

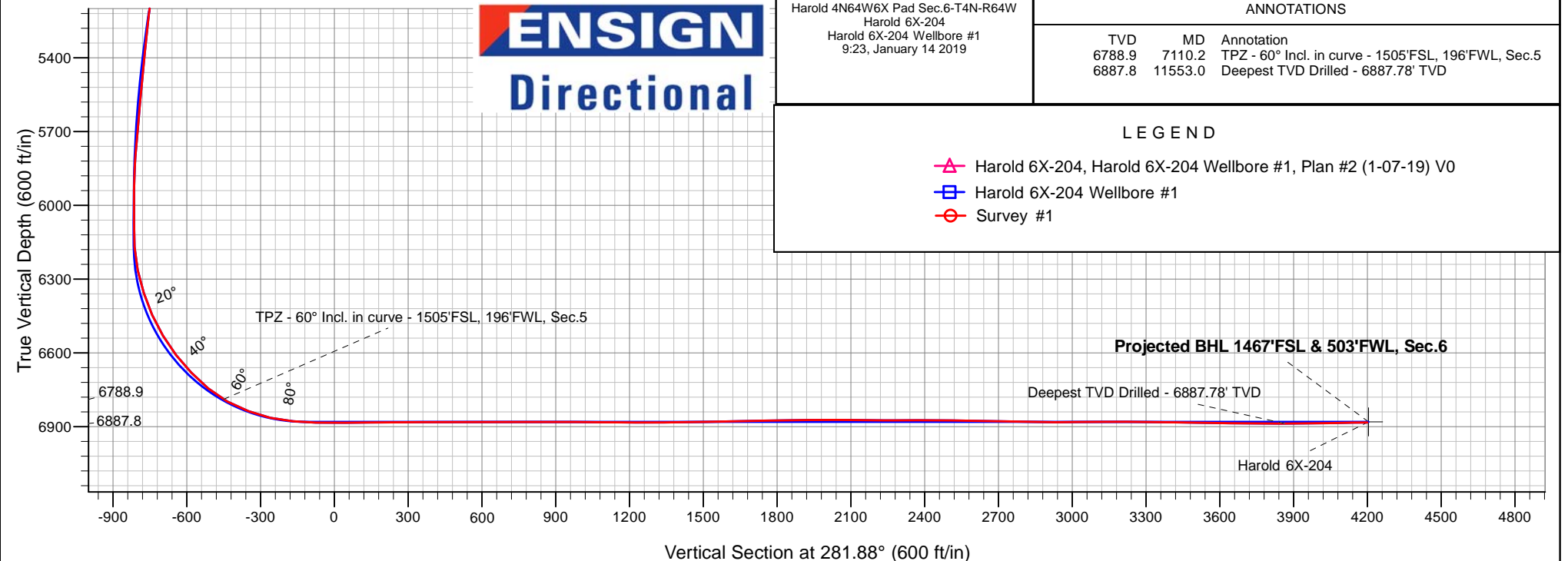
