

PDC Energy Inc. DJ Basin

Well Name: **Red Cloud 7N (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

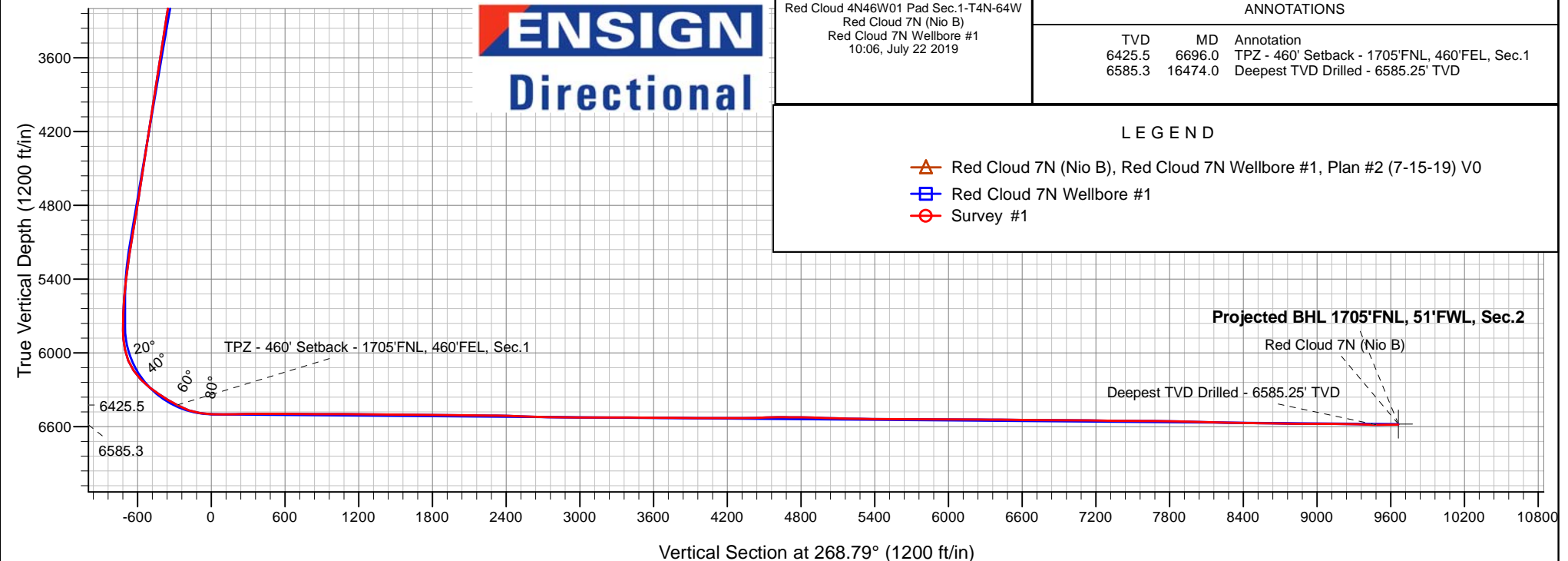
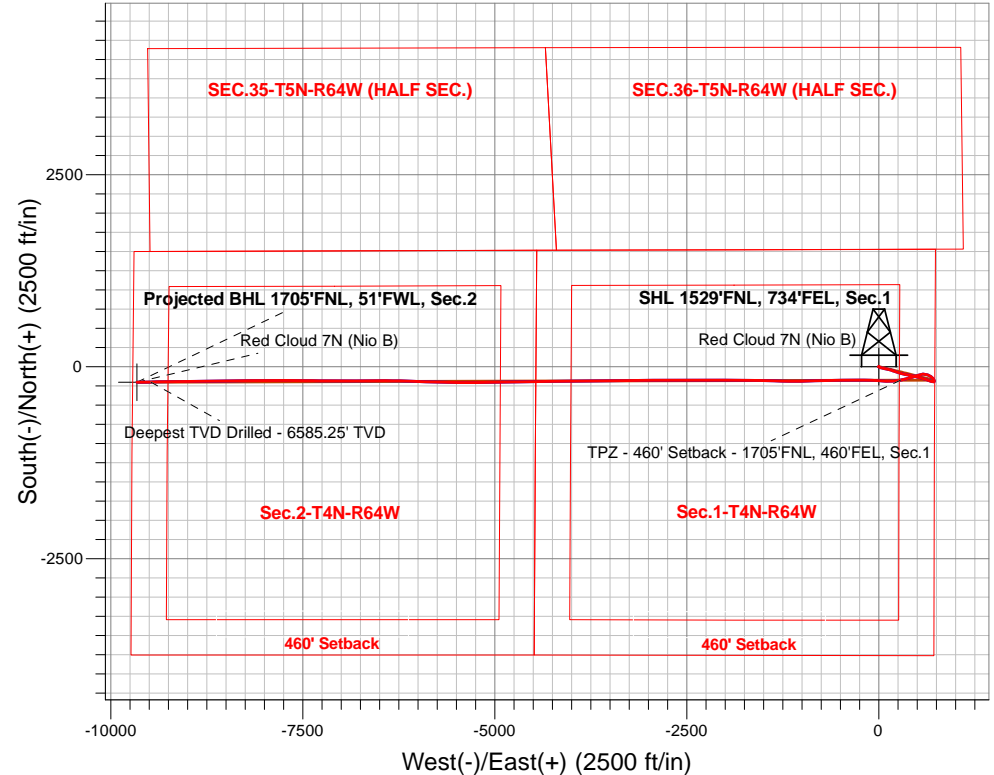
+N/-S +E/-W Northing Easting Latitude Longitude Slot

