

PDC Energy Inc. DJ Basin

Rio 16N

Rio Pad

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

Ground Elevation: 5067.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1243142.03	3156857.66	39.999451	-104.940102	

T41 - RKB 25' Well @ 5092.0ft (T41 - RKB 25')

Rio Pad

Rio 16N

Rio 16N Final Surveys

13:37, August 15 2023

FINAL SURVEY

Projected Bottom Hole Location

19738' MD / 7700.0' TVD

90.72° INC / 187.74° AZM

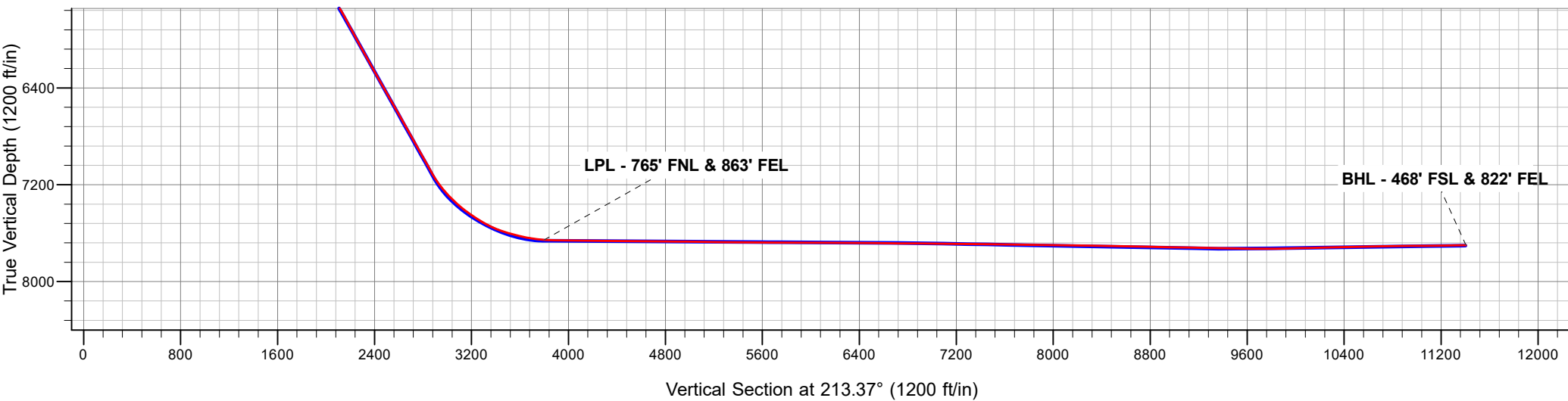
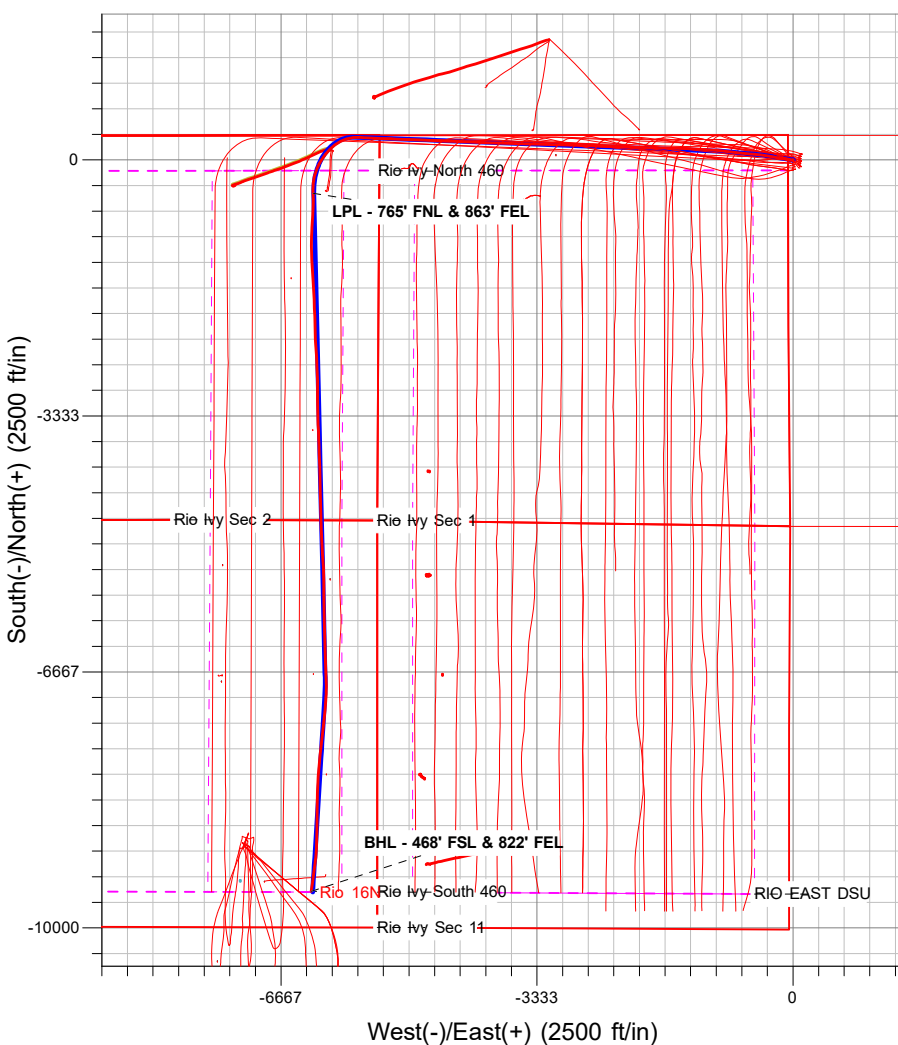
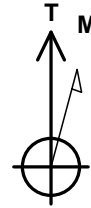
468' FSL / 822' FEL

