

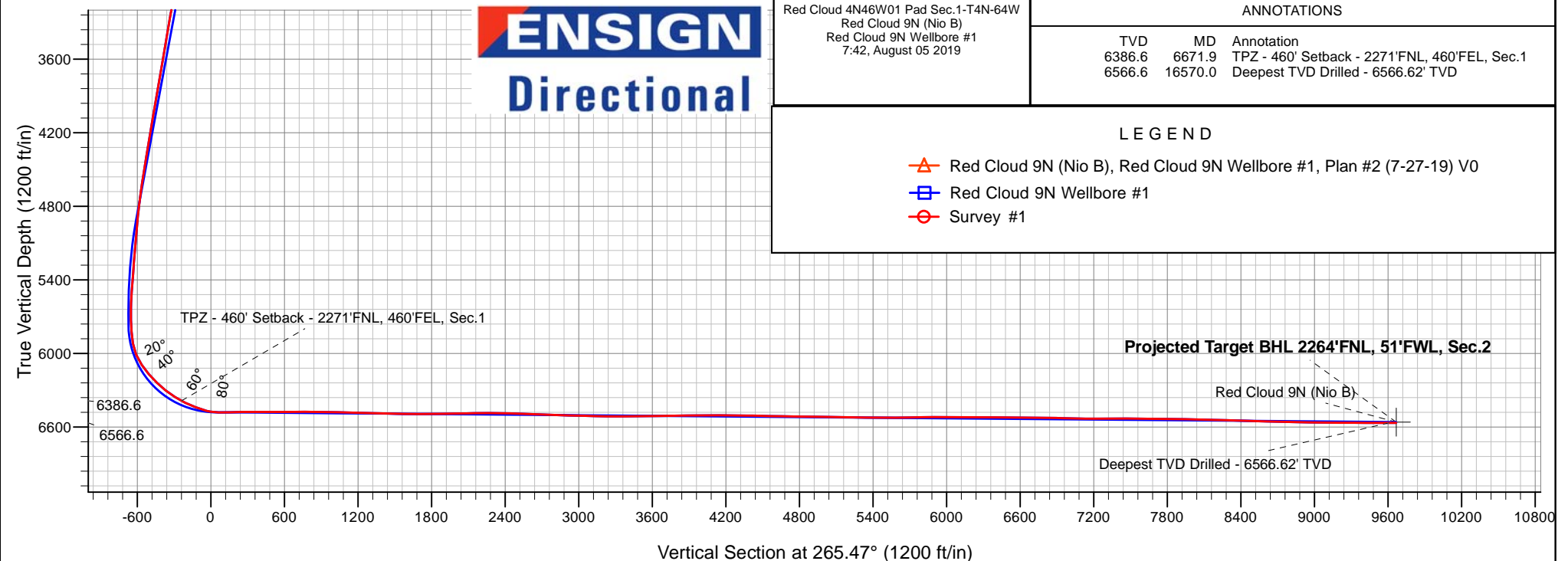
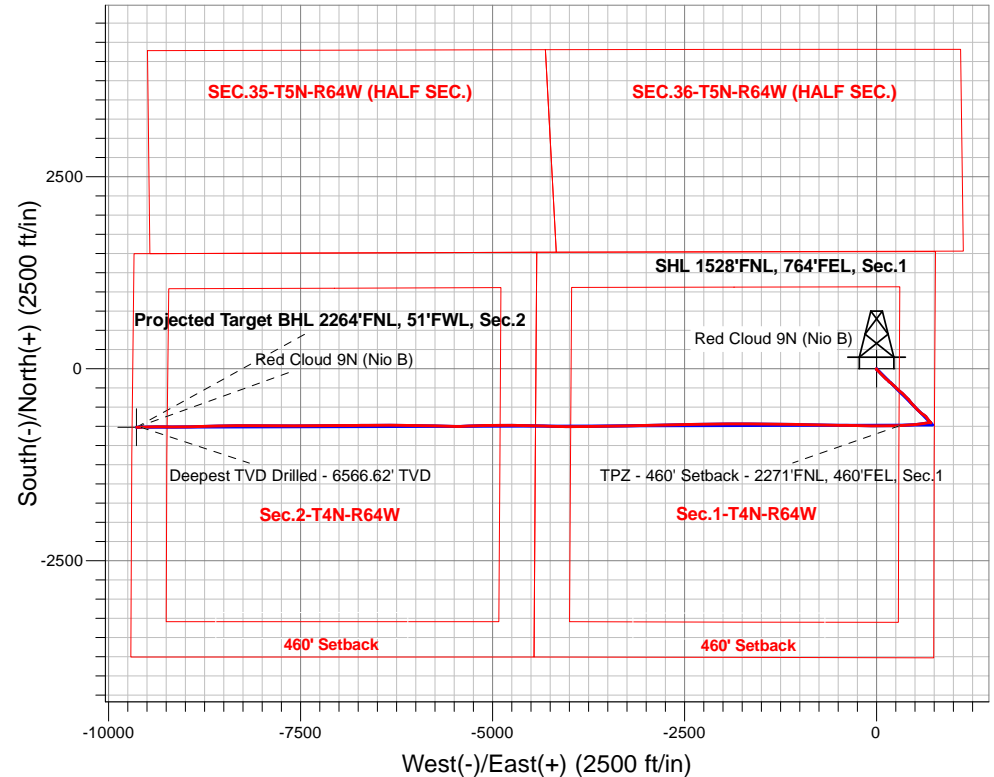
# PDC Energy Inc. DJ Basin

