

PDC Energy Inc. DJ Basin

Well Name: **Red Cloud 1N (Nio B)**

Surface Location: Red Cloud 4N46W01 Pad Sec.1-T4N-64W

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

Ground Elevation: 4602.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1369932.733	281005.22	40.344482	-104.491846	

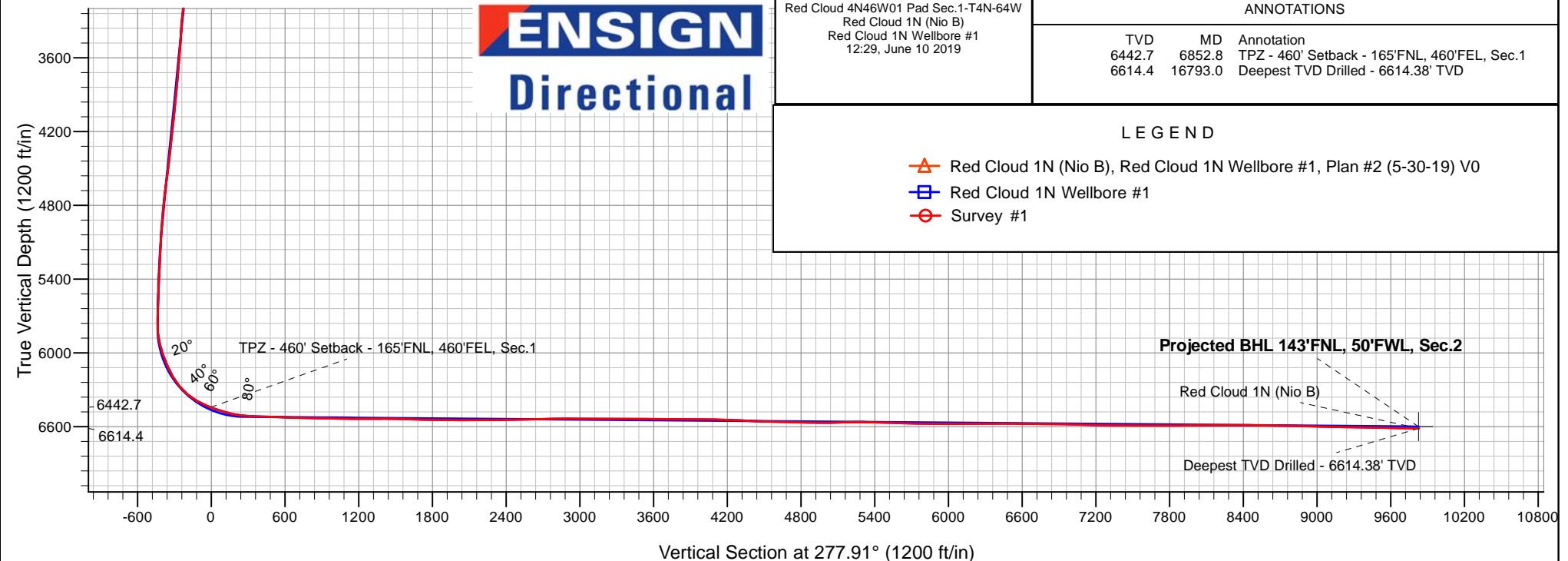
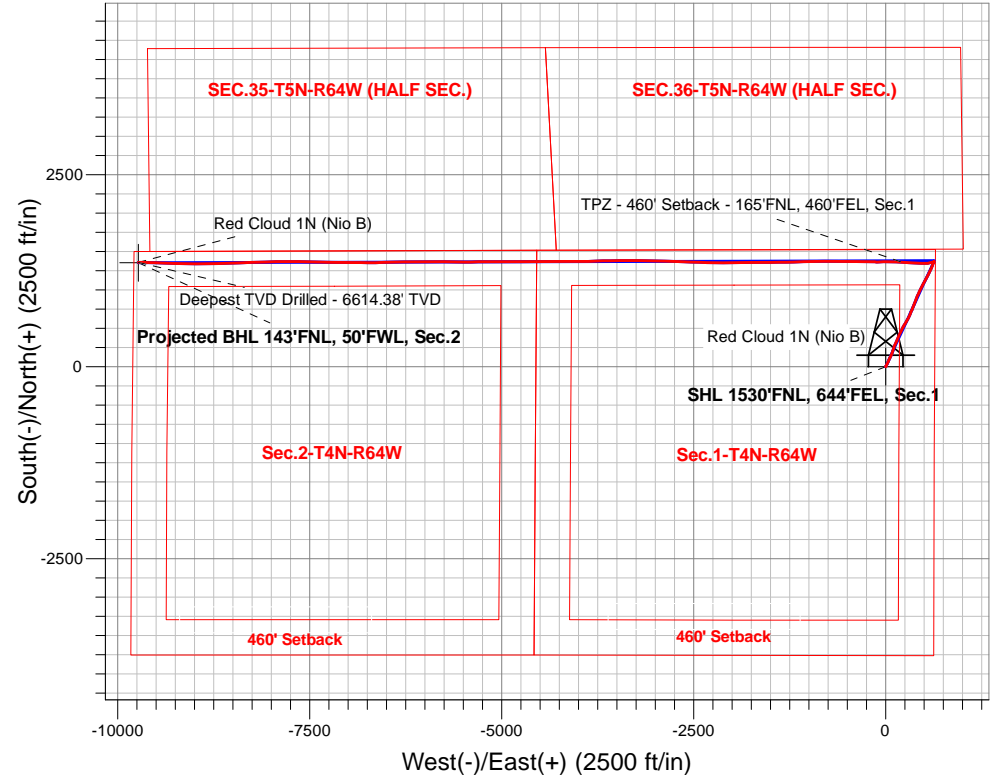
Original Well Elev WELL @ 4625.0ft (Original Well Elev)