ANNOTATIONS

MD	TVD	Annotation
10633.0	7655.2	LPL - 765' FNL & 863' FEL
19738.0	7700.0	BHL - 468' FSL & 822' FEL

Azimuths to True North
Magnetic North: 7.87°

Magnetic Field
Strength: 51507.1nT
Dip Angle: 66.15°
Date: 06/21/2023
Model: HRGM



PDC Energy Inc. DJ Basin

SEC.6-T1S-R67W

Rio Pad

Rio 16N

Rio 16N

Design: Rio 16N Final Surveys

Standard Survey Report

15 August, 2023

Ensign Survey Report

Company: PDC Energy Inc. DJ Basin	Local Co-ordinate Reference: Well Rio 16N
Project: SEC.6-T1S-R67W	TVD Reference: Well @ 5092.0ft (T41 - RKB 25')
Site: Rio Pad	MD Reference: Well @ 5092.0ft (T41 - RKB 25')
Well: Rio 16N	North Reference: True
Wellbore: Rio 16N	Survey Calculation Method: Minimum Curvature
Design: Rio 16N Final Surveys	Database: US_EDM

Project SEC.6-T1S-R67W, Adams County, CO	
Map System: US State Plane 1983	System Datum: Mean Sea Level
Geo Datum: North American Datum 1983	
Map Zone: Colorado Northern Zone	Using geodetic scale factor

Site Rio Pad	
Site Position:	Northing: 1,243,218.38 usft
From: Lat/Long	Easting: 3,156,945.99 usft
Position Uncertainty: 0.0 ft	Slot Radius: 13-3/16 "
	Latitude: 39.999659
	Longitude: -104.939785
	Grid Convergence: 0.36 °

Well Rio 16N	
Well Position +N/-S 0.0 ft	Northing: 1,243,142.03 usft
+E/-W 0.0 ft	Easting: 3,156,857.66 usft
Position Uncertainty 0.0 ft	Wellhead Elevation: ft
	Latitude: 39.999451
	Longitude: -104.940102
	Ground Level: 5,067.0 ft

Wellbore Rio 16N					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HRGM	06/21/2023	7.87	66.15	51,507.08811492

Design Rio 16N Final Surveys				
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	213.37

Survey Program		Date 08/15/2023
From (ft)	To (ft)	Survey (Wellbore)
157.0	19,738.0	Survey #1 (Rio 16N)
		Tool Name MWD
		Description 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
Rio 16N SHL - 324' FNL & 66' FWL									
157.0	0.62	130.77	157.0	-0.6	0.6	0.1	0.39	0.39	0.00
248.0	0.88	118.64	248.0	-1.2	1.6	0.1	0.33	0.29	-13.33
339.0	0.79	121.28	339.0	-1.9	2.8	0.0	0.11	-0.10	2.90
458.0	0.62	158.72	458.0	-2.9	3.7	0.4	0.40	-0.14	31.46
543.0	1.49	264.89	543.0	-3.4	2.8	1.3	2.08	1.02	124.91
628.0	2.99	275.97	627.9	-3.3	-0.5	3.0	1.83	1.76	13.04
713.0	4.22	286.69	712.7	-2.2	-5.7	5.0	1.64	1.45	12.61
798.0	6.24	283.17	797.4	-0.2	-13.2	7.4	2.41	2.38	-4.14
883.0	8.62	283.70	881.6	2.3	-23.9	11.2	2.80	2.80	0.62

