

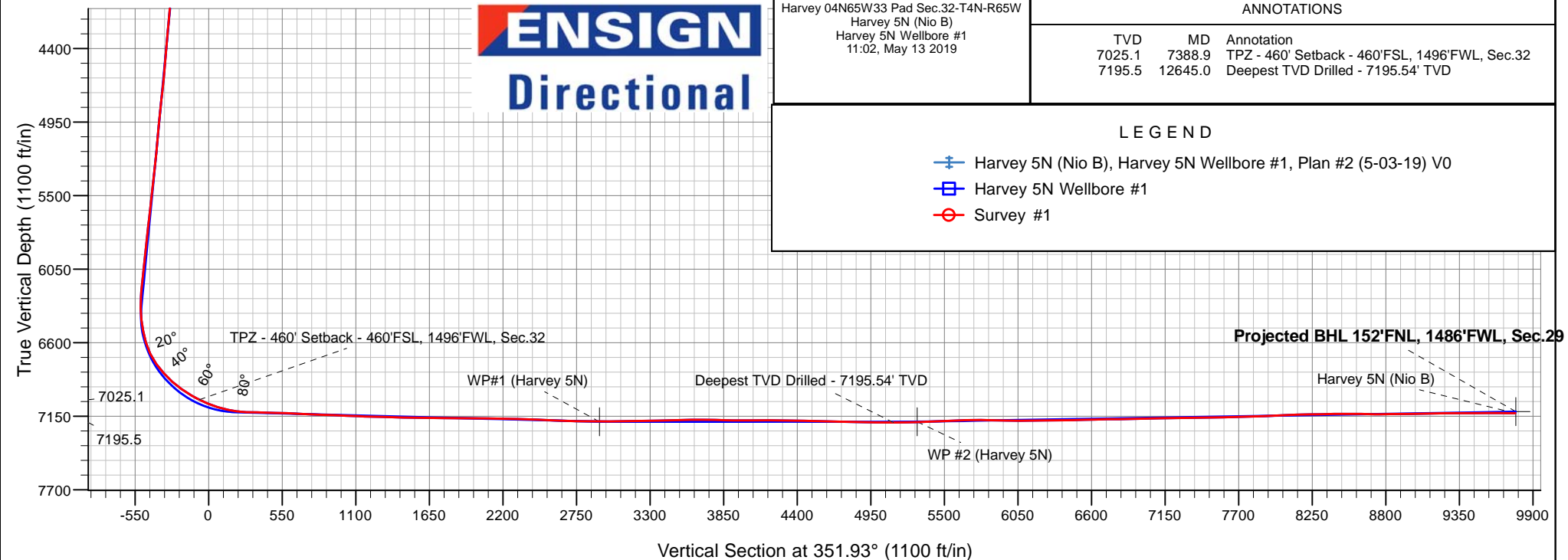
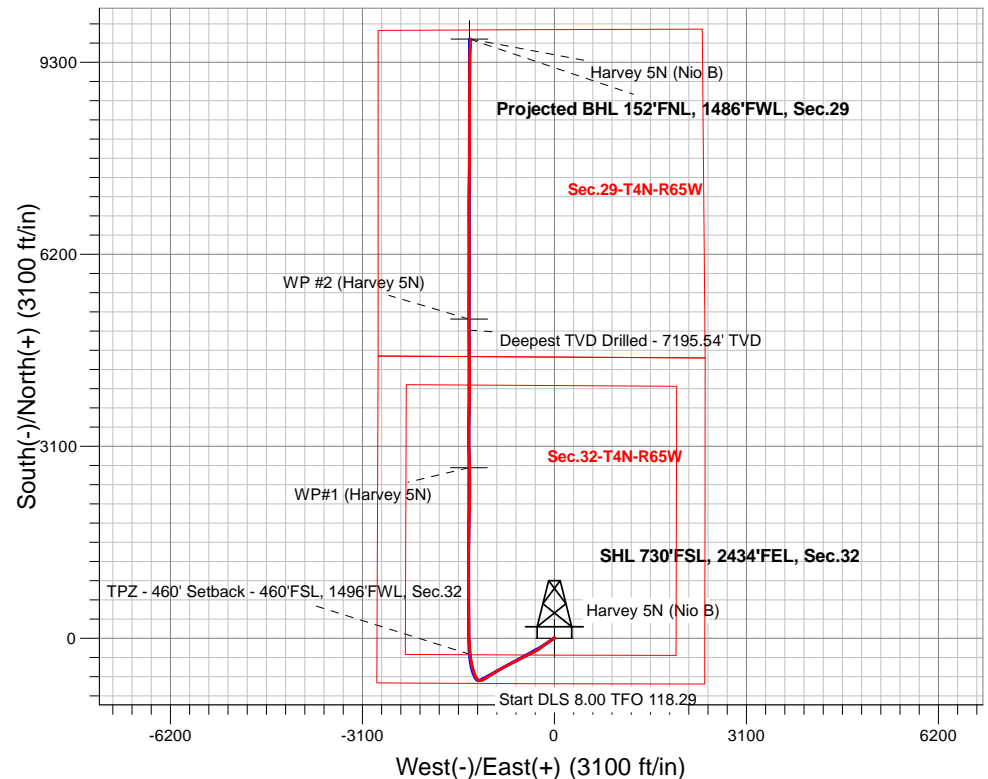
# PDC Energy Inc. DJ Basin

