

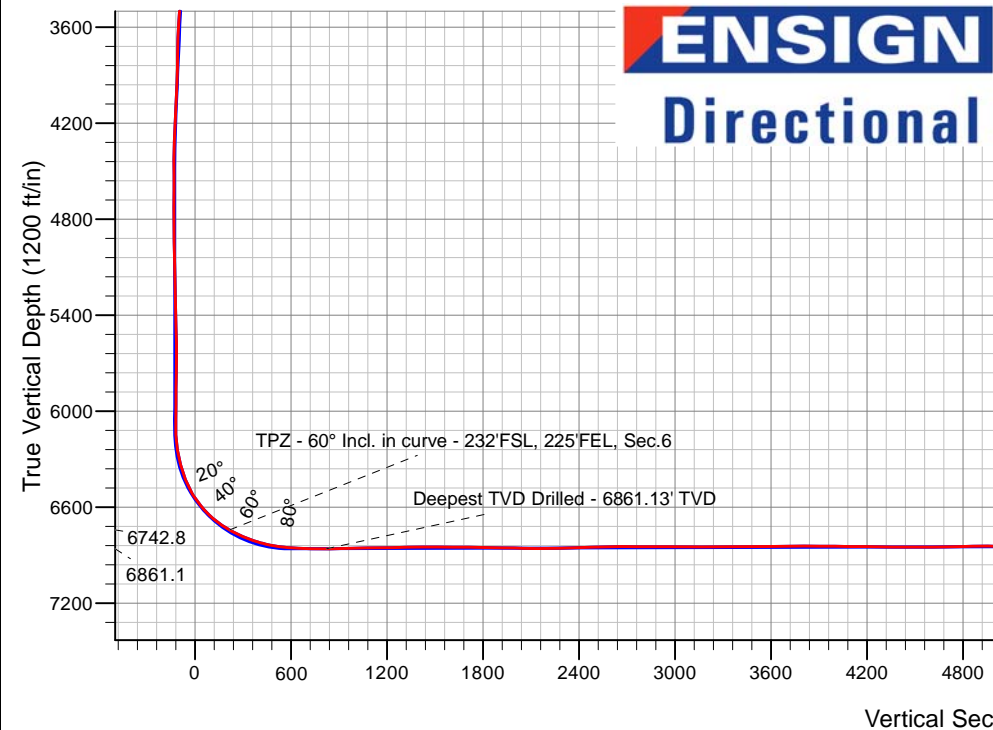
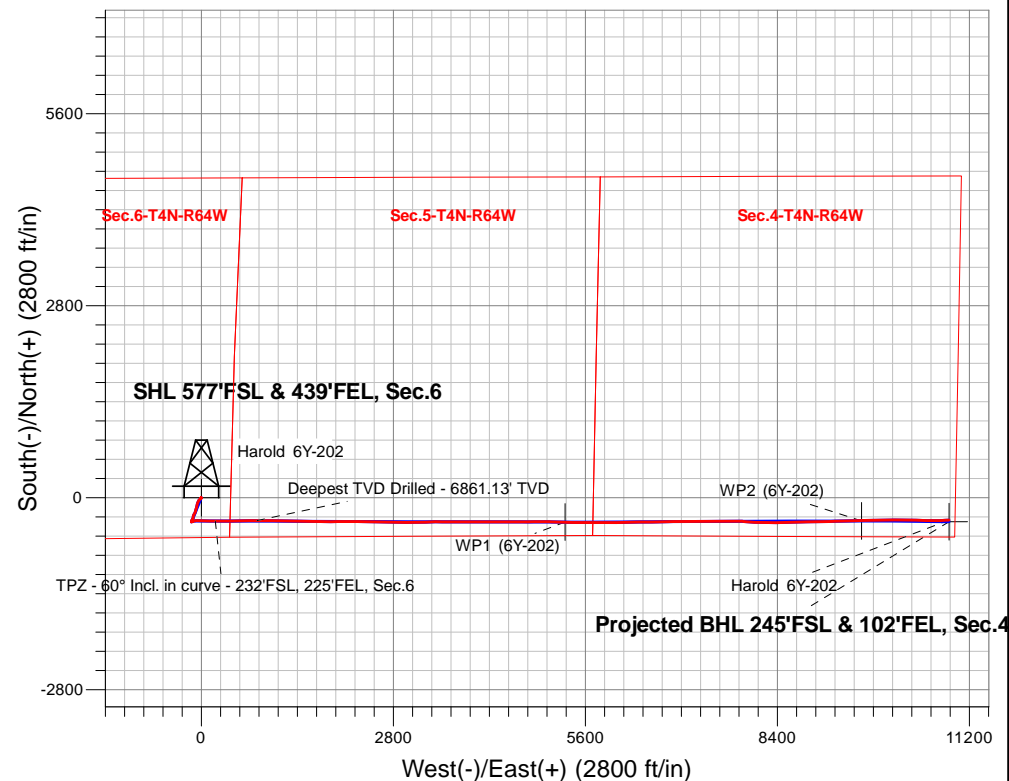
PDC Energy Inc. DJ Basin

