

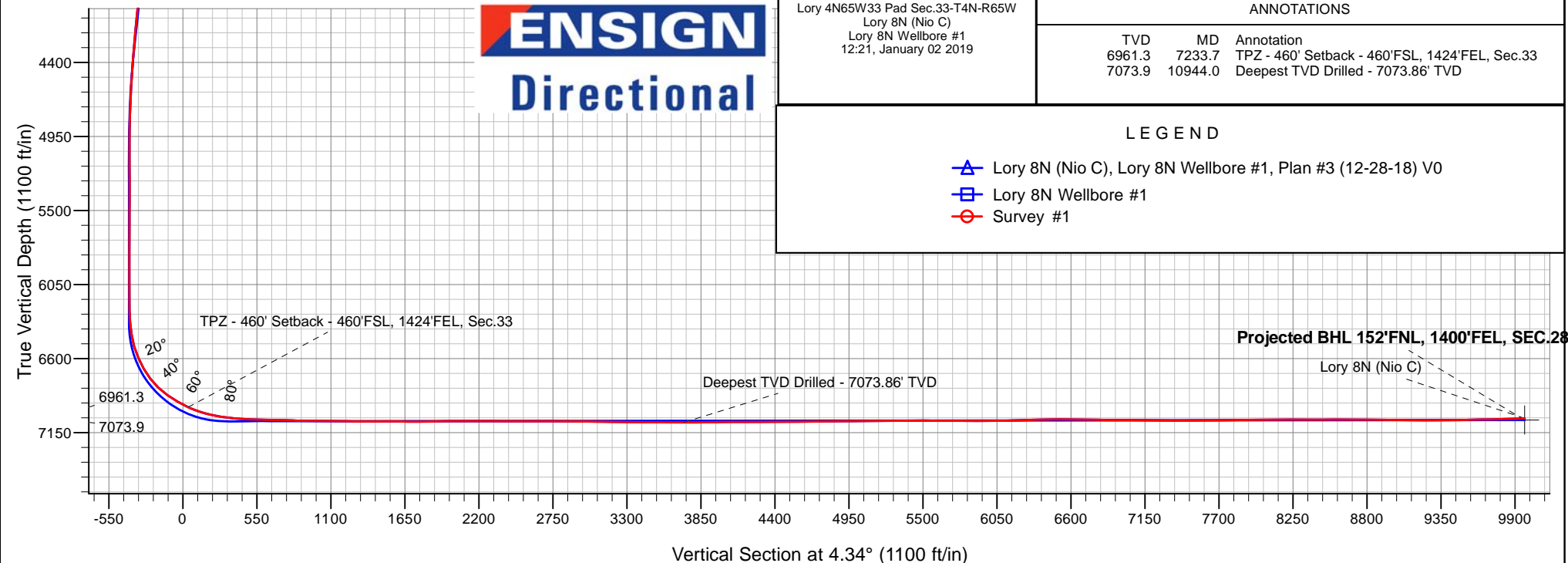
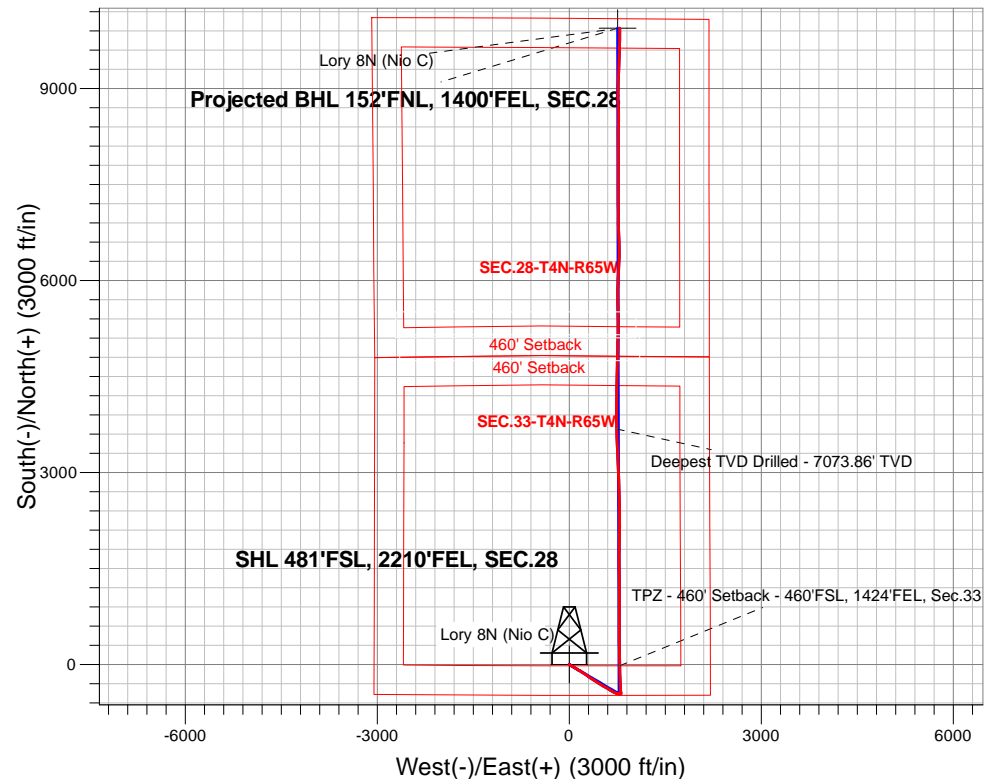
PDC Energy Inc. DJ Basin