0.0 0.0 1369932.5 3280915.27 40.344484 -104.492169

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

FINAL SURVEY

Projected Bottom Hole Location
16,653'MD 6583'TVD 204'S & 9660'W of SHL
90.99 degree Incl @ 268.77 degree AZM



Red Cloud 4N46W01 Pad Sec.1-T4N-64W
 Red Cloud 7N (Nio B)
 Red Cloud 7N Wellbore #1
 10:06, July 22 2019

ANNOTATIONS

TVD	MD	Annotation
6425.5	6696.0	TPZ - 460' Setback - 1705'FNL, 460'FEL, Sec.1
6585.3	16474.0	Deepest TVD Drilled - 6585.25' TVD

LEGEND

- Red Cloud 7N (Nio B), Red Cloud 7N Wellbore #1, Plan #2 (7-15-19) V0
- Red Cloud 7N Wellbore #1
- Survey #1



PDC Energy Inc. DJ Basin

SEC.1-T4N-R64W

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

Red Cloud 7N (Nio B)

Red Cloud 7N Wellbore #1

Survey: Survey #1

Standard Survey Report

22 July, 2019

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Red Cloud 7N (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 7N (Nio B)	North Reference:	True
Wellbore:	Red Cloud 7N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Red Cloud 7N 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 7N (Nio B)					
Well Position	+N/-S	0.0 ft	Northing:	1,369,932.51 usft	Latitude:	40.344484
	+E/-W	0.0 ft	Easting:	3,280,915.27 usft	Longitude:	-104.492169
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,602.0 ft

Wellbore	Red Cloud 7N Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	7/15/2019	8.08	66.88	52,136

Design	Red Cloud 7N 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	268.79	

Survey Program	Date	7/22/2019			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
155.0	16,653.0	Survey #1 (Red Cloud 7N 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)	
155.0	0.92	274.04	155.0	0.1	-1.2	1.2	0.59	0.59	0.00	
250.0	0.87	278.40	250.0	0.2	-2.7	2.7	0.09	-0.05	4.59	
346.0	1.00	134.70	346.0	-0.2	-2.8	2.8	1.85	0.14	-149.69	
441.0	1.40	127.94	441.0	-1.5	-1.3	1.4	0.45	0.42	-7.12	
536.0	1.47	130.39	535.9	-3.0	0.5	-0.4	0.10	0.07	2.58	
631.0	1.63	120.30	630.9	-4.5	2.6	-2.5	0.33	0.17	-10.62	
725.0	1.93	125.23	724.8	-6.1	5.0	-4.9	0.36	0.32	5.24	
821.0	2.11	127.10	820.8	-8.1	7.8	-7.6	0.20	0.19	1.95	
915.0	2.20	126.86	914.7	-10.2	10.6	-10.4	0.10	0.10	-0.26	
1,010.0	3.70	101.05	1,009.6	-11.9	15.1	-14.8	2.07	1.58	-27.17	

