

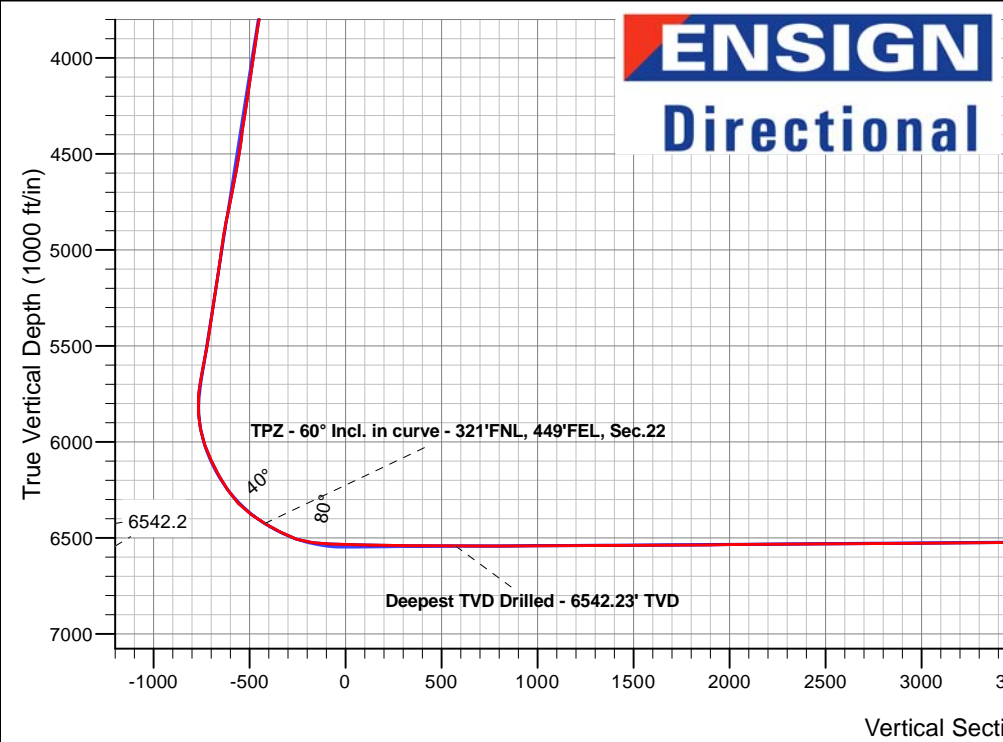
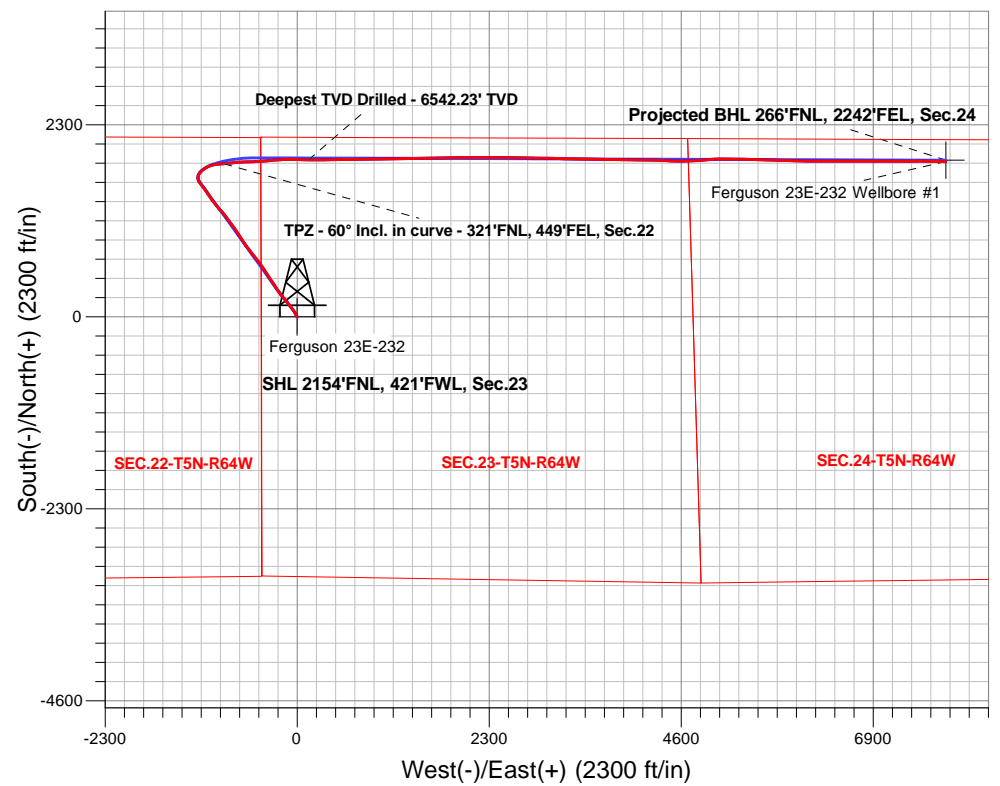
PDC Energy Inc. DJ Basin