Well Name: **Lory 8N (Nio C)**

Surface Location: Lory 4N65W33 Pad Sec.33-T4N-R65W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4818.0
+N/-S+E/-W Northing Easting Latitude Longitude Slot
0.0 0.0 1339720.0 13232520.67 40.262932 -104.666800
Original Well Elev WELL @ 4841.0ft (Original Well Elev)

FINAL SURVEY

Projected Bottom Hole Location
17,210'MD 7044'TVD 9941'N & 790'E of SHL
91.97 degree Incl @ 0.30 degree AZM





PDC Energy Inc. DJ Basin

SEC.33-T4N-R65W

Lory 4N65W33 Pad Sec.33-T4N-R65W

Lory 8N (Nio C)

Lory 8N Wellbore #1

Survey: Survey #1

Standard Survey Report

02 January, 2019

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Lory 8N (Nio C)
Project:	SEC.33-T4N-R65W	TVD Reference:	WELL @ 4841.0ft (Original Well Elev)
Site:	Lory 4N65W33 Pad Sec.33-T4N-R65W	MD Reference:	WELL @ 4841.0ft (Original Well Elev)
Well:	Lory 8N (Nio C)	North Reference:	True
Wellbore:	Lory 8N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Lory 8N Wellbore #1	Database:	US_EDM

Project	SEC.33-T4N-R65W, 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	Lory 4N65W33 Pad Sec.33-T4N-R65W				
Site Position:		Northing:	1,339,615.11 usft	Latitude:	40.262644
From:	Lat/Long	Easting:	3,232,521.77 usft	Longitude:	-104.666800
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.54 °

Well	Lory 8N (Nio C)					
Well Position	+N/-S	0.0 ft	Northing:	1,339,720.01 usft	Latitude:	40.262932
	+E/-W	0.0 ft	Easting:	3,232,520.67 usft	Longitude:	-104.666800
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,818.0 ft

Wellbore	Lory 8N Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/28/2018	8.23	66.70	52,160

Design	Lory 8N 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	4.34	

Survey Program	Date	1/2/2019			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
144.0	17,210.0	Survey #1 (Lory 8N 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	281.40	1.0	0.0	0.0	0.0	0.00	0.00	0.00	
SHL 481'FSL, 2210'FEL, SEC.28										
144.0	0.10	281.40	144.0	0.0	-0.1	0.0	0.07	0.07	0.00	
234.0	0.20	321.80	234.0	0.2	-0.3	0.1	0.16	0.11	44.89	
324.0	0.00	0.00	324.0	0.3	-0.4	0.3	0.22	-0.22	0.00	
414.0	0.10	251.30	414.0	0.3	-0.5	0.2	0.11	0.11	0.00	
503.0	1.20	138.10	503.0	-0.5	0.1	-0.4	1.40	1.24	-127.19	
594.0	2.80	126.70	593.9	-2.5	2.5	-2.3	1.80	1.76	-12.53	
683.0	4.70	123.20	682.7	-5.8	7.3	-5.2	2.15	2.13	-3.93	
773.0	6.40	123.20	772.3	-10.6	14.6	-9.4	1.89	1.89	0.00	