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Wellbore:	Red Cloud 7N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Red Cloud 7N 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)	
1,106.0	5.93	103.03	1,105.3	-13.6	22.9	-22.7	2.33	2.32	2.06	
1,201.0	7.60	103.97	1,199.6	-16.2	33.8	-33.5	1.76	1.76	0.99	
1,296.0	7.70	104.43	1,293.7	-19.3	46.1	-45.7	0.12	0.11	0.48	
1,392.0	8.01	101.82	1,388.8	-22.3	58.9	-58.4	0.49	0.32	-2.72	
1,487.0	7.30	100.63	1,483.0	-24.8	71.3	-70.7	0.77	-0.75	-1.25	
1,581.0	6.79	100.80	1,576.3	-26.9	82.6	-82.0	0.54	-0.54	0.18	
1,771.0	7.99	105.21	1,764.7	-32.5	106.4	-105.7	0.70	0.63	2.32	
1,865.0	7.53	102.88	1,857.8	-35.6	118.7	-117.9	0.59	-0.49	-2.48	
1,960.0	9.28	106.84	1,951.8	-39.2	132.1	-131.2	1.94	1.84	4.17	
2,056.0	9.43	106.78	2,046.5	-43.7	147.0	-146.1	0.16	0.16	-0.06	
2,151.0	11.07	108.88	2,140.0	-48.9	163.1	-162.0	1.77	1.73	2.21	
2,245.0	11.65	109.18	2,232.2	-54.9	180.6	-179.4	0.62	0.62	0.32	
2,340.0	11.44	107.71	2,325.3	-61.0	198.6	-197.3	0.38	-0.22	-1.55	
2,434.0	11.18	108.12	2,417.4	-66.6	216.2	-214.7	0.29	-0.28	0.44	
2,529.0	10.87	106.55	2,510.7	-72.0	233.5	-232.0	0.45	-0.33	-1.65	
2,624.0	10.91	106.20	2,604.0	-77.1	250.7	-249.1	0.08	0.04	-0.37	
2,718.0	10.92	105.79	2,696.3	-82.0	267.8	-266.1	0.08	0.01	-0.44	
2,812.0	10.81	106.28	2,788.6	-86.9	284.9	-283.0	0.15	-0.12	0.52	
2,907.0	10.34	104.38	2,882.0	-91.5	301.7	-299.7	0.62	-0.49	-2.00	
3,001.0	10.16	104.04	2,974.5	-95.6	317.9	-315.8	0.20	-0.19	-0.36	
3,095.0	9.57	102.33	3,067.1	-99.3	333.6	-331.4	0.70	-0.63	-1.82	
3,189.0	9.29	100.37	3,159.8	-102.3	348.7	-346.4	0.45	-0.30	-2.09	
3,285.0	8.83	99.91	3,254.6	-105.0	363.6	-361.3	0.49	-0.48	-0.48	
3,379.0	8.55	97.29	3,347.5	-107.1	377.6	-375.3	0.52	-0.30	-2.79	
3,474.0	8.85	99.95	3,441.4	-109.3	391.8	-389.4	0.53	0.32	2.80	
3,665.0	9.47	106.00	3,630.0	-116.2	421.4	-418.8	0.60	0.32	3.17	
3,760.0	9.34	105.09	3,723.7	-120.3	436.3	-433.7	0.21	-0.14	-0.96	
3,855.0	8.98	102.52	3,817.5	-123.9	451.0	-448.3	0.57	-0.38	-2.71	
3,950.0	9.56	103.33	3,911.3	-127.4	465.9	-463.1	0.63	0.61	0.85	
4,045.0	9.56	107.29	4,005.0	-131.5	481.1	-478.3	0.69	0.00	4.17	
4,140.0	8.92	103.87	4,098.7	-135.6	495.8	-492.9	0.89	-0.67	-3.60	
4,235.0	7.44	99.04	4,192.8	-138.4	509.0	-506.0	1.72	-1.56	-5.08	
4,330.0	9.26	107.79	4,286.8	-141.7	522.4	-519.3	2.33	1.92	9.21	
4,425.0	10.17	108.44	4,380.4	-146.7	537.6	-534.4	0.96	0.96	0.68	
4,520.0	9.47	107.06	4,474.0	-151.6	553.1	-549.7	0.78	-0.74	-1.45	
4,615.0	9.18	102.81	4,567.7	-155.6	567.9	-564.5	0.79	-0.31	-4.47	
4,711.0	8.63	104.15	4,662.6	-159.0	582.4	-578.9	0.61	-0.57	1.40	
4,807.0	9.38	107.74	4,757.4	-163.2	596.8	-593.2	0.98	0.78	3.74	
4,901.0	10.64	108.02	4,850.0	-168.2	612.4	-608.7	1.34	1.34	0.30	
4,996.0	10.74	110.37	4,943.3	-174.0	629.0	-625.2	0.47	0.11	2.47	
5,091.0	9.89	109.81	5,036.8	-179.8	645.0	-641.0	0.90	-0.89	-0.59	
5,186.0	8.93	109.83	5,130.5	-185.1	659.6	-655.5	1.01	-1.01	0.02	
5,280.0	8.54	107.67	5,223.4	-189.7	673.1	-669.0	0.54	-0.41	-2.30	