Well Name: **Ferguson 23E-232**

Surface Location: Ferguson 5N64W23F Pad Sec.23-T5N-R64W
 North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
 Ground Elevation: 4575.0
 +N/-S+E/-W Northing Easting Longitude Slot
 0.0 0.0 1385011.05 3271629.52 40.386157 -104.524885
 Original Well Elev WELL @ 4598.0ft (Original Well Elev)

FINAL SURVEY

Projected Bottom Hole Location
15,622'MD 6496'TVD 1861'N & 7768'E of SHL
90.35 degree Incl @ 90.81 degree AZM



Ferguson 5N64W23F Pad Sec.23-T5N-R64W Ferguson 23E-232 Ferguson 23E-232 Wellbore #1 14:21, February 25 2020		ANNOTATIONS	
TVD	MD	Annotation	
6425.0	6951.7	TPZ - 60° Incl. in curve - 321'FNL, 449'FEL, Sec.22	
6542.2	7987.0	Deepest TVD Drilled - 6542.23' TVD	

LEGEND	
	Ferguson 23E-232, Ferguson 23E-232 Wellbore #1, Plan #2 (1-21-20) V0
	Ferguson 23E-232 Wellbore #1
	Survey #1



PDC Energy Inc. DJ Basin

SEC.23-T5N-R64W

Ferguson 5N64W23F Pad Sec.23-T5N-R64W

Ferguson 23E-232

Ferguson 23E-232 Wellbore #1

Survey: Survey #1

Standard Survey Report

25 February, 2020



Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Ferguson 23E-232
Project:	SEC.23-T5N-R64W	TVD Reference:	WELL @ 4598.0ft (Original Well Elev)
Site:	Ferguson 5N64W23F Pad Sec.23-T5N-R64W	MD Reference:	WELL @ 4598.0ft (Original Well Elev)
Well:	Ferguson 23E-232	North Reference:	True
Wellbore:	Ferguson 23E-232 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Ferguson 23E-232 Wellbore #1	Database:	US_EDM

Project	SEC.23-T5N-R64W, Weld County, Colorado		
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	Ferguson 5N64W23F Pad Sec.23-T5N-R64W				
Site Position:		Northing:	1,385,011.05 usft	Latitude:	40.386157
From:	Lat/Long	Easting:	3,271,629.53 usft	Longitude:	-104.524886
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.63 °

Well	Ferguson 23E-232					
Well Position	+N/-S	0.0 ft	Northing:	1,385,011.05 usft	Latitude:	40.386157
	+E/-W	0.0 ft	Easting:	3,271,629.53 usft	Longitude:	-104.524886
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,575.0 ft

Wellbore	Ferguson 23E-232 Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	2/11/2020	7.98	66.85	52,059

Design	Ferguson 23E-232 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	76.42	