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Site:	Lory 4N65W33 Pad Sec.33-T4N-R65W	MD Reference:	WELL @ 4841.0ft (Original Well Elev)
Well:	Lory 8N (Nio C)	North Reference:	True
Wellbore:	Lory 8N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Lory 8N 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)
863.0	8.20	118.80	861.6	-16.4	24.4	-14.5	2.09	2.00	-4.89
953.0	9.70	117.00	950.5	-22.9	36.8	-20.1	1.70	1.67	-2.00
1,042.0	10.00	120.40	1,038.2	-30.2	50.1	-26.4	0.74	0.34	3.82
1,131.0	11.00	122.70	1,125.7	-38.7	63.9	-33.8	1.22	1.12	2.58
1,221.0	12.60	122.30	1,213.8	-48.6	79.5	-42.5	1.78	1.78	-0.44
1,311.0	13.60	122.80	1,301.4	-59.6	96.7	-52.1	1.12	1.11	0.56
1,401.0	14.60	122.50	1,388.7	-71.4	115.1	-62.5	1.11	1.11	-0.33
1,490.0	14.70	122.10	1,474.8	-83.5	134.1	-73.1	0.16	0.11	-0.45
1,580.0	13.40	118.30	1,562.1	-94.5	153.0	-82.6	1.77	-1.44	-4.22
1,638.0	12.00	115.80	1,618.7	-100.3	164.3	-87.6	2.59	-2.41	-4.31
1,759.0	11.09	122.53	1,737.3	-112.0	185.5	-97.7	1.34	-0.75	5.56
1,848.0	12.45	126.75	1,824.4	-122.4	200.4	-106.9	1.81	1.53	4.74
1,938.0	11.77	123.51	1,912.4	-133.2	215.8	-116.5	1.07	-0.76	-3.60
2,027.0	11.71	121.19	1,999.5	-142.9	231.1	-125.0	0.53	-0.07	-2.61
2,117.0	12.87	126.96	2,087.5	-153.7	246.9	-134.6	1.88	1.29	6.41
2,207.0	12.08	124.59	2,175.4	-165.1	262.7	-144.7	1.05	-0.88	-2.63
2,297.0	11.43	123.24	2,263.5	-175.3	277.9	-153.8	0.78	-0.72	-1.50
2,386.0	12.69	124.98	2,350.5	-185.7	293.3	-163.0	1.47	1.42	1.96
2,476.0	11.69	122.71	2,438.5	-196.3	309.1	-172.4	1.23	-1.11	-2.52
2,566.0	13.02	125.01	2,526.4	-207.1	325.0	-181.9	1.58	1.48	2.56
2,656.0	12.00	124.71	2,614.2	-218.2	341.0	-191.8	1.14	-1.13	-0.33
2,745.0	14.53	122.88	2,700.9	-229.5	358.0	-201.8	2.88	2.84	-2.06
2,835.0	14.10	122.12	2,788.1	-241.5	376.8	-212.3	0.52	-0.48	-0.84
2,925.0	13.43	120.55	2,875.5	-252.6	395.1	-222.0	0.85	-0.74	-1.74
3,015.0	14.94	125.70	2,962.7	-264.7	413.5	-232.7	2.19	1.68	5.72
3,105.0	13.33	124.03	3,050.0	-277.3	431.5	-243.9	1.85	-1.79	-1.86
3,194.0	14.06	122.52	3,136.5	-288.9	449.1	-254.1	0.91	0.82	-1.70
3,283.0	13.43	120.74	3,222.9	-299.9	467.1	-263.8	0.85	-0.71	-2.00
3,373.0	12.57	119.79	3,310.6	-310.2	484.6	-272.6	0.98	-0.96	-1.06
3,465.0	11.53	118.77	3,400.6	-319.6	501.4	-280.7	1.15	-1.13	-1.11
3,555.0	12.75	121.74	3,488.6	-329.1	517.7	-289.0	1.52	1.36	3.30
3,644.0	13.32	120.71	3,575.3	-339.5	534.9	-298.1	0.69	0.64	-1.16
3,734.0	11.98	118.90	3,663.1	-349.3	552.0	-306.6	1.55	-1.49	-2.01
3,824.0	12.99	118.27	3,751.0	-358.6	569.0	-314.6	1.13	1.12	-0.70
3,914.0	11.63	117.60	3,838.9	-367.6	586.0	-322.2	1.52	-1.51	-0.74
4,003.0	11.53	123.98	3,926.1	-376.7	601.3	-330.2	1.44	-0.11	7.17
4,093.0	11.62	123.05	4,014.3	-386.7	616.4	-339.0	0.23	0.10	-1.03
4,183.0	10.29	122.93	4,102.6	-396.0	630.7	-347.2	1.48	-1.48	-0.13
4,273.0	11.40	122.05	4,191.0	-405.1	645.0	-355.2	1.25	1.23	-0.98
4,363.0	11.10	121.74	4,279.3	-414.4	659.9	-363.3	0.34	-0.33	-0.34
4,453.0	11.66	117.01	4,367.5	-423.1	675.4	-370.8	1.21	0.62	-5.26
4,543.0	10.57	116.70	4,455.8	-430.9	690.9	-377.4	1.21	-1.21	-0.34
4,633.0	9.58	113.38	4,544.4	-437.6	705.1	-383.0	1.27	-1.10	-3.69