Well Name: **Harold 6Y-202**

Surface Location: Harold 4N64W6X Pad Sec.6-T4N-R64W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4788.0
+N/-S+E/-W Northing Easting Latitude Longitude Slot
0.0 0.0 1366436.293254937.71 40.335660 -104.585490
RKB - 23' WELL @ 4811.0ft (RKB - 23')

FINAL SURVEY

Projected Bottom Hole Location
17,607'MD 6830'TVD 326'S & 10902'E of SHL
90.46 degree Incl @ 87.45 degree AZM



ENSIGN
Directional

Harold 4N64W6X Pad Sec.6-T4N-R64W
Harold 6Y-202
Harold 6Y-202 Wellbore #1
11:51, January 07 2019

ANNOTATIONS

TVD	MD	Annotation
6742.8	6886.1	TPZ - 60° Incl. in curve - 232'FSL, 225'FEL, Sec.6
6861.1	7512.0	Deepest TVD Drilled - 6861.13' TVD

LEGEND

- Harold 6Y-202, Harold 6Y-202 Wellbore #1, Plan #2 (12-28-18) V0
- Harold 6Y-202 Wellbore #1
- Survey #1



PDC Energy Inc. DJ Basin

SEC.6-T4N-R64W

Harold 4N64W6X Pad Sec.6-T4N-R64W

Harold 6Y-202

Harold 6Y-202 Wellbore #1

Survey: Survey #1

Standard Survey Report

07 January, 2019

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Harold 6Y-202
Project:	SEC.6-T4N-R64W	TVD Reference:	WELL @ 4811.0ft (RKB - 23')
Site:	Harold 4N64W6X Pad Sec.6-T4N-R64W	MD Reference:	WELL @ 4811.0ft (RKB - 23')
Well:	Harold 6Y-202	North Reference:	True
Wellbore:	Harold 6Y-202 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Harold 6Y-202 Wellbore #1	Database:	US_EDM

Project	SEC.6-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	Harold 4N64W6X Pad Sec.6-T4N-R64W				
Site Position:		Northing:	1,366,494.58 usft	Latitude:	40.335820
From:	Lat/Long	Easting:	3,254,937.11 usft	Longitude:	-104.585490
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.59 °

Well	Harold 6Y-202					
Well Position	+N/-S	0.0 ft	Northing:	1,366,436.29 usft	Latitude:	40.335660
	+E/-W	0.0 ft	Easting:	3,254,937.71 usft	Longitude:	-104.585490
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,788.0 ft

Wellbore	Harold 6Y-202 Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/28/2018	8.18	66.83	52,185

