

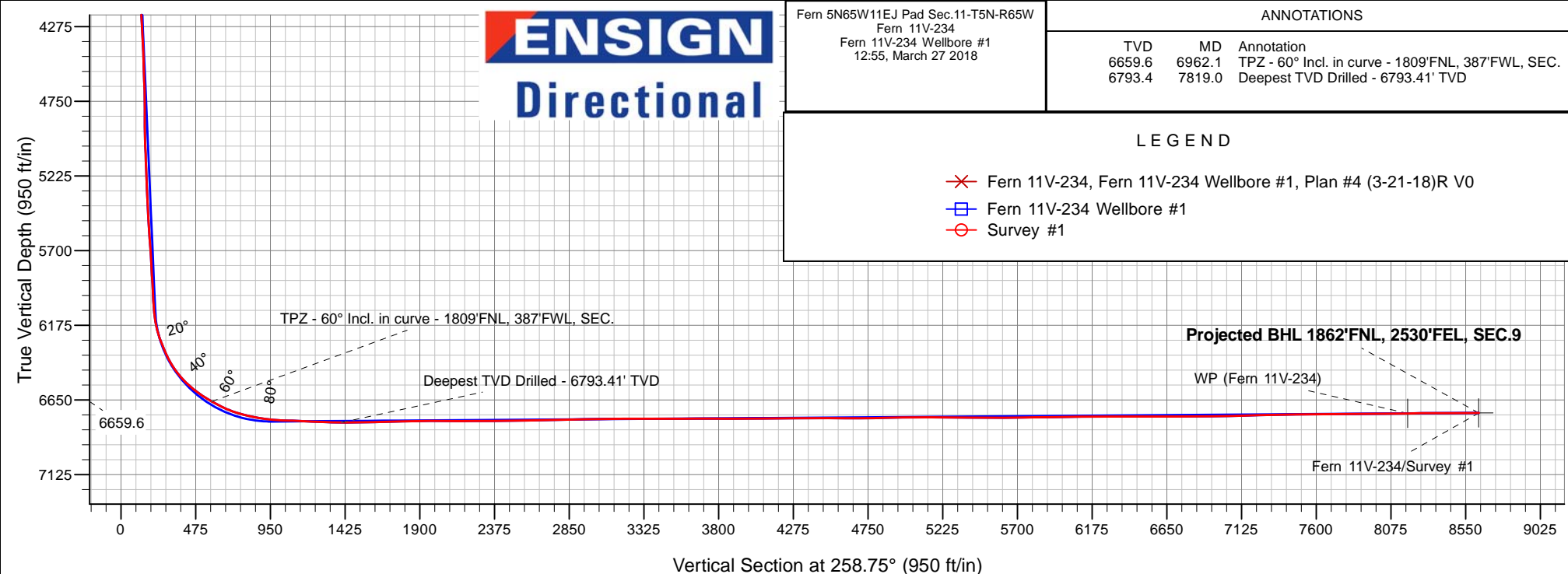
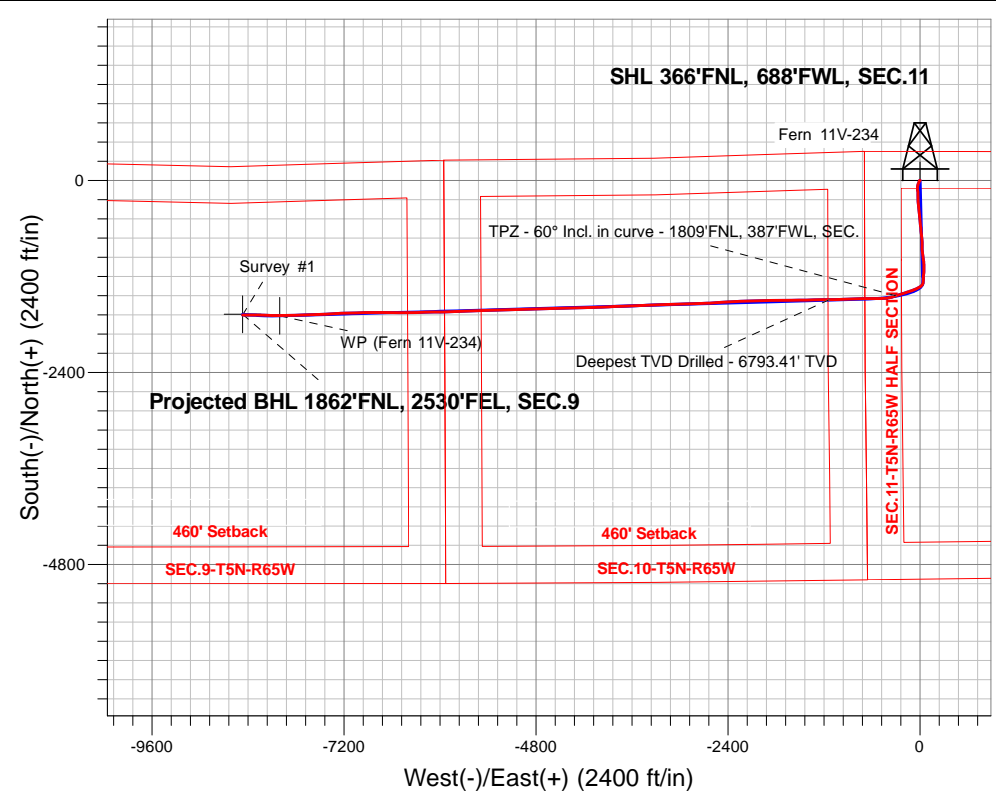
PDC Energy Inc. DJ Basin