Well Name: **Red Cloud 9N (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 1369932.463280885.24 40.344485 -104.492276  
Original Well Elev WELL @ 4625.0ft (Original Well Elev)

## FINAL SURVEY

**Projected Bottom Hole Location**  
**16,628'MD 6566'TVD 763'S & 9636'W of SHL**  
**90.25 degree Incl @ 268.93 degree AZM**





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

**SEC.1-T4N-R64W**

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

**Red Cloud 9N (Nio B)**

**Red Cloud 9N Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**05 August, 2019**

<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Red Cloud 9N (Nio B)
<b>Project:</b>	SEC.1-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4625.0ft (Original Well Elev)
<b>Site:</b>	Red Cloud 4N46W01 Pad Sec.1-T4N-64W	<b>MD Reference:</b>	WELL @ 4625.0ft (Original Well Elev)
<b>Well:</b>	Red Cloud 9N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Red Cloud 9N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Red Cloud 9N Wellbore #1	<b>Database:</b>	US_EDM

<b>Project</b>	SEC.1-T4N-R64W, Weld County, CO		
<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	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 9N (Nio B)					
Well Position	+N/-S	0.0 ft	Northing:	1,369,932.46 usft	Latitude:	40.344485
	+E/-W	0.0 ft	Easting:	3,280,885.25 usft	Longitude:	-104.492277
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,602.0 ft

<b>Wellbore</b>	Red Cloud 9N 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>
	HDGM	7/28/2019	8.08	66.87	52,132

<b>Design</b>	Red Cloud 9N 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	265.47	

<b>Survey Program</b>	<b>Date</b>	8/5/2019			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
155.0	16,628.0	Survey #1 (Red Cloud 9N Wellbore #1)	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	17.90	1.0	0.0	0.0	0.0	0.00	0.00	0.00	
<b>SHL 1528'FNL, 764'FEL, Sec.1</b>										
155.0	0.22	17.90	155.0	0.3	0.1	-0.1	0.14	0.14	0.00	
250.0	0.17	38.35	250.0	0.6	0.2	-0.3	0.09	-0.05	21.53	
346.0	0.03	29.21	346.0	0.7	0.3	-0.4	0.15	-0.15	-9.52	
441.0	0.13	164.24	441.0	0.6	0.4	-0.4	0.16	0.11	142.14	
536.0	0.28	151.76	536.0	0.3	0.5	-0.5	0.16	0.16	-13.14	
631.0	0.42	205.40	631.0	-0.2	0.5	-0.5	0.36	0.15	56.46	
725.0	0.54	201.89	725.0	-0.9	0.2	-0.1	0.13	0.13	-3.73	
821.0	0.73	210.24	821.0	-1.9	-0.3	0.5	0.22	0.20	8.70	