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5,375.0	8.07	106.38	5,317.4	-193.7	686.2	-682.0	0.53	-0.49	-1.36
5,469.0	6.55	101.64	5,410.7	-196.7	697.8	-693.5	1.74	-1.62	-5.04
5,564.0	6.27	94.60	5,505.1	-198.2	708.3	-703.9	0.88	-0.29	-7.41
5,659.0	3.41	71.34	5,599.7	-197.7	716.1	-711.8	3.59	-3.01	-24.48
5,755.0	2.72	27.16	5,695.6	-194.7	719.9	-715.6	2.49	-0.72	-46.02
5,850.0	3.27	3.78	5,790.5	-190.0	721.1	-716.9	1.40	0.58	-24.61
5,945.0	9.66	338.81	5,884.8	-179.9	718.4	-714.4	7.19	6.73	-26.28
6,040.0	20.73	323.97	5,976.4	-158.8	705.6	-702.1	12.26	11.65	-15.62
6,136.0	28.30	309.44	6,063.8	-130.5	677.9	-675.0	10.03	7.89	-15.14
6,231.0	36.95	288.98	6,143.9	-106.8	633.3	-630.9	14.65	9.11	-21.54
6,326.0	42.32	267.21	6,217.4	-99.0	574.0	-571.8	15.60	5.65	-22.92
6,421.0	53.18	250.84	6,281.4	-113.2	505.7	-503.2	17.06	11.43	-17.23
6,516.0	58.01	251.55	6,335.1	-138.4	431.5	-428.5	5.12	5.08	0.75
6,611.0	59.50	255.70	6,384.4	-161.3	353.6	-350.2	4.05	1.57	4.37
6,696.0	62.61	260.31	6,425.5	-176.7	280.9	-277.1	5.99	3.66	5.42
TPZ - 460' Setback - 1705'FNL, 460'FEL, Sec.1									
6,706.0	62.99	260.83	6,430.1	-178.1	272.1	-268.3	5.99	3.76	5.24
6,801.0	70.31	265.85	6,467.8	-188.1	185.6	-181.6	9.10	7.71	5.28
6,896.0	80.75	272.22	6,491.5	-189.6	93.8	-89.8	12.76	10.99	6.71
6,992.0	89.13	275.07	6,500.0	-183.5	-1.5	5.4	9.22	8.73	2.97
6,994.7	89.16	274.97	6,500.0	-183.2	-4.3	8.1	3.69	1.03	-3.55
LPL 1705'FNL, 737'FEL, Sec.1									
7,087.0	90.11	271.70	6,500.6	-177.9	-96.4	100.1	3.69	1.03	-3.55
7,182.0	91.08	270.47	6,499.6	-176.1	-191.3	195.0	1.65	1.02	-1.29
7,278.0	91.04	269.74	6,497.8	-175.9	-287.3	291.0	0.76	-0.04	-0.76
7,373.0	91.37	269.38	6,495.8	-176.6	-382.3	385.9	0.51	0.35	-0.38
7,469.0	89.22	269.70	6,495.3	-177.4	-478.3	481.9	2.26	-2.24	0.33
7,564.0	89.45	269.03	6,496.4	-178.5	-573.3	576.9	0.75	0.24	-0.71
7,660.0	89.57	268.80	6,497.2	-180.3	-669.3	672.9	0.27	0.13	-0.24
7,756.0	89.49	268.30	6,498.0	-182.7	-765.2	768.9	0.53	-0.08	-0.52
7,852.0	90.03	268.10	6,498.4	-185.7	-861.2	864.9	0.60	0.56	-0.21
7,975.0	90.26	268.31	6,498.1	-189.6	-984.1	987.9	0.25	0.19	0.17
8,070.0	89.10	270.42	6,498.7	-190.6	-1,079.1	1,082.9	2.53	-1.22	2.22
8,166.0	89.80	270.22	6,499.6	-190.1	-1,175.1	1,178.8	0.76	0.73	-0.21
8,261.0	89.03	271.75	6,500.5	-188.4	-1,270.1	1,273.8	1.80	-0.81	1.61
8,357.0	89.27	271.38	6,502.0	-185.8	-1,366.0	1,369.6	0.46	0.25	-0.39
8,452.0	90.06	271.82	6,502.5	-183.2	-1,461.0	1,464.5	0.95	0.83	0.46
8,548.0	89.42	270.88	6,503.0	-180.9	-1,557.0	1,560.4	1.18	-0.67	-0.98
8,643.0	89.64	270.89	6,503.7	-179.4	-1,651.9	1,655.3	0.23	0.23	0.01
8,739.0	89.90	270.34	6,504.1	-178.4	-1,747.9	1,751.3	0.63	0.27	-0.57
8,834.0	88.64	271.23	6,505.3	-177.1	-1,842.9	1,846.2	1.62	-1.33	0.94
8,930.0	88.91	270.59	6,507.4	-175.6	-1,938.9	1,942.1	0.72	0.28	-0.67
9,025.0	89.38	270.18	6,508.8	-175.0	-2,033.9	2,037.1	0.66	0.49	-0.43
9,120.0	89.74	269.67	6,509.5	-175.1	-2,128.9	2,132.1	0.66	0.38	-0.54