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Site:	Lory 4N65W33 Pad Sec.33-T4N-R65W	MD Reference:	WELL @ 4841.0ft (Original Well Elev)
Well:	Lory 8N (Nio C)	North Reference:	True
Wellbore:	Lory 8N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Lory 8N 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)
4,722.0	8.94	112.03	4,632.3	-443.1	718.3	-387.5	0.76	-0.72	-1.52
4,812.0	7.80	109.75	4,721.3	-447.8	730.5	-391.3	1.32	-1.27	-2.53
4,902.0	6.87	107.59	4,810.6	-451.5	741.4	-394.1	1.08	-1.03	-2.40
4,991.0	5.93	104.28	4,899.0	-454.3	751.0	-396.2	1.13	-1.06	-3.72
5,081.0	5.03	94.26	4,988.6	-455.7	759.4	-397.0	1.46	-1.00	-11.13
5,171.0	4.50	93.85	5,078.3	-456.2	766.9	-396.9	0.59	-0.59	-0.46
5,260.0	3.97	89.11	5,167.1	-456.4	773.4	-396.6	0.71	-0.60	-5.33
5,350.0	3.40	92.81	5,256.9	-456.5	779.2	-396.3	0.69	-0.63	4.11
5,439.0	2.85	93.68	5,345.7	-456.8	784.0	-396.2	0.62	-0.62	0.98
5,529.0	2.37	97.26	5,435.6	-457.1	788.1	-396.2	0.56	-0.53	3.98
5,619.0	2.03	103.62	5,525.6	-457.8	791.5	-396.6	0.46	-0.38	7.07
5,709.0	2.00	106.00	5,615.5	-458.6	794.6	-397.2	0.10	-0.03	2.64
5,888.0	1.15	102.72	5,794.5	-459.8	799.3	-398.0	0.48	-0.47	-1.83
5,978.0	0.83	103.33	5,884.4	-460.2	800.8	-398.3	0.36	-0.36	0.68
6,067.0	0.70	87.90	5,973.4	-460.3	802.0	-398.3	0.27	-0.15	-17.34
6,157.0	0.76	68.75	6,063.4	-460.1	803.1	-398.0	0.28	0.07	-21.28
6,246.0	0.69	64.20	6,152.4	-459.6	804.2	-397.5	0.10	-0.08	-5.11
6,335.0	0.89	59.17	6,241.4	-459.0	805.2	-396.8	0.24	0.22	-5.65
6,425.0	4.60	2.59	6,331.3	-455.1	806.0	-392.8	4.64	4.12	-62.87
6,515.0	9.32	355.32	6,420.6	-444.2	805.6	-382.0	5.32	5.24	-8.08
6,605.0	15.95	358.24	6,508.4	-424.5	804.6	-362.5	7.40	7.37	3.24
6,695.0	24.25	353.16	6,592.8	-393.8	802.0	-332.0	9.42	9.22	-5.64
6,785.0	29.58	353.66	6,673.1	-353.3	797.3	-292.0	5.93	5.92	0.56
6,875.0	36.67	356.65	6,748.4	-304.3	793.3	-243.5	8.08	7.88	3.32
6,964.0	47.07	0.26	6,814.6	-245.1	791.9	-184.5	11.99	11.69	4.06
7,054.0	54.78	359.29	6,871.3	-175.3	791.6	-114.9	8.61	8.57	-1.08
7,144.0	59.46	357.23	6,920.1	-99.7	789.3	-39.7	5.54	5.20	-2.29
7,233.7	65.84	356.18	6,961.3	-20.2	784.7	39.2	7.19	7.11	-1.17
TPZ - 460' Setback - 460'FSL, 1424'FEL, Sec.33									
7,234.0	65.86	356.18	6,961.4	-20.0	784.7	39.4	7.19	7.12	-1.10
7,324.0	71.57	358.97	6,994.1	63.8	781.1	122.7	6.97	6.34	3.10
7,413.0	77.63	0.38	7,017.7	149.5	780.7	208.2	6.98	6.81	1.58
7,502.0	81.20	359.98	7,034.1	237.0	780.9	295.4	4.04	4.01	-0.45
7,525.4	82.25	0.12	7,037.4	260.1	781.0	318.5	4.53	4.49	0.59
LPL 737'FSL, 1435'FEL, SEC.33									
7,592.0	85.24	0.51	7,044.7	326.4	781.3	384.5	4.53	4.49	0.59
7,715.0	88.42	0.67	7,051.5	449.2	782.6	507.1	2.59	2.59	0.13
7,805.0	88.44	0.26	7,054.0	539.1	783.3	596.8	0.46	0.02	-0.46
7,894.0	88.50	359.90	7,056.3	628.1	783.5	685.5	0.41	0.07	-0.40
7,984.0	88.29	359.59	7,058.9	718.0	783.1	775.2	0.42	-0.23	-0.34
8,074.0	88.51	359.49	7,061.4	808.0	782.3	864.9	0.27	0.24	-0.11
8,163.0	89.38	359.50	7,063.0	897.0	781.5	953.5	0.98	0.98	0.01
8,253.0	89.54	359.54	7,063.9	987.0	780.8	1,043.2	0.18	0.18	0.04
8,342.0	89.13	359.14	7,064.9	1,076.0	779.8	1,131.9	0.64	-0.46	-0.45

