nio C) Wellbore #1

Survey: Survey #1

Standard Survey Report

15 March, 2019

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Challenger 8N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4798.0ft
Site:	Challenger 4N64W8 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4798.0ft
Well:	Challenger 8N (Nio C)	North Reference:	True
Wellbore:	Challenger 8N (Nio C) Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Challenger 8N (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 8N (Nio C)					
Well Position	+N/-S	0.0 ft	Northing:	1,364,473.29 usft	Latitude:	40.330190
	+E/-W	0.0 ft	Easting:	3,257,810.21 usft	Longitude:	-104.575260
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,775.0 ft

Wellbore	Challenger 8N (Nio C) Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	3/8/2019	8.17	66.82	52,167

Design	Challenger 8N (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	266.20	

Survey Program	Date	3/15/2019			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
154.0	14,142.0	Survey #1 (Challenger 8N (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	
1.0	0.00	229.30	1.0	0.0	0.0	0.0	0.32	0.32	0.00	
SHL 1433'FNL & 2431'FWL, Sec.8										
154.0	0.50	229.30	154.0	-0.4	-0.5	0.5	0.32	0.32	0.00	
250.0	0.50	210.60	250.0	-1.1	-1.0	1.1	0.17	0.00	-19.48	
345.0	0.60	177.80	345.0	-1.9	-1.2	1.4	0.34	0.11	-34.53	
440.0	0.40	205.40	440.0	-2.7	-1.4	1.5	0.32	-0.21	29.05	
535.0	0.70	219.80	535.0	-3.5	-1.9	2.1	0.35	0.32	15.16	
630.0	0.70	183.80	630.0	-4.5	-2.3	2.6	0.46	0.00	-37.89	
725.0	0.90	231.50	725.0	-5.5	-2.9	3.3	0.71	0.21	50.21	
820.0	0.80	232.70	820.0	-6.4	-4.0	4.4	0.11	-0.11	1.26	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Challenger 8N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4798.0ft
Site:	Challenger 4N64W8 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4798.0ft
Well:	Challenger 8N (Nio C)	North Reference:	True
Wellbore:	Challenger 8N (Nio C) Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Challenger 8N (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)
916.0	0.70	229.50	915.9	-7.2	-5.0	5.5	0.11	-0.10	-3.33
1,010.0	2.20	191.80	1,009.9	-9.3	-5.8	6.4	1.81	1.60	-40.11
1,106.0	3.00	174.60	1,105.8	-13.6	-5.9	6.8	1.16	0.83	-17.92
1,201.0	1.80	168.50	1,200.7	-17.6	-5.4	6.6	1.29	-1.26	-6.42
1,296.0	2.30	169.50	1,295.7	-20.9	-4.8	6.1	0.53	0.53	1.05
1,392.0	3.90	173.20	1,391.5	-26.0	-4.0	5.7	1.68	1.67	3.85