Ensign

Survey Report

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Rio 16N
Project:	SEC.6-T1S-R67W	TVD Reference:	Well @ 5092.0ft (T41 - RKB 25')
Site:	Rio Pad	MD Reference:	Well @ 5092.0ft (T41 - RKB 25')
Well:	Rio 16N	North Reference:	True
Wellbore:	Rio 16N	Survey Calculation Method:	Minimum Curvature
Design:	Rio 16N Final Surveys	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)
968.0	8.97	285.63	965.6	5.6	-36.5	15.4	0.54	0.41	2.27
1,053.0	11.08	277.55	1,049.3	8.5	-51.0	20.9	2.98	2.48	-9.51
1,138.0	13.10	280.01	1,132.5	11.2	-68.5	28.3	2.45	2.38	2.89
1,224.0	14.86	279.83	1,215.9	14.8	-89.0	36.6	2.05	2.05	-0.21
1,309.0	16.53	278.25	1,297.7	18.4	-111.7	46.1	2.03	1.96	-1.86
1,394.0	17.41	276.85	1,379.0	21.7	-136.3	56.9	1.14	1.04	-1.65
1,479.0	19.17	277.02	1,459.7	24.9	-162.8	68.7	2.07	2.07	0.20
1,564.0	20.22	278.95	1,539.8	28.9	-191.2	81.0	1.45	1.24	2.27
1,653.0	22.95	279.31	1,622.5	34.1	-223.5	94.4	3.07	3.07	0.40
1,738.0	24.71	281.77	1,700.3	40.4	-257.2	107.7	2.38	2.07	2.89
1,823.0	26.29	279.31	1,777.0	47.1	-293.2	122.0	2.24	1.86	-2.89
1,908.0	26.56	280.01	1,853.1	53.4	-330.5	137.2	0.48	0.32	0.82
1,994.0	28.40	277.72	1,929.4	59.5	-369.7	153.6	2.47	2.14	-2.66
2,079.0	29.63	276.49	2,003.7	64.6	-410.6	171.9	1.61	1.45	-1.45
2,164.0	30.78	276.49	2,077.2	69.4	-453.1	191.2	1.35	1.35	0.00
2,249.0	34.91	274.21	2,148.6	73.7	-499.0	212.9	5.07	4.86	-2.68
2,334.0	36.49	274.56	2,217.6	77.5	-548.4	236.9	1.87	1.86	0.41
2,388.0	36.84	274.03	2,260.9	79.9	-580.6	252.6	0.87	0.65	-0.98
2,459.0	35.43	277.24	2,318.3	84.0	-622.2	272.1	3.32	-1.99	4.52
2,554.0	35.56	276.12	2,395.6	90.4	-677.0	296.9	0.70	0.14	-1.18
2,647.0	34.71	275.85	2,471.7	96.0	-730.3	321.5	0.93	-0.91	-0.29
2,741.0	37.33	276.17	2,547.7	101.8	-785.2	346.9	2.79	2.79	0.34
2,835.0	40.48	276.34	2,620.8	108.2	-843.9	373.8	3.35	3.35	0.18
2,929.0	43.38	276.14	2,690.8	115.0	-906.3	402.4	3.09	3.09	-0.21
3,023.0	46.51	276.37	2,757.3	122.3	-972.3	432.7	3.33	3.33	0.24
3,116.0	46.39	273.83	2,821.4	128.2	-1,039.5	464.6	1.98	-0.13	-2.73
3,210.0	46.37	273.77	2,886.2	132.8	-1,107.4	498.2	0.05	-0.02	-0.06
3,303.0	46.47	273.80	2,950.3	137.2	-1,174.6	531.4	0.11	0.11	0.03
3,397.0	47.76	274.20	3,014.3	142.0	-1,243.3	565.2	1.41	1.37	0.43
3,491.0	47.66	273.66	3,077.6	146.8	-1,312.7	599.4	0.44	-0.11	-0.57
3,585.0	48.01	271.54	3,140.7	149.9	-1,382.3	635.0	1.71	0.37	-2.26
3,679.0	47.57	271.44	3,203.8	151.7	-1,451.9	671.8	0.47	-0.47	-0.11
3,773.0	47.98	270.94	3,267.0	153.2	-1,521.4	708.9	0.59	0.44	-0.53
3,867.0	47.62	271.38	3,330.1	154.6	-1,591.1	746.0	0.52	-0.38	0.47
3,961.0	45.66	270.56	3,394.7	155.8	-1,659.4	782.6	2.18	-2.09	-0.87
4,054.0	47.93	271.93	3,458.3	157.3	-1,727.2	818.6	2.67	2.44	1.47
4,147.0	48.32	270.81	3,520.4	158.9	-1,796.4	855.3	0.99	0.42	-1.20
4,241.0	48.10	270.96	3,583.0	160.0	-1,866.5	893.0	0.26	-0.23	0.16
4,336.0	48.28	271.43	3,646.4	161.5	-1,937.3	930.7	0.41	0.19	0.49
4,430.0	47.82	272.13	3,709.2	163.6	-2,007.1	967.3	0.74	-0.49	0.74
4,525.0	47.97	271.36	3,772.9	165.8	-2,077.6	1,004.2	0.62	0.16	-0.81
4,619.0	47.83	271.77	3,835.9	167.7	-2,147.3	1,041.0	0.36	-0.15	0.44
4,713.0	47.69	272.22	3,899.1	170.1	-2,216.9	1,077.2	0.38	-0.15	0.48