<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Red Cloud 9N (Nio B)
<b>Project:</b>	SEC.1-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4625.0ft (Original Well Elev)
<b>Site:</b>	Red Cloud 4N46W01 Pad Sec.1-T4N-64W	<b>MD Reference:</b>	WELL @ 4625.0ft (Original Well Elev)
<b>Well:</b>	Red Cloud 9N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Red Cloud 9N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Red Cloud 9N 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)
915.0	0.89	219.98	915.0	-3.0	-1.1	1.3	0.22	0.17	10.36
1,010.0	1.16	220.48	1,010.0	-4.3	-2.2	2.5	0.28	0.28	0.53
1,106.0	2.05	169.37	1,105.9	-6.7	-2.5	3.0	1.67	0.93	-53.24
1,201.0	3.76	137.21	1,200.8	-10.6	-0.1	0.9	2.42	1.80	-33.85
1,296.0	6.11	133.89	1,295.4	-16.4	5.7	-4.4	2.49	2.47	-3.49
1,392.0	8.41	133.54	1,390.7	-24.8	14.5	-12.5	2.40	2.40	-0.36
1,487.0	8.72	134.78	1,484.6	-34.7	24.6	-21.8	0.38	0.33	1.31
1,581.0	8.12	135.63	1,577.6	-44.4	34.3	-30.7	0.65	-0.64	0.90
1,771.0	9.92	136.19	1,765.2	-65.8	55.0	-49.7	0.95	0.95	0.29
1,866.0	12.14	132.76	1,858.5	-78.5	68.0	-61.6	2.44	2.34	-3.61
1,960.0	14.51	134.45	1,949.9	-93.5	83.7	-76.1	2.55	2.52	1.80
2,056.0	17.58	134.36	2,042.2	-112.0	102.6	-93.5	3.20	3.20	-0.09
2,151.0	16.86	134.23	2,132.9	-131.7	122.8	-112.0	0.76	-0.76	-0.14
2,245.0	15.65	132.92	2,223.2	-149.8	141.8	-129.6	1.34	-1.29	-1.39
2,340.0	15.23	129.44	2,314.8	-166.5	160.9	-147.2	1.07	-0.44	-3.66
2,434.0	14.18	127.27	2,405.7	-181.3	179.6	-164.7	1.26	-1.12	-2.31
2,529.0	16.83	132.20	2,497.2	-197.6	199.0	-182.8	3.11	2.79	5.19
2,624.0	17.51	133.66	2,588.0	-216.7	219.5	-201.7	0.85	0.72	1.54
2,718.0	17.42	132.32	2,677.6	-235.9	240.2	-220.8	0.44	-0.10	-1.43
2,812.0	16.54	133.17	2,767.5	-254.6	260.3	-239.4	0.97	-0.94	0.90
2,907.0	15.79	131.33	2,858.8	-272.3	279.9	-257.5	0.96	-0.79	-1.94
3,001.0	15.33	132.76	2,949.3	-289.2	298.6	-274.9	0.64	-0.49	1.52
3,095.0	14.64	130.37	3,040.1	-305.4	316.8	-291.7	0.99	-0.73	-2.54
3,189.0	16.14	133.57	3,130.8	-322.1	335.3	-308.8	1.83	1.60	3.40
3,285.0	16.28	135.47	3,223.0	-340.8	354.4	-326.4	0.57	0.15	1.98
3,380.0	14.90	134.54	3,314.5	-358.9	372.5	-343.0	1.48	-1.45	-0.98
3,475.0	13.66	133.39	3,406.5	-375.2	389.3	-358.5	1.34	-1.31	-1.21
3,570.0	14.53	136.11	3,498.7	-391.5	405.7	-373.6	1.15	0.92	2.86
3,665.0	16.54	141.17	3,590.2	-410.6	422.5	-388.7	2.55	2.12	5.33
3,760.0	17.10	141.07	3,681.1	-432.0	439.7	-404.2	0.59	0.59	-0.11
3,855.0	16.43	139.69	3,772.1	-453.1	457.2	-420.0	0.82	-0.71	-1.45
3,950.0	15.49	137.61	3,863.4	-472.7	474.4	-435.6	1.16	-0.99	-2.19
4,045.0	14.70	136.31	3,955.2	-490.8	491.3	-451.0	0.90	-0.83	-1.37
4,140.0	15.63	135.64	4,046.8	-508.7	508.6	-466.8	1.00	0.98	-0.71
4,235.0	15.83	136.34	4,138.3	-527.2	526.5	-483.2	0.29	0.21	0.74
4,330.0	14.42	133.47	4,230.0	-544.7	544.0	-499.3	1.68	-1.48	-3.02
4,426.0	13.25	133.14	4,323.2	-560.5	560.7	-514.7	1.22	-1.22	-0.34
4,520.0	12.55	129.72	4,414.8	-574.4	576.4	-529.3	1.10	-0.74	-3.64
4,615.0	11.94	127.28	4,507.7	-586.9	592.2	-544.0	0.84	-0.64	-2.57
4,711.0	10.78	122.98	4,601.8	-597.8	607.6	-558.5	1.50	-1.21	-4.48
4,901.0	9.73	128.24	4,788.8	-617.4	635.2	-584.4	0.74	-0.55	2.77
4,996.0	10.84	145.85	4,882.3	-629.8	646.5	-594.7	3.49	1.17	18.54
5,091.0	9.68	144.16	4,975.7	-643.6	656.2	-603.3	1.26	-1.22	-1.78