1,486.0	3.80	169.70	1,485.3	-32.3	-3.1	5.2	0.27	-0.11	-3.72
1,581.0	3.40	174.70	1,580.1	-38.2	-2.3	4.8	0.53	-0.42	5.26
1,770.0	3.66	165.76	1,768.8	-49.6	-0.3	3.6	0.32	0.14	-4.73
1,865.0	8.83	168.66	1,863.2	-59.7	1.9	2.0	5.45	5.44	3.05
1,960.0	11.32	161.20	1,956.7	-75.7	6.4	-1.3	2.95	2.62	-7.85
2,054.0	11.60	160.66	2,048.8	-93.3	12.5	-6.2	0.32	0.30	-0.57
2,243.0	10.92	164.54	2,234.2	-128.5	23.5	-15.0	0.54	-0.36	2.05
2,338.0	13.09	146.54	2,327.1	-146.2	31.9	-22.1	4.53	2.28	-18.95
2,527.0	10.12	142.91	2,512.3	-177.3	53.7	-41.8	1.62	-1.57	-1.92
2,622.0	9.52	145.17	2,605.9	-190.4	63.2	-50.4	0.75	-0.63	2.38
2,718.0	9.93	148.44	2,700.5	-204.0	72.1	-58.4	0.72	0.43	3.41
2,813.0	9.99	149.51	2,794.1	-218.0	80.5	-65.9	0.20	0.06	1.13
3,004.0	9.78	148.16	2,982.2	-246.1	97.5	-81.0	0.16	-0.11	-0.71
3,100.0	9.66	144.68	3,076.9	-259.6	106.5	-89.0	0.62	-0.13	-3.63
3,195.0	9.22	142.08	3,170.6	-272.1	115.7	-97.5	0.64	-0.46	-2.74
3,291.0	11.18	157.61	3,265.1	-286.8	124.0	-104.7	3.50	2.04	16.18
3,386.0	10.40	153.76	3,358.4	-303.0	131.3	-110.9	1.12	-0.82	-4.05
3,578.0	8.71	144.70	3,547.7	-330.4	147.4	-125.2	1.18	-0.88	-4.72
3,674.0	11.42	153.78	3,642.2	-344.9	155.8	-132.6	3.26	2.82	9.46
3,769.0	11.65	153.28	3,735.3	-361.9	164.2	-139.9	0.26	0.24	-0.53
3,865.0	11.39	151.92	3,829.4	-378.9	173.1	-147.6	0.39	-0.27	-1.42
3,961.0	11.48	150.80	3,923.5	-395.6	182.2	-155.6	0.25	0.09	-1.17
4,057.0	11.10	150.76	4,017.6	-412.0	191.4	-163.6	0.40	-0.40	-0.04
4,151.0	10.51	148.56	4,110.0	-427.2	200.3	-171.5	0.77	-0.63	-2.34
4,246.0	7.92	141.47	4,203.7	-439.7	208.9	-179.3	2.97	-2.73	-7.46
4,342.0	4.24	136.47	4,299.2	-447.5	215.4	-185.3	3.87	-3.83	-5.21
4,437.0	3.17	126.70	4,394.0	-451.6	219.9	-189.5	1.30	-1.13	-10.28
4,532.0	0.86	244.29	4,488.9	-453.5	221.4	-190.9	3.84	-2.43	123.78
4,628.0	0.91	258.84	4,584.9	-453.9	220.0	-189.5	0.24	0.05	15.16
4,724.0	0.80	275.27	4,680.9	-454.0	218.6	-188.0	0.28	-0.11	17.11
4,819.0	0.62	244.57	4,775.9	-454.2	217.5	-186.9	0.44	-0.19	-32.32
4,914.0	0.71	326.40	4,870.9	-453.9	216.7	-186.1	0.92	0.09	86.14
5,010.0	0.49	319.75	4,966.9	-453.1	216.1	-185.6	0.24	-0.23	-6.93
5,201.0	0.10	343.25	5,157.9	-452.3	215.5	-185.1	0.21	-0.20	12.30
5,392.0	0.34	220.65	5,348.9	-452.6	215.1	-184.6	0.21	0.13	-64.19
5,488.0	0.73	188.08	5,444.9	-453.4	214.8	-184.3	0.50	0.41	-33.93
5,584.0	0.95	194.64	5,540.9	-454.8	214.5	-183.9	0.25	0.23	6.83