Design	Harold 6Y-202 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	91.84	

Survey Program	Date	1/7/2019			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
158.0	17,607.0	Survey #1 (Harold 6Y-202 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	0.01	233.00	1.0	0.0	0.0	0.0	0.70	0.70	0.00	
SHL 577'FSL & 439'FEL, Sec.6										
158.0	1.10	233.00	158.0	-0.9	-1.2	-1.2	0.70	0.70	0.00	
253.0	1.19	236.40	253.0	-2.0	-2.8	-2.7	0.12	0.09	3.58	
348.0	1.08	230.30	348.0	-3.1	-4.3	-4.2	0.17	-0.12	-6.42	
444.0	1.09	228.10	443.9	-4.3	-5.6	-5.5	0.04	0.01	-2.29	
540.0	0.92	215.48	539.9	-5.6	-6.8	-6.6	0.29	-0.18	-13.15	
635.0	0.91	221.42	634.9	-6.7	-7.7	-7.5	0.10	-0.01	6.25	
731.0	0.65	54.39	730.9	-7.0	-7.8	-7.5	1.61	-0.27	-173.99	
826.0	0.62	55.78	825.9	-6.4	-6.9	-6.7	0.04	-0.03	1.46	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Harold 6Y-202
Project:	SEC.6-T4N-R64W	TVD Reference:	WELL @ 4811.0ft (RKB - 23')
Site:	Harold 4N64W6X Pad Sec.6-T4N-R64W	MD Reference:	WELL @ 4811.0ft (RKB - 23')
Well:	Harold 6Y-202	North Reference:	True
Wellbore:	Harold 6Y-202 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Harold 6Y-202 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)
922.0	0.44	44.26	921.9	-5.8	-6.2	-6.0	0.22	-0.19	-12.00
1,017.0	0.52	32.03	1,016.9	-5.2	-5.7	-5.6	0.14	0.08	-12.87
1,113.0	0.60	56.07	1,112.9	-4.6	-5.1	-4.9	0.26	0.08	25.04
1,208.0	0.54	204.49	1,207.9	-4.7	-4.9	-4.7	1.15	-0.06	156.23
1,303.0	1.71	222.39	1,302.9	-6.1	-6.0	-5.8	1.27	1.23	18.84
1,399.0	3.21	227.21	1,398.8	-9.0	-8.9	-8.7	1.58	1.56	5.02
1,495.0	4.79	227.24	1,494.5	-13.6	-13.9	-13.4	1.65	1.65	0.03
1,618.0	5.65	224.52	1,617.0	-21.4	-21.9	-21.2	0.73	0.70	-2.21
1,682.0	5.29	222.22	1,680.7	-25.8	-26.1	-25.2	0.66	-0.56	-3.59
1,778.0	6.39	215.33	1,776.2	-33.4	-32.1	-31.0	1.36	1.15	-7.18
1,873.0	6.89	209.57	1,870.6	-42.7	-38.0	-36.6	0.88	0.53	-6.06
1,969.0	7.75	207.17	1,965.8	-53.5	-43.8	-42.1	0.95	0.90	-2.50
2,064.0	7.44	201.84	2,060.0	-64.9	-49.0	-46.9	0.81	-0.33	-5.61