Well Name: **Fern 11V-234**

Surface Location: Fern 5N65W11EJ Pad Sec.11-T5N-R65W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4619.0
+N/-S+E/-W Northing Easting Latitude Longitude Slot
0.0 0.0397124.24 3240103.82 40.420303 -104.637628
Original Well Elev WELL @ 4642.0ft (Original Well Elev)

FINAL SURVEY

Projected Bottom Hole Location
15,159'MD 6733'TVD 1684'S & 8469'W of SHL
90.6 degree Incl @ 269.10 degree AZM





PDC Energy Inc. DJ Basin

SEC.11-T5N-R65W

Fern 5N65W11EJ Pad Sec.11-T5N-R65W

Fern 11V-234

Fern 11V-234 Wellbore #1

Survey: Survey #1

Standard Survey Report

27 March, 2018

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Fern 11V-234
Project:	SEC.11-T5N-R65W	TVD Reference:	WELL @ 4642.0ft (Original Well Elev)
Site:	Fern 5N65W11EJ Pad Sec.11-T5N-R65W	MD Reference:	WELL @ 4642.0ft (Original Well Elev)
Well:	Fern 11V-234	North Reference:	True
Wellbore:	Fern 11V-234 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Fern 11V-234 Wellbore #1	Database:	US_EDM

Project	SEC.11-T5N-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		Fern 5N65W11EJ Pad Sec.11-T5N-R65W			
Site Position:		Northing:	1,397,139.19 usft	Latitude:	40.420344
From:	Lat/Long	Easting:	3,240,103.68 usft	Longitude:	-104.637628
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.56 °

Well	Fern 11V-234					
Well Position	+N/-S	0.0 ft	Northing:	1,397,124.24 usft	Latitude:	40.420303
	+E/-W	0.0 ft	Easting:	3,240,103.82 usft	Longitude:	-104.637628
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,619.0 ft

Wellbore	Fern 11V-234 Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/5/2018	7.90	66.85	52,457