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Site:	Challenger 4N64W8 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4798.0ft
Well:	Challenger 8N (Nio C)	North Reference:	True
Wellbore:	Challenger 8N (Nio C) Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Challenger 8N (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)
5,679.0	1.01	181.91	5,635.9	-456.4	214.3	-183.6	0.24	0.06	-13.40
5,774.0	0.85	169.21	5,730.8	-457.9	214.4	-183.6	0.27	-0.17	-13.37
5,869.0	0.88	169.51	5,825.8	-459.3	214.7	-183.8	0.03	0.03	0.32
6,060.0	0.46	217.37	6,016.8	-461.4	214.5	-183.4	0.35	-0.22	25.06
6,156.0	0.26	105.86	6,112.8	-461.7	214.5	-183.4	0.63	-0.21	-116.16
6,252.0	4.09	251.43	6,208.7	-462.9	211.4	-180.3	4.49	3.99	151.64
6,347.0	14.20	259.52	6,302.4	-466.1	196.7	-165.4	10.70	10.64	8.52
6,443.0	21.45	263.50	6,393.7	-470.2	167.7	-136.1	7.65	7.55	4.15
6,538.0	27.89	267.02	6,480.0	-473.3	128.2	-96.5	6.95	6.78	3.71
6,634.0	35.78	274.13	6,561.6	-472.5	77.7	-46.2	9.09	8.22	7.41
6,728.0	45.69	276.04	6,632.7	-467.0	16.6	14.3	10.62	10.54	2.03
6,824.0	48.84	275.44	6,697.8	-459.9	-53.5	83.9	3.31	3.28	-0.63
6,919.0	53.46	270.20	6,757.4	-456.4	-127.3	157.3	6.49	4.86	-5.52
7,015.0	59.34	267.25	6,810.6	-458.2	-207.2	237.1	6.64	6.13	-3.07
7,022.4	60.00	267.45	6,814.3	-458.5	-213.6	243.5	9.17	8.85	2.76
TPZ - 60° Incl.in curve - 1889'FNL, 2219'FWL, Sec.8									
7,110.0	67.77	269.69	6,852.8	-460.4	-292.2	322.0	9.17	8.88	2.55
7,205.0	79.68	273.44	6,879.4	-457.9	-383.2	412.7	13.09	12.54	3.95
7,301.0	89.46	272.01	6,888.5	-453.3	-478.5	507.5	10.29	10.19	-1.49
7,355.5	89.76	271.52	6,888.9	-451.7	-533.0	561.7	1.05	0.56	-0.89
LPL 1868'FNL & 1900'FWL, Sec.8									
7,396.0	89.99	271.16	6,888.9	-450.7	-573.5	602.1	1.05	0.56	-0.89
7,491.0	89.69	270.65	6,889.2	-449.2	-668.4	696.7	0.62	-0.32	-0.54
7,614.0	89.91	269.07	6,889.6	-449.5	-791.4	819.5	1.30	0.18	-1.28
7,708.0	89.33	268.28	6,890.3	-451.7	-885.4	913.4	1.04	-0.62	-0.84
7,803.0	90.19	268.65	6,890.7	-454.2	-980.4	1,008.3	0.99	0.91	0.39
7,898.0	90.43	268.88	6,890.1	-456.3	-1,075.3	1,103.2	0.35	0.25	0.24
7,993.0	90.20	268.29	6,889.6	-458.6	-1,170.3	1,198.1	0.67	-0.24	-0.62
8,088.0	89.55	267.45	6,889.8	-462.2	-1,265.3	1,293.1	1.12	-0.68	-0.88
8,183.0	88.96	268.46	6,891.1	-465.5	-1,360.2	1,388.0	1.23	-0.62	1.06
8,278.0	88.90	269.57	6,892.8	-467.2	-1,455.1	1,482.9	1.17	-0.06	1.17
8,373.0	88.89	269.30	6,894.7	-468.1	-1,550.1	1,577.7	0.28	-0.01	-0.28
8,467.0	90.53	270.95	6,895.1	-467.9	-1,644.1	1,671.5	2.47	1.74	1.76
8,563.0	91.04	271.14	6,893.8	-466.2	-1,740.1	1,767.2	0.57	0.53	0.20
8,657.0	91.37	270.92	6,891.9	-464.5	-1,834.1	1,860.8	0.42	0.35	-0.23
8,752.0	91.47	270.56	6,889.5	-463.2	-1,929.0	1,955.5	0.39	0.11	-0.38
8,847.0	91.75	269.98	6,886.8	-462.8	-2,024.0	2,050.2	0.68	0.29	-0.61
8,943.0	92.02	269.69	6,883.7	-463.1	-2,119.9	2,146.0	0.41	0.28	-0.30
9,037.0	90.52	270.93	6,881.6	-462.6	-2,213.9	2,239.7	2.07	-1.60	1.32
9,133.0	88.87	270.44	6,882.1	-461.4	-2,309.9	2,335.4	1.79	-1.72	-0.51
9,227.0	88.92	271.65	6,883.9	-459.7	-2,403.9	2,429.0	1.29	0.05	1.29
9,323.0	89.22	272.05	6,885.5	-456.6	-2,499.8	2,524.6	0.52	0.31	0.42
9,418.0	89.19	271.97	6,886.8	-453.3	-2,594.7	2,619.1	0.09	-0.03	-0.08
9,512.0	89.20	272.04	6,888.1	-450.0	-2,688.7	2,712.6	0.08	0.01	0.07