Ensign

Survey Report

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Rio 16N
Project:	SEC.6-T1S-R67W	TVD Reference:	Well @ 5092.0ft (T41 - RKB 25')
Site:	Rio Pad	MD Reference:	Well @ 5092.0ft (T41 - RKB 25')
Well:	Rio 16N	North Reference:	True
Wellbore:	Rio 16N	Survey Calculation Method:	Minimum Curvature
Design:	Rio 16N Final Surveys	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)	
4,807.0	48.31	271.54	3,962.0	172.4	-2,286.7	1,113.7	0.85	0.66	-0.72	
4,901.0	48.00	272.01	4,024.7	174.6	-2,356.7	1,150.4	0.50	-0.33	0.50	
4,995.0	48.36	271.87	4,087.4	176.9	-2,426.7	1,186.9	0.40	0.38	-0.15	
5,090.0	48.33	271.83	4,150.6	179.2	-2,497.6	1,224.0	0.04	-0.03	-0.04	
5,278.0	47.33	271.87	4,276.8	183.7	-2,636.9	1,296.9	0.53	-0.53	0.02	
5,373.0	46.47	272.46	4,341.7	186.3	-2,706.2	1,332.8	1.01	-0.91	0.62	
5,467.0	46.19	271.90	4,406.6	188.9	-2,774.1	1,368.0	0.52	-0.30	-0.60	
5,562.0	46.74	271.82	4,472.0	191.2	-2,843.0	1,404.0	0.58	0.58	-0.08	
5,655.0	46.95	271.72	4,535.6	193.3	-2,910.8	1,439.5	0.24	0.23	-0.11	
5,844.0	47.19	271.59	4,664.4	197.3	-3,049.1	1,512.3	0.14	0.13	-0.07	
6,032.0	47.07	272.49	4,792.3	202.2	-3,186.8	1,583.9	0.36	-0.06	0.48	
6,125.0	47.05	271.82	4,855.6	204.7	-3,254.8	1,619.2	0.53	-0.02	-0.72	
6,219.0	45.81	272.16	4,920.4	207.1	-3,322.9	1,654.7	1.34	-1.32	0.36	
6,313.0	47.25	272.02	4,985.1	209.6	-3,391.1	1,690.1	1.54	1.53	-0.15	
6,406.0	46.23	271.21	5,048.8	211.5	-3,458.8	1,725.7	1.27	-1.10	-0.87	
6,501.0	46.99	271.28	5,114.1	213.0	-3,527.8	1,762.4	0.80	0.80	0.07	
6,689.0	46.22	270.59	5,243.2	215.2	-3,664.4	1,835.7	0.49	-0.41	-0.37	
6,783.0	47.15	271.38	5,307.7	216.4	-3,732.8	1,872.3	1.16	0.99	0.84	
6,877.0	46.73	271.28	5,371.9	218.0	-3,801.4	1,908.7	0.45	-0.45	-0.11	
6,971.0	47.09	271.81	5,436.1	219.8	-3,870.0	1,944.9	0.56	0.38	0.56	
7,065.0	46.56	272.21	5,500.4	222.2	-3,938.5	1,980.6	0.64	-0.56	0.43	
7,159.0	47.07	272.40	5,564.7	225.0	-4,007.0	2,016.0	0.56	0.54	0.20	
7,254.0	46.06	271.76	5,630.1	227.5	-4,076.0	2,051.8	1.17	-1.06	-0.67	
7,348.0	46.98	272.81	5,694.7	230.2	-4,144.1	2,087.0	1.27	0.98	1.12	
7,442.0	47.22	272.76	5,758.7	233.6	-4,212.9	2,122.0	0.26	0.26	-0.05	
7,536.0	47.09	272.29	5,822.7	236.6	-4,281.8	2,157.4	0.39	-0.14	-0.50	
7,631.0	46.46	273.25	5,887.7	240.0	-4,350.9	2,192.6	0.99	-0.66	1.01	
7,726.0	45.00	270.59	5,954.0	242.3	-4,418.9	2,228.1	2.53	-1.54	-2.80	
7,820.0	47.16	272.82	6,019.2	244.3	-4,486.5	2,263.6	2.86	2.30	2.37	
7,914.0	45.94	271.98	6,083.9	247.2	-4,554.7	2,298.7	1.45	-1.30	-0.89	
8,008.0	47.05	272.60	6,148.6	249.9	-4,622.8	2,333.9	1.27	1.18	0.66	
8,102.0	47.75	272.37	6,212.2	252.9	-4,692.0	2,369.4	0.77	0.74	-0.24	
8,196.0	47.88	272.69	6,275.3	256.0	-4,761.5	2,405.1	0.29	0.14	0.34	
8,289.0	47.80	272.22	6,337.8	258.9	-4,830.4	2,440.5	0.38	-0.09	-0.51	
8,383.0	47.76	271.99	6,400.9	261.5	-4,900.0	2,476.7	0.19	-0.04	-0.24	
8,477.0	47.59	271.87	6,464.2	263.8	-4,969.4	2,512.9	0.20	-0.18	-0.13	
8,571.0	46.61	271.90	6,528.2	266.1	-5,038.3	2,548.9	1.04	-1.04	0.03	
8,663.0	47.86	272.36	6,590.7	268.6	-5,105.8	2,583.9	1.41	1.36	0.50	
8,757.0	47.29	271.95	6,654.1	271.2	-5,175.1	2,619.8	0.69	-0.61	-0.44	
8,850.0	47.92	272.55	6,716.8	273.9	-5,243.7	2,655.3	0.83	0.68	0.65	
8,944.0	47.94	272.70	6,779.8	277.1	-5,313.4	2,691.0	0.12	0.02	0.16	
9,037.0	47.55	272.53	6,842.3	280.2	-5,382.2	2,726.2	0.44	-0.42	-0.18	
9,131.0	47.28	272.00	6,905.9	283.0	-5,451.3	2,762.0	0.50	-0.29	-0.56	