Design	Fern 11V-234 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	258.75	

Survey Program	Date	3/27/2018			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
153.0	15,159.0	Survey #1 (Fern 11V-234 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	290.90	1.0	0.0	0.0	0.0	0.00	0.00	0.00	
SHL 366'FNL, 688'FWL, SEC.11										
153.0	0.20	290.90	153.0	0.1	-0.2	0.2	0.13	0.13	0.00	
249.0	0.70	133.10	249.0	-0.2	0.0	0.0	0.93	0.52	-164.38	
344.0	0.70	313.10	344.0	-0.2	0.0	0.0	1.47	0.00	-189.47	
440.0	0.70	302.30	440.0	0.5	-0.9	0.8	0.14	0.00	-11.25	
535.0	0.80	262.10	535.0	0.7	-2.0	1.9	0.55	0.11	-42.32	
630.0	1.70	216.90	630.0	-0.5	-3.6	3.6	1.34	0.95	-47.58	
725.0	3.50	203.40	724.9	-4.3	-5.6	6.3	1.99	1.89	-14.21	
821.0	4.30	208.60	820.6	-10.2	-8.4	10.3	0.91	0.83	5.42	

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Site:	Fern 5N65W11EJ Pad Sec.11-T5N-R65W	MD Reference:	WELL @ 4642.0ft (Original Well Elev)
Well:	Fern 11V-234	North Reference:	True
Wellbore:	Fern 11V-234 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Fern 11V-234 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)
916.0	6.30	202.30	915.2	-18.1	-12.1	15.4	2.19	2.11	-6.63
1,011.0	7.50	200.70	1,009.5	-28.7	-16.3	21.6	1.28	1.26	-1.68
1,107.0	8.40	202.30	1,104.6	-41.1	-21.2	28.8	0.97	0.94	1.67
1,202.0	8.90	198.40	1,198.5	-54.5	-26.1	36.2	0.81	0.53	-4.11
1,298.0	9.50	192.80	1,293.3	-69.3	-30.2	43.1	1.12	0.63	-5.83
1,393.0	9.30	185.40	1,387.0	-84.5	-32.7	48.5	1.29	-0.21	-7.79
1,489.0	9.30	177.50	1,481.8	-100.0	-33.1	51.9	1.33	0.00	-8.23
1,587.0	8.80	171.60	1,578.6	-115.3	-31.6	53.5	1.08	-0.51	-6.02
1,680.0	7.20	167.90	1,670.6	-128.1	-29.4	53.8	1.81	-1.72	-3.98
1,776.0	10.30	174.90	1,765.5	-142.5	-27.3	54.6	3.41	3.23	7.29
1,870.0	13.00	180.30	1,857.6	-161.5	-26.6	57.6	3.09	2.87	5.74
1,966.0	15.10	180.20	1,950.7	-184.8	-26.8	62.3	2.19	2.19	-0.10
2,062.0	17.70	177.50	2,042.8	-211.9	-26.2	67.0	2.82	2.71	-2.81