2,159.0	7.32	199.83	2,154.2	-76.3	-53.4	-50.9	0.30	-0.13	-2.12
2,255.0	7.22	200.89	2,249.4	-87.7	-57.6	-54.7	0.17	-0.10	1.10
2,351.0	6.48	199.90	2,344.7	-98.4	-61.6	-58.4	0.78	-0.77	-1.03
2,446.0	7.59	193.32	2,439.0	-109.6	-64.8	-61.3	1.44	1.17	-6.93
2,542.0	7.03	190.20	2,534.2	-121.5	-67.3	-63.4	0.71	-0.58	-3.25
2,637.0	8.29	189.36	2,628.4	-134.0	-69.5	-65.1	1.33	1.33	-0.88
2,733.0	8.10	189.14	2,723.4	-147.5	-71.7	-66.9	0.20	-0.20	-0.23
2,828.0	8.07	194.66	2,817.5	-160.6	-74.4	-69.2	0.82	-0.03	5.81
2,924.0	7.64	195.02	2,912.6	-173.2	-77.8	-72.2	0.45	-0.45	0.38
3,019.0	8.24	199.83	3,006.7	-185.7	-81.7	-75.7	0.94	0.63	5.06
3,115.0	7.26	197.06	3,101.8	-198.0	-85.9	-79.4	1.09	-1.02	-2.89
3,210.0	7.24	205.46	3,196.0	-209.2	-90.2	-83.4	1.12	-0.02	8.84
3,306.0	6.97	202.72	3,291.3	-220.0	-95.0	-87.9	0.45	-0.28	-2.85
3,401.0	7.43	209.09	3,385.5	-230.7	-100.3	-92.8	0.97	0.48	6.71
3,497.0	7.14	204.92	3,480.8	-241.5	-105.8	-98.0	0.63	-0.30	-4.34
3,592.0	6.79	207.58	3,575.1	-251.8	-110.9	-102.7	0.50	-0.37	2.80
3,688.0	7.01	194.72	3,670.4	-262.5	-115.0	-106.5	1.62	0.23	-13.40
3,783.0	7.17	191.84	3,764.7	-273.9	-117.7	-108.8	0.41	0.17	-3.03
3,879.0	6.70	192.08	3,859.9	-285.3	-120.1	-110.8	0.49	-0.49	0.25
3,974.0	7.21	198.22	3,954.3	-296.4	-123.1	-113.5	0.95	0.54	6.46
4,070.0	7.17	203.29	4,049.5	-307.6	-127.4	-117.4	0.66	-0.04	5.28
4,165.0	7.39	205.45	4,143.7	-318.6	-132.3	-122.0	0.37	0.23	2.27
4,261.0	7.02	206.05	4,239.0	-329.4	-137.6	-126.9	0.39	-0.39	0.63
4,356.0	3.96	198.19	4,333.5	-337.7	-141.1	-130.2	3.31	-3.22	-8.27
4,452.0	3.84	196.05	4,429.3	-344.0	-143.1	-131.9	0.20	-0.13	-2.23
4,548.0	2.30	146.71	4,525.2	-348.7	-142.9	-131.6	3.04	-1.60	-51.40
4,643.0	2.01	214.63	4,620.1	-351.6	-142.8	-131.4	2.55	-0.31	71.49
4,738.0	1.28	194.03	4,715.1	-354.0	-144.0	-132.5	0.98	-0.77	-21.68
4,833.0	1.11	28.87	4,810.1	-354.3	-143.8	-132.3	2.49	-0.18	-173.85
4,929.0	1.16	43.14	4,906.1	-352.7	-142.7	-131.3	0.30	0.05	14.86