FINAL SURVEY

Projected Bottom Hole Location

16,793'MD 6614'TVD 1359'N & 9733'W of SHL

89.34 degree Incl @ 271.49 degree AZM





PDC Energy Inc. DJ Basin

SEC.1-T4N-R64W

Red Cloud 4N46W01 Pad Sec.1-T4N-64W

Red Cloud 1N (Nio B)

Red Cloud 1N Wellbore #1

Survey: Survey #1

Standard Survey Report

10 June, 2019

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Red Cloud 1N (Nio B)
Project:	SEC.1-T4N-R64W	TVD Reference:	WELL @ 4625.0ft (Original Well Elev)
Site:	Red Cloud 4N46W01 Pad Sec.1-T4N-64W	MD Reference:	WELL @ 4625.0ft (Original Well Elev)
Well:	Red Cloud 1N (Nio B)	North Reference:	True
Wellbore:	Red Cloud 1N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Red Cloud 1N Wellbore #1	Database:	US_EDM

Project	SEC.1-T4N-R64W, Weld County, CO		
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	Red Cloud 4N46W01 Pad Sec.1-T4N-64W				
Site Position:		Northing:	1,369,932.80 usft	Latitude:	40.344481
From:	Lat/Long	Easting:	3,281,020.19 usft	Longitude:	-104.491793
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.65 °

Well	Red Cloud 1N (Nio B)					
Well Position	+N-S	0.0 ft	Northing:	1,369,932.73 usft	Latitude:	40.344482
	+E-W	0.0 ft	Easting:	3,281,005.22 usft	Longitude:	-104.491846
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,602.0 ft

Wellbore	Red Cloud 1N Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	6/3/2019	8.08	66.88	52,150

