

PDC Energy Inc. DJ Basin

Well Name: **McGlothlin Farms 4X-214**

Surface Location: McGlothlin Farms 5N64W4DX Pad Sec.4-T5N-R64W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone

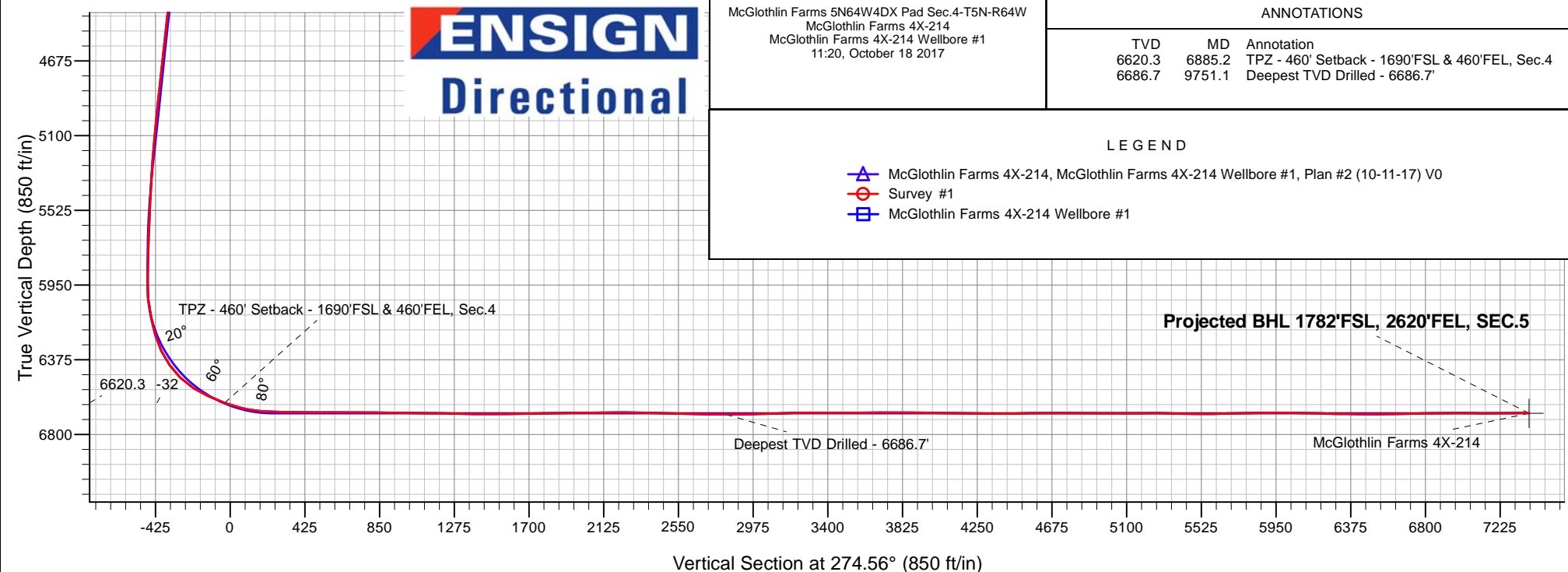