Survey Program	Date	2/25/2020			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
155.0	15,622.0	Survey #1 (Ferguson 23E-232 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	248.30	1.0	0.0	0.0	0.0	0.32	0.32	0.00	
SHL 2154'FNL, 421'FWL, Sec.23										
155.0	0.50	248.30	155.0	-0.3	-0.6	-0.7	0.32	0.32	0.00	
250.0	1.10	309.50	250.0	0.2	-1.7	-1.6	1.02	0.63	64.42	
345.0	2.30	326.50	344.9	2.3	-3.5	-2.8	1.36	1.26	17.89	
440.0	3.30	337.60	439.8	6.5	-5.6	-3.9	1.19	1.05	11.68	
535.0	5.90	336.40	534.5	13.5	-8.6	-5.2	2.74	2.74	-1.26	
631.0	8.40	331.30	629.8	24.1	-13.9	-7.9	2.68	2.60	-5.31	
726.0	9.40	331.10	723.6	37.0	-21.0	-11.7	1.05	1.05	-0.21	
821.0	10.20	331.30	817.2	51.2	-28.8	-16.0	0.84	0.84	0.21	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Ferguson 23E-232
Project:	SEC.23-T5N-R64W	TVD Reference:	WELL @ 4598.0ft (Original Well Elev)
Site:	Ferguson 5N64W23F Pad Sec.23-T5N-R64W	MD Reference:	WELL @ 4598.0ft (Original Well Elev)
Well:	Ferguson 23E-232	North Reference:	True
Wellbore:	Ferguson 23E-232 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Ferguson 23E-232 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	11.00	323.80	910.6	65.9	-38.2	-21.6	1.68	0.84	-7.89
1,011.0	11.70	323.60	1,003.8	81.0	-49.2	-28.9	0.74	0.74	-0.21
1,106.0	14.20	324.50	1,096.3	98.2	-61.7	-36.9	2.64	2.63	0.95
1,201.0	16.30	323.80	1,188.0	118.4	-76.4	-46.4	2.22	2.21	-0.74
1,296.0	17.50	322.60	1,278.9	140.5	-92.9	-57.3	1.32	1.26	-1.26
1,391.0	18.00	322.00	1,369.4	163.5	-110.6	-69.2	0.56	0.53	-0.63
1,487.0	18.90	320.30	1,460.4	187.1	-129.7	-82.1	1.09	0.94	-1.77
1,581.0	20.40	318.90	1,548.9	211.2	-150.2	-96.4	1.67	1.60	-1.49
1,634.0	22.60	317.30	1,598.3	225.6	-163.2	-105.6	4.30	4.15	-3.02
1,754.0	22.84	325.47	1,709.0	261.8	-192.0	-125.2	2.64	0.20	6.81
1,843.0	22.29	323.85	1,791.2	289.6	-211.8	-137.8	0.93	-0.62	-1.82
1,933.0	21.03	323.88	1,874.8	316.4	-231.4	-150.6	1.40	-1.40	0.03
2,022.0	22.86	327.20	1,957.4	343.9	-250.1	-162.4	2.48	2.06	3.73