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Site:	Harold 4N64W6X Pad Sec.6-T4N-R64W	MD Reference:	WELL @ 4811.0ft (RKB - 23')
Well:	Harold 6Y-202	North Reference:	True
Wellbore:	Harold 6Y-202 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Harold 6Y-202 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)
5,025.0	1.17	58.30	5,002.0	-351.5	-141.2	-129.8	0.32	0.01	15.79
5,121.0	1.45	61.87	5,098.0	-350.4	-139.3	-127.9	0.30	0.29	3.72
5,216.0	1.45	64.11	5,193.0	-349.3	-137.1	-125.8	0.06	0.00	2.36
5,312.0	1.44	71.98	5,289.0	-348.4	-134.9	-123.6	0.21	-0.01	8.20
5,407.0	1.57	83.63	5,383.9	-347.9	-132.5	-121.2	0.35	0.14	12.26
5,503.0	1.35	88.78	5,479.9	-347.7	-130.0	-118.8	0.27	-0.23	5.36
5,598.0	0.87	78.75	5,574.9	-347.6	-128.2	-117.0	0.54	-0.51	-10.56
5,694.0	0.77	275.47	5,670.9	-347.4	-128.1	-116.9	1.69	-0.10	-170.08
5,789.0	0.64	310.75	5,765.9	-347.0	-129.2	-118.0	0.47	-0.14	37.14
5,885.0	0.54	293.83	5,861.9	-346.4	-130.0	-118.8	0.21	-0.10	-17.63
5,981.0	0.37	309.14	5,957.9	-346.1	-130.7	-119.5	0.22	-0.18	15.95
6,076.0	1.10	304.46	6,052.8	-345.4	-131.6	-120.5	0.77	0.77	-4.93
6,172.0	1.25	62.67	6,148.8	-344.3	-131.5	-120.3	2.10	0.16	123.14
6,267.0	10.48	77.32	6,243.2	-342.0	-122.1	-111.0	9.76	9.72	15.42
6,363.0	15.38	78.58	6,336.8	-337.5	-101.1	-90.2	5.11	5.10	1.31
6,459.0	20.82	86.99	6,428.0	-334.1	-71.6	-60.8	6.27	5.67	8.76
6,554.0	30.66	95.79	6,513.5	-335.7	-30.5	-19.7	11.09	10.36	9.26
6,650.0	39.30	91.56	6,592.1	-339.0	24.4	35.3	9.34	9.00	-4.41
6,746.0	48.23	88.77	6,661.4	-339.0	90.7	101.6	9.51	9.30	-2.91
6,842.0	56.87	91.31	6,719.7	-339.2	166.8	177.7	9.24	9.00	2.65
6,886.1	60.00	91.20	6,742.8	-340.0	204.4	215.2	7.11	7.10	-0.25
TPZ - 60° Incl. in curve - 232'FSL, 225'FEL, Sec.6									
6,938.0	63.69	91.08	6,767.3	-340.9	250.1	261.0	7.11	7.10	-0.23
7,033.0	70.56	89.89	6,804.2	-341.6	337.6	348.4	7.32	7.23	-1.25
7,129.0	76.35	89.11	6,831.5	-340.8	429.6	440.3	6.08	6.03	-0.81
7,225.0	83.65	88.99	6,848.2	-339.3	524.1	534.7	7.61	7.60	-0.13
7,281.6	85.47	88.38	6,853.5	-338.0	580.4	591.0	3.39	3.21	-1.09
LPL 231'FSL & 151'FWL, Sec.5									
7,321.0	86.73	87.95	6,856.2	-336.7	619.7	630.2	3.39	3.21	-1.08
7,416.0	88.22	88.53	6,860.4	-333.8	714.5	724.9	1.68	1.57	0.61
7,512.0	90.89	91.33	6,861.1	-333.7	810.5	820.8	4.03	2.78	2.92
Deepest TVD Drilled - 6861.13' TVD									
7,607.0	91.10	90.36	6,859.5	-335.1	905.5	915.8	1.04	0.22	-1.02
7,703.0	91.26	90.42	6,857.5	-335.7	1,001.5	1,011.7	0.18	0.17	0.06
7,827.0	90.98	90.76	6,855.1	-337.0	1,125.4	1,135.7	0.36	-0.23	0.27
7,923.0	91.62	90.80	6,852.9	-338.3	1,221.4	1,231.6	0.67	0.67	0.04
8,018.0	91.04	90.80	6,850.7	-339.6	1,316.4	1,326.6	0.61	-0.61	0.00
8,114.0	90.21	91.70	6,849.6	-341.7	1,412.3	1,422.6	1.28	-0.86	0.94
8,209.0	89.74	91.24	6,849.7	-344.2	1,507.3	1,517.6	0.69	-0.49	-0.48
8,305.0	89.35	91.03	6,850.5	-346.1	1,603.3	1,613.6	0.46	-0.41	-0.22
8,401.0	89.47	90.86	6,851.4	-347.6	1,699.3	1,709.6	0.22	0.13	-0.18
8,497.0	89.28	90.27	6,852.5	-348.6	1,795.2	1,805.5	0.65	-0.20	-0.61
8,592.0	88.88	89.63	6,854.0	-348.5	1,890.2	1,900.5	0.79	-0.42	-0.67
8,688.0	88.45	89.62	6,856.3	-347.9	1,986.2	1,996.4	0.45	-0.45	-0.01