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<b>Site:</b>	Red Cloud 4N46W01 Pad Sec.1-T4N-64W	<b>MD Reference:</b>	WELL @ 4625.0ft (Original Well Elev)
<b>Well:</b>	Red Cloud 9N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Red Cloud 9N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Red Cloud 9N 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)
5,186.0	9.04	143.78	5,069.5	-656.1	665.3	-611.4	0.68	-0.67	-0.40
5,280.0	8.47	139.84	5,162.4	-667.4	674.1	-619.3	0.88	-0.61	-4.19
5,375.0	7.39	139.68	5,256.5	-677.4	682.5	-626.9	1.14	-1.14	-0.17
5,470.0	6.95	137.64	5,350.7	-686.3	690.4	-634.0	0.54	-0.46	-2.15
5,564.0	6.56	137.45	5,444.1	-694.5	697.8	-640.8	0.42	-0.41	-0.20
5,659.0	6.44	136.20	5,538.5	-702.3	705.2	-647.5	0.20	-0.13	-1.32
5,755.0	2.14	147.33	5,634.2	-707.7	709.9	-651.8	4.54	-4.48	11.59
5,850.0	2.11	296.33	5,729.1	-708.4	709.3	-651.1	4.31	-0.03	156.84
5,945.0	4.31	302.02	5,824.0	-705.7	704.7	-646.8	2.34	2.32	5.99
6,040.0	10.18	278.67	5,918.2	-702.6	693.3	-635.7	6.79	6.18	-24.58
6,136.0	22.68	259.97	6,010.2	-704.5	666.6	-608.9	13.98	13.02	-19.48
6,231.0	34.47	258.91	6,093.4	-712.9	622.0	-563.8	12.42	12.41	-1.12
6,326.0	41.02	264.33	6,168.5	-721.2	564.6	-505.8	7.72	6.89	5.71
6,422.0	45.38	263.67	6,238.5	-728.1	499.2	-440.2	4.57	4.54	-0.69
6,517.0	51.72	264.91	6,301.4	-735.1	428.4	-369.0	6.74	6.67	1.31
6,611.0	57.59	267.44	6,355.7	-740.2	351.9	-292.4	6.62	6.24	2.69
6,671.9	61.55	268.22	6,386.6	-742.2	299.5	-239.9	6.60	6.50	1.28
TPZ - 460' Setback - 2271'FNL, 460'FEL, Sec.1									
6,706.0	63.77	268.63	6,402.2	-743.0	269.2	-209.7	6.60	6.51	1.20
6,801.0	69.36	269.90	6,440.0	-744.1	182.1	-122.7	6.01	5.88	1.34
6,896.0	75.14	269.56	6,468.9	-744.5	91.6	-32.6	6.09	6.08	-0.36
6,966.2	85.42	269.72	6,480.8	-744.9	22.6	36.3	14.65	14.65	0.23
LPL 2265'FNL, 737'FEL, Sec.1									
6,992.0	89.20	269.78	6,482.0	-745.1	-3.2	62.1	14.65	14.65	0.22
7,087.0	92.58	271.15	6,480.5	-744.3	-98.2	156.7	3.84	3.56	1.44
7,183.0	90.49	271.43	6,477.9	-742.1	-194.1	252.1	2.20	-2.18	0.29
7,278.0	89.73	270.87	6,477.8	-740.2	-289.1	346.7	0.99	-0.80	-0.59
7,373.0	89.75	270.68	6,478.2	-738.9	-384.1	441.3	0.20	0.02	-0.20
7,469.0	90.29	270.83	6,478.2	-737.7	-480.1	536.8	0.58	0.56	0.16
7,565.0	90.65	271.06	6,477.4	-736.1	-576.1	632.4	0.44	0.38	0.24
7,660.0	89.92	270.82	6,476.9	-734.5	-671.1	727.0	0.81	-0.77	-0.25
7,756.0	90.43	270.93	6,476.6	-733.1	-767.0	822.5	0.54	0.53	0.11
7,852.0	88.81	271.37	6,477.2	-731.1	-863.0	918.1	1.75	-1.69	0.46
7,947.0	88.27	271.32	6,479.7	-728.9	-958.0	1,012.5	0.57	-0.57	-0.05
8,043.0	88.46	270.97	6,482.4	-727.0	-1,053.9	1,108.0	0.41	0.20	-0.36
8,139.0	88.43	270.78	6,485.0	-725.5	-1,149.9	1,203.6	0.20	-0.03	-0.20
8,234.0	88.57	270.61	6,487.5	-724.4	-1,244.8	1,298.1	0.23	0.15	-0.18
8,330.0	88.88	270.81	6,489.6	-723.2	-1,340.8	1,393.7	0.38	0.32	0.21
8,425.0	88.77	270.29	6,491.6	-722.3	-1,435.8	1,488.3	0.56	-0.12	-0.55
8,548.0	89.20	270.52	6,493.8	-721.4	-1,558.7	1,610.8	0.40	0.35	0.19
8,644.0	90.27	270.51	6,494.2	-720.5	-1,654.7	1,706.5	1.11	1.11	-0.01
8,739.0	90.62	270.04	6,493.5	-720.1	-1,749.7	1,801.1	0.62	0.37	-0.49
8,834.0	90.64	269.93	6,492.4	-720.1	-1,844.7	1,895.8	0.12	0.02	-0.12
8,930.0	90.76	269.56	6,491.2	-720.5	-1,940.7	1,991.6	0.41	0.13	-0.39