Ensign

Survey Report

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Rio 16N
Project:	SEC.6-T1S-R67W	TVD Reference:	Well @ 5092.0ft (T41 - RKB 25')
Site:	Rio Pad	MD Reference:	Well @ 5092.0ft (T41 - RKB 25')
Well:	Rio 16N	North Reference:	True
Wellbore:	Rio 16N	Survey Calculation Method:	Minimum Curvature
Design:	Rio 16N Final Surveys	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)
9,224.0	47.68	272.15	6,968.8	285.5	-5,519.8	2,797.6	0.45	0.43	0.16
9,317.0	47.74	272.60	7,031.4	288.3	-5,588.6	2,833.0	0.36	0.06	0.48
9,411.0	47.26	272.04	7,094.9	291.1	-5,657.8	2,868.7	0.67	-0.51	-0.60
9,486.2	47.72	269.02	7,145.7	291.6	-5,713.3	2,898.8	3.03	0.61	-4.02
16N KOP 8/100									
9,505.0	47.85	268.27	7,158.3	291.3	-5,727.2	2,906.7	3.03	0.68	-3.98
9,598.0	46.85	255.47	7,221.5	281.7	-5,794.6	2,951.8	10.17	-1.08	-13.76
9,693.0	47.70	244.40	7,286.0	257.8	-5,860.0	3,007.7	8.60	0.89	-11.65
9,787.0	49.83	237.09	7,348.0	223.2	-5,921.5	3,070.4	6.27	2.27	-7.78
9,880.0	53.12	230.50	7,406.0	180.2	-5,980.1	3,138.6	6.57	3.54	-7.09
9,974.0	57.42	225.00	7,459.6	128.3	-6,037.2	3,213.4	6.63	4.57	-5.85
10,068.0	58.50	218.74	7,509.5	69.0	-6,090.3	3,292.1	5.76	1.15	-6.66
10,162.0	66.49	212.51	7,552.9	1.2	-6,138.7	3,375.3	10.33	8.50	-6.63
10,255.0	71.68	205.51	7,586.1	-74.7	-6,180.7	3,461.8	8.97	5.58	-7.53
10,350.0	75.89	198.26	7,612.6	-159.3	-6,214.6	3,551.1	8.56	4.43	-7.63
10,444.0	79.51	191.26	7,632.7	-248.1	-6,237.9	3,638.1	8.23	3.85	-7.45
10,539.0	83.34	181.30	7,646.9	-341.3	-6,248.1	3,721.6	11.12	4.03	-10.48
10,628.1	86.35	178.26	7,654.9	-430.0	-6,247.8	3,795.4	4.80	3.38	-3.42
Rio 16N LPL - 760' FNL & 855' FEL									
10,633.0	86.52	178.09	7,655.2	-434.9	-6,247.6	3,799.5	4.80	3.39	-3.40
LPL - 765' FNL & 863' FEL									
10,727.0	88.96	180.64	7,658.9	-528.8	-6,246.6	3,877.3	3.75	2.60	2.71
10,821.0	89.24	182.26	7,660.4	-622.8	-6,249.0	3,957.1	1.75	0.30	1.72
11,009.0	89.44	184.00	7,662.5	-810.5	-6,259.2	4,119.5	0.93	0.11	0.93
11,198.0	90.17	181.97	7,663.2	-999.2	-6,269.1	4,282.5	1.14	0.39	-1.07
11,292.0	89.37	179.69	7,663.6	-1,093.2	-6,270.4	4,361.8	2.57	-0.85	-2.43
11,386.0	89.24	178.84	7,664.7	-1,187.2	-6,269.2	4,439.6	0.91	-0.14	-0.90
11,480.0	89.39	177.84	7,665.8	-1,281.1	-6,266.5	4,516.6	1.08	0.16	-1.06
11,575.0	89.69	175.75	7,666.6	-1,376.0	-6,261.2	4,592.9	2.22	0.32	-2.20
11,669.0	89.47	176.15	7,667.3	-1,469.7	-6,254.6	4,667.5	0.49	-0.23	0.43
11,763.0	89.82	176.62	7,667.9	-1,563.5	-6,248.6	4,742.6	0.62	0.37	0.50
11,857.0	89.53	177.28	7,668.4	-1,657.4	-6,243.6	4,818.2	0.77	-0.31	0.70
11,950.0	89.36	177.66	7,669.3	-1,750.3	-6,239.5	4,893.6	0.45	-0.18	0.41
12,045.0	89.56	177.24	7,670.2	-1,845.2	-6,235.3	4,970.5	0.49	0.21	-0.44
12,139.0	89.54	177.44	7,670.9	-1,939.1	-6,230.9	5,046.5	0.21	-0.02	0.21
12,233.0	89.24	178.25	7,671.9	-2,033.0	-6,227.4	5,123.0	0.92	-0.32	0.86
12,327.0	89.37	178.05	7,673.1	-2,127.0	-6,224.4	5,199.8	0.25	0.14	-0.21
12,421.0	89.47	178.33	7,674.0	-2,220.9	-6,221.4	5,276.6	0.32	0.11	0.30
12,516.0	89.64	177.92	7,674.8	-2,315.9	-6,218.3	5,354.2	0.47	0.18	-0.43
12,610.0	89.46	176.32	7,675.5	-2,409.8	-6,213.6	5,430.0	1.71	-0.19	-1.70
12,704.0	89.51	176.40	7,676.3	-2,503.6	-6,207.6	5,505.1	0.10	0.05	0.09
12,799.0	89.71	176.90	7,677.0	-2,598.4	-6,202.0	5,581.2	0.57	0.21	0.53
12,893.0	89.51	177.75	7,677.6	-2,692.3	-6,197.7	5,657.2	0.93	-0.21	0.90
12,987.0	89.38	178.72	7,678.5	-2,786.2	-6,194.8	5,734.1	1.04	-0.14	1.03