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Design:	Harold 6Y-202 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)
8,783.0	87.96	89.37	6,859.2	-347.0	2,081.2	2,091.2	0.58	-0.52	-0.26
8,879.0	91.35	89.87	6,859.8	-346.4	2,177.1	2,187.2	3.57	3.53	0.52
8,974.0	92.26	90.61	6,856.8	-346.8	2,272.1	2,282.1	1.23	0.96	0.78
9,070.0	92.30	90.06	6,853.0	-347.4	2,368.0	2,378.0	0.57	0.04	-0.57
9,166.0	90.89	91.99	6,850.3	-349.1	2,463.9	2,473.9	2.49	-1.47	2.01
9,261.0	90.62	92.16	6,849.1	-352.5	2,558.9	2,568.9	0.34	-0.28	0.18
9,356.0	90.39	91.90	6,848.2	-355.9	2,653.8	2,663.9	0.37	-0.24	-0.27
9,452.0	90.15	90.99	6,847.8	-358.3	2,749.8	2,759.9	0.98	-0.25	-0.95
9,547.0	90.03	90.76	6,847.6	-359.8	2,844.8	2,854.9	0.27	-0.13	-0.24
9,642.0	89.99	89.96	6,847.6	-360.4	2,939.8	2,949.8	0.84	-0.04	-0.84
9,738.0	89.86	89.27	6,847.7	-359.7	3,035.8	3,045.8	0.73	-0.14	-0.72
9,833.0	89.83	89.16	6,848.0	-358.4	3,130.8	3,140.7	0.12	-0.03	-0.12
9,928.0	89.69	88.32	6,848.4	-356.3	3,225.7	3,235.5	0.90	-0.15	-0.88
10,023.0	89.35	87.64	6,849.2	-353.0	3,320.7	3,330.3	0.80	-0.36	-0.72
10,118.0	90.87	89.87	6,849.0	-350.9	3,415.6	3,425.2	2.84	1.60	2.35
10,213.0	91.18	90.85	6,847.3	-351.5	3,510.6	3,520.1	1.08	0.33	1.03
10,308.0	90.99	89.68	6,845.5	-351.9	3,605.6	3,615.1	1.25	-0.20	-1.23
10,404.0	91.17	89.22	6,843.7	-351.0	3,701.6	3,711.0	0.51	0.19	-0.48
10,499.0	88.84	91.67	6,843.7	-351.8	3,796.6	3,805.9	3.56	-2.45	2.58
10,595.0	89.44	90.95	6,845.1	-354.0	3,892.5	3,901.9	0.98	0.63	-0.75
10,691.0	90.13	90.42	6,845.5	-355.1	3,988.5	3,997.9	0.91	0.72	-0.55
10,786.0	89.66	89.90	6,845.7	-355.4	4,083.5	4,092.8	0.74	-0.49	-0.55
10,882.0	89.32	89.07	6,846.5	-354.5	4,179.5	4,188.7	0.93	-0.35	-0.86
10,977.0	89.07	89.18	6,847.9	-353.1	4,274.5	4,283.6	0.29	-0.26	0.12
11,073.0	88.80	88.28	6,849.6	-350.9	4,370.4	4,379.5	0.98	-0.28	-0.94
11,168.0	90.03	90.66	6,850.6	-350.1	4,465.4	4,474.4	2.82	1.29	2.51
11,264.0	90.50	90.50	6,850.2	-351.0	4,561.4	4,570.3	0.52	0.49	-0.17
11,360.0	90.79	90.00	6,849.1	-351.4	4,657.4	4,666.3	0.60	0.30	-0.52
11,456.0	91.28	89.81	6,847.4	-351.3	4,753.4	4,762.2	0.55	0.51	-0.20
11,552.0	91.90	88.94	6,844.7	-350.2	4,849.3	4,858.1	1.11	0.65	-0.91
11,648.0	88.87	90.15	6,844.0	-349.5	4,945.3	4,954.0	3.40	-3.16	1.26
11,743.0	88.52	90.63	6,846.2	-350.1	5,040.3	5,049.0	0.63	-0.37	0.51
11,839.0	89.29	92.48	6,848.0	-352.7	5,136.2	5,144.9	2.09	0.80	1.93
11,934.0	89.53	91.74	6,849.0	-356.2	5,231.2	5,239.9	0.82	0.25	-0.78
12,006.8	89.93	91.35	6,849.4	-358.2	5,303.9	5,312.7	0.77	0.55	-0.53
WP1 (6Y-202)									
12,030.0	90.06	91.23	6,849.4	-358.7	5,327.1	5,335.9	0.77	0.55	-0.53
12,125.0	91.01	91.14	6,848.5	-360.7	5,422.1	5,430.9	1.00	1.00	-0.09
12,221.0	91.72	90.51	6,846.2	-362.1	5,518.1	5,526.9	0.99	0.74	-0.66
12,317.0	92.52	90.06	6,842.6	-362.5	5,614.0	5,622.8	0.96	0.83	-0.47
12,412.0	89.34	90.35	6,841.1	-362.9	5,709.0	5,717.7	3.36	-3.35	0.31
12,508.0	89.06	90.12	6,842.4	-363.3	5,805.0	5,813.7	0.38	-0.29	-0.24
12,604.0	89.74	89.88	6,843.4	-363.3	5,901.0	5,909.6	0.75	0.71	-0.25