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<b>Well:</b>	Red Cloud 9N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Red Cloud 9N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Red Cloud 9N 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)
9,025.0	91.00	269.44	6,489.8	-721.4	-2,035.7	2,086.3	0.28	0.25	-0.13
9,121.0	91.30	269.14	6,487.9	-722.6	-2,131.7	2,182.1	0.44	0.31	-0.31
9,216.0	89.26	268.68	6,487.4	-724.4	-2,226.7	2,276.9	2.20	-2.15	-0.48
9,311.0	89.97	268.56	6,488.0	-726.6	-2,321.6	2,371.8	0.76	0.75	-0.13
9,406.0	87.77	269.90	6,489.9	-727.9	-2,416.6	2,466.5	2.71	-2.32	1.41
9,502.0	87.78	269.64	6,493.6	-728.3	-2,512.5	2,562.2	0.27	0.01	-0.27
9,597.0	87.83	269.48	6,497.3	-729.0	-2,607.4	2,656.9	0.18	0.05	-0.17
9,693.0	88.12	269.00	6,500.7	-730.3	-2,703.4	2,752.6	0.58	0.30	-0.50
9,788.0	88.19	268.84	6,503.7	-732.1	-2,798.3	2,847.4	0.18	0.07	-0.17
9,884.0	88.40	268.57	6,506.6	-734.3	-2,894.2	2,943.2	0.36	0.22	-0.28
9,980.0	88.37	268.11	6,509.3	-737.0	-2,990.2	3,039.0	0.48	-0.03	-0.48
10,075.0	88.81	267.83	6,511.6	-740.4	-3,085.1	3,133.9	0.55	0.46	-0.29
10,170.0	88.50	267.49	6,513.8	-744.3	-3,180.0	3,228.8	0.48	-0.33	-0.36
10,266.0	90.45	269.27	6,514.7	-747.0	-3,275.9	3,324.7	2.75	2.03	1.85
10,361.0	90.87	269.95	6,513.6	-747.6	-3,370.9	3,419.4	0.84	0.44	0.72
10,457.0	90.92	269.30	6,512.1	-748.3	-3,466.9	3,515.2	0.68	0.05	-0.68
10,552.0	90.86	268.92	6,510.7	-749.8	-3,561.9	3,610.0	0.40	-0.06	-0.40
10,648.0	90.80	268.45	6,509.3	-752.0	-3,657.8	3,705.8	0.49	-0.06	-0.49
10,744.0	91.07	268.35	6,507.7	-754.6	-3,753.8	3,801.7	0.30	0.28	-0.10
10,839.0	89.97	270.67	6,506.8	-755.4	-3,848.8	3,896.4	2.70	-1.16	2.44