2,111.0	22.88	326.91	2,039.4	372.9	-268.9	-173.9	0.13	0.02	-0.33
2,201.0	22.33	326.59	2,122.4	401.8	-287.9	-185.5	0.63	-0.61	-0.36
2,291.0	21.95	326.56	2,205.8	430.1	-306.6	-197.0	0.42	-0.42	-0.03
2,381.0	21.34	325.86	2,289.5	457.7	-325.1	-208.5	0.74	-0.68	-0.78
2,471.0	23.60	326.93	2,372.6	486.4	-344.1	-220.3	2.55	2.51	1.19
2,561.0	23.35	326.78	2,455.2	516.4	-363.7	-232.3	0.29	-0.28	-0.17
2,651.0	22.77	326.59	2,538.0	545.9	-383.0	-244.2	0.65	-0.64	-0.21
2,741.0	24.18	325.10	2,620.5	575.5	-403.2	-256.8	1.70	1.57	-1.66
2,831.0	24.65	324.67	2,702.5	606.0	-424.6	-270.4	0.56	0.52	-0.48
2,920.0	23.46	324.19	2,783.8	635.5	-445.7	-284.0	1.36	-1.34	-0.54
3,010.0	23.13	323.76	2,866.4	664.3	-466.6	-297.6	0.41	-0.37	-0.48
3,100.0	22.36	323.23	2,949.4	692.2	-487.3	-311.2	0.89	-0.86	-0.59
3,189.0	22.93	320.73	3,031.6	719.2	-508.4	-325.3	1.26	0.64	-2.81
3,279.0	20.75	318.70	3,115.1	744.8	-530.0	-340.4	2.56	-2.42	-2.26
3,369.0	21.41	320.66	3,199.1	769.4	-551.0	-354.9	1.07	0.73	2.18
3,459.0	21.86	322.68	3,282.7	795.5	-571.5	-368.8	0.97	0.50	2.24
3,549.0	22.61	324.76	3,366.0	822.9	-591.7	-381.9	1.21	0.83	2.31
3,639.0	21.71	323.78	3,449.4	850.5	-611.5	-394.7	1.08	-1.00	-1.09
3,728.0	24.77	326.61	3,531.2	879.3	-631.5	-407.4	3.66	3.44	3.18
3,819.0	25.45	327.22	3,613.6	911.7	-652.6	-420.3	0.80	0.75	0.67
3,908.0	25.69	326.93	3,693.8	943.9	-673.5	-433.0	0.30	0.27	-0.33
3,998.0	25.69	326.57	3,774.9	976.6	-694.8	-446.1	0.17	0.00	-0.40
4,088.0	24.59	326.12	3,856.4	1,008.4	-716.0	-459.3	1.24	-1.22	-0.50
4,177.0	23.10	325.77	3,937.8	1,038.2	-736.2	-471.8	1.68	-1.67	-0.39
4,267.0	21.82	325.74	4,021.0	1,066.6	-755.5	-484.0	1.42	-1.42	-0.03
4,357.0	19.86	324.94	4,105.1	1,093.0	-773.7	-495.5	2.20	-2.18	-0.89
4,447.0	19.88	321.21	4,189.7	1,117.4	-792.1	-507.6	1.41	0.02	-4.14
4,537.0	20.92	319.84	4,274.1	1,141.6	-812.0	-521.3	1.27	1.16	-1.52
4,626.0	22.03	326.15	4,356.9	1,167.6	-831.6	-534.2	2.88	1.25	7.09
4,716.0	19.70	326.25	4,441.0	1,194.3	-849.4	-545.3	2.59	-2.59	0.11