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Wellbore:	Lory 8N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Lory 8N 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)
8,432.0	89.08	359.08	7,066.3	1,165.9	778.4	1,221.5	0.09	-0.06	-0.07
8,522.0	90.00	0.44	7,067.0	1,255.9	778.0	1,311.2	1.82	1.02	1.51
8,612.0	90.27	0.49	7,066.8	1,345.9	778.7	1,401.0	0.31	0.30	0.06
8,701.0	90.15	0.16	7,066.5	1,434.9	779.2	1,489.8	0.39	-0.13	-0.37
8,791.0	89.39	359.36	7,066.8	1,524.9	778.9	1,579.5	1.23	-0.84	-0.89
8,881.0	89.19	359.16	7,068.0	1,614.9	777.7	1,669.1	0.31	-0.22	-0.22
8,971.0	90.71	0.86	7,068.0	1,704.9	777.7	1,758.9	2.53	1.69	1.89
9,061.0	90.68	0.76	7,066.9	1,794.9	779.0	1,848.7	0.12	-0.03	-0.11
9,151.0	90.76	0.82	7,065.8	1,884.9	780.2	1,938.5	0.11	0.09	0.07
9,241.0	90.36	0.72	7,064.9	1,974.9	781.4	2,028.3	0.46	-0.44	-0.11
9,330.0	90.00	0.90	7,064.7	2,063.9	782.7	2,117.1	0.45	-0.40	0.20
9,420.0	89.69	0.81	7,064.9	2,153.8	784.0	2,207.0	0.36	-0.34	-0.10
9,509.0	89.45	0.39	7,065.6	2,242.8	785.0	2,295.8	0.54	-0.27	-0.47
9,599.0	90.06	359.85	7,066.0	2,332.8	785.1	2,385.5	0.91	0.68	-0.60
9,688.0	90.06	359.54	7,065.9	2,421.8	784.7	2,474.3	0.35	0.00	-0.35
9,778.0	90.13	359.26	7,065.7	2,511.8	783.7	2,563.9	0.32	0.08	-0.31
9,868.0	89.80	358.64	7,065.8	2,601.8	782.1	2,653.5	0.78	-0.37	-0.69
9,958.0	89.92	357.95	7,066.0	2,691.8	779.4	2,743.0	0.78	0.13	-0.77
10,048.0	89.81	357.47	7,066.2	2,781.7	775.8	2,832.4	0.55	-0.12	-0.53
10,138.0	89.39	357.17	7,066.8	2,871.6	771.6	2,921.7	0.57	-0.47	-0.33
10,227.0	89.20	356.90	7,067.9	2,960.5	767.0	3,010.0	0.37	-0.21	-0.30
10,317.0	89.58	358.60	7,068.9	3,050.4	763.5	3,099.4	1.94	0.42	1.89
10,406.0	89.52	358.24	7,069.6	3,139.4	761.0	3,187.9	0.41	-0.07	-0.40
10,496.0	89.39	357.76	7,070.4	3,229.3	757.9	3,277.4	0.55	-0.14	-0.53
10,585.0	89.12	357.29	7,071.6	3,318.2	754.0	3,365.7	0.61	-0.30	-0.53
10,674.0	88.82	356.56	7,073.2	3,407.1	749.3	3,454.0	0.89	-0.34	-0.82
10,764.0	90.51	358.99	7,073.7	3,497.0	745.8	3,543.4	3.29	1.88	2.70
10,854.0	89.82	358.56	7,073.5	3,587.0	743.8	3,633.0	0.90	-0.77	-0.48
10,944.0	89.67	357.77	7,073.9	3,676.9	741.0	3,722.4	0.89	-0.17	-0.88
Deepest TVD Drilled - 7073.86' TVD									
11,034.0	90.66	0.29	7,073.6	3,766.9	739.4	3,812.0	3.01	1.10	2.80
11,123.0	90.56	359.39	7,072.6	3,855.9	739.2	3,900.8	1.02	-0.11	-1.01
11,213.0	90.53	358.95	7,071.8	3,945.9	737.9	3,990.4	0.49	-0.03	-0.49
11,304.0	90.49	1.28	7,071.0	4,036.9	738.1	4,081.1	2.56	-0.04	2.56
11,394.0	90.22	1.36	7,070.4	4,126.8	740.1	4,171.0	0.31	-0.30	0.09
11,484.0	90.11	0.90	7,070.2	4,216.8	741.9	4,260.9	0.53	-0.12	-0.51
11,573.0	90.17	359.97	7,069.9	4,305.8	742.6	4,349.7	1.05	0.07	-1.04
11,663.0	90.85	1.37	7,069.1	4,395.8	743.6	4,439.5	1.73	0.76	1.56
11,753.0	90.00	1.31	7,068.5	4,485.8	745.7	4,529.3	0.95	-0.94	-0.07
11,843.0	89.93	1.01	7,068.5	4,575.8	747.6	4,619.2	0.34	-0.08	-0.33
11,934.0	89.78	0.67	7,068.8	4,666.8	748.9	4,710.0	0.41	-0.16	-0.37
12,024.0	91.34	2.52	7,067.9	4,756.7	751.4	4,799.9	2.69	1.73	2.06
12,114.0	91.41	1.92	7,065.7	4,846.6	754.9	4,889.8	0.67	0.08	-0.67