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Harold 6Y-202
Project:	SEC.6-T4N-R64W	TVD Reference:	WELL @ 4811.0ft (RKB - 23')
Site:	Harold 4N64W6X Pad Sec.6-T4N-R64W	MD Reference:	WELL @ 4811.0ft (RKB - 23')
Well:	Harold 6Y-202	North Reference:	True
Wellbore:	Harold 6Y-202 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Harold 6Y-202 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)
12,699.0	90.45	89.28	6,843.3	-362.6	5,996.0	6,004.5	0.98	0.75	-0.63
12,795.0	91.23	88.66	6,841.9	-360.8	6,091.9	6,100.4	1.04	0.81	-0.65
12,891.0	91.72	87.90	6,839.4	-358.0	6,187.9	6,196.2	0.94	0.51	-0.79
12,987.0	89.94	90.04	6,838.0	-356.2	6,283.8	6,292.0	2.90	-1.85	2.23
13,082.0	90.22	89.62	6,837.9	-356.0	6,378.8	6,387.0	0.53	0.29	-0.44
13,178.0	91.60	89.30	6,836.4	-355.1	6,474.8	6,482.9	1.48	1.44	-0.33
13,274.0	89.66	90.51	6,835.3	-354.9	6,570.8	6,578.8	2.38	-2.02	1.26
13,370.0	89.72	89.81	6,835.8	-355.2	6,666.8	6,674.8	0.73	0.06	-0.73
13,466.0	90.04	88.39	6,836.0	-353.7	6,762.8	6,770.7	1.52	0.33	-1.48
13,562.0	90.45	88.00	6,835.6	-350.6	6,858.7	6,866.5	0.59	0.43	-0.41
13,657.0	90.81	86.87	6,834.6	-346.4	6,953.6	6,961.2	1.25	0.38	-1.19
13,752.0	89.55	89.29	6,834.3	-343.2	7,048.6	7,056.0	2.87	-1.33	2.55
13,848.0	89.25	91.23	6,835.3	-343.6	7,144.6	7,151.9	2.04	-0.31	2.02
13,943.0	89.44	90.96	6,836.4	-345.4	7,239.5	7,246.9	0.35	0.20	-0.28
14,039.0	90.28	90.00	6,836.6	-346.3	7,335.5	7,342.9	1.33	0.88	-1.00
14,135.0	90.63	90.11	6,835.8	-346.3	7,431.5	7,438.8	0.38	0.36	0.11
14,231.0	90.59	88.64	6,834.8	-345.3	7,527.5	7,534.7	1.53	-0.04	-1.53
14,327.0	91.23	88.32	6,833.3	-342.8	7,623.5	7,630.5	0.75	0.67	-0.33
14,422.0	90.17	90.97	6,832.1	-342.2	7,718.4	7,725.5	3.00	-1.12	2.79
14,518.0	90.75	90.34	6,831.4	-343.3	7,814.4	7,821.4	0.89	0.60	-0.66
14,614.0	90.16	93.44	6,830.6	-346.4	7,910.4	7,917.4	3.29	-0.61	3.23
14,710.0	90.69	93.44	6,829.9	-352.2	8,006.2	8,013.4	0.55	0.55	0.00
14,805.0	88.15	92.54	6,830.8	-357.1	8,101.0	8,108.3	2.84	-2.67	-0.95
14,901.0	88.35	91.88	6,833.8	-360.8	8,196.9	8,204.3	0.72	0.21	-0.69
14,997.0	89.17	92.04	6,835.9	-364.1	8,292.8	8,300.3	0.87	0.85	0.17
15,092.0	88.46	89.02	6,837.8	-365.0	8,387.8	8,395.2	3.26	-0.75	-3.18
15,188.0	88.95	89.32	6,840.0	-363.6	8,483.8	8,491.1	0.60	0.51	0.31
15,282.0	89.57	88.56	6,841.2	-361.9	8,577.8	8,585.0	1.04	0.66	-0.81
15,378.0	90.15	87.96	6,841.4	-359.0	8,673.7	8,680.8	0.87	0.60	-0.63
15,473.0	91.04	87.70	6,840.4	-355.4	8,768.6	8,775.5	0.98	0.94	-0.27
15,569.0	91.24	86.90	6,838.5	-350.8	8,864.5	8,871.2	0.86	0.21	-0.83
15,664.0	90.61	89.44	6,837.0	-347.8	8,959.4	8,966.0	2.75	-0.66	2.67
15,759.0	91.01	89.43	6,835.7	-346.9	9,054.4	9,060.9	0.42	0.42	-0.01
15,855.0	91.08	89.07	6,833.9	-345.6	9,150.4	9,156.8	0.38	0.07	-0.38
15,950.0	91.30	87.89	6,831.9	-343.1	9,245.3	9,251.6	1.26	0.23	-1.24
16,045.0	89.45	89.45	6,831.3	-340.9	9,340.3	9,346.4	2.55	-1.95	1.64
16,141.0	89.43	89.25	6,832.3	-339.8	9,436.3	9,442.3	0.21	-0.02	-0.21
16,237.0	89.69	88.67	6,833.0	-338.1	9,532.3	9,538.2	0.66	0.27	-0.60
16,332.0	89.83	87.40	6,833.4	-334.8	9,627.2	9,633.0	1.34	0.15	-1.34
16,333.3	89.83	87.39	6,833.4	-334.7	9,628.5	9,634.3	0.57	0.20	-0.53
WP2 (6Y-202)									
16,428.0	90.02	86.89	6,833.5	-330.0	9,723.1	9,728.7	0.57	0.20	-0.53
16,523.0	90.54	88.85	6,833.0	-326.5	9,818.0	9,823.5	2.13	0.55	2.06
16,619.0	89.93	89.54	6,832.7	-325.1	9,914.0	9,919.3	0.96	-0.64	0.72