2,157.0	17.80	177.00	2,133.3	-240.8	-24.8	71.3	0.19	0.11	-0.53
2,252.0	17.10	176.60	2,223.9	-269.2	-23.2	75.2	0.75	-0.74	-0.42
2,348.0	16.40	176.10	2,315.8	-296.8	-21.4	78.9	0.74	-0.73	-0.52
2,443.0	16.10	174.50	2,407.0	-323.3	-19.2	81.9	0.57	-0.32	-1.68
2,538.0	15.50	174.20	2,498.4	-349.1	-16.7	84.5	0.64	-0.63	-0.32
2,633.0	15.20	172.10	2,590.0	-374.0	-13.7	86.4	0.66	-0.32	-2.21
2,729.0	14.90	172.60	2,682.8	-398.7	-10.4	88.0	0.34	-0.31	0.52
2,824.0	14.60	174.00	2,774.6	-422.8	-7.6	89.9	0.49	-0.32	1.47
2,920.0	16.60	175.20	2,867.1	-448.5	-5.1	92.5	2.11	2.08	1.25
3,016.0	16.30	175.60	2,959.1	-475.6	-3.0	95.7	0.33	-0.31	0.42
3,111.0	16.00	173.70	3,050.4	-501.9	-0.5	98.4	0.64	-0.32	-2.00
3,206.0	15.30	174.70	3,141.9	-527.4	2.1	100.8	0.79	-0.74	1.05
3,302.0	14.60	173.70	3,234.6	-552.0	4.6	103.2	0.78	-0.73	-1.04
3,396.0	14.00	171.60	3,325.7	-575.0	7.5	104.8	0.84	-0.64	-2.23
3,492.0	14.50	177.40	3,418.8	-598.5	9.8	107.1	1.57	0.52	6.04
3,588.0	14.20	176.10	3,511.8	-622.3	11.1	110.5	0.46	-0.31	-1.35
3,683.0	13.70	174.40	3,604.0	-645.1	13.0	113.0	0.68	-0.53	-1.79
3,778.0	13.70	174.20	3,696.3	-667.5	15.3	115.2	0.05	0.00	-0.21
3,874.0	13.70	172.60	3,789.5	-690.1	17.9	117.1	0.39	0.00	-1.67
3,969.0	14.80	175.80	3,881.6	-713.3	20.2	119.3	1.42	1.16	3.37
4,065.0	13.90	173.30	3,974.6	-737.0	22.5	121.7	1.14	-0.94	-2.60
4,160.0	13.50	172.40	4,066.9	-759.3	25.2	123.3	0.48	-0.42	-0.95
4,255.0	15.80	181.90	4,158.8	-783.3	26.3	127.0	3.49	2.42	10.00
4,351.0	15.10	180.30	4,251.4	-808.8	25.8	132.5	0.85	-0.73	-1.67
4,447.0	14.80	178.90	4,344.1	-833.6	26.0	137.1	0.49	-0.31	-1.46
4,543.0	14.20	178.10	4,437.1	-857.6	26.6	141.2	0.66	-0.63	-0.83
4,638.0	13.60	175.80	4,529.3	-880.4	27.8	144.5	0.86	-0.63	-2.42
4,734.0	14.40	176.50	4,622.4	-903.6	29.3	147.5	0.85	0.83	0.73
4,830.0	14.00	174.00	4,715.5	-927.0	31.3	150.1	0.76	-0.42	-2.60
4,925.0	15.30	168.90	4,807.4	-950.8	34.9	151.2	1.93	1.37	-5.37