Well Name: **Harvey 5N (Nio B)**

Surface Location: Harvey 04N65W33 Pad Sec.32-T4N-R65W  
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone  
Ground Elevation: 4900.0  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1339938.03 3227042.93 40.263670 -104.686420  
Original Well Elev WELL @ 4923.0ft (Original Well Elev)

## FINAL SURVEY

**Projected Bottom Hole Location**  
**17,345'MD 7127'TVD 9674'N & 1357'W of SHL**  
**89.31 degree Incl @ 2.12 degree AZM**





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

**SEC.32-T4N-R65W**

**Harvey 04N65W33 Pad Sec.32-T4N-R65W**

**Harvey 5N (Nio B)**

**Harvey 5N Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**13 May, 2019**

<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Harvey 5N (Nio B)
<b>Project:</b>	SEC.32-T4N-R65W	<b>TVD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Site:</b>	Harvey 04N65W33 Pad Sec.32-T4N-R65W	<b>MD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Well:</b>	Harvey 5N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Harvey 5N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Harvey 5N Wellbore #1	<b>Database:</b>	US_EDM

<b>Project</b>	SEC.32-T4N-R65W, 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	Harvey 04N65W33 Pad Sec.32-T4N-R65W				
Site Position:		Northing:	1,339,821.45 usft	Latitude:	40.263350
From:	Lat/Long	Easting:	3,227,041.21 usft	Longitude:	-104.686430
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.53 °

Well	Harvey 5N (Nio B)					
Well Position	+N/-S	0.0 ft	Northing:	1,339,938.03 usft	Latitude:	40.263670
	+E/-W	0.0 ft	Easting:	3,227,042.93 usft	Longitude:	-104.686420
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,900.0 ft

<b>Wellbore</b>	Harvey 5N 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	5/3/2019	8.20	66.68	52,112

<b>Design</b>	Harvey 5N 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	351.93	

<b>Survey Program</b>	<b>Date</b>	5/13/2019			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
145.0	17,345.0	Survey #1 (Harvey 5N 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	0.01	357.00	1.0	0.0	0.0	0.0	0.69	0.69	0.00	
<b>SHL 730'FSL, 2434'FEL, Sec.32</b>										
145.0	1.00	357.00	145.0	1.3	-0.1	1.3	0.69	0.69	0.00	
235.0	1.20	359.40	235.0	3.0	-0.1	3.0	0.23	0.22	2.67	
325.0	1.10	349.80	325.0	4.8	-0.3	4.8	0.24	-0.11	-10.67	
414.0	1.10	354.20	413.9	6.5	-0.5	6.5	0.09	0.00	4.94	
504.0	0.40	318.30	503.9	7.6	-0.8	7.6	0.90	-0.78	-39.89	
593.0	0.40	287.20	592.9	7.9	-1.3	8.0	0.24	0.00	-34.94	
683.0	1.60	227.10	682.9	7.1	-2.5	7.4	1.60	1.33	-66.78	
773.0	2.10	225.00	772.9	5.1	-4.6	5.7	0.56	0.56	-2.33	