Design	Red Cloud 1N 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	277.91	

Survey Program	Date	6/10/2019			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
155.0	16,793.0	Survey #1 (Red Cloud 1N 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
1.0	0.00	65.30	1.0	0.0	0.0	0.0	0.25	0.25	0.00
SHL 1530'FNL, 644'FEL, Sec.1									
155.0	0.39	65.30	155.0	0.2	0.5	-0.4	0.25	0.25	0.00
250.0	0.42	51.98	250.0	0.6	1.0	-1.0	0.10	0.03	-14.02
346.0	2.20	16.62	346.0	2.6	1.9	-1.5	1.95	1.85	-36.83
441.0	4.20	23.36	440.8	7.5	3.8	-2.7	2.14	2.11	7.09
536.0	6.85	27.32	535.4	15.7	7.7	-5.5	2.82	2.79	4.17
630.0	8.92	27.13	628.5	27.2	13.6	-9.8	2.20	2.20	-0.20
725.0	9.32	26.28	722.3	40.6	20.4	-14.6	0.44	0.42	-0.89
821.0	9.15	24.14	817.0	54.6	27.0	-19.2	0.40	-0.18	-2.23

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Wellbore:	Red Cloud 1N Wellbore #1	Survey Calculation Method:	Minimum Curvature
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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)
915.0	9.34	23.89	909.8	68.4	33.1	-23.4	0.21	0.20	-0.27
1,010.0	9.05	23.86	1,003.6	82.3	39.2	-27.6	0.31	-0.31	-0.03
1,106.0	11.15	22.35	1,098.1	97.7	45.8	-31.9	2.20	2.19	-1.57
1,201.0	13.58	25.21	1,190.9	116.3	54.1	-37.6	2.64	2.56	3.01
1,296.0	15.77	26.42	1,282.8	138.0	64.6	-45.0	2.33	2.31	1.27
1,392.0	19.02	23.50	1,374.4	164.0	76.6	-53.3	3.50	3.39	-3.04
1,487.0	18.12	19.45	1,464.4	192.2	87.7	-60.4	1.65	-0.95	-4.26
1,615.0	15.66	16.11	1,586.9	227.5	99.1	-66.9	2.07	-1.92	-2.61
1,771.0	16.87	19.16	1,736.7	269.1	112.4	-74.3	0.95	0.78	1.96
1,865.0	19.95	27.55	1,825.9	296.2	124.3	-82.4	4.31	3.28	8.93
1,960.0	19.16	25.31	1,915.4	324.7	138.5	-92.5	1.15	-0.83	-2.36
2,055.0	18.69	23.09	2,005.2	352.8	151.1	-101.1	0.91	-0.49	-2.34
2,151.0	17.78	21.36	2,096.4	380.6	162.5	-108.5	1.10	-0.95	-1.80
2,245.0	16.78	19.32	2,186.2	406.8	172.2	-114.6	1.24	-1.06	-2.17