10,935.0	90.37	270.40	6,506.6	-754.6	-3,944.8	3,992.0	0.50	0.42	-0.28
11,030.0	90.72	269.98	6,505.7	-754.2	-4,039.8	4,086.7	0.58	0.37	-0.44
11,126.0	89.16	271.47	6,505.8	-753.0	-4,135.7	4,182.3	2.25	-1.63	1.55
11,222.0	89.48	271.63	6,506.9	-750.4	-4,231.7	4,277.7	0.37	0.33	0.17
11,317.0	90.09	271.46	6,507.2	-747.9	-4,326.7	4,372.2	0.67	0.64	-0.18
11,413.0	88.43	272.02	6,508.5	-744.9	-4,422.6	4,467.6	1.82	-1.73	0.58
11,508.0	88.69	271.37	6,510.9	-742.1	-4,517.5	4,562.0	0.74	0.27	-0.68
11,604.0	88.86	271.21	6,512.9	-740.0	-4,613.5	4,657.5	0.24	0.18	-0.17
11,699.0	89.15	270.71	6,514.6	-738.4	-4,708.5	4,752.1	0.61	0.31	-0.53
11,795.0	89.20	270.34	6,516.0	-737.5	-4,804.5	4,847.7	0.39	0.05	-0.39
11,890.0	89.26	269.85	6,517.2	-737.4	-4,899.4	4,942.4	0.52	0.06	-0.52
11,986.0	89.38	269.31	6,518.4	-738.1	-4,995.4	5,038.1	0.58	0.13	-0.56
12,081.0	89.20	268.74	6,519.6	-739.7	-5,090.4	5,132.9	0.63	-0.19	-0.60
12,176.0	89.08	268.30	6,521.0	-742.1	-5,185.4	5,227.8	0.48	-0.13	-0.46
12,272.0	89.02	267.55	6,522.6	-745.6	-5,281.3	5,323.7	0.78	-0.06	-0.78
12,368.0	89.03	267.19	6,524.2	-750.0	-5,377.2	5,419.6	0.38	0.01	-0.38
12,463.0	90.24	270.15	6,524.8	-752.2	-5,472.1	5,514.4	3.37	1.27	3.12
12,559.0	90.92	271.71	6,523.8	-750.7	-5,568.1	5,610.0	1.77	0.71	1.63
12,654.0	90.97	271.29	6,522.3	-748.2	-5,663.1	5,704.5	0.45	0.05	-0.44
12,750.0	91.10	271.03	6,520.5	-746.2	-5,759.0	5,800.0	0.30	0.14	-0.27
12,846.0	89.50	271.77	6,520.0	-743.9	-5,855.0	5,895.5	1.84	-1.67	0.77
12,941.0	89.63	271.22	6,520.8	-741.4	-5,950.0	5,989.9	0.59	0.14	-0.58
13,037.0	89.83	271.17	6,521.2	-739.4	-6,045.9	6,085.5	0.21	0.21	-0.05