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Well:	Ferguson 23E-232	North Reference:	True
Wellbore:	Ferguson 23E-232 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Ferguson 23E-232 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)
4,806.0	21.56	320.50	4,525.3	1,219.6	-868.4	-557.7	3.05	2.07	-6.39
4,896.0	23.00	319.20	4,608.5	1,245.7	-890.4	-573.0	1.69	1.60	-1.44
4,985.0	20.57	316.45	4,691.2	1,270.2	-912.5	-588.8	2.96	-2.73	-3.09
5,075.0	23.43	318.04	4,774.6	1,295.0	-935.4	-605.2	3.25	3.18	1.77
5,165.0	24.47	319.85	4,856.9	1,322.5	-959.4	-622.0	1.41	1.16	2.01
5,254.0	22.12	324.99	4,938.6	1,350.4	-980.9	-636.4	3.49	-2.64	5.78
5,344.0	18.80	321.94	5,022.9	1,375.7	-999.5	-648.6	3.87	-3.69	-3.39
5,433.0	19.62	320.62	5,107.0	1,398.5	-1,017.9	-661.1	1.04	0.92	-1.48
5,523.0	20.85	323.89	5,191.4	1,423.1	-1,036.9	-673.8	1.86	1.37	3.63
5,613.0	21.95	325.43	5,275.2	1,449.9	-1,055.9	-685.9	1.37	1.22	1.71
5,702.0	24.87	326.53	5,356.9	1,479.2	-1,075.6	-698.3	3.32	3.28	1.24
5,792.0	25.14	326.61	5,438.4	1,511.0	-1,096.6	-711.2	0.30	0.30	0.09
5,881.0	26.28	325.03	5,518.6	1,542.9	-1,118.3	-724.8	1.49	1.28	-1.78
5,970.0	24.13	321.88	5,599.2	1,573.4	-1,140.8	-739.5	2.85	-2.42	-3.54
6,060.0	21.99	319.41	5,682.0	1,600.6	-1,163.1	-754.8	2.61	-2.38	-2.74
6,149.0	20.62	334.87	5,764.9	1,627.5	-1,180.7	-765.5	6.48	-1.54	17.37
6,239.0	21.15	353.68	5,849.1	1,658.0	-1,189.2	-766.7	7.44	0.59	20.90
6,329.0	20.76	20.66	5,933.4	1,689.2	-1,185.3	-755.6	10.64	-0.43	29.98
6,419.0	25.61	34.02	6,016.1	1,720.3	-1,168.8	-732.2	7.92	5.39	14.84
6,508.0	27.76	46.39	6,095.7	1,750.5	-1,143.0	-700.1	6.68	2.42	13.90
6,598.0	30.65	58.08	6,174.3	1,777.1	-1,108.3	-660.1	7.09	3.21	12.99
6,688.0	34.29	63.67	6,250.3	1,800.5	-1,066.1	-613.6	5.24	4.04	6.21
6,778.0	44.07	78.38	6,320.1	1,818.1	-1,012.5	-557.3	14.93	10.87	16.34
6,868.0	53.69	85.26	6,379.3	1,827.5	-945.5	-490.0	12.13	10.69	7.64
6,951.7	60.00	84.09	6,425.0	1,834.0	-875.7	-420.7	7.63	7.54	-1.40
TPZ - 60° Incl. in curve - 321'FNL, 449'FEL, Sec.22									
6,957.0	60.40	84.02	6,427.6	1,834.5	-871.2	-416.1	7.63	7.55	-1.30
7,047.0	62.65	83.28	6,470.5	1,843.2	-792.6	-337.6	2.60	2.50	-0.82
7,138.0	70.44	85.82	6,506.7	1,851.1	-709.5	-255.1	8.93	8.56	2.79
7,227.0	85.31	88.88	6,525.4	1,855.0	-622.8	-169.9	17.04	16.71	3.44
7,317.0	87.33	87.47	6,531.2	1,857.9	-533.1	-82.0	2.74	2.24	-1.57
7,386.5	88.28	86.50	6,533.8	1,861.6	-463.7	-13.7	1.96	1.37	-1.40
LPL 250'FNL, 40'FEL, Sec.22									
7,407.0	88.56	86.21	6,534.4	1,862.9	-443.3	6.5	1.96	1.37	-1.40
7,497.0	88.62	85.53	6,536.6	1,869.3	-353.5	95.2	0.76	0.07	-0.76
7,539.0	89.25	83.81	6,537.4	1,873.2	-311.7	136.8	4.36	1.50	-4.10
7,628.0	89.17	85.81	6,538.6	1,881.3	-223.1	224.8	2.25	-0.09	2.25
7,718.0	89.28	88.84	6,539.8	1,885.5	-133.2	313.2	3.37	0.12	3.37
7,807.0	89.17	90.98	6,541.0	1,885.6	-44.2	399.7	2.41	-0.12	2.40
7,897.0	89.69	91.18	6,541.9	1,883.9	45.7	486.8	0.62	0.58	0.22
7,987.0	89.93	91.42	6,542.2	1,881.9	135.7	573.8	0.38	0.27	0.27
Deepest TVD Drilled - 6542.23' TVD									
8,077.0	90.18	90.39	6,542.1	1,880.5	225.7	660.9	1.18	0.28	-1.14
8,167.0	90.10	88.80	6,541.9	1,881.1	315.7	748.5	1.77	-0.09	-1.77