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Well:	Fern 11V-234	North Reference:	True
Wellbore:	Fern 11V-234 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Fern 11V-234 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)
5,021.0	14.40	166.80	4,900.2	-974.8	40.1	150.8	1.09	-0.94	-2.19
5,116.0	16.40	178.20	4,991.8	-999.7	43.2	152.6	3.81	2.11	12.00
5,212.0	15.40	176.10	5,084.1	-1,026.0	44.5	156.5	1.20	-1.04	-2.19
5,307.0	13.90	174.20	5,176.0	-1,049.9	46.5	159.2	1.66	-1.58	-2.00
5,403.0	15.10	181.60	5,269.0	-1,073.9	47.3	163.1	2.30	1.25	7.71
5,498.0	14.20	179.60	5,360.9	-1,097.9	47.0	168.0	1.09	-0.95	-2.11
5,594.0	13.30	177.20	5,454.1	-1,120.7	47.7	171.8	1.11	-0.94	-2.50
5,690.0	14.40	184.20	5,547.4	-1,143.7	47.3	176.6	2.09	1.15	7.29
5,785.0	14.90	185.60	5,639.3	-1,167.6	45.3	183.3	0.64	0.53	1.47
5,880.0	13.50	183.70	5,731.4	-1,190.8	43.4	189.7	1.55	-1.47	-2.00
5,975.0	12.80	181.60	5,823.9	-1,212.4	42.4	194.9	0.89	-0.74	-2.21
6,071.0	14.90	183.50	5,917.1	-1,235.4	41.3	200.4	2.24	2.19	1.98
6,166.0	13.80	181.70	6,009.1	-1,258.9	40.2	206.1	1.25	-1.16	-1.89
6,262.0	14.10	186.30	6,102.3	-1,281.9	38.6	212.2	1.20	0.31	4.79
6,357.0	19.10	216.90	6,193.5	-1,305.9	28.0	227.3	10.43	5.26	32.21
6,452.0	22.40	237.30	6,282.4	-1,328.2	3.4	255.8	8.31	3.47	21.47
6,548.0	26.10	243.60	6,369.9	-1,347.5	-31.0	293.2	4.70	3.85	6.56
6,644.0	34.30	247.70	6,452.8	-1,367.2	-75.0	340.2	8.80	8.54	4.27
6,739.0	44.80	251.00	6,526.0	-1,388.3	-131.6	399.8	11.27	11.05	3.47
6,835.0	52.80	252.80	6,589.2	-1,410.6	-200.2	471.5	8.45	8.33	1.88
6,931.0	58.10	251.70	6,643.6	-1,434.7	-275.4	550.0	5.60	5.52	-1.15
6,962.1	59.99	252.65	6,659.6	-1,442.9	-300.8	576.5	6.63	6.08	3.06
TPZ - 60° Incl. in curve - 1809'FNL, 387'FWL, SEC.									
7,026.0	63.90	254.50	6,689.7	-1,458.8	-354.9	632.6	6.63	6.12	2.89
7,122.0	71.20	266.10	6,726.4	-1,473.5	-442.2	721.1	13.50	7.60	12.08
7,217.0	78.20	270.50	6,751.5	-1,476.2	-533.7	811.3	8.62	7.37	4.63
7,313.0	81.00	268.40	6,768.8	-1,477.1	-628.1	904.1	3.62	2.92	-2.19
7,369.2	85.03	268.82	6,775.6	-1,478.4	-683.9	959.1	7.20	7.16	0.74
LPL 1852'FNL, 0'FEL, SEC.10									
7,408.0	87.80	269.10	6,778.1	-1,479.1	-722.5	997.2	7.20	7.16	0.73
7,503.0	87.50	268.40	6,782.0	-1,481.2	-817.4	1,090.6	0.80	-0.32	-0.74
7,627.0	87.80	268.10	6,787.0	-1,485.0	-941.3	1,212.8	0.34	0.24	-0.24
7,723.0	87.50	267.90	6,791.0	-1,488.3	-1,037.1	1,307.5	0.38	-0.31	-0.21
7,819.0	89.60	269.50	6,793.4	-1,490.5	-1,133.1	1,402.0	2.75	2.19	1.67
Deepest TVD Drilled - 6793.41' TVD									
7,914.0	90.70	269.10	6,793.2	-1,491.7	-1,228.1	1,495.4	1.23	1.16	-0.42
8,010.0	91.20	268.90	6,791.6	-1,493.3	-1,324.0	1,589.9	0.56	0.52	-0.21
8,105.0	91.50	268.90	6,789.3	-1,495.2	-1,419.0	1,683.4	0.32	0.32	0.00
8,201.0	91.50	269.50	6,786.8	-1,496.5	-1,514.9	1,777.7	0.62	0.00	0.63
8,296.0	91.50	269.50	6,784.3	-1,497.3	-1,609.9	1,871.0	0.00	0.00	0.00
8,391.0	89.90	269.10	6,783.2	-1,498.5	-1,704.9	1,964.4	1.74	-1.68	-0.42
8,487.0	89.80	269.10	6,783.4	-1,500.0	-1,800.9	2,058.9	0.10	-0.10	0.00
8,583.0	89.50	268.90	6,784.0	-1,501.7	-1,896.9	2,153.3	0.38	-0.31	-0.21
8,679.0	90.70	268.60	6,783.8	-1,503.8	-1,992.8	2,247.9	1.29	1.25	-0.31