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Lory 8N (Nio C)
Project:	SEC.33-T4N-R65W	TVD Reference:	WELL @ 4841.0ft (Original Well Elev)
Site:	Lory 4N65W33 Pad Sec.33-T4N-R65W	MD Reference:	WELL @ 4841.0ft (Original Well Elev)
Well:	Lory 8N (Nio C)	North Reference:	True
Wellbore:	Lory 8N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Lory 8N 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)
12,204.0	91.00	1.25	7,063.8	4,936.6	757.4	4,979.7	0.87	-0.46	-0.74
12,294.0	90.32	0.98	7,062.8	5,026.5	759.1	5,069.6	0.81	-0.76	-0.30
12,384.0	90.04	0.91	7,062.5	5,116.5	760.6	5,159.4	0.32	-0.31	-0.08
12,474.0	90.13	0.65	7,062.4	5,206.5	761.8	5,249.2	0.31	0.10	-0.29
12,564.0	90.48	0.21	7,061.9	5,296.5	762.5	5,339.0	0.62	0.39	-0.49
12,653.0	90.13	359.74	7,061.4	5,385.5	762.5	5,427.8	0.66	-0.39	-0.53
12,743.0	90.11	359.29	7,061.2	5,475.5	761.7	5,517.4	0.50	-0.02	-0.50
12,833.0	89.65	358.47	7,061.4	5,565.5	760.0	5,607.0	1.04	-0.51	-0.91
12,922.0	89.83	0.13	7,061.8	5,654.5	758.9	5,695.7	1.88	0.20	1.87
13,012.0	89.84	359.61	7,062.1	5,744.5	758.7	5,785.4	0.58	0.01	-0.58
13,102.0	89.91	359.47	7,062.3	5,834.5	757.9	5,875.1	0.17	0.08	-0.16
13,192.0	89.05	1.50	7,063.1	5,924.5	758.7	5,964.9	2.45	-0.96	2.26
13,282.0	91.72	3.49	7,062.5	6,014.4	762.6	6,054.8	3.70	2.97	2.21
13,372.0	91.43	2.83	7,060.0	6,104.2	767.6	6,144.8	0.80	-0.32	-0.73
13,462.0	91.48	2.66	7,057.7	6,194.1	771.9	6,234.7	0.20	0.06	-0.19
13,551.0	91.91	2.49	7,055.1	6,282.9	775.9	6,323.6	0.52	0.48	-0.19
13,641.0	90.32	0.79	7,053.4	6,372.9	778.5	6,413.5	2.59	-1.77	-1.89
13,730.0	91.27	359.90	7,052.1	6,461.9	779.0	6,502.3	1.46	1.07	-1.00
13,820.0	89.29	358.49	7,051.7	6,551.8	777.7	6,591.9	2.70	-2.20	-1.57