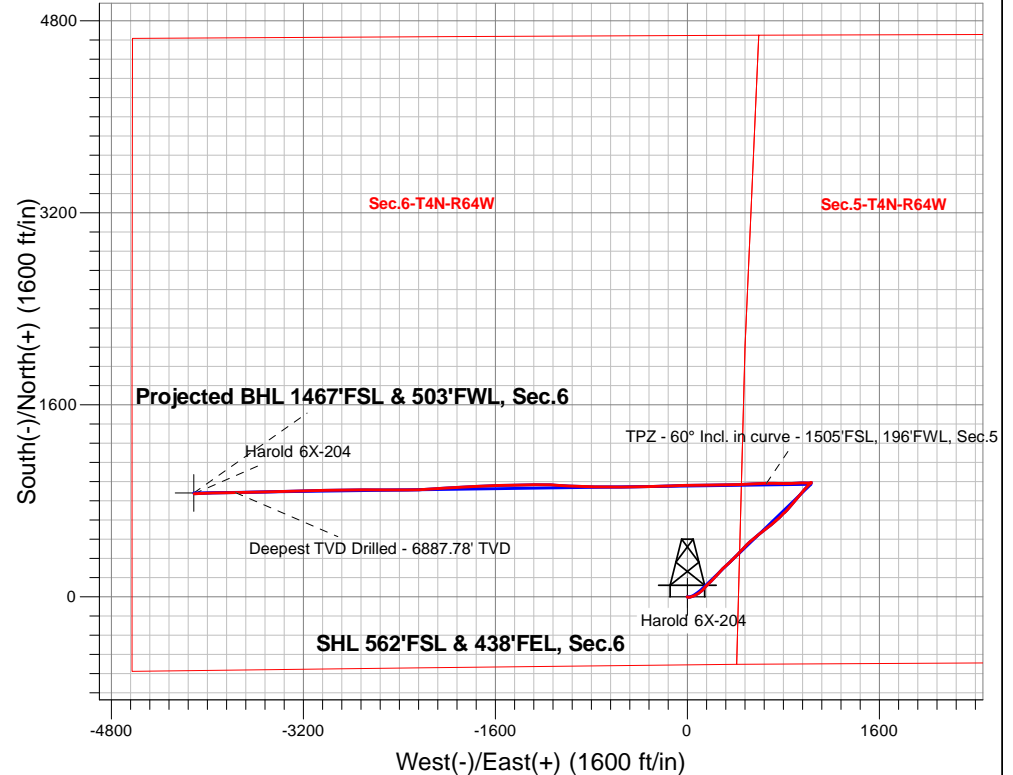
PDC Energy Inc. DJ Basin