<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Red Cloud 9N (Nio B)
<b>Project:</b>	SEC.1-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4625.0ft (Original Well Elev)
<b>Site:</b>	Red Cloud 4N46W01 Pad Sec.1-T4N-64W	<b>MD Reference:</b>	WELL @ 4625.0ft (Original Well Elev)
<b>Well:</b>	Red Cloud 9N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Red Cloud 9N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Red Cloud 9N 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)
13,133.0	90.49	270.95	6,520.9	-737.6	-6,141.9	6,181.0	0.72	0.69	-0.23
13,228.0	89.20	270.36	6,521.2	-736.5	-6,236.9	6,275.6	1.49	-1.36	-0.62
13,324.0	89.57	269.94	6,522.2	-736.3	-6,332.9	6,371.3	0.58	0.39	-0.44
13,420.0	89.76	269.82	6,522.8	-736.5	-6,428.9	6,467.0	0.23	0.20	-0.13
13,515.0	89.44	269.84	6,523.5	-736.8	-6,523.9	6,561.7	0.34	-0.34	0.02
13,611.0	89.41	269.50	6,524.4	-737.3	-6,619.9	6,657.5	0.36	-0.03	-0.35
13,707.0	89.25	269.16	6,525.5	-738.4	-6,715.9	6,753.2	0.39	-0.17	-0.35
13,802.0	89.85	269.19	6,526.3	-739.8	-6,810.9	6,848.0	0.63	0.63	0.03
13,898.0	88.26	269.95	6,527.9	-740.5	-6,906.9	6,943.8	1.84	-1.66	0.79
13,994.0	88.54	270.03	6,530.5	-740.5	-7,002.8	7,039.4	0.30	0.29	0.08
14,089.0	89.07	269.65	6,532.5	-740.8	-7,097.8	7,134.1	0.69	0.56	-0.40
14,185.0	90.03	269.48	6,533.3	-741.5	-7,193.8	7,229.9	1.02	1.00	-0.18
14,280.0	90.65	268.79	6,532.7	-743.0	-7,288.8	7,324.7	0.98	0.65	-0.73
14,376.0	90.81	269.50	6,531.5	-744.4	-7,384.8	7,420.5	0.76	0.17	0.74
14,472.0	89.11	270.81	6,531.6	-744.1	-7,480.7	7,516.2	2.24	-1.77	1.36
14,567.0	89.57	270.29	6,532.7	-743.2	-7,575.7	7,610.8	0.73	0.48	-0.55
14,663.0	89.29	269.45	6,533.6	-743.5	-7,671.7	7,706.5	0.92	-0.29	-0.88
14,758.0	90.15	269.40	6,534.1	-744.4	-7,766.7	7,801.3	0.91	0.91	-0.05
14,853.0	88.15	270.63	6,535.5	-744.4	-7,861.7	7,895.9	2.47	-2.11	1.29
14,949.0	88.34	270.52	6,538.4	-743.4	-7,957.7	7,991.5	0.23	0.20	-0.11
15,044.0	88.67	270.38	6,540.9	-742.7	-8,052.6	8,086.1	0.38	0.35	-0.15
15,139.0	88.84	270.19	6,543.0	-742.2	-8,147.6	8,180.8	0.27	0.18	-0.20
15,234.0	88.85	269.71	6,544.9	-742.3	-8,242.6	8,275.5	0.51	0.01	-0.51
15,329.0	88.41	269.39	6,547.2	-743.0	-8,337.5	8,370.2	0.57	-0.46	-0.34
15,425.0	88.21	269.10	6,550.0	-744.3	-8,433.5	8,465.9	0.37	-0.21	-0.30