<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Harvey 5N (Nio B)
<b>Project:</b>	SEC.32-T4N-R65W	<b>TVD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Site:</b>	Harvey 04N65W33 Pad Sec.32-T4N-R65W	<b>MD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Well:</b>	Harvey 5N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Harvey 5N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Harvey 5N 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)
862.0	2.00	234.60	861.8	3.1	-7.0	4.0	0.40	-0.11	10.79
952.0	3.60	235.90	951.7	0.6	-10.7	2.1	1.78	1.78	1.44
1,041.0	5.70	231.80	1,040.4	-3.7	-16.5	-1.4	2.39	2.36	-4.61
1,131.0	7.70	232.00	1,129.8	-10.2	-24.7	-6.6	2.22	2.22	0.22
1,221.0	7.90	233.40	1,219.0	-17.6	-34.4	-12.6	0.31	0.22	1.56
1,310.0	9.20	234.60	1,307.0	-25.4	-45.1	-18.8	1.47	1.46	1.35
1,400.0	11.30	235.30	1,395.5	-34.6	-58.3	-26.0	2.34	2.33	0.78
1,490.0	13.40	236.70	1,483.4	-45.3	-74.2	-34.4	2.36	2.33	1.56
1,579.0	13.80	235.30	1,569.9	-57.0	-91.6	-43.6	0.58	0.45	-1.57
1,669.0	13.90	235.20	1,657.3	-69.3	-109.3	-53.3	0.11	0.11	-0.11
1,758.0	13.10	237.30	1,743.9	-80.9	-126.5	-62.3	1.05	-0.90	2.36
1,848.0	12.60	237.10	1,831.6	-91.7	-143.4	-70.7	0.56	-0.56	-0.22
1,938.0	11.76	234.85	1,919.6	-102.3	-159.1	-78.9	1.07	-0.93	-2.50
2,028.0	15.47	232.68	2,007.0	-114.9	-176.2	-89.0	4.16	4.12	-2.41
2,117.0	14.80	231.22	2,093.0	-129.2	-194.5	-100.6	0.87	-0.75	-1.64
2,207.0	16.31	232.90	2,179.7	-144.0	-213.5	-112.6	1.75	1.68	1.87
2,297.0	15.71	232.27	2,266.2	-159.1	-233.2	-124.8	0.69	-0.67	-0.70
2,387.0	16.30	238.95	2,352.7	-173.1	-253.7	-135.7	2.15	0.66	7.42
2,477.0	14.97	237.06	2,439.3	-185.9	-274.3	-145.5	1.58	-1.48	-2.10
2,566.0	15.57	240.62	2,525.2	-198.0	-294.3	-154.7	1.25	0.67	4.00
2,657.0	14.55	240.05	2,613.1	-209.7	-314.9	-163.4	1.13	-1.12	-0.63
2,747.0	15.77	243.08	2,699.9	-220.9	-335.6	-171.6	1.62	1.36	3.37
2,837.0	15.32	241.17	2,786.7	-232.2	-356.9	-179.7	0.76	-0.50	-2.12
2,927.0	15.32	242.10	2,873.5	-243.5	-377.8	-188.0	0.27	0.00	1.03
3,017.0	15.01	244.51	2,960.3	-254.0	-398.8	-195.5	0.78	-0.34	2.68
3,106.0	14.33	245.78	3,046.4	-263.5	-419.3	-202.0	0.85	-0.76	1.43
3,196.0	13.23	243.95	3,133.8	-272.6	-438.7	-208.3	1.31	-1.22	-2.03
3,286.0	14.88	243.32	3,221.1	-282.3	-458.3	-215.2	1.84	1.83	-0.70
3,375.0	12.85	243.10	3,307.5	-291.9	-477.3	-222.0	2.28	-2.28	-0.25
3,465.0	14.39	247.57	3,395.0	-300.7	-496.6	-228.0	2.07	1.71	4.97
3,555.0	15.34	243.75	3,482.0	-310.3	-517.6	-234.5	1.52	1.06	-4.24
3,644.0	16.60	241.29	3,567.6	-321.6	-539.3	-242.6	1.61	1.42	-2.76
3,734.0	14.44	236.82	3,654.3	-333.9	-560.0	-251.9	2.74	-2.40	-4.97
3,824.0	15.86	241.86	3,741.2	-345.8	-580.2	-260.9	2.15	1.58	5.60
3,913.0	14.24	241.17	3,827.1	-356.8	-600.5	-269.0	1.83	-1.82	-0.78
4,003.0	15.32	243.39	3,914.1	-367.5	-620.8	-276.7	1.35	1.20	2.47
4,092.0	15.16	245.48	4,000.0	-377.6	-641.9	-283.7	0.64	-0.18	2.35
4,182.0	14.76	245.85	4,086.9	-387.2	-663.1	-290.2	0.46	-0.44	0.41
4,272.0	13.77	243.75	4,174.2	-396.6	-683.2	-296.7	1.24	-1.10	-2.33
4,361.0	15.46	242.28	4,260.3	-406.8	-703.2	-304.0	1.94	1.90	-1.65
4,452.0	14.69	242.87	4,348.1	-417.7	-724.2	-311.9	0.86	-0.85	0.65
4,542.0	16.95	245.76	4,434.7	-428.3	-746.3	-319.2	2.66	2.51	3.21
4,632.0	16.12	245.63	4,521.0	-438.8	-769.7	-326.4	0.92	-0.92	-0.14