Ensign

Survey Report

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Rio 16N
Project:	SEC.6-T1S-R67W	TVD Reference:	Well @ 5092.0ft (T41 - RKB 25')
Site:	Rio Pad	MD Reference:	Well @ 5092.0ft (T41 - RKB 25')
Well:	Rio 16N	North Reference:	True
Wellbore:	Rio 16N	Survey Calculation Method:	Minimum Curvature
Design:	Rio 16N Final Surveys	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)
13,080.0	89.62	178.44	7,679.4	-2,879.2	-6,192.5	5,810.5	0.40	0.26	-0.30
13,175.0	90.42	179.98	7,679.3	-2,974.2	-6,191.1	5,889.1	1.83	0.84	1.62
13,269.0	90.80	179.90	7,678.3	-3,068.2	-6,191.0	5,967.5	0.41	0.40	-0.09
13,363.0	89.89	179.76	7,677.8	-3,162.2	-6,190.8	6,045.9	0.98	-0.97	-0.15
13,456.0	89.59	178.37	7,678.2	-3,255.2	-6,189.3	6,122.7	1.53	-0.32	-1.49
13,550.0	89.84	178.32	7,678.6	-3,349.1	-6,186.5	6,199.7	0.27	0.27	-0.05
13,644.0	90.12	177.41	7,678.7	-3,443.1	-6,183.0	6,276.2	1.01	0.30	-0.97
13,738.0	88.69	178.21	7,679.7	-3,537.0	-6,179.4	6,352.7	1.74	-1.52	0.85
13,831.0	88.62	177.65	7,681.8	-3,629.9	-6,176.1	6,428.4	0.61	-0.08	-0.60
13,925.0	89.86	177.61	7,683.1	-3,723.8	-6,172.2	6,504.7	1.32	1.32	-0.04
14,019.0	89.71	177.78	7,683.4	-3,817.7	-6,168.4	6,581.1	0.24	-0.16	0.18
14,112.0	89.85	178.14	7,683.8	-3,910.7	-6,165.1	6,656.9	0.42	0.15	0.39
14,206.0	89.51	178.47	7,684.3	-4,004.6	-6,162.3	6,733.8	0.50	-0.36	0.35
14,298.0	90.21	178.37	7,684.5	-4,096.6	-6,159.8	6,809.2	0.77	0.76	-0.11
14,315.8	90.10	178.42	7,684.5	-4,114.4	-6,159.3	6,823.9	0.68	-0.63	0.26
16N WP#1									
14,390.0	89.63	178.61	7,684.7	-4,188.6	-6,157.4	6,884.7	0.68	-0.63	0.26
14,483.0	89.21	178.55	7,685.6	-4,281.5	-6,155.1	6,961.1	0.46	-0.45	-0.06
14,577.0	89.57	179.05	7,686.6	-4,375.5	-6,153.1	7,038.5	0.66	0.38	0.53
14,670.0	89.09	179.10	7,687.7	-4,468.5	-6,151.6	7,115.3	0.52	-0.52	0.05