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Harold 6Y-202
Project:	SEC.6-T4N-R64W	TVD Reference:	WELL @ 4811.0ft (RKB - 23')
Site:	Harold 4N64W6X Pad Sec.6-T4N-R64W	MD Reference:	WELL @ 4811.0ft (RKB - 23')
Well:	Harold 6Y-202	North Reference:	True
Wellbore:	Harold 6Y-202 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Harold 6Y-202 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)	
16,714.0	89.59	89.48	6,833.1	-324.3	10,009.0	10,014.3	0.36	-0.36	-0.06	
16,809.0	90.14	90.24	6,833.3	-324.1	10,104.0	10,109.2	0.99	0.58	0.80	
16,904.0	89.92	91.56	6,833.2	-325.6	10,199.0	10,204.2	1.41	-0.23	1.39	
17,000.0	89.94	91.80	6,833.3	-328.4	10,295.0	10,300.2	0.25	0.02	0.25	
17,095.0	90.03	91.55	6,833.4	-331.2	10,389.9	10,395.2	0.28	0.09	-0.26	
17,191.0	90.23	90.64	6,833.2	-333.0	10,485.9	10,491.2	0.97	0.21	-0.95	
17,286.0	90.29	89.91	6,832.7	-333.5	10,580.9	10,586.1	0.77	0.06	-0.77	
17,381.0	90.44	89.79	6,832.1	-333.2	10,675.9	10,681.1	0.20	0.16	-0.13	
17,475.0	90.42	88.26	6,831.4	-331.6	10,769.9	10,775.0	1.63	-0.02	-1.63	
17,547.0	90.46	87.45	6,830.9	-328.9	10,841.8	10,846.8	1.13	0.06	-1.13	
17,607.0	90.46	87.45	6,830.4	-326.3	10,901.8	10,906.6	0.00	0.00	0.00	
Projected BHL 245'FSL & 102'FEL, Sec.4										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SHL 577'FSL & 439'FEL - hit/miss target - Shape - Point	0.00	0.00	1.0	0.0	0.0	1,366,436.30	3,254,937.71	40.335660	-104.585490	
Projected BHL 245'FSL & 102'FEL - survey misses target center by 24.8ft at 17607.0ft MD (6830.4 TVD, -326.3 N, 10901.8 E) - Point	0.00	0.00	6,831.0	-351.0	10,903.5	1,366,197.80	3,265,843.79	40.334690	-104.546380	
WP2 (6Y-202) - survey misses target center by 2.9ft at 16333.3ft MD (6833.4 TVD, -334.7 N, 9628.5 E) - Point	0.00	0.00	6,834.7	-337.3	9,628.6	1,366,198.32	3,264,568.86	40.334729	-104.550953	
WP1 (6Y-202) - survey misses target center by 3.5ft at 12006.8ft MD (6849.4 TVD, -358.2 N, 5303.9 E) - Point	0.00	0.00	6,847.3	-355.3	5,304.0	1,366,135.72	3,260,244.86	40.334683	-104.566465	

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
6,886.1	6,742.8	-340.0	204.4	TPZ - 60° Incl. in curve - 232'FSL, 225'FEL, Sec.6	
7,512.0	6,861.1	-333.7	810.5	Deepest TVD Drilled - 6861.13' TVD	

Checked By: _____	Approved By: _____	Date: _____
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