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<b>Site:</b>	Harvey 04N65W33 Pad Sec.32-T4N-R65W	<b>MD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Well:</b>	Harvey 5N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Harvey 5N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Harvey 5N 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)
4,721.0	15.20	242.26	4,606.7	-449.4	-791.2	-333.8	1.45	-1.03	-3.79
4,811.0	14.53	237.59	4,693.7	-460.9	-811.2	-342.4	1.52	-0.74	-5.19
4,901.0	15.75	236.86	4,780.6	-473.7	-831.0	-352.2	1.37	1.36	-0.81
4,990.0	13.58	236.07	4,866.7	-486.1	-849.8	-361.9	2.45	-2.44	-0.89
5,080.0	15.34	242.02	4,953.8	-497.6	-869.0	-370.6	2.56	1.96	6.61
5,169.0	13.75	242.06	5,040.0	-508.1	-888.8	-378.2	1.79	-1.79	0.04
5,259.0	15.49	242.21	5,127.0	-518.7	-908.9	-385.9	1.93	1.93	0.17
5,349.0	17.23	240.64	5,213.4	-530.8	-931.1	-394.8	1.99	1.93	-1.74
5,438.0	15.26	241.41	5,298.8	-542.9	-952.9	-403.7	2.23	-2.21	0.87
5,528.0	15.86	237.85	5,385.5	-555.1	-973.7	-412.8	1.25	0.67	-3.96
5,618.0	13.56	235.84	5,472.6	-567.6	-992.8	-422.5	2.62	-2.56	-2.23
5,707.0	14.47	237.62	5,558.9	-579.4	-1,010.9	-431.7	1.13	1.02	2.00
5,797.0	16.29	238.08	5,645.7	-592.1	-1,031.1	-441.4	2.03	2.02	0.51
5,887.0	13.67	233.07	5,732.7	-605.1	-1,050.3	-451.6	3.24	-2.91	-5.57
5,977.0	14.26	237.54	5,820.0	-617.5	-1,068.2	-461.3	1.37	0.66	4.97
6,067.0	14.55	236.68	5,907.2	-629.6	-1,087.0	-470.7	0.40	0.32	-0.96
6,156.0	15.31	241.20	5,993.2	-641.4	-1,106.6	-479.7	1.56	0.85	5.08
6,246.0	15.83	237.60	6,079.9	-653.7	-1,127.4	-488.9	1.22	0.58	-4.00
6,336.0	15.01	239.88	6,166.6	-666.2	-1,147.8	-498.4	1.13	-0.91	2.53
6,425.0	13.74	244.45	6,252.8	-676.5	-1,167.3	-505.9	1.91	-1.43	5.13
6,515.0	14.59	265.98	6,340.2	-681.9	-1,188.3	-508.3	5.90	0.94	23.92
6,605.0	15.65	286.66	6,427.1	-679.2	-1,211.2	-502.4	6.07	1.18	22.98
6,694.0	16.77	302.58	6,512.6	-668.9	-1,233.6	-489.0	5.13	1.26	17.89
6,784.0	19.37	318.76	6,598.2	-650.6	-1,254.4	-468.0	6.25	2.89	17.98
6,875.0	26.85	332.64	6,681.9	-621.0	-1,273.8	-435.9	10.12	8.22	15.25
6,964.0	36.13	340.87	6,757.8	-578.2	-1,291.7	-391.1	11.47	10.43	9.25
7,054.0	42.02	341.47	6,827.6	-524.5	-1,310.0	-335.4	6.56	6.54	0.67
7,144.0	48.25	344.66	6,891.1	-463.5	-1,328.5	-272.4	7.36	6.92	3.54
7,233.0	55.00	349.25	6,946.3	-395.6	-1,344.1	-202.9	8.59	7.58	5.16
7,323.0	60.75	354.00	6,994.2	-320.3	-1,355.0	-126.8	7.79	6.39	5.28
7,388.9	63.23	353.79	7,025.1	-262.4	-1,361.2	-68.6	3.78	3.77	-0.31
TPZ - 460' Setback - 460'FSL, 1496'FWL, Sec.32									
7,413.0	64.14	353.72	7,035.8	-240.9	-1,363.6	-47.0	3.78	3.77	-0.30
7,502.0	70.34	355.47	7,070.2	-159.3	-1,371.3	34.9	7.20	6.97	1.97
7,592.0	76.87	357.94	7,095.6	-73.1	-1,376.2	120.9	7.72	7.26	2.74
7,682.0	82.29	358.33	7,111.9	15.3	-1,379.1	208.8	6.04	6.02	0.43
7,682.2	82.29	358.33	7,111.9	15.5	-1,379.1	209.1	0.00	0.00	0.00
LPL 737'FSL, 1470'FWL, Sec.32									
7,772.0	88.25	358.09	7,119.3	104.9	-1,381.9	298.0	6.64	6.64	-0.27
7,885.0	88.72	357.53	7,122.3	217.8	-1,386.2	410.3	0.65	0.42	-0.50
7,975.0	88.55	0.08	7,124.4	307.7	-1,388.1	499.6	2.84	-0.19	2.83
8,064.0	87.89	0.35	7,127.2	396.7	-1,387.7	587.7	0.80	-0.74	0.30
8,154.0	87.42	0.27	7,130.9	486.6	-1,387.3	676.6	0.53	-0.52	-0.09
8,244.0	87.11	0.76	7,135.2	576.5	-1,386.5	765.5	0.64	-0.34	0.54