14,763.0	89.49	178.81	7,688.9	-4,561.5	-6,149.9	7,192.0	0.53	0.43	-0.31
14,856.0	90.20	179.03	7,689.1	-4,654.4	-6,148.1	7,268.7	0.80	0.76	0.24
14,950.0	89.19	177.82	7,689.6	-4,748.4	-6,145.6	7,345.8	1.68	-1.07	-1.29
15,044.0	89.31	177.44	7,690.8	-4,842.3	-6,141.7	7,422.1	0.42	0.13	-0.40
15,138.0	89.16	176.59	7,692.1	-4,936.2	-6,136.8	7,497.8	0.92	-0.16	-0.90
15,325.0	89.59	176.41	7,694.1	-5,122.8	-6,125.4	7,647.4	0.25	0.23	-0.10
15,418.0	89.60	176.52	7,694.8	-5,215.6	-6,119.6	7,721.7	0.12	0.01	0.12
15,512.0	89.66	177.06	7,695.4	-5,309.5	-6,114.4	7,797.2	0.58	0.06	0.57
15,606.0	89.58	177.70	7,696.0	-5,403.4	-6,110.1	7,873.3	0.69	-0.09	0.68
15,700.0	89.22	179.61	7,697.0	-5,497.4	-6,107.9	7,950.5	2.07	-0.38	2.03
15,793.0	89.19	179.95	7,698.3	-5,590.3	-6,107.5	8,028.0	0.37	-0.03	0.37
15,887.0	89.15	179.99	7,699.7	-5,684.3	-6,107.5	8,106.5	0.06	-0.04	0.04
15,982.0	89.03	179.49	7,701.2	-5,779.3	-6,107.0	8,185.6	0.54	-0.13	-0.53
16,076.0	89.00	179.27	7,702.8	-5,873.3	-6,106.0	8,263.5	0.24	-0.03	-0.23
16,171.0	89.16	178.87	7,704.3	-5,968.3	-6,104.5	8,342.0	0.45	0.17	-0.42
16,265.0	89.16	178.28	7,705.7	-6,062.2	-6,102.1	8,419.1	0.63	0.00	-0.63
16,359.0	89.20	178.02	7,707.0	-6,156.2	-6,099.1	8,495.9	0.28	0.04	-0.28
16,454.0	88.97	178.52	7,708.5	-6,251.1	-6,096.2	8,573.7	0.58	-0.24	0.53
16,548.0	88.90	178.57	7,710.3	-6,345.1	-6,093.8	8,650.8	0.09	-0.07	0.05
16,642.0	89.12	178.26	7,711.9	-6,439.0	-6,091.2	8,727.8	0.40	0.23	-0.33
16,736.0	89.17	177.59	7,713.3	-6,533.0	-6,087.8	8,804.4	0.71	0.05	-0.71
16,924.0	89.16	177.47	7,716.1	-6,720.8	-6,079.7	8,956.8	0.06	-0.01	-0.06
17,018.0	89.04	179.45	7,717.5	-6,814.7	-6,077.2	9,033.9	2.11	-0.13	2.11
17,112.0	88.95	181.36	7,719.2	-6,908.7	-6,077.9	9,112.7	2.03	-0.10	2.03