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9,215.0	90.06	269.26	6,509.7	-176.0	-2,223.9	2,227.1	0.55	0.34	-0.43
9,310.0	88.81	269.33	6,510.6	-177.1	-2,318.8	2,322.1	1.32	-1.32	0.07
9,406.0	88.15	269.55	6,513.2	-178.1	-2,414.8	2,418.0	0.72	-0.69	0.23
9,501.0	87.95	269.95	6,516.4	-178.5	-2,509.7	2,512.9	0.47	-0.21	0.42
9,597.0	87.67	269.87	6,520.1	-178.6	-2,605.7	2,608.9	0.30	-0.29	-0.08
9,692.0	89.37	269.83	6,522.5	-178.9	-2,700.6	2,703.8	1.79	1.79	-0.04
9,788.0	89.31	270.64	6,523.6	-178.5	-2,796.6	2,799.8	0.85	-0.06	0.84
9,883.0	89.22	270.60	6,524.9	-177.5	-2,891.6	2,894.7	0.10	-0.09	-0.04
9,979.0	89.06	269.96	6,526.3	-177.0	-2,987.6	2,990.7	0.69	-0.17	-0.67
10,170.0	90.38	270.29	6,527.2	-176.6	-3,178.6	3,181.6	0.71	0.69	0.17
10,265.0	90.25	269.31	6,526.7	-176.9	-3,273.6	3,276.6	1.04	-0.14	-1.03
10,361.0	89.78	269.14	6,526.7	-178.2	-3,369.6	3,372.6	0.52	-0.49	-0.18
10,456.0	89.94	268.58	6,526.9	-180.1	-3,464.6	3,467.6	0.61	0.17	-0.59
10,552.0	89.53	267.53	6,527.4	-183.4	-3,560.5	3,563.6	1.17	-0.43	-1.09
10,648.0	89.73	269.75	6,528.0	-185.6	-3,656.5	3,659.6	2.32	0.21	2.31
10,743.0	89.55	269.11	6,528.6	-186.6	-3,751.5	3,754.6	0.70	-0.19	-0.67
10,838.0	89.37	269.29	6,529.5	-187.9	-3,846.5	3,849.6	0.27	-0.19	0.19
10,934.0	89.76	269.90	6,530.2	-188.6	-3,942.4	3,945.5	0.75	0.41	0.64
11,030.0	90.04	269.55	6,530.4	-189.0	-4,038.4	4,041.5	0.47	0.29	-0.36
11,126.0	89.79	268.98	6,530.5	-190.3	-4,134.4	4,137.5	0.65	-0.26	-0.59
11,221.0	90.00	268.06	6,530.7	-192.7	-4,229.4	4,232.5	0.99	0.22	-0.97
11,317.0	90.33	268.01	6,530.4	-196.0	-4,325.3	4,328.5	0.35	0.34	-0.05
11,412.0	91.31	269.67	6,529.1	-197.9	-4,420.3	4,423.5	2.03	1.03	1.75
11,507.0	92.26	269.60	6,526.1	-198.5	-4,515.3	4,518.4	1.00	1.00	-0.07
11,603.0	90.48	270.68	6,523.8	-198.3	-4,611.2	4,614.4	2.17	-1.85	1.13
11,699.0	89.24	269.50	6,524.0	-198.2	-4,707.2	4,710.4	1.78	-1.29	-1.23
11,794.0	89.67	269.01	6,524.9	-199.4	-4,802.2	4,805.3	0.69	0.45	-0.52
11,890.0	87.97	269.61	6,526.9	-200.6	-4,898.2	4,901.3	1.88	-1.77	0.63
11,985.0	88.14	269.28	6,530.1	-201.5	-4,993.1	4,996.3	0.39	0.18	-0.35
12,081.0	88.50	268.43	6,533.0	-203.4	-5,089.1	5,092.2	0.96	0.38	-0.89
12,176.0	89.27	267.85	6,534.8	-206.5	-5,184.0	5,187.2	1.01	0.81	-0.61
12,272.0	88.50	270.24	6,536.7	-208.1	-5,280.0	5,283.2	2.62	-0.80	2.49
12,367.0	88.99	269.76	6,538.8	-208.1	-5,374.9	5,378.1	0.72	0.52	-0.51
12,463.0	89.87	270.95	6,539.7	-207.5	-5,470.9	5,474.1	1.54	0.92	1.24
12,558.0	90.33	270.61	6,539.5	-206.2	-5,565.9	5,569.0	0.60	0.48	-0.36
12,654.0	89.34	271.90	6,539.8	-204.1	-5,661.9	5,664.9	1.69	-1.03	1.34
12,749.0	89.54	271.45	6,540.8	-201.3	-5,756.8	5,759.8	0.52	0.21	-0.47
12,845.0	90.52	271.62	6,540.7	-198.7	-5,852.8	5,855.7	1.04	1.02	0.18
12,941.0	89.06	271.89	6,541.1	-195.8	-5,948.8	5,951.6	1.55	-1.52	0.28
13,037.0	89.33	271.85	6,542.4	-192.7	-6,044.7	6,047.4	0.28	0.28	-0.04
13,132.0	90.41	272.16	6,542.6	-189.3	-6,139.6	6,142.3	1.18	1.14	0.33
13,228.0	89.20	270.99	6,542.9	-186.7	-6,235.6	6,238.1	1.75	-1.26	-1.22
13,324.0	89.70	270.81	6,543.9	-185.2	-6,331.6	6,334.1	0.55	0.52	-0.19