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<b>Well:</b>	Harvey 5N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Harvey 5N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Harvey 5N 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)
8,334.0	88.41	0.14	7,138.7	666.4	-1,385.7	854.5	1.60	1.44	-0.69
8,423.0	88.13	0.22	7,141.4	755.4	-1,385.5	942.5	0.33	-0.31	0.09
8,513.0	87.48	359.81	7,144.8	845.3	-1,385.4	1,031.5	0.85	-0.72	-0.46
8,602.0	87.41	359.57	7,148.8	934.2	-1,385.9	1,119.6	0.28	-0.08	-0.27
8,692.0	88.90	0.04	7,151.7	1,024.2	-1,386.2	1,208.7	1.74	1.66	0.52
8,782.0	88.61	0.09	7,153.6	1,114.2	-1,386.1	1,297.8	0.33	-0.32	0.06
8,872.0	88.54	359.82	7,155.9	1,204.1	-1,386.2	1,386.9	0.31	-0.08	-0.30
8,962.0	88.50	359.96	7,158.2	1,294.1	-1,386.4	1,476.0	0.16	-0.04	0.16
9,051.0	88.78	359.48	7,160.3	1,383.1	-1,386.8	1,564.2	0.62	0.31	-0.54
9,141.0	88.93	358.92	7,162.1	1,473.1	-1,388.1	1,653.4	0.64	0.17	-0.62
9,231.0	89.22	358.96	7,163.6	1,563.0	-1,389.7	1,742.7	0.33	0.32	0.04
9,320.0	90.07	1.74	7,164.1	1,652.0	-1,389.2	1,830.8	3.27	0.96	3.12
9,409.0	90.01	2.01	7,164.1	1,741.0	-1,386.3	1,918.4	0.31	-0.07	0.30
9,498.0	89.63	3.10	7,164.3	1,829.9	-1,382.3	2,005.9	1.30	-0.43	1.22
9,588.0	88.88	2.11	7,165.5	1,919.8	-1,378.2	2,094.3	1.38	-0.83	-1.10
9,678.0	88.52	1.52	7,167.5	2,009.7	-1,375.4	2,183.0	0.77	-0.40	-0.66
9,768.0	88.69	0.96	7,169.7	2,099.7	-1,373.4	2,271.7	0.65	0.19	-0.62
9,858.0	88.48	0.51	7,172.0	2,189.6	-1,372.3	2,360.7	0.55	-0.23	-0.50
9,948.0	87.88	0.27	7,174.8	2,279.6	-1,371.7	2,449.6	0.72	-0.67	-0.27
10,038.0	87.15	1.03	7,178.7	2,369.5	-1,370.6	2,538.5	1.17	-0.81	0.84
10,129.0	88.35	0.38	7,182.3	2,460.4	-1,369.5	2,628.4	1.50	1.32	-0.71
10,219.0	87.66	0.35	7,185.4	2,550.4	-1,368.9	2,717.3	0.77	-0.77	-0.03
10,309.0	90.16	358.63	7,187.1	2,640.3	-1,369.7	2,806.5	3.37	2.78	-1.91
10,399.0	89.39	358.50	7,187.5	2,730.3	-1,372.0	2,895.9	0.87	-0.86	-0.14
10,423.7	89.29	358.54	7,187.8	2,755.0	-1,372.6	2,920.5	0.43	-0.40	0.16
WP#1 (Harvey 5N)									
10,488.0	89.03	358.64	7,188.7	2,819.3	-1,374.2	2,984.3	0.43	-0.40	0.16
10,578.0	91.50	358.30	7,188.3	2,909.2	-1,376.6	3,073.7	2.77	2.74	-0.38
10,668.0	91.46	358.02	7,186.0	2,999.1	-1,379.5	3,163.2	0.31	-0.04	-0.31
10,758.0	90.70	358.15	7,184.3	3,089.1	-1,382.5	3,252.6	0.86	-0.84	0.14
10,847.0	91.21	0.01	7,182.8	3,178.0	-1,383.9	3,340.9	2.17	0.57	2.09
10,937.0	91.33	359.85	7,180.8	3,268.0	-1,384.1	3,430.0	0.22	0.13	-0.18
11,028.0	91.62	359.81	7,178.5	3,359.0	-1,384.3	3,520.1	0.32	0.32	-0.04
11,118.0	91.04	0.99	7,176.4	3,449.0	-1,383.7	3,609.1	1.46	-0.64	1.31
11,207.0	89.36	2.48	7,176.1	3,537.9	-1,381.0	3,696.8	2.52	-1.89	1.67
11,297.0	88.69	1.82	7,177.6	3,627.8	-1,377.6	3,785.4	1.04	-0.74	-0.73
11,386.0	88.50	0.56	7,179.8	3,716.8	-1,375.8	3,873.2	1.43	-0.21	-1.42
11,476.0	89.97	0.31	7,181.0	3,806.8	-1,375.1	3,962.2	1.66	1.63	-0.28
11,565.0	90.81	359.89	7,180.4	3,895.8	-1,374.9	4,050.3	1.06	0.94	-0.47
11,655.0	89.88	0.92	7,179.8	3,985.8	-1,374.3	4,139.3	1.54	-1.03	1.14
11,746.0	89.72	0.40	7,180.1	4,076.8	-1,373.3	4,229.2	0.60	-0.18	-0.57
11,836.0	89.15	0.40	7,181.0	4,166.8	-1,372.6	4,318.2	0.63	-0.63	0.00
11,926.0	88.94	0.04	7,182.5	4,256.7	-1,372.3	4,407.3	0.46	-0.23	-0.40