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Design:	Fern 11V-234 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)
8,774.0	90.30	267.90	6,783.0	-1,506.7	-2,087.8	2,341.6	0.85	-0.42	-0.74
8,870.0	90.00	268.10	6,782.8	-1,510.0	-2,183.7	2,436.3	0.38	-0.31	0.21
8,965.0	91.00	267.50	6,781.9	-1,513.7	-2,278.7	2,530.1	1.23	1.05	-0.63
9,061.0	91.10	267.20	6,780.2	-1,518.1	-2,374.5	2,625.0	0.33	0.10	-0.31
9,156.0	91.20	266.50	6,778.3	-1,523.3	-2,469.4	2,719.1	0.74	0.11	-0.74
9,252.0	91.40	265.90	6,776.1	-1,529.7	-2,565.1	2,814.2	0.66	0.21	-0.63
9,348.0	91.00	267.90	6,774.1	-1,534.9	-2,661.0	2,909.2	2.12	-0.42	2.08
9,443.0	91.10	267.70	6,772.3	-1,538.5	-2,755.9	3,003.0	0.24	0.11	-0.21
9,538.0	91.50	267.50	6,770.2	-1,542.5	-2,850.8	3,096.9	0.47	0.42	-0.21
9,633.0	89.80	269.10	6,769.1	-1,545.3	-2,945.7	3,190.6	2.46	-1.79	1.68
9,729.0	89.80	268.60	6,769.4	-1,547.2	-3,041.7	3,285.1	0.52	0.00	-0.52
9,824.0	90.00	268.20	6,769.6	-1,549.9	-3,136.7	3,378.7	0.47	0.21	-0.42
9,919.0	90.30	268.20	6,769.4	-1,552.9	-3,231.6	3,472.4	0.32	0.32	0.00
10,015.0	90.30	267.70	6,768.9	-1,556.3	-3,327.6	3,567.2	0.52	0.00	-0.52
10,110.0	90.20	267.40	6,768.4	-1,560.4	-3,422.5	3,661.1	0.33	-0.11	-0.32
10,206.0	90.00	267.40	6,768.3	-1,564.7	-3,518.4	3,756.0	0.21	-0.21	0.00
10,301.0	89.80	267.00	6,768.4	-1,569.4	-3,613.3	3,850.0	0.47	-0.21	-0.42
10,397.0	90.10	268.60	6,768.5	-1,573.1	-3,709.2	3,944.8	1.70	0.31	1.67
10,492.0	90.00	268.20	6,768.4	-1,575.7	-3,804.1	4,038.4	0.43	-0.11	-0.42
10,587.0	90.60	267.50	6,767.9	-1,579.3	-3,899.1	4,132.2	0.97	0.63	-0.74
10,682.0	91.40	266.60	6,766.3	-1,584.2	-3,993.9	4,226.2	1.27	0.84	-0.95