Well Name: **Harold 6X-204**

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 1366421.723254937.86 40.335620 -104.585490
RKB - 23' WELL @ 4811.0ft (RKB - 23')

FINAL SURVEY

Projected Bottom Hole Location
11,900'MD 6883'TVD 859'N & 4111'W of SHL
90.75 degree Incl @ 267.69 degree AZM





PDC Energy Inc. DJ Basin

SEC.6-T4N-R64W

Harold 4N64W6X Pad Sec.6-T4N-R64W

Harold 6X-204

Harold 6X-204 Wellbore #1

Survey: Survey #1

Standard Survey Report

14 January, 2019

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Harold 6X-204
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 6X-204	North Reference:	True
Wellbore:	Harold 6X-204 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Harold 6X-204 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 6X-204					
Well Position	+N/-S	0.0 ft	Northing:	1,366,421.72 usft	Latitude:	40.335620
	+E/-W	0.0 ft	Easting:	3,254,937.87 usft	Longitude:	-104.585490
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,788.0 ft

Wellbore	Harold 6X-204 Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	1/7/2019	8.18	66.83	52,182

Design	Harold 6X-204 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	281.88	

Survey Program	Date	1/14/2019			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
158.0	11,900.0	Survey #1 (Harold 6X-204 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	256.25	1.0	0.0	0.0	0.0	0.27	0.27	0.00	
SHL 562'FSL & 438'FEL, Sec.6										
158.0	0.42	256.25	158.0	-0.1	-0.6	0.5	0.27	0.27	0.00	
253.0	0.54	170.44	253.0	-0.7	-0.8	0.7	0.69	0.13	-90.33	
348.0	1.18	116.52	348.0	-1.5	0.1	-0.4	1.02	0.67	-56.76	
444.0	3.17	103.46	443.9	-2.6	3.6	-4.0	2.12	2.07	-13.60	
540.0	4.90	100.30	539.7	-4.0	10.2	-10.8	1.82	1.80	-3.29	
635.0	4.61	86.15	634.3	-4.4	18.0	-18.5	1.27	-0.31	-14.89	
731.0	6.82	70.76	729.9	-2.3	27.2	-27.1	2.78	2.30	-16.03	
826.0	8.24	68.54	824.0	2.1	38.9	-37.6	1.53	1.49	-2.34	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Harold 6X-204
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 6X-204	North Reference:	True
Wellbore:	Harold 6X-204 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Harold 6X-204 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	9.67	67.21	918.9	7.7	52.7	-50.0	1.51	1.49	-1.39
1,017.0	10.82	66.45	1,012.4	14.4	68.3	-63.8	1.22	1.21	-0.80
1,113.0	12.49	58.56	1,106.4	23.4	85.4	-78.7	2.40	1.74	-8.22
1,208.0	13.74	51.20	1,198.9	35.8	102.9	-93.4	2.19	1.32	-7.75