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Well:	Challenger 8N (Nio C)	North Reference:	True
Wellbore:	Challenger 8N (Nio C) Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Challenger 8N (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)
9,608.0	89.52	271.90	6,889.2	-446.7	-2,784.6	2,808.1	0.36	0.33	-0.15
9,799.0	89.37	271.26	6,891.0	-441.4	-2,975.5	2,998.2	0.34	-0.08	-0.34
9,893.0	89.43	271.05	6,892.0	-439.5	-3,069.5	3,091.9	0.23	0.06	-0.22
9,989.0	89.50	270.76	6,892.9	-438.0	-3,165.5	3,187.5	0.31	0.07	-0.30
10,084.0	89.55	270.58	6,893.7	-436.9	-3,260.5	3,282.2	0.20	0.05	-0.19
10,179.0	90.06	270.29	6,894.0	-436.2	-3,355.5	3,377.0	0.62	0.54	-0.31
10,274.0	89.86	270.16	6,894.1	-435.8	-3,450.5	3,471.8	0.25	-0.21	-0.14
10,369.0	89.90	270.01	6,894.3	-435.7	-3,545.5	3,566.5	0.16	0.04	-0.16
10,465.0	90.00	269.95	6,894.4	-435.7	-3,641.5	3,662.3	0.12	0.10	-0.06
10,561.0	89.86	270.15	6,894.5	-435.6	-3,737.5	3,758.1	0.25	-0.15	0.21
10,656.0	90.30	269.94	6,894.4	-435.5	-3,832.5	3,852.9	0.51	0.46	-0.22
10,751.0	90.48	270.24	6,893.7	-435.4	-3,927.5	3,947.7	0.37	0.19	0.32
10,846.0	90.13	268.57	6,893.2	-436.4	-4,022.4	4,042.5	1.80	-0.37	-1.76
10,942.0	90.18	267.79	6,892.9	-439.4	-4,118.4	4,138.5	0.81	0.05	-0.81
11,038.0	90.32	266.98	6,892.5	-443.8	-4,214.3	4,234.4	0.86	0.15	-0.84
11,133.0	90.33	265.76	6,892.0	-449.8	-4,309.1	4,329.4	1.28	0.01	-1.28
11,229.0	91.49	269.14	6,890.5	-454.1	-4,405.0	4,425.4	3.72	1.21	3.52
11,324.0	90.92	269.48	6,888.5	-455.2	-4,499.9	4,520.2	0.70	-0.60	0.36
11,420.0	90.99	269.13	6,886.9	-456.4	-4,595.9	4,616.1	0.37	0.07	-0.36
11,610.0	91.50	267.92	6,882.7	-461.3	-4,785.8	4,805.9	0.69	0.27	-0.64
11,705.0	90.60	270.04	6,881.0	-463.0	-4,880.8	4,900.7	2.42	-0.95	2.23
11,801.0	90.81	269.78	6,879.8	-463.1	-4,976.8	4,996.5	0.35	0.22	-0.27
11,896.0	90.97	269.17	6,878.3	-464.0	-5,071.8	5,091.4	0.66	0.17	-0.64
11,992.0	88.73	269.47	6,878.6	-465.1	-5,167.7	5,187.2	2.35	-2.33	0.31
12,182.0	88.24	268.83	6,883.6	-467.9	-5,357.7	5,376.9	0.42	-0.26	-0.34
12,278.0	88.68	268.09	6,886.2	-470.5	-5,453.6	5,472.8	0.90	0.46	-0.77
12,373.0	88.79	267.17	6,888.3	-474.5	-5,548.5	5,567.7	0.98	0.12	-0.97
12,468.0	89.46	268.58	6,889.7	-478.0	-5,643.4	5,662.7	1.64	0.71	1.48
12,563.0	88.65	269.79	6,891.3	-479.3	-5,738.4	5,757.5	1.53	-0.85	1.27
12,658.0	88.75	269.18	6,893.5	-480.2	-5,833.3	5,852.3	0.65	0.11	-0.64
12,753.0	89.05	268.75	6,895.3	-481.9	-5,928.3	5,947.2	0.55	0.32	-0.45
Deepest TVD Drilled - 6895.29' TVD									
12,848.0	91.24	270.31	6,895.0	-482.7	-6,023.3	6,042.0	2.83	2.31	1.64
12,944.0	91.87	270.13	6,892.4	-482.3	-6,119.3	6,137.8	0.68	0.66	-0.19
13,039.0	92.21	270.08	6,889.1	-482.1	-6,214.2	6,232.5	0.36	0.36	-0.05
13,135.0	91.94	269.61	6,885.6	-482.4	-6,310.1	6,328.2	0.56	-0.28	-0.49
13,231.0	92.09	269.16	6,882.2	-483.4	-6,406.1	6,424.0	0.49	0.16	-0.47
13,422.0	92.07	270.45	6,875.3	-484.1	-6,596.9	6,614.5	0.68	-0.01	0.68
13,517.0	89.83	271.77	6,873.7	-482.2	-6,691.9	6,709.1	2.74	-2.36	1.39
13,613.0	89.10	271.15	6,874.6	-479.8	-6,787.9	6,804.7	1.00	-0.76	-0.65
13,708.0	89.27	271.11	6,875.9	-477.9	-6,882.8	6,899.4	0.18	0.18	-0.04
13,804.0	89.46	270.80	6,877.0	-476.3	-6,978.8	6,995.0	0.38	0.20	-0.32
13,899.0	89.45	270.31	6,877.9	-475.4	-7,073.8	7,089.8	0.52	-0.01	-0.52