10,777.0	90.10	269.30	6,765.0	-1,587.6	-4,088.9	4,320.0	3.15	-1.37	2.84
10,873.0	89.60	268.20	6,765.3	-1,589.7	-4,184.8	4,414.5	1.26	-0.52	-1.15
10,969.0	89.50	267.20	6,766.0	-1,593.5	-4,280.7	4,509.3	1.05	-0.10	-1.04
11,064.0	90.00	269.10	6,766.5	-1,596.6	-4,375.7	4,603.1	2.07	0.53	2.00
11,160.0	90.40	269.30	6,766.1	-1,597.9	-4,471.7	4,697.5	0.47	0.42	0.21
11,255.0	90.80	268.80	6,765.1	-1,599.5	-4,566.7	4,790.9	0.67	0.42	-0.53
11,351.0	91.30	268.10	6,763.4	-1,602.1	-4,662.6	4,885.5	0.90	0.52	-0.73
11,446.0	91.50	267.50	6,761.0	-1,605.7	-4,757.5	4,979.3	0.67	0.21	-0.63
11,542.0	89.90	269.60	6,759.9	-1,608.2	-4,853.5	5,073.9	2.75	-1.67	2.19
11,637.0	89.50	269.10	6,760.4	-1,609.2	-4,948.5	5,167.3	0.67	-0.42	-0.53
11,732.0	89.70	268.40	6,761.0	-1,611.3	-5,043.4	5,260.8	0.77	0.21	-0.74
11,828.0	89.30	267.70	6,761.9	-1,614.6	-5,139.4	5,355.6	0.84	-0.42	-0.73
11,922.0	89.60	267.20	6,762.8	-1,618.8	-5,233.3	5,448.5	0.62	0.32	-0.53
12,018.0	89.70	267.00	6,763.4	-1,623.6	-5,329.1	5,543.5	0.23	0.10	-0.21
12,113.0	90.70	268.40	6,763.0	-1,627.4	-5,424.1	5,637.3	1.81	1.05	1.47
12,208.0	90.90	269.10	6,761.7	-1,629.5	-5,519.0	5,730.9	0.77	0.21	0.74
12,304.0	90.90	268.60	6,760.2	-1,631.4	-5,615.0	5,825.4	0.52	0.00	-0.52
12,399.0	90.70	268.10	6,758.9	-1,634.2	-5,710.0	5,919.0	0.57	-0.21	-0.53
12,495.0	90.70	267.70	6,757.7	-1,637.7	-5,805.9	6,013.8	0.42	0.00	-0.42
12,590.0	91.00	267.40	6,756.3	-1,641.7	-5,900.8	6,107.7	0.45	0.32	-0.32
12,685.0	90.20	269.30	6,755.3	-1,644.5	-5,995.7	6,201.3	2.17	-0.84	2.00
12,781.0	90.00	269.30	6,755.1	-1,645.6	-6,091.7	6,295.7	0.21	-0.21	0.00