1,303.0	14.03	46.83	1,291.1	50.8	120.1	-107.1	1.15	0.31	-4.60
1,399.0	16.14	43.57	1,383.8	68.4	137.8	-120.8	2.37	2.20	-3.40
1,495.0	17.90	44.34	1,475.6	88.6	157.3	-135.7	1.85	1.83	0.80
1,595.0	18.83	43.69	1,570.5	111.3	179.2	-152.5	0.95	0.93	-0.65
1,682.0	16.64	44.34	1,653.4	130.3	197.6	-166.6	2.53	-2.52	0.75
1,778.0	16.80	44.46	1,745.3	150.1	217.0	-181.4	0.17	0.17	0.13
1,873.0	16.30	43.20	1,836.4	169.6	235.7	-195.7	0.65	-0.53	-1.33
1,969.0	15.51	42.35	1,928.7	188.9	253.6	-209.2	0.86	-0.82	-0.89
2,064.0	16.06	42.98	2,020.1	207.9	271.1	-222.5	0.61	0.58	0.66
2,159.0	15.15	40.17	2,111.6	227.0	288.0	-235.1	1.25	-0.96	-2.96
2,255.0	15.06	47.24	2,204.3	245.0	305.3	-248.3	1.92	-0.09	7.36
2,351.0	15.18	50.88	2,297.0	261.4	324.2	-263.4	1.00	0.13	3.79
2,446.0	17.16	47.64	2,388.2	278.7	344.2	-279.4	2.29	2.08	-3.41
2,542.0	17.06	45.24	2,480.0	298.2	364.7	-295.4	0.74	-0.10	-2.50
2,637.0	16.76	45.05	2,570.9	317.7	384.3	-310.6	0.32	-0.32	-0.20
2,733.0	16.70	44.41	2,662.8	337.3	403.7	-325.6	0.20	-0.06	-0.67
2,828.0	16.86	43.96	2,753.8	357.0	422.8	-340.2	0.22	0.17	-0.47
2,924.0	16.92	43.01	2,845.6	377.2	442.0	-354.9	0.29	0.06	-0.99
3,019.0	15.66	43.15	2,936.8	396.7	460.2	-368.7	1.33	-1.33	0.15
3,115.0	16.60	42.62	3,029.0	416.2	478.4	-382.4	0.99	0.98	-0.55
3,210.0	17.29	45.88	3,119.9	436.0	497.7	-397.2	1.24	0.73	3.43
3,306.0	16.31	46.76	3,211.8	455.2	517.8	-412.9	1.05	-1.02	0.92
3,401.0	15.68	49.19	3,303.1	472.7	537.2	-428.3	0.97	-0.66	2.56
3,497.0	17.25	52.58	3,395.2	489.9	558.3	-445.5	1.92	1.64	3.53
3,592.0	16.69	51.24	3,486.1	507.0	580.1	-463.3	0.72	-0.59	-1.41
3,688.0	16.02	50.11	3,578.2	524.1	601.1	-480.2	0.77	-0.70	-1.18
3,783.0	16.91	52.87	3,669.3	540.8	622.1	-497.4	1.25	0.94	2.91
3,879.0	16.87	52.03	3,761.1	557.8	644.2	-515.5	0.26	-0.04	-0.88
3,974.0	16.56	51.72	3,852.1	574.7	665.7	-533.1	0.34	-0.33	-0.33
4,070.0	16.56	52.36	3,944.1	591.5	687.3	-550.7	0.19	0.00	0.67
4,165.0	16.28	50.51	4,035.3	608.3	708.3	-567.8	0.62	-0.29	-1.95
4,261.0	14.98	49.13	4,127.7	624.9	728.1	-583.8	1.41	-1.35	-1.44
4,356.0	17.49	48.19	4,218.9	642.5	748.0	-599.6	2.66	2.64	-0.99
4,452.0	17.39	46.00	4,310.5	662.1	769.1	-616.2	0.69	-0.10	-2.28
4,548.0	16.41	43.99	4,402.4	681.8	788.8	-631.5	1.19	-1.02	-2.09
4,643.0	18.43	46.30	4,493.0	701.8	809.0	-647.1	2.25	2.13	2.43
4,738.0	18.51	43.72	4,583.1	723.1	830.3	-663.5	0.86	0.08	-2.72
4,833.0	17.54	40.77	4,673.5	744.9	850.0	-678.4	1.40	-1.02	-3.11
4,929.0	16.74	38.94	4,765.2	766.6	868.2	-691.7	1.00	-0.83	-1.91