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Challenger 8N (Nio C)
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4798.0ft
Site:	Challenger 4N64W8 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4798.0ft
Well:	Challenger 8N (Nio C)	North Reference:	True
Wellbore:	Challenger 8N (Nio C) Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Challenger 8N (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)
13,994.0	89.25	269.85	6,879.0	-475.3	-7,168.8	7,184.5	0.53	-0.21	-0.48
14,084.0	89.06	269.63	6,880.3	-475.7	-7,258.8	7,274.4	0.32	-0.21	-0.24
14,142.0	89.06	269.63	6,881.3	-476.0	-7,316.8	7,332.2	0.00	0.00	0.00
Projected BHL 1843'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 1433'FNL & 2431'F - survey hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,364,473.31	3,257,810.21	40.330190	-104.575260
Projected BHL 1843'FNL - survey misses target center by 10.6ft at 14142.0ft MD (6881.3 TVD, -476.0 N, -7316.8 E) - Point	0.00	0.00	6,885.0	-485.9	-7,317.0	1,363,911.09	3,250,499.03	40.328853	-104.601503

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,022.4	6,814.3	-458.5	-213.6	TPZ - 60° Incl.in curve - 1889'FNL, 2219'FWL, Sec.8
12,753.0	6,895.3	-481.9	-5,928.3	Deepest TVD Drilled - 6895.29' TVD

Checked By: _____	Approved By: _____	Date: _____
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