<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Harvey 5N (Nio B)
<b>Project:</b>	SEC.32-T4N-R65W	<b>TVD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Site:</b>	Harvey 04N65W33 Pad Sec.32-T4N-R65W	<b>MD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Well:</b>	Harvey 5N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Harvey 5N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Harvey 5N 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)
12,016.0	88.80	359.69	7,184.3	4,346.7	-1,372.5	4,496.4	0.42	-0.16	-0.39
12,105.0	88.31	359.16	7,186.6	4,435.7	-1,373.4	4,584.6	0.81	-0.55	-0.60
12,195.0	87.84	359.19	7,189.6	4,525.6	-1,374.7	4,673.8	0.52	-0.52	0.03
12,285.0	89.35	359.03	7,191.8	4,615.6	-1,376.1	4,763.1	1.69	1.68	-0.18
12,375.0	89.16	358.82	7,193.0	4,705.6	-1,377.8	4,852.4	0.31	-0.21	-0.23
12,465.0	89.57	359.75	7,193.9	4,795.6	-1,378.9	4,941.7	1.13	0.46	1.03
12,555.0	88.94	359.70	7,195.1	4,885.5	-1,379.3	5,030.8	0.70	-0.70	-0.06
12,645.0	90.52	1.06	7,195.5	4,975.5	-1,378.7	5,119.9	2.32	1.76	1.51
Deepest TVD Drilled - 7195.54' TVD									
12,735.0	89.72	0.30	7,195.4	5,065.5	-1,377.7	5,208.8	1.23	-0.89	-0.84
12,824.3	92.65	359.70	7,193.5	5,154.8	-1,377.7	5,297.2	3.35	3.28	-0.68
WP #2 (Harvey 5N)									
12,825.0	92.67	359.69	7,193.5	5,155.5	-1,377.7	5,297.9	3.35	3.28	-0.68
12,914.0	92.59	359.89	7,189.4	5,244.4	-1,378.0	5,386.0	0.24	-0.09	0.22
13,004.0	92.12	359.85	7,185.7	5,334.3	-1,378.2	5,475.0	0.52	-0.52	-0.04
13,094.0	92.13	359.22	7,182.4	5,424.3	-1,378.9	5,564.2	0.70	0.01	-0.70
13,183.0	92.00	359.21	7,179.2	5,513.2	-1,380.1	5,652.4	0.15	-0.15	-0.01
13,272.0	89.75	0.51	7,177.8	5,602.2	-1,380.4	5,740.5	2.92	-2.53	1.46
13,361.0	89.02	0.56	7,178.7	5,691.2	-1,379.5	5,828.5	0.82	-0.82	0.06