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Red Cloud 7N (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 7N (Nio B)	North Reference:	True
Wellbore:	Red Cloud 7N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Red Cloud 7N 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)
13,419.0	90.44	270.66	6,543.7	-184.0	-6,426.6	6,429.0	0.79	0.78	-0.16
13,515.0	88.93	269.92	6,544.3	-183.5	-6,522.6	6,525.0	1.75	-1.57	-0.77
13,610.0	88.97	269.51	6,546.0	-184.0	-6,617.5	6,620.0	0.43	0.04	-0.43
13,706.0	89.64	269.27	6,547.2	-185.0	-6,713.5	6,715.9	0.74	0.70	-0.25
13,802.0	90.32	269.08	6,547.2	-186.4	-6,809.5	6,811.9	0.74	0.71	-0.20
13,898.0	89.41	270.02	6,547.4	-187.1	-6,905.5	6,907.9	1.36	-0.95	0.98
13,993.0	88.52	270.75	6,549.2	-186.5	-7,000.5	7,002.9	1.21	-0.94	0.77
14,089.0	89.32	270.15	6,551.0	-185.7	-7,096.5	7,098.8	1.04	0.83	-0.63
14,184.0	90.55	269.69	6,551.1	-185.9	-7,191.5	7,193.8	1.38	1.29	-0.48
14,280.0	89.20	270.85	6,551.3	-185.4	-7,287.5	7,289.8	1.85	-1.41	1.21
14,375.0	88.86	270.90	6,552.9	-184.0	-7,382.4	7,384.7	0.36	-0.36	0.05
14,471.0	89.99	270.63	6,553.9	-182.7	-7,478.4	7,480.6	1.21	1.18	-0.28
14,567.0	89.15	270.58	6,554.6	-181.7	-7,574.4	7,576.6	0.88	-0.88	-0.05
14,662.0	90.13	270.62	6,555.2	-180.7	-7,669.4	7,671.5	1.03	1.03	0.04
14,757.0	88.67	269.95	6,556.2	-180.2	-7,764.4	7,766.5	1.69	-1.54	-0.71
14,852.0	89.13	269.46	6,558.0	-180.7	-7,859.4	7,861.4	0.71	0.48	-0.52
14,948.0	88.19	269.78	6,560.2	-181.3	-7,955.4	7,957.4	1.03	-0.98	0.33
15,043.0	89.34	269.53	6,562.3	-181.9	-8,050.3	8,052.4	1.24	1.21	-0.26
15,139.0	87.64	269.89	6,564.8	-182.4	-8,146.3	8,148.3	1.81	-1.77	0.38
15,234.0	88.35	269.47	6,568.1	-182.9	-8,241.2	8,243.3	0.87	0.75	-0.44
15,329.0	89.27	269.20	6,570.1	-184.0	-8,336.2	8,338.2	1.01	0.97	-0.28
15,424.0	89.99	268.95	6,570.7	-185.5	-8,431.2	8,433.2	0.80	0.76	-0.26
15,520.0	88.43	269.53	6,572.0	-186.8	-8,527.2	8,529.2	1.73	-1.63	0.60
15,615.0	88.85	269.49	6,574.3	-187.6	-8,622.1	8,624.2	0.44	0.44	-0.04