Ensign Survey Report

Company: PDC Energy Inc. DJ Basin	Local Co-ordinate Reference: Well Rio 16N
Project: SEC.6-T1S-R67W	TVD Reference: Well @ 5092.0ft (T41 - RKB 25')
Site: Rio Pad	MD Reference: Well @ 5092.0ft (T41 - RKB 25')
Well: Rio 16N	North Reference: True
Wellbore: Rio 16N	Survey Calculation Method: Minimum Curvature
Design: Rio 16N Final Surveys	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)
17,206.0	89.04	182.83	7,720.8	-7,002.6	-6,081.3	9,193.1	1.57	0.10	1.56
17,299.0	89.12	184.46	7,722.3	-7,095.4	-6,087.2	9,273.8	1.75	0.09	1.75
17,394.0	89.19	185.56	7,723.7	-7,190.0	-6,095.5	9,357.4	1.16	0.07	1.16
17,449.0	89.15	185.97	7,724.5	-7,244.7	-6,101.0	9,406.1	0.76	-0.06	0.75
16N WP#2									
17,487.0	89.13	186.26	7,725.1	-7,282.5	-6,105.1	9,439.9	0.76	-0.06	0.75
17,580.0	89.19	186.02	7,726.5	-7,375.0	-6,115.0	9,522.6	0.27	0.06	-0.26
17,673.0	89.08	185.90	7,727.9	-7,467.5	-6,124.7	9,605.2	0.18	-0.12	-0.13
17,766.0	89.04	186.49	7,729.4	-7,559.9	-6,134.7	9,687.9	0.64	-0.04	0.63
17,860.0	90.81	186.58	7,729.5	-7,653.3	-6,145.4	9,771.8	1.89	1.88	0.10
17,952.0	91.20	186.59	7,727.9	-7,744.7	-6,156.0	9,853.9	0.42	0.42	0.01
18,045.0	91.17	185.95	7,726.0	-7,837.1	-6,166.1	9,936.6	0.69	-0.03	-0.69
18,139.0	91.09	184.86	7,724.1	-7,930.7	-6,175.0	10,019.7	1.16	-0.09	-1.16
18,234.0	91.13	183.54	7,722.3	-8,025.4	-6,181.9	10,102.6	1.39	0.04	-1.39
18,327.0	91.23	182.69	7,720.4	-8,118.2	-6,187.0	10,182.9	0.92	0.11	-0.91
18,422.0	91.26	181.80	7,718.3	-8,213.1	-6,190.7	10,264.2	0.94	0.03	-0.94
18,515.0	91.13	181.24	7,716.4	-8,306.1	-6,193.2	10,343.2	0.62	-0.14	-0.60
18,609.0	91.17	180.75	7,714.5	-8,400.0	-6,194.8	10,422.6	0.52	0.04	-0.52
18,703.0	91.06	180.31	7,712.6	-8,494.0	-6,195.7	10,501.5	0.48	-0.12	-0.47
18,797.0	91.16	180.58	7,710.8	-8,588.0	-6,196.4	10,580.4	0.31	0.11	0.29
18,891.0	90.86	180.98	7,709.2	-8,682.0	-6,197.7	10,659.6	0.53	-0.32	0.43
18,985.0	90.65	181.17	7,707.9	-8,776.0	-6,199.5	10,739.1	0.30	-0.22	0.20
19,079.0	90.50	181.51	7,707.0	-8,869.9	-6,201.6	10,818.8	0.40	-0.16	0.36
19,173.0	90.59	182.77	7,706.1	-8,963.9	-6,205.2	10,899.1	1.34	0.10	1.34
19,267.0	90.53	184.80	7,705.2	-9,057.6	-6,211.4	10,980.9	2.16	-0.06	2.16
19,361.0	90.62	187.30	7,704.2	-9,151.1	-6,221.3	11,064.4	2.66	0.10	2.66
19,549.0	90.58	188.24	7,702.3	-9,337.4	-6,246.7	11,233.9	0.50	-0.02	0.50
19,643.0	90.72	187.74	7,701.2	-9,430.4	-6,259.7	11,318.8	0.55	0.15	-0.53
19,738.0	90.72	187.74	7,700.0	-9,524.6	-6,272.5	11,404.5	0.00	0.00	0.00
BHL - 468' FSL & 822' FEL - Rio 16N BHL - 460' FSL & 840' FEL									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
10,633.0	7,655.2	-434.9	-6,247.6	LPL - 765' FNL & 863' FEL
19,738.0	7,700.0	-9,524.6	-6,272.5	BHL - 468' FSL & 822' FEL

Checked By: _____ Approved By: _____ Date: _____