13,451.0	88.42	0.35	7,180.8	5,781.1	-1,378.8	5,917.5	0.71	-0.67	-0.23
13,541.0	89.57	0.67	7,182.3	5,871.1	-1,378.0	6,006.5	1.33	1.28	0.36
13,631.0	90.44	0.40	7,182.3	5,961.1	-1,377.2	6,095.5	1.01	0.97	-0.30
13,721.0	89.90	359.99	7,182.1	6,051.1	-1,376.9	6,184.5	0.75	-0.60	-0.46
13,811.0	91.39	359.78	7,181.0	6,141.1	-1,377.0	6,273.6	1.67	1.66	-0.23
13,901.0	90.95	359.24	7,179.2	6,231.1	-1,377.8	6,362.8	0.77	-0.49	-0.60
13,991.0	90.67	358.99	7,177.9	6,321.1	-1,379.2	6,452.1	0.42	-0.31	-0.28
14,081.0	91.69	359.38	7,176.1	6,411.0	-1,380.5	6,541.4	1.21	1.13	0.43
14,171.0	91.36	359.96	7,173.7	6,501.0	-1,381.0	6,630.5	0.74	-0.37	0.64
14,260.0	90.60	0.00	7,172.2	6,590.0	-1,381.0	6,718.6	0.86	-0.85	0.04
14,350.0	90.15	0.46	7,171.6	6,680.0	-1,380.7	6,807.7	0.71	-0.50	0.51
14,440.0	91.81	0.39	7,170.0	6,770.0	-1,380.0	6,896.7	1.85	1.84	-0.08
14,529.0	91.27	0.12	7,167.6	6,858.9	-1,379.6	6,984.7	0.68	-0.61	-0.30
14,619.0	91.34	0.61	7,165.6	6,948.9	-1,379.0	7,073.7	0.55	0.08	0.54
14,710.0	91.15	0.53	7,163.6	7,039.9	-1,378.1	7,163.7	0.23	-0.21	-0.09
14,799.0	90.76	0.05	7,162.1	7,128.9	-1,377.7	7,251.7	0.69	-0.44	-0.54
14,889.0	90.08	0.08	7,161.5	7,218.9	-1,377.6	7,340.8	0.76	-0.76	0.03
14,978.0	91.67	0.26	7,160.1	7,307.9	-1,377.3	7,428.9	1.80	1.79	0.20
15,068.0	91.50	359.98	7,157.6	7,397.8	-1,377.1	7,517.9	0.36	-0.19	-0.31
15,158.0	90.66	359.89	7,155.9	7,487.8	-1,377.2	7,607.0	0.94	-0.93	-0.10
15,248.0	90.26	359.74	7,155.2	7,577.8	-1,377.5	7,696.2	0.47	-0.44	-0.17
15,337.0	92.44	0.27	7,153.1	7,666.8	-1,377.5	7,784.2	2.52	2.45	0.60
15,426.0	92.69	0.55	7,149.1	7,755.7	-1,376.9	7,872.2	0.42	0.28	0.31
15,516.0	92.46	1.18	7,145.1	7,845.6	-1,375.5	7,961.0	0.74	-0.26	0.70
15,605.0	92.30	0.52	7,141.4	7,934.5	-1,374.2	8,048.8	0.76	-0.18	-0.74