2,339.0	19.92	29.34	2,275.4	433.6	184.5	-123.1	4.72	3.34	10.66
2,434.0	18.92	27.20	2,365.0	461.4	199.5	-134.1	1.29	-1.05	-2.25
2,529.0	18.32	25.94	2,455.0	488.5	213.1	-143.8	0.76	-0.63	-1.33
2,623.0	17.52	25.56	2,544.5	514.5	225.6	-152.7	0.86	-0.85	-0.40
2,718.0	19.92	31.81	2,634.4	541.2	240.3	-163.6	3.29	2.53	6.58
2,812.0	19.79	31.50	2,722.9	568.4	257.1	-176.4	0.18	-0.14	-0.33
2,907.0	19.85	29.60	2,812.2	596.1	273.5	-188.8	0.68	0.06	-2.00
3,024.0	19.34	28.10	2,922.5	630.5	292.4	-202.9	0.61	-0.44	-1.28
3,119.0	18.58	24.13	3,012.3	658.2	306.0	-212.5	1.58	-0.80	-4.18
3,213.0	17.35	19.55	3,101.7	685.0	316.8	-219.5	1.99	-1.31	-4.87
3,308.0	19.89	26.57	3,191.8	712.9	328.8	-227.6	3.56	2.67	7.39
3,403.0	19.00	23.39	3,281.3	741.5	342.2	-236.9	1.46	-0.94	-3.35
3,498.0	17.82	19.60	3,371.5	769.4	353.2	-243.9	1.77	-1.24	-3.99
3,593.0	17.28	20.34	3,462.1	796.3	363.0	-249.9	0.62	-0.57	0.78
3,688.0	18.78	23.06	3,552.4	823.6	373.8	-256.9	1.81	1.58	2.86
3,783.0	19.03	21.68	3,642.3	852.1	385.6	-264.6	0.54	0.26	-1.45
3,879.0	19.44	21.79	3,732.9	881.5	397.3	-272.2	0.43	0.43	0.11
3,974.0	18.19	20.52	3,822.8	910.0	408.3	-279.2	1.38	-1.32	-1.34
4,069.0	19.46	25.47	3,912.8	938.2	420.3	-287.2	2.15	1.34	5.21
4,163.0	18.85	24.63	4,001.6	966.1	433.4	-296.3	0.71	-0.65	-0.89
4,258.0	19.87	25.76	4,091.2	994.6	446.8	-305.7	1.14	1.07	1.19
4,354.0	18.11	25.51	4,181.9	1,022.8	460.3	-315.2	1.84	-1.83	-0.26
4,449.0	19.11	28.06	4,272.0	1,049.8	474.0	-325.0	1.36	1.05	2.68
4,543.0	19.19	27.90	4,360.8	1,077.1	488.5	-335.6	0.10	0.09	-0.17
4,638.0	17.61	26.81	4,450.9	1,103.7	502.3	-345.6	1.70	-1.66	-1.15
4,734.0	19.45	29.68	4,541.9	1,130.6	516.7	-356.2	2.14	1.92	2.99
4,830.0	19.47	29.21	4,632.5	1,158.4	532.5	-368.0	0.16	0.02	-0.49
4,924.0	18.62	27.26	4,721.3	1,185.4	547.0	-378.6	1.13	-0.90	-2.07
5,019.0	18.22	25.97	4,811.4	1,212.3	560.4	-388.3	0.60	-0.42	-1.36