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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 6X-204	North Reference:	True
Wellbore:	Harold 6X-204 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Harold 6X-204 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	15.79	39.47	4,857.3	787.4	885.2	-704.0	1.00	-0.99	0.55
5,121.0	16.41	41.68	4,949.6	807.6	902.5	-716.8	0.91	0.65	2.30
5,216.0	16.31	41.48	5,040.7	827.6	920.2	-730.1	0.12	-0.11	-0.21
5,312.0	15.68	40.84	5,133.0	847.5	937.7	-743.0	0.68	-0.66	-0.67
5,407.0	14.50	38.83	5,224.7	866.5	953.5	-754.6	1.36	-1.24	-2.12
5,503.0	13.21	37.34	5,317.9	884.6	967.7	-764.8	1.39	-1.34	-1.55
5,598.0	11.66	41.39	5,410.7	900.4	980.6	-774.2	1.87	-1.63	4.26
5,694.0	10.14	43.43	5,505.0	913.9	992.9	-783.4	1.63	-1.58	2.13
5,789.0	9.36	41.08	5,598.6	925.7	1,003.7	-791.5	0.92	-0.82	-2.47
5,885.0	8.48	50.47	5,693.5	936.1	1,014.3	-799.7	1.77	-0.92	9.78
5,981.0	7.87	48.26	5,788.5	945.0	1,024.6	-808.1	0.71	-0.64	-2.30
6,076.0	3.01	46.46	5,883.0	951.1	1,031.3	-813.3	5.12	-5.12	-1.89
6,172.0	0.93	20.66	5,979.0	953.5	1,033.4	-814.9	2.30	-2.17	-26.88
6,267.0	1.72	194.74	6,074.0	952.9	1,033.3	-814.9	2.79	0.83	183.24
6,363.0	3.30	249.55	6,169.9	950.5	1,030.4	-812.5	2.82	1.65	57.09
6,459.0	12.94	265.61	6,264.8	948.7	1,017.0	-799.8	10.22	10.04	16.73
6,554.0	18.04	273.60	6,356.3	948.8	991.7	-775.0	5.81	5.37	8.41
6,650.0	24.30	269.34	6,445.8	949.5	957.1	-741.0	6.71	6.52	-4.44
6,746.0	31.75	265.52	6,530.5	947.3	912.1	-697.4	7.98	7.76	-3.98
6,842.0	38.65	267.91	6,608.9	944.3	856.9	-644.0	7.33	7.19	2.49
6,938.0	44.47	270.96	6,680.7	943.7	793.2	-581.9	6.42	6.06	3.18
7,033.0	50.47	271.46	6,744.9	945.2	723.3	-513.1	6.33	6.32	0.53
7,110.2	59.99	268.96	6,788.9	945.4	659.9	-451.1	12.62	12.34	-3.24
TPZ - 60° Incl. in curve - 1505'FSL, 196'FWL, Sec.5									
7,129.0	62.32	268.43	6,797.9	945.0	643.5	-435.1	12.62	12.37	-2.83
7,225.0	69.69	267.30	6,837.0	941.7	555.9	-350.0	7.75	7.68	-1.18
7,321.0	77.72	267.92	6,863.9	937.9	463.9	-260.8	8.39	8.36	0.65
7,416.0	84.60	267.77	6,878.5	934.4	370.2	-169.8	7.24	7.24	-0.16
7,471.4	86.88	268.78	6,882.6	932.7	315.0	-116.1	4.51	4.12	1.83
LPL 1487'FSL & 149'FEL, Sec.6									
7,512.0	88.56	269.52	6,884.2	932.1	274.4	-76.5	4.51	4.13	1.82
7,636.0	90.89	269.44	6,884.8	931.0	150.4	44.6	1.88	1.88	-0.06
7,732.0	90.74	269.28	6,883.4	929.9	54.4	138.3	0.23	-0.16	-0.17
7,828.0	90.27	268.08	6,882.6	927.7	-41.6	231.7	1.34	-0.49	-1.25
7,923.0	90.39	268.25	6,882.0	924.6	-136.5	324.0	0.22	0.13	0.18
8,019.0	90.18	268.02	6,881.6	921.5	-232.4	417.2	0.32	-0.22	-0.24
8,115.0	89.67	267.12	6,881.7	917.5	-328.4	510.3	1.08	-0.53	-0.94
8,210.0	90.03	269.00	6,881.9	914.2	-423.3	602.5	2.01	0.38	1.98
8,306.0	90.17	270.89	6,881.8	914.1	-519.3	696.4	1.97	0.15	1.97
8,401.0	90.34	271.08	6,881.3	915.8	-614.3	789.7	0.27	0.18	0.20
8,497.0	89.92	271.08	6,881.1	917.6	-710.3	884.0	0.44	-0.44	0.00
8,593.0	89.52	269.82	6,881.6	918.3	-806.3	978.1	1.38	-0.42	-1.31
8,688.0	89.76	270.78	6,882.2	918.8	-901.3	1,071.2	1.04	0.25	1.01
8,784.0	89.68	273.38	6,882.7	922.3	-997.2	1,165.8	2.71	-0.08	2.71