15,711.0	89.34	269.01	6,575.8	-188.9	-8,718.1	8,720.2	0.71	0.51	-0.50
15,806.0	90.30	268.81	6,576.1	-190.7	-8,813.1	8,815.2	1.03	1.01	-0.21
15,901.0	89.06	269.74	6,576.6	-191.9	-8,908.1	8,910.2	1.63	-1.31	0.98
15,997.0	89.69	269.38	6,577.7	-192.6	-9,004.1	9,006.1	0.76	0.66	-0.38
16,093.0	90.87	269.15	6,577.2	-193.9	-9,100.1	9,102.1	1.25	1.23	-0.24
16,188.0	88.10	269.16	6,578.1	-195.3	-9,195.0	9,197.1	2.92	-2.92	0.01
16,283.0	88.23	269.00	6,581.1	-196.8	-9,290.0	9,292.1	0.22	0.14	-0.17
16,378.0	88.31	268.93	6,584.0	-198.5	-9,384.9	9,387.0	0.11	0.08	-0.07
16,474.0	90.18	269.17	6,585.3	-200.1	-9,480.9	9,483.0	1.96	1.95	0.25
Deepest TVD Drilled - 6585.25' TVD									
16,570.0	90.73	268.73	6,584.5	-201.9	-9,576.9	9,579.0	0.73	0.57	-0.46
16,595.0	90.99	268.77	6,584.1	-202.4	-9,601.9	9,604.0	1.05	1.04	0.16
16,653.0	90.99	268.77	6,583.1	-203.6	-9,659.8	9,662.0	0.00	0.00	0.00
Projected BHL 1705'FNL, 51'FWL, Sec.2									

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Red Cloud 7N (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 7N (Nio B)	North Reference:	True
Wellbore:	Red Cloud 7N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Red Cloud 7N Wellbore #1	Database:	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 1529'FNL, 734'FEL - survey misses target center by 154.0ft at 155.0ft MD (155.0 TVD, 0.1 N, -1.2 E) - Point	0.00	0.00	1.0	0.0	0.0	1,369,932.52	3,280,915.27	40.344484	-104.492169
Projected BHL 1705'FNL - survey misses target center by 3.2ft at 16653.0ft MD (6583.1 TVD, -203.6 N, -9659.8 E) - Point	0.00	0.00	6,580.0	-203.2	-9,660.5	1,369,619.53	3,271,258.08	40.343921	-104.526825

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
6,696.0	6,425.5	-176.7	280.9	TPZ - 460' Setback - 1705'FNL, 460'FEL, Sec.1	
16,474.0	6,585.3	-200.1	-9,480.9	Deepest TVD Drilled - 6585.25' TVD	

Checked By: _____	Approved By: _____	Date: _____
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