15,520.0	88.40	268.87	6,552.8	-746.0	-8,528.4	8,560.7	0.31	0.20	-0.24
15,616.0	88.28	268.45	6,555.6	-748.2	-8,624.4	8,656.5	0.45	-0.13	-0.44
15,711.0	88.24	267.93	6,558.5	-751.2	-8,719.3	8,751.4	0.55	-0.04	-0.55
15,806.0	88.01	267.69	6,561.6	-754.8	-8,814.2	8,846.2	0.35	-0.24	-0.25
15,901.0	90.15	269.58	6,563.1	-757.1	-8,909.1	8,941.1	3.01	2.25	1.99
15,998.0	89.71	270.07	6,563.2	-757.4	-9,006.1	9,037.8	0.68	-0.45	0.51
16,093.0	89.73	269.87	6,563.7	-757.5	-9,101.1	9,132.5	0.21	0.02	-0.21
16,189.0	89.39	269.93	6,564.4	-757.6	-9,197.1	9,228.2	0.36	-0.35	0.06
16,284.0	89.48	269.70	6,565.4	-757.9	-9,292.1	9,322.9	0.26	0.09	-0.24
16,379.0	89.68	269.44	6,566.0	-758.6	-9,387.1	9,417.7	0.35	0.21	-0.27
16,475.0	89.69	269.01	6,566.6	-759.9	-9,483.1	9,513.5	0.45	0.01	-0.45
16,570.0	90.25	268.93	6,566.6	-761.6	-9,578.1	9,608.3	0.60	0.59	-0.08
Deepest TVD Drilled - 6566.62' TVD									
16,628.0	90.25	268.93	6,566.4	-762.7	-9,636.1	9,666.2	0.00	0.00	0.00
Projected Target BHL 2264'FNL, 51'FWL, Sec.2									

<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Red Cloud 9N (Nio B)
<b>Project:</b>	SEC.1-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4625.0ft (Original Well Elev)
<b>Site:</b>	Red Cloud 4N46W01 Pad Sec.1-T4N-64W	<b>MD Reference:</b>	WELL @ 4625.0ft (Original Well Elev)
<b>Well:</b>	Red Cloud 9N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Red Cloud 9N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Red Cloud 9N Wellbore #1	<b>Database:</b>	US_EDM

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 1528'FNL, 764'FEL - survey hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,369,932.47	3,280,885.25	40.344485	-104.492277
Projected Target BHL 22 - survey misses target center by 6.4ft at 16628.0ft MD (6566.4 TVD, -762.7 N, -9636.1 E) - Point	0.00	0.00	6,560.0	-763.4	-9,636.6	1,369,059.66	3,271,258.34	40.342384	-104.526846

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
+N/-S (ft)	+E/-W (ft)			
6,671.9	6,386.6	-742.2	299.5	TPZ - 460' Setback - 2271'FNL, 460'FEL, Sec.1
16,570.0	6,566.6	-761.6	-9,578.1	Deepest TVD Drilled - 6566.62' TVD

Checked By: _____	Approved By: _____	Date: _____
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