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Survey										
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5,114.0	17.62	25.41	4,901.8	1,238.6	573.1	-397.2	0.66	-0.63	-0.59	
5,209.0	15.97	23.33	4,992.8	1,263.6	584.4	-405.0	1.85	-1.74	-2.19	
5,303.0	14.76	20.75	5,083.4	1,286.7	593.8	-411.1	1.48	-1.29	-2.74	
5,398.0	13.32	19.81	5,175.6	1,308.3	601.8	-416.0	1.53	-1.52	-0.99	
5,493.0	10.42	21.36	5,268.5	1,326.6	608.6	-420.3	3.07	-3.05	1.63	
5,588.0	9.23	20.95	5,362.1	1,341.7	614.5	-424.0	1.25	-1.25	-0.43	
5,683.0	7.69	21.29	5,456.1	1,354.7	619.5	-427.2	1.62	-1.62	0.36	
5,778.0	3.59	45.51	5,550.6	1,362.7	624.0	-430.5	4.90	-4.32	25.49	
5,873.0	2.99	54.79	5,645.5	1,366.2	628.1	-434.1	0.84	-0.63	9.77	
5,969.0	0.94	117.93	5,741.4	1,367.3	630.8	-436.7	2.81	-2.14	65.77	
6,064.0	4.03	255.04	5,836.4	1,366.1	628.3	-434.3	5.01	3.25	144.33	
6,159.0	16.08	256.56	5,929.7	1,362.2	612.2	-418.9	12.69	12.68	1.60	
6,254.0	21.64	254.98	6,019.6	1,354.6	582.5	-390.5	5.88	5.85	-1.66	
6,350.0	24.69	258.67	6,107.8	1,346.0	545.7	-355.3	3.52	3.18	3.84	
6,445.0	29.59	270.62	6,192.4	1,342.4	502.8	-313.2	7.69	5.16	12.58	
6,540.0	39.23	272.96	6,270.7	1,344.2	449.2	-259.9	10.24	10.15	2.46	
6,635.0	50.25	274.74	6,338.1	1,348.8	382.6	-193.3	11.67	11.60	1.87	
6,729.0	61.05	276.53	6,391.1	1,356.5	305.5	-115.9	11.60	11.49	1.90	
6,824.0	67.76	272.75	6,432.1	1,363.3	220.1	-30.4	7.92	7.06	-3.98	
6,852.8	68.93	272.08	6,442.7	1,364.4	193.4	-3.8	4.62	4.07	-2.34	
TPZ - 460' Setback - 165'FNL, 460'FEL, Sec.1										
6,920.0	71.68	270.54	6,465.4	1,365.9	130.1	59.1	4.62	4.09	-2.28	
7,015.0	76.42	269.08	6,491.5	1,365.5	38.8	149.5	5.20	4.99	-1.54	
7,110.0	82.57	269.23	6,508.8	1,364.2	-54.5	241.7	6.48	6.47	0.16	
7,140.0	84.44	269.92	6,512.2	1,364.0	-84.3	271.2	6.64	6.23	2.32	
LPL 150'FNL, 737'FEL, Sec.1										
7,206.0	88.55	271.44	6,516.2	1,364.7	-150.2	336.6	6.64	6.23	2.30	
7,301.0	88.18	271.34	6,518.9	1,367.0	-245.1	430.9	0.40	-0.39	-0.11	
7,397.0	87.88	270.88	6,522.2	1,368.9	-341.0	526.2	0.57	-0.31	-0.48	
7,493.0	88.34	270.30	6,525.4	1,369.9	-437.0	621.3	0.77	0.48	-0.60	
7,588.0	88.43	270.32	6,528.1	1,370.4	-531.9	715.5	0.10	0.09	0.02	
7,683.0	88.53	270.21	6,530.6	1,370.8	-626.9	809.6	0.16	0.11	-0.12	
7,779.0	88.85	270.34	6,532.8	1,371.3	-722.9	904.7	0.36	0.33	0.14	
7,875.0	88.99	270.02	6,534.6	1,371.6	-818.9	999.8	0.36	0.15	-0.33	
7,971.0	89.14	269.56	6,536.1	1,371.3	-914.9	1,094.9	0.50	0.16	-0.48	
8,066.0	89.69	268.52	6,537.1	1,369.7	-1,009.8	1,188.7	1.24	0.58	-1.09	
8,162.0	90.32	268.43	6,537.1	1,367.1	-1,105.8	1,283.4	0.66	0.66	-0.09	
8,257.0	90.75	267.62	6,536.2	1,363.8	-1,200.7	1,377.0	0.97	0.45	-0.85	
8,353.0	88.75	269.65	6,536.6	1,361.5	-1,296.7	1,471.7	2.97	-2.08	2.11	
8,448.0	88.50	269.23	6,538.9	1,360.6	-1,391.7	1,565.7	0.51	-0.26	-0.44	
8,544.0	88.41	269.04	6,541.5	1,359.2	-1,487.6	1,660.5	0.22	-0.09	-0.20	
8,639.0	88.90	270.19	6,543.7	1,358.5	-1,582.6	1,754.5	1.32	0.52	1.21	
8,734.0	89.25	269.93	6,545.3	1,358.6	-1,677.6	1,848.6	0.46	0.37	-0.27	
8,830.0	89.24	269.25	6,546.5	1,357.9	-1,773.6	1,943.6	0.71	-0.01	-0.71	