13,910.0	88.80	358.12	7,053.2	6,641.8	775.1	6,681.4	0.68	-0.54	-0.41
13,999.0	88.86	357.47	7,055.0	6,730.7	771.6	6,769.8	0.73	0.07	-0.73
14,089.0	89.87	358.63	7,056.0	6,820.6	768.6	6,859.2	1.71	1.12	1.29
14,179.0	90.06	359.89	7,056.1	6,910.6	767.4	6,948.9	1.42	0.21	1.40
14,269.0	89.44	359.84	7,056.4	7,000.6	767.2	7,038.6	0.69	-0.69	-0.06
14,359.0	89.25	359.64	7,057.5	7,090.6	766.8	7,128.3	0.31	-0.21	-0.22
14,449.0	89.06	359.08	7,058.8	7,180.6	765.8	7,218.0	0.66	-0.21	-0.62
14,538.0	90.30	0.55	7,059.3	7,269.6	765.5	7,306.7	2.16	1.39	1.65
14,628.0	89.98	359.57	7,059.1	7,359.6	765.6	7,396.4	1.15	-0.36	-1.09
14,718.0	89.62	359.14	7,059.4	7,449.6	764.6	7,486.1	0.62	-0.40	-0.48
14,808.0	90.67	0.98	7,059.2	7,539.6	764.7	7,575.8	2.35	1.17	2.04
14,898.0	90.30	359.95	7,058.4	7,629.6	765.4	7,665.6	1.22	-0.41	-1.14
14,987.0	90.34	359.60	7,057.9	7,718.6	765.1	7,754.3	0.40	0.04	-0.39
15,076.0	91.06	0.87	7,056.8	7,807.6	765.4	7,843.1	1.64	0.81	1.43
15,166.0	90.70	0.56	7,055.4	7,897.5	766.5	7,932.9	0.53	-0.40	-0.34
15,256.0	90.43	359.85	7,054.5	7,987.5	766.9	8,022.7	0.84	-0.30	-0.79
15,346.0	90.24	359.04	7,054.0	8,077.5	766.0	8,112.3	0.92	-0.21	-0.90
15,436.0	89.83	359.60	7,054.0	8,167.5	764.9	8,202.0	0.77	-0.46	0.62
15,527.0	89.31	359.18	7,054.6	8,258.5	764.0	8,292.6	0.73	-0.57	-0.46
15,616.0	90.67	1.98	7,054.7	8,347.5	764.9	8,381.4	3.50	1.53	3.15
15,706.0	90.46	2.09	7,053.8	8,437.4	768.1	8,471.4	0.26	-0.23	0.12
15,795.0	90.20	0.19	7,053.3	8,526.4	769.8	8,560.2	2.15	-0.29	-2.13
15,885.0	89.77	358.32	7,053.3	8,616.4	768.7	8,649.9	2.13	-0.48	-2.08
15,974.0	89.99	358.33	7,053.5	8,705.4	766.1	8,738.4	0.25	0.25	0.01