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Design:	Ferguson 23E-232 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)	
8,257.0	90.13	88.76	6,541.7	1,883.0	405.7	836.4	0.06	0.03	-0.04	
8,347.0	89.70	89.39	6,541.9	1,884.5	495.7	924.3	0.85	-0.48	0.70	
8,436.0	90.24	88.84	6,541.9	1,885.9	584.6	1,011.1	0.87	0.61	-0.62	
8,527.0	90.54	88.77	6,541.3	1,887.8	675.6	1,100.0	0.34	0.33	-0.08	
8,616.0	90.36	89.46	6,540.6	1,889.1	764.6	1,186.8	0.80	-0.20	0.78	
8,706.0	90.27	89.55	6,540.1	1,889.9	854.6	1,274.4	0.14	-0.10	0.10	
8,795.0	90.41	89.40	6,539.6	1,890.7	943.6	1,361.1	0.23	0.16	-0.17	
8,885.0	90.24	89.24	6,539.1	1,891.8	1,033.6	1,448.9	0.26	-0.19	-0.18	
8,973.0	90.26	89.35	6,538.7	1,892.9	1,121.6	1,534.7	0.13	0.02	0.13	
9,062.0	90.32	89.20	6,538.2	1,894.0	1,210.6	1,621.4	0.18	0.07	-0.17	
9,152.0	90.55	88.80	6,537.6	1,895.6	1,300.6	1,709.3	0.51	0.26	-0.44	
9,242.0	90.32	89.27	6,536.9	1,897.1	1,390.5	1,797.1	0.58	-0.26	0.52	
9,332.0	90.32	89.36	6,536.4	1,898.2	1,480.5	1,884.8	0.10	0.00	0.10	
9,421.0	90.43	89.14	6,535.8	1,899.3	1,569.5	1,971.6	0.28	0.12	-0.25	
9,511.0	90.68	88.52	6,534.9	1,901.2	1,659.5	2,059.5	0.74	0.28	-0.69	
9,600.0	90.37	88.91	6,534.1	1,903.2	1,748.5	2,146.4	0.56	-0.35	0.44	
9,690.0	90.39	89.41	6,533.5	1,904.5	1,838.5	2,234.2	0.56	0.02	0.56	
9,779.0	90.28	89.41	6,533.0	1,905.4	1,927.5	2,320.9	0.12	-0.12	0.00	
9,868.0	90.39	89.44	6,532.5	1,906.3	2,016.5	2,407.7	0.13	0.12	0.03	
9,958.0	90.29	89.11	6,531.9	1,907.4	2,106.4	2,495.4	0.38	-0.11	-0.37	
10,048.0	90.68	88.61	6,531.2	1,909.2	2,196.4	2,583.3	0.70	0.43	-0.56	
10,138.0	90.50	89.18	6,530.2	1,911.0	2,286.4	2,671.2	0.66	-0.20	0.63	
10,228.0	90.44	91.42	6,529.5	1,910.5	2,376.4	2,758.5	2.49	-0.07	2.49	
10,318.0	90.54	90.91	6,528.7	1,908.7	2,466.4	2,845.6	0.58	0.11	-0.57	
10,408.0	90.61	90.71	6,527.8	1,907.4	2,556.4	2,932.7	0.24	0.08	-0.22	
10,498.0	90.28	91.46	6,527.1	1,905.7	2,646.3	3,019.8	0.91	-0.37	0.83	
10,587.0	90.57	90.65	6,526.5	1,904.0	2,735.3	3,105.9	0.97	0.33	-0.91	
10,676.0	90.27	91.55	6,525.8	1,902.3	2,824.3	3,192.0	1.07	-0.34	1.01	
10,766.0	90.55	90.68	6,525.2	1,900.6	2,914.3	3,279.0	1.02	0.31	-0.97	
10,856.0	90.52	91.06	6,524.3	1,899.2	3,004.3	3,366.2	0.42	-0.03	0.42	
10,945.0	90.31	91.33	6,523.7	1,897.4	3,093.2	3,452.2	0.38	-0.24	0.30	
11,035.0	90.20	91.51	6,523.3	1,895.1	3,183.2	3,539.2	0.23	-0.12	0.20	
11,125.0	90.45	90.87	6,522.8	1,893.3	3,273.2	3,626.2	0.76	0.28	-0.71	
11,215.0	90.34	91.63	6,522.2	1,891.3	3,363.2	3,713.2	0.85	-0.12	0.84	
11,304.0	90.40	91.06	6,521.6	1,889.2	3,452.1	3,799.2	0.64	0.07	-0.64	
11,393.0	90.82	89.67	6,520.6	1,888.6	3,541.1	3,885.6	1.63	0.47	-1.56	
11,483.0	90.26	91.58	6,519.8	1,887.7	3,631.1	3,972.8	2.21	-0.62	2.12	
11,573.0	90.51	90.54	6,519.2	1,886.0	3,721.1	4,059.9	1.19	0.28	-1.16	
11,662.0	90.39	91.71	6,518.5	1,884.2	3,810.1	4,146.0	1.32	-0.13	1.31	
11,752.0	90.68	90.86	6,517.6	1,882.2	3,900.1	4,233.0	1.00	0.32	-0.94	
11,842.0	90.55	90.51	6,516.7	1,881.1	3,990.0	4,320.2	0.41	-0.14	-0.39	
11,932.0	90.54	90.73	6,515.8	1,880.2	4,080.0	4,407.4	0.24	-0.01	0.24	
12,022.0	90.44	90.95	6,515.1	1,878.9	4,170.0	4,494.6	0.27	-0.11	0.24	