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8,925.0	89.62	269.11	6,547.5	1,356.6	-1,868.6	2,037.5	0.43	0.40	-0.15
9,020.0	89.94	268.49	6,547.8	1,354.6	-1,963.5	2,131.3	0.73	0.34	-0.65
9,116.0	90.76	268.58	6,547.3	1,352.1	-2,059.5	2,226.0	0.86	0.85	0.09
9,211.0	90.79	272.22	6,546.0	1,352.8	-2,154.5	2,320.1	3.83	0.03	3.83
9,306.0	91.03	271.70	6,544.5	1,356.1	-2,249.4	2,414.6	0.60	0.25	-0.55
9,402.0	91.27	271.92	6,542.5	1,359.1	-2,345.3	2,510.0	0.34	0.25	0.23
9,497.0	91.27	271.32	6,540.4	1,361.8	-2,440.3	2,604.5	0.63	0.00	-0.63
9,593.0	91.07	271.27	6,538.5	1,363.9	-2,536.2	2,699.8	0.21	-0.21	-0.05
9,688.0	91.08	270.97	6,536.7	1,365.8	-2,631.2	2,794.1	0.32	0.01	-0.32
9,784.0	89.82	272.69	6,535.9	1,368.9	-2,727.1	2,889.6	2.22	-1.31	1.79
9,879.0	89.59	271.67	6,536.4	1,372.5	-2,822.1	2,984.1	1.10	-0.24	-1.07
9,975.0	89.99	271.38	6,536.8	1,375.0	-2,918.0	3,079.5	0.51	0.42	-0.30
10,070.0	90.83	271.70	6,536.1	1,377.6	-3,013.0	3,173.9	0.95	0.88	0.34
10,166.0	88.92	270.97	6,536.3	1,379.8	-3,109.0	3,269.3	2.13	-1.99	-0.76
10,261.0	88.83	270.80	6,538.2	1,381.3	-3,203.9	3,363.5	0.20	-0.09	-0.18
10,357.0	89.50	269.93	6,539.6	1,381.9	-3,299.9	3,458.7	1.14	0.70	-0.91
10,452.0	90.06	269.74	6,539.9	1,381.6	-3,394.9	3,552.7	0.62	0.59	-0.20
10,548.0	90.47	268.89	6,539.5	1,380.5	-3,490.9	3,647.7	0.98	0.43	-0.89
10,644.0	89.22	269.39	6,539.7	1,379.0	-3,586.9	3,742.5	1.40	-1.30	0.52
10,739.0	89.29	268.95	6,541.0	1,377.7	-3,681.9	3,836.4	0.47	0.07	-0.46
10,834.0	89.52	268.29	6,542.0	1,375.4	-3,776.8	3,930.2	0.74	0.24	-0.69
10,930.0	90.06	267.44	6,542.3	1,371.8	-3,872.8	4,024.7	1.05	0.56	-0.89
11,026.0	88.61	270.20	6,543.4	1,369.8	-3,968.7	4,119.5	3.25	-1.51	2.88
11,121.0	87.92	270.63	6,546.3	1,370.5	-4,063.7	4,213.6	0.86	-0.73	0.45
11,217.0	87.63	269.84	6,550.0	1,370.9	-4,159.6	4,308.7	0.88	-0.30	-0.82
11,313.0	87.20	269.44	6,554.4	1,370.3	-4,255.5	4,403.6	0.61	-0.45	-0.42
11,408.0	88.44	269.90	6,558.0	1,369.8	-4,350.4	4,497.5	1.39	1.31	0.48
11,503.0	88.64	269.89	6,560.4	1,369.6	-4,445.4	4,591.6	0.21	0.21	-0.01
11,599.0	88.64	269.61	6,562.7	1,369.2	-4,541.4	4,686.6	0.29	0.00	-0.29
11,695.0	88.54	269.26	6,565.0	1,368.2	-4,637.3	4,781.5	0.38	-0.10	-0.36
11,790.0	88.57	268.20	6,567.4	1,366.1	-4,732.3	4,875.3	1.12	0.03	-1.12
11,885.0	90.04	270.11	6,568.6	1,364.7	-4,827.3	4,969.1	2.54	1.55	2.01
11,981.0	91.37	270.54	6,567.4	1,365.3	-4,923.3	5,064.3	1.46	1.39	0.45
12,076.0	91.73	270.87	6,564.8	1,366.4	-5,018.2	5,158.5	0.51	0.38	0.35
12,172.0	90.32	270.03	6,563.1	1,367.2	-5,114.2	5,253.7	1.71	-1.47	-0.88
12,267.0	88.79	269.43	6,563.9	1,366.7	-5,209.2	5,347.7	1.73	-1.61	-0.63
12,363.0	88.27	268.85	6,566.3	1,365.3	-5,305.1	5,442.6	0.81	-0.54	-0.60
12,458.0	88.07	269.34	6,569.4	1,363.8	-5,400.1	5,536.4	0.56	-0.21	0.52
12,554.0	87.80	269.85	6,572.8	1,363.1	-5,496.0	5,631.3	0.60	-0.28	0.53
12,649.0	89.50	271.20	6,575.1	1,364.0	-5,591.0	5,725.5	2.28	1.79	1.42
12,745.0	89.58	270.89	6,575.8	1,365.7	-5,687.0	5,820.8	0.33	0.08	-0.32
12,841.0	89.64	270.34	6,576.5	1,366.8	-5,783.0	5,916.0	0.58	0.06	-0.57
12,937.0	90.17	269.92	6,576.6	1,367.0	-5,879.0	6,011.1	0.70	0.55	-0.44