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Fern 11V-234
Project:	SEC.11-T5N-R65W	TVD Reference:	WELL @ 4642.0ft (Original Well Elev)
Site:	Fern 5N65W11EJ Pad Sec.11-T5N-R65W	MD Reference:	WELL @ 4642.0ft (Original Well Elev)
Well:	Fern 11V-234	North Reference:	True
Wellbore:	Fern 11V-234 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Fern 11V-234 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)
12,876.0	89.90	268.60	6,755.2	-1,647.4	-6,186.7	6,389.2	0.74	-0.11	-0.74
12,972.0	89.80	268.20	6,755.5	-1,650.1	-6,282.7	6,483.8	0.43	-0.10	-0.42
13,068.0	90.00	268.10	6,755.6	-1,653.2	-6,378.6	6,578.6	0.23	0.21	-0.10
13,163.0	90.60	271.00	6,755.1	-1,653.9	-6,473.6	6,671.9	3.12	0.63	3.05
13,259.0	90.50	271.00	6,754.2	-1,652.2	-6,569.6	6,765.7	0.10	-0.10	0.00
13,354.0	90.20	270.70	6,753.6	-1,650.8	-6,664.6	6,858.6	0.45	-0.32	-0.32
13,450.0	90.10	270.20	6,753.4	-1,650.1	-6,760.6	6,952.6	0.53	-0.10	-0.52
13,545.0	91.60	267.90	6,752.0	-1,651.6	-6,855.5	7,046.0	2.89	1.58	-2.42
13,641.0	91.60	269.10	6,749.3	-1,654.2	-6,951.5	7,140.6	1.25	0.00	1.25
13,737.0	91.40	268.80	6,746.8	-1,655.9	-7,047.4	7,235.0	0.38	-0.21	-0.31
13,833.0	91.10	268.10	6,744.7	-1,658.5	-7,143.4	7,329.7	0.79	-0.31	-0.73
13,928.0	90.90	267.50	6,743.0	-1,662.2	-7,238.3	7,423.5	0.67	-0.21	-0.63
14,023.0	90.70	266.80	6,741.7	-1,666.9	-7,333.1	7,517.4	0.77	-0.21	-0.74
14,119.0	90.40	266.50	6,740.8	-1,672.5	-7,429.0	7,612.5	0.44	-0.31	-0.31
14,215.0	90.70	268.90	6,739.8	-1,676.3	-7,524.9	7,707.3	2.52	0.31	2.50
14,311.0	90.60	268.60	6,738.8	-1,678.4	-7,620.9	7,801.9	0.33	-0.10	-0.31
14,406.0	90.30	267.90	6,738.0	-1,681.3	-7,715.8	7,895.6	0.80	-0.32	-0.74
14,502.0	89.60	267.20	6,738.1	-1,685.4	-7,811.7	7,990.4	1.03	-0.73	-0.73
14,597.0	91.10	269.80	6,737.5	-1,687.9	-7,906.7	8,084.0	3.16	1.58	2.74
14,693.0	91.00	269.60	6,735.8	-1,688.4	-8,002.7	8,178.3	0.23	-0.10	-0.21
14,694.7	90.99	269.64	6,735.7	-1,688.4	-8,004.4	8,180.0	2.27	-0.53	2.21
WP (Fern 11V-234)									
14,788.0	90.50	271.70	6,734.5	-1,687.4	-8,097.6	8,271.2	2.27	-0.53	2.21
14,884.0	89.90	271.40	6,734.2	-1,684.8	-8,193.6	8,364.8	0.70	-0.63	-0.31
14,979.0	90.20	270.70	6,734.1	-1,683.0	-8,288.6	8,457.7	0.80	0.32	-0.74
15,104.0	90.60	269.10	6,733.2	-1,683.2	-8,413.6	8,580.3	1.32	0.32	-1.28
15,158.5	90.60	269.10	6,732.7	-1,684.1	-8,468.0	8,633.9	0.00	0.00	0.00
BHL 1852'FNL, 2530'FEL, SEC.9									
15,159.0	90.60	269.10	6,732.6	-1,684.1	-8,468.6	8,634.4	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL 366'FNL, 688'FWL, - survey hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,397,124.26	3,240,103.82	40.420303	-104.637628
BHL 1852'FNL, 2530'FE - survey misses target center by 9.5ft at 15158.5ft MD (6732.7 TVD, -1684.1 N, -8468.0 E) - Point	0.00	0.00	6,732.0	-1,674.6	-8,468.2	1,395,367.41	3,231,652.66	40.415702	-104.668039
WP (Fern 11V-234) - survey misses target center by 4.9ft at 14694.7ft MD (6735.7 TVD, -1688.4 N, -8004.4 E) - Point	0.00	0.00	6,735.3	-1,693.3	-8,004.4	1,395,353.26	3,232,116.58	40.415652	-104.666374

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Fern 11V-234
Project:	SEC.11-T5N-R65W	TVD Reference:	WELL @ 4642.0ft (Original Well Elev)
Site:	Fern 5N65W11EJ Pad Sec.11-T5N-R65W	MD Reference:	WELL @ 4642.0ft (Original Well Elev)
Well:	Fern 11V-234	North Reference:	True
Wellbore:	Fern 11V-234 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Fern 11V-234 Wellbore #1	Database:	US_EDM

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
6,962.1	6,659.6	-1,442.9	-300.8	TPZ - 60° Incl. in curve - 1809'FNL, 387'FWL, SEC.
7,819.0	6,793.4	-1,490.5	-1,133.1	Deepest TVD Drilled - 6793.41' TVD

Checked By: _____	Approved By: _____	Date: _____
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