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Lory 8N (Nio C)
Project:	SEC.33-T4N-R65W	TVD Reference:	WELL @ 4841.0ft (Original Well Elev)
Site:	Lory 4N65W33 Pad Sec.33-T4N-R65W	MD Reference:	WELL @ 4841.0ft (Original Well Elev)
Well:	Lory 8N (Nio C)	North Reference:	True
Wellbore:	Lory 8N Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Lory 8N 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)
16,064.0	89.36	356.73	7,054.0	8,795.3	762.2	8,827.7	1.91	-0.70	-1.78
16,153.0	89.38	0.12	7,055.0	8,884.2	759.7	8,916.2	3.81	0.02	3.81
16,243.0	88.71	0.88	7,056.5	8,974.2	760.5	9,006.0	1.13	-0.74	0.84
16,332.0	90.20	2.40	7,057.3	9,063.2	763.1	9,094.9	2.39	1.67	1.71
16,421.0	90.24	1.86	7,057.0	9,152.1	766.4	9,183.9	0.61	0.04	-0.61
16,511.0	89.73	2.14	7,057.0	9,242.0	769.5	9,273.8	0.65	-0.57	0.31
16,600.0	89.57	2.03	7,057.5	9,331.0	772.8	9,362.7	0.22	-0.18	-0.12
16,690.0	91.25	2.31	7,056.9	9,420.9	776.2	9,452.6	1.89	1.87	0.31
16,780.0	91.29	2.27	7,054.9	9,510.8	779.8	9,542.6	0.06	0.04	-0.04
16,869.0	90.94	2.24	7,053.2	9,599.7	783.3	9,631.5	0.39	-0.39	-0.03
16,958.0	90.99	1.59	7,051.7	9,688.7	786.2	9,720.4	0.73	0.06	-0.73
17,048.0	91.93	0.90	7,049.4	9,778.6	788.2	9,810.2	1.30	1.04	-0.77
17,150.0	91.97	0.30	7,045.9	9,880.6	789.3	9,912.0	0.59	0.04	-0.59
17,210.0	91.97	0.30	7,043.8	9,940.5	789.6	9,971.8	0.00	0.00	0.00
Projected BHL 152'FNL, 1400'FEL, SEC.28									

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 481'FSL, 2210'FEL	0.00	0.00	1.0	0.0	0.0	1,339,720.02	3,232,520.67	40.262932	-104.666800
- survey hits target center									
- Point									
Projected BHL 152'FNL,	0.00	0.00	7,056.0	9,942.8	754.2	1,349,669.04	3,233,181.42	40.290225	-104.664096
- survey misses target center by 37.4ft at 17210.0ft MD (7043.8 TVD, 9940.5 N, 789.6 E)									
- Point									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,233.7	6,961.3	-20.2	784.7	TPZ - 460' Setback - 460'FSL, 1424'FEL, Sec.33
10,944.0	7,073.9	3,676.9	741.0	Deepest TVD Drilled - 7073.86' TVD

Checked By: _____	Approved By: _____	Date: _____
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