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Red Cloud 1N (Nio B)
Project:	SEC.1-T4N-R64W	TVD Reference:	WELL @ 4625.0ft (Original Well Elev)
Site:	Red Cloud 4N46W01 Pad Sec.1-T4N-64W	MD Reference:	WELL @ 4625.0ft (Original Well Elev)
Well:	Red Cloud 1N (Nio B)	North Reference:	True
Wellbore:	Red Cloud 1N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Red Cloud 1N 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)	
13,032.0	90.41	269.58	6,576.2	1,366.6	-5,973.9	6,105.2	0.44	0.25	-0.36	
13,128.0	90.27	269.80	6,575.6	1,366.0	-6,069.9	6,200.2	0.27	-0.15	0.23	
13,223.0	89.83	269.52	6,575.5	1,365.5	-6,164.9	6,294.2	0.55	-0.46	-0.29	
13,320.0	89.80	268.90	6,575.8	1,364.1	-6,261.9	6,390.1	0.64	-0.03	-0.64	
13,415.0	89.81	268.94	6,576.1	1,362.4	-6,356.9	6,483.9	0.04	0.01	0.04	
13,511.0	89.53	268.32	6,576.7	1,360.1	-6,452.9	6,578.7	0.71	-0.29	-0.65	
13,606.0	89.57	268.44	6,577.4	1,357.4	-6,547.8	6,672.3	0.13	0.04	0.13	
13,702.0	89.40	267.76	6,578.3	1,354.2	-6,643.8	6,766.9	0.73	-0.18	-0.71	
13,798.0	89.20	270.68	6,579.5	1,352.9	-6,739.8	6,861.8	3.05	-0.21	3.04	
13,893.0	88.85	271.35	6,581.1	1,354.6	-6,834.7	6,956.1	0.80	-0.37	0.71	
13,989.0	88.76	270.89	6,583.1	1,356.4	-6,930.7	7,051.4	0.49	-0.09	-0.48	
14,085.0	88.67	270.57	6,585.2	1,357.7	-7,026.7	7,146.6	0.35	-0.09	-0.33	
14,180.0	88.67	270.20	6,587.5	1,358.3	-7,121.6	7,240.8	0.39	0.00	-0.39	
14,275.0	89.77	271.11	6,588.7	1,359.4	-7,216.6	7,335.0	1.50	1.16	0.96	
14,371.0	89.18	271.46	6,589.6	1,361.5	-7,312.6	7,430.4	0.71	-0.61	0.36	
14,467.0	88.31	271.57	6,591.7	1,364.1	-7,408.5	7,525.8	0.91	-0.91	0.11	
14,563.0	90.37	271.03	6,592.8	1,366.3	-7,504.5	7,621.1	2.22	2.15	-0.56	
14,658.0	90.81	270.56	6,591.9	1,367.6	-7,599.5	7,715.4	0.68	0.46	-0.49	
14,753.0	90.91	270.03	6,590.4	1,368.1	-7,694.5	7,809.5	0.57	0.11	-0.56	
14,849.0	90.79	269.56	6,589.0	1,367.7	-7,790.5	7,904.6	0.51	-0.13	-0.49	
14,944.0	90.15	269.52	6,588.2	1,367.0	-7,885.4	7,998.5	0.67	-0.67	-0.04	
15,040.0	90.05	268.95	6,588.1	1,365.7	-7,981.4	8,093.4	0.60	-0.10	-0.59	
15,135.0	89.81	268.76	6,588.2	1,363.8	-8,076.4	8,187.3	0.32	-0.25	-0.20	
15,230.0	89.87	268.14	6,588.4	1,361.2	-8,171.4	8,281.0	0.66	0.06	-0.65	
15,325.0	89.66	268.14	6,588.8	1,358.1	-8,266.3	8,374.6	0.22	-0.22	0.00	
15,420.0	89.59	267.51	6,589.5	1,354.5	-8,361.3	8,468.1	0.67	-0.07	-0.66	
15,516.0	89.60	266.83	6,590.1	1,349.8	-8,457.1	8,562.4	0.71	0.01	-0.71	
15,611.0	88.98	269.34	6,591.3	1,346.6	-8,552.1	8,656.0	2.72	-0.65	2.64	
15,707.0	89.13	269.18	6,592.9	1,345.4	-8,648.1	8,750.9	0.23	0.16	-0.17	
15,802.0	89.27	268.81	6,594.2	1,343.7	-8,743.0	8,844.8	0.42	0.15	-0.39	
15,992.0	88.54	268.45	6,597.8	1,339.2	-8,932.9	9,032.2	0.43	-0.38	-0.19	
16,088.0	88.17	271.45	6,600.6	1,339.1	-9,028.9	9,127.3	3.15	-0.39	3.13	
16,184.0	87.64	271.10	6,604.1	1,341.2	-9,124.8	9,222.6	0.66	-0.55	-0.36	
16,280.0	89.57	272.63	6,606.5	1,344.3	-9,220.7	9,318.0	2.57	2.01	1.59	
16,375.0	89.29	271.96	6,607.4	1,348.1	-9,315.6	9,412.5	0.76	-0.29	-0.71	
16,470.0	88.85	271.87	6,608.9	1,351.3	-9,410.6	9,507.0	0.47	-0.46	-0.09	
16,566.0	88.80	271.33	6,610.9	1,354.0	-9,506.5	9,602.4	0.56	-0.05	-0.56	
16,661.0	89.06	271.00	6,612.7	1,355.9	-9,601.5	9,696.7	0.44	0.27	-0.35	
16,735.0	89.34	271.49	6,613.7	1,357.5	-9,675.4	9,770.2	0.76	0.38	0.66	
16,792.7	89.34	271.49	6,614.4	1,359.0	-9,733.2	9,827.6	0.00	0.00	0.00	
Projected BHL 143'FNL, 50'FWL, Sec.2										
16,793.0	89.34	271.49	6,614.4	1,359.0	-9,733.4	9,827.8	0.00	0.00	0.00	
Deepest TVD Drilled - 6614.38' TVD										