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Ferguson 23E-232
Project:	SEC.23-T5N-R64W	TVD Reference:	WELL @ 4598.0ft (Original Well Elev)
Site:	Ferguson 5N64W23F Pad Sec.23-T5N-R64W	MD Reference:	WELL @ 4598.0ft (Original Well Elev)
Well:	Ferguson 23E-232	North Reference:	True
Wellbore:	Ferguson 23E-232 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Ferguson 23E-232 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)	
12,112.0	90.40	91.25	6,514.4	1,877.1	4,260.0	4,581.6	0.34	-0.04	0.33	
12,184.0	90.57	92.33	6,513.8	1,874.9	4,332.0	4,651.1	1.52	0.24	1.50	
12,274.0	90.16	91.18	6,513.2	1,872.1	4,421.9	4,737.9	1.36	-0.46	-1.28	
12,363.0	90.28	93.53	6,512.9	1,868.5	4,510.8	4,823.4	2.64	0.13	2.64	
12,452.0	91.52	90.60	6,511.5	1,865.3	4,599.8	4,909.1	3.57	1.39	-3.29	
12,542.0	90.55	87.65	6,509.8	1,866.6	4,689.7	4,996.9	3.45	-1.08	-3.28	
12,631.0	90.83	85.60	6,508.8	1,871.9	4,778.5	5,084.5	2.32	0.31	-2.30	
12,721.0	89.65	85.01	6,508.4	1,879.2	4,868.2	5,173.4	1.47	-1.31	-0.66	
12,811.0	87.60	86.48	6,510.6	1,885.9	4,958.0	5,262.2	2.80	-2.28	1.63	
12,901.0	87.25	88.35	6,514.6	1,890.0	5,047.8	5,350.4	2.11	-0.39	2.08	
12,991.0	88.11	89.39	6,518.2	1,891.7	5,137.7	5,438.2	1.50	0.96	1.16	
13,081.0	89.13	90.71	6,520.4	1,891.7	5,227.7	5,525.7	1.85	1.13	1.47	
13,170.0	91.05	92.14	6,520.3	1,889.5	5,316.6	5,611.6	2.69	2.16	1.61	
13,260.0	90.73	92.96	6,518.9	1,885.4	5,406.5	5,698.1	0.98	-0.36	0.91	
13,351.0	90.81	91.46	6,517.6	1,881.9	5,497.4	5,785.6	1.65	0.09	-1.65	
13,441.0	90.66	91.48	6,516.5	1,879.6	5,587.4	5,872.5	0.17	-0.17	0.02	
13,531.0	90.27	91.10	6,515.8	1,877.6	5,677.4	5,959.5	0.61	-0.43	-0.42	
13,621.0	89.73	92.12	6,515.8	1,875.1	5,767.3	6,046.4	1.28	-0.60	1.13	
13,711.0	91.03	90.09	6,515.2	1,873.3	5,857.3	6,133.4	2.68	1.44	-2.26	
13,801.0	91.08	91.45	6,513.5	1,872.1	5,947.3	6,220.6	1.51	0.06	1.51	
13,890.0	90.77	92.80	6,512.1	1,868.8	6,036.2	6,306.3	1.56	-0.35	1.52	
13,980.0	91.16	90.83	6,510.6	1,866.0	6,126.2	6,393.0	2.23	0.43	-2.19	
14,070.0	90.26	90.11	6,509.4	1,865.2	6,216.1	6,480.3	1.28	-1.00	-0.80	
14,160.0	89.45	89.93	6,509.7	1,865.2	6,306.1	6,567.8	0.92	-0.90	-0.20	
14,249.0	91.32	89.83	6,509.1	1,865.4	6,395.1	6,654.3	2.10	2.10	-0.11	