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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)
8,879.0	90.07	275.55	6,882.9	929.7	-1,091.9	1,260.0	2.32	0.41	2.28
8,975.0	90.10	270.26	6,882.7	934.6	-1,187.7	1,354.7	5.51	0.03	-5.51
9,071.0	90.89	268.82	6,881.9	933.8	-1,283.7	1,448.5	1.71	0.82	-1.50
9,166.0	91.10	268.64	6,880.2	931.7	-1,378.7	1,541.0	0.29	0.22	-0.19
9,262.0	91.30	268.72	6,878.2	929.5	-1,474.6	1,634.4	0.22	0.21	0.08
9,357.0	91.31	268.63	6,876.1	927.3	-1,569.6	1,726.9	0.10	0.01	-0.09
9,452.0	90.65	267.78	6,874.4	924.3	-1,664.5	1,819.2	1.13	-0.69	-0.89
9,548.0	90.41	266.92	6,873.6	919.9	-1,760.4	1,912.1	0.93	-0.25	-0.90
9,643.0	90.48	266.85	6,872.8	914.7	-1,855.3	2,003.9	0.10	0.07	-0.07
9,738.0	89.37	267.03	6,872.9	909.7	-1,950.1	2,095.7	1.18	-1.17	0.19
9,834.0	89.16	266.16	6,874.2	904.0	-2,046.0	2,188.3	0.93	-0.22	-0.91
9,928.0	90.21	266.81	6,874.7	898.2	-2,139.8	2,278.9	1.31	1.12	0.69
10,024.0	90.28	267.03	6,874.3	893.0	-2,235.6	2,371.6	0.24	0.07	0.23
10,119.0	89.17	269.69	6,874.7	890.3	-2,330.6	2,464.0	3.03	-1.17	2.80
10,213.0	89.51	270.28	6,875.8	890.3	-2,424.6	2,556.0	0.72	0.36	0.63
10,309.0	89.05	270.06	6,877.0	890.6	-2,520.6	2,649.9	0.53	-0.48	-0.23
10,404.0	88.84	270.04	6,878.8	890.7	-2,615.6	2,742.9	0.22	-0.22	-0.02
10,500.0	88.53	269.52	6,881.0	890.3	-2,711.5	2,836.8	0.63	-0.32	-0.54
10,596.0	90.34	269.69	6,881.9	889.6	-2,807.5	2,930.5	1.89	1.89	0.18
10,691.0	90.23	269.24	6,881.4	888.7	-2,902.5	3,023.3	0.49	-0.12	-0.47
10,787.0	90.24	269.09	6,881.1	887.3	-2,998.5	3,117.0	0.16	0.01	-0.16
10,882.0	89.76	268.83	6,881.1	885.6	-3,093.5	3,209.6	0.57	-0.51	-0.27
10,978.0	89.73	268.75	6,881.5	883.6	-3,189.5	3,303.1	0.09	-0.03	-0.08
11,073.0	89.36	268.45	6,882.2	881.3	-3,284.4	3,395.5	0.50	-0.39	-0.32
11,169.0	89.08	268.32	6,883.5	878.6	-3,380.4	3,488.9	0.32	-0.29	-0.14
11,265.0	88.52	267.97	6,885.6	875.5	-3,476.3	3,582.1	0.69	-0.58	-0.36
11,361.0	89.69	268.76	6,887.1	872.7	-3,572.3	3,675.4	1.47	1.22	0.82
11,457.0	89.51	268.62	6,887.7	870.5	-3,668.2	3,768.9	0.24	-0.19	-0.15
11,553.0	90.42	269.13	6,887.8	868.6	-3,764.2	3,862.4	1.09	0.95	0.53
Deepest TVD Drilled - 6887.78' TVD									
11,648.0	90.84	268.82	6,886.7	866.9	-3,859.2	3,955.0	0.55	0.44	-0.33
11,744.0	90.73	268.40	6,885.4	864.6	-3,955.2	4,048.4	0.45	-0.11	-0.44
11,840.0	90.75	267.69	6,884.2	861.3	-4,051.1	4,141.6	0.74	0.02	-0.74
11,900.0	90.75	267.69	6,883.4	858.9	-4,111.0	4,199.8	0.00	0.00	0.00
Projected BHL 1467'FSL & 503'FWL, Sec.6									

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Harold 6X-204
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 6X-204	North Reference:	True
Wellbore:	Harold 6X-204 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Harold 6X-204 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 562'FSL & 438'FEL - survey hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,366,421.73	3,254,937.87	40.335620	-104.585490
Projected BHL 1467'FSL - survey misses target center by 7.7ft at 11900.0ft MD (6883.4 TVD, 858.9 N, -4111.0 E) - Point	0.00	0.00	6,881.0	865.8	-4,113.7	1,367,244.98	3,250,815.61	40.337996	-104.600247

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,110.2	6,788.9	945.4	659.9	TPZ - 60° Incl. in curve - 1505'FSL, 196'FWL, Sec.5
11,553.0	6,887.8	868.6	-3,764.2	Deepest TVD Drilled - 6887.78' TVD

Checked By: _____	Approved By: _____	Date: _____
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