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Red Cloud 1N (Nio B)
Project:	SEC.1-T4N-R64W	TVD Reference:	WELL @ 4625.0ft (Original Well Elev)
Site:	Red Cloud 4N46W01 Pad Sec.1-T4N-64W	MD Reference:	WELL @ 4625.0ft (Original Well Elev)
Well:	Red Cloud 1N (Nio B)	North Reference:	True
Wellbore:	Red Cloud 1N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Red Cloud 1N Wellbore #1	Database:	US_EDM

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
- Shape									
SHL 1530'FNL, 644'FEL	0.00	0.00	1.0	0.0	0.0	1,369,932.74	3,281,005.22	40.344482	-104.491846
- survey hits target center									
- Point									
Projected BHL 143'FNL,	0.00	0.00	6,600.0	1,352.3	-9,733.5	1,371,174.27	3,271,257.41	40.348188	-104.526766
- survey misses target center by 15.9ft at 16792.7ft MD (6614.4 TVD, 1359.0 N, -9733.2 E)									
- Point									

Survey Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W		
		(ft)	(ft)	Comment	
6,852.8	6,442.7	1,364.4	193.4	TPZ - 460' Setback - 165'FNL, 460'FEL, Sec.1	
16,793.0	6,614.4	1,359.0	-9,733.4	Deepest TVD Drilled - 6614.38' TVD	

Checked By: _____ Approved By: _____ Date: _____