14,339.0	90.92	89.82	6,507.3	1,865.7	6,485.1	6,741.9	0.44	-0.44	-0.01	
14,428.0	90.00	90.19	6,506.6	1,865.7	6,574.1	6,828.4	1.11	-1.03	0.42	
14,518.0	88.48	90.37	6,507.8	1,865.2	6,664.1	6,915.7	1.70	-1.69	0.20	
14,608.0	90.58	90.18	6,508.5	1,864.8	6,754.1	7,003.1	2.34	2.33	-0.21	
14,697.0	89.83	89.96	6,508.2	1,864.7	6,843.1	7,089.6	0.88	-0.84	-0.25	
14,786.0	91.48	90.43	6,507.2	1,864.4	6,932.1	7,176.0	1.93	1.85	0.53	
14,877.0	91.50	91.40	6,504.8	1,862.9	7,023.0	7,264.1	1.07	0.02	1.07	
14,966.0	92.23	89.76	6,501.9	1,862.0	7,112.0	7,350.4	2.02	0.82	-1.84	
15,055.0	91.94	90.01	6,498.7	1,862.2	7,200.9	7,436.9	0.43	-0.33	0.28	
15,145.0	91.38	89.69	6,496.1	1,862.4	7,290.9	7,524.4	0.72	-0.62	-0.36	
15,234.0	90.45	89.45	6,494.7	1,863.1	7,379.9	7,611.0	1.08	-1.04	-0.27	
15,324.0	89.56	89.33	6,494.7	1,864.1	7,469.9	7,698.7	1.00	-0.99	-0.13	
15,414.0	88.83	90.93	6,495.9	1,863.9	7,559.8	7,786.1	1.95	-0.81	1.78	
15,504.0	90.12	90.96	6,496.7	1,862.4	7,649.8	7,873.3	1.43	1.43	0.03	
15,562.0	90.35	90.81	6,496.5	1,861.5	7,707.8	7,929.4	0.47	0.40	-0.26	
15,622.0	90.35	90.81	6,496.1	1,860.6	7,767.8	7,987.5	0.00	0.00	0.00	
Projected BHL 266'FNL, 2242'FEL, Sec.24										

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Ferguson 23E-232
Project:	SEC.23-T5N-R64W	TVD Reference:	WELL @ 4598.0ft (Original Well Elev)
Site:	Ferguson 5N64W23F Pad Sec.23-T5N-R64W	MD Reference:	WELL @ 4598.0ft (Original Well Elev)
Well:	Ferguson 23E-232	North Reference:	True
Wellbore:	Ferguson 23E-232 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Ferguson 23E-232 Wellbore #1	Database:	US_EDM

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SHL 2154'FNL, 421'FWL - survey hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,385,011.05	3,271,629.53	40.386157	-104.524886	
Projected BHL 266'FNL, - survey misses target center by 18.0ft at 15622.0ft MD (6496.1 TVD, 1860.6 N, 7767.8 E) - Point	0.00	0.00	6,488.0	1,876.6	7,769.6	1,386,972.92	3,279,377.66	40.391305	-104.496993	

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
6,951.7	6,425.0	1,834.0	-875.7	TPZ - 60° Incl. in curve - 321'FNL, 449'FEL, Sec.22	
7,987.0	6,542.2	1,881.9	135.7	Deepest TVD Drilled - 6542.23' TVD	

Checked By: _____ Approved By: _____ Date: _____