<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Harvey 5N (Nio B)
<b>Project:</b>	SEC.32-T4N-R65W	<b>TVD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Site:</b>	Harvey 04N65W33 Pad Sec.32-T4N-R65W	<b>MD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Well:</b>	Harvey 5N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Harvey 5N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Harvey 5N 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)	
15,695.0	92.14	1.09	7,137.9	8,024.4	-1,372.9	8,137.7	0.66	-0.18	0.63	
15,785.0	91.08	0.53	7,135.4	8,114.4	-1,371.7	8,226.6	1.33	-1.18	-0.62	
15,875.0	90.92	0.34	7,133.8	8,204.3	-1,371.0	8,315.6	0.28	-0.18	-0.21	
15,965.0	90.55	0.64	7,132.7	8,294.3	-1,370.2	8,404.6	0.53	-0.41	0.33	
16,055.0	90.25	0.24	7,132.0	8,384.3	-1,369.5	8,493.6	0.56	-0.33	-0.44	
16,144.0	89.47	359.73	7,132.2	8,473.3	-1,369.5	8,581.7	1.05	-0.88	-0.57	
16,235.0	88.90	359.68	7,133.5	8,564.3	-1,370.0	8,671.8	0.63	-0.63	-0.05	
16,325.0	90.32	359.11	7,134.1	8,654.3	-1,371.0	8,761.1	1.70	1.58	-0.63	
16,415.0	91.10	359.94	7,133.0	8,744.3	-1,371.7	8,850.3	1.27	0.87	0.92	
16,505.0	90.58	359.18	7,131.7	8,834.3	-1,372.4	8,939.5	1.02	-0.58	-0.84	
16,594.0	90.35	359.75	7,131.0	8,923.3	-1,373.2	9,027.7	0.69	-0.26	0.64	
16,684.0	91.43	0.73	7,129.6	9,013.3	-1,372.9	9,116.7	1.62	1.20	1.09	
16,774.0	90.83	0.20	7,127.8	9,103.2	-1,372.1	9,205.7	0.89	-0.67	-0.59	
16,863.0	90.36	0.49	7,126.9	9,192.2	-1,371.6	9,293.8	0.62	-0.53	0.33	
16,953.0	89.83	1.01	7,126.7	9,282.2	-1,370.4	9,382.7	0.82	-0.59	0.58	
17,042.0	90.82	1.97	7,126.2	9,371.2	-1,368.1	9,470.5	1.55	1.11	1.08	
17,132.0	90.15	2.08	7,125.5	9,461.1	-1,364.9	9,559.1	0.75	-0.74	0.12	
17,221.0	89.68	2.17	7,125.6	9,550.1	-1,361.6	9,646.6	0.54	-0.53	0.10	
17,285.0	89.31	2.12	7,126.2	9,614.0	-1,359.2	9,709.6	0.58	-0.58	-0.08	
17,345.0	89.31	2.12	7,126.9	9,674.0	-1,357.0	9,768.7	0.00	0.00	0.00	
Projected BHL 152'FNL, 1486'FWL, Sec.29										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SHL 730'FSL, 2434'FEL	0.00	0.00	1.0	0.0	0.0	1,339,938.04	3,227,042.93	40.263670	-104.686420	
- hit/miss target										
- Shape										
- Point										
Projected BHL 152'FNL,	0.00	0.00	7,115.0	9,676.0	-1,372.6	1,349,600.57	3,225,581.73	40.290230	-104.691340	
- survey hits target center										
- Point										
WP #2 (Harvey 5N)	0.00	0.00	7,190.0	5,154.7	-1,379.3	1,345,079.61	3,225,616.43	40.277819	-104.691364	
- survey misses target center by 3.9ft at 12824.4ft MD (7193.5 TVD, 5154.9 N, -1377.7 E)										
- Point										
WP#1 (Harvey 5N)	0.00	0.00	7,190.0	2,754.7	-1,382.9	1,342,679.79	3,225,634.85	40.271231	-104.691376	
- survey misses target center by 10.5ft at 10423.7ft MD (7187.8 TVD, 2755.0 N, -1372.6 E)										
- Point										



<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Harvey 5N (Nio B)
<b>Project:</b>	SEC.32-T4N-R65W	<b>TVD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Site:</b>	Harvey 04N65W33 Pad Sec.32-T4N-R65W	<b>MD Reference:</b>	WELL @ 4923.0ft (Original Well Elev)
<b>Well:</b>	Harvey 5N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Harvey 5N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Harvey 5N Wellbore #1	<b>Database:</b>	US_EDM

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,388.9	7,025.1	-262.4	-1,361.2	TPZ - 460' Setback - 460'FSL, 1496'FWL, Sec.32
12,645.0	7,195.5	4,975.5	-1,378.7	Deepest TVD Drilled - 7195.54' TVD

Checked By: _____	Approved By: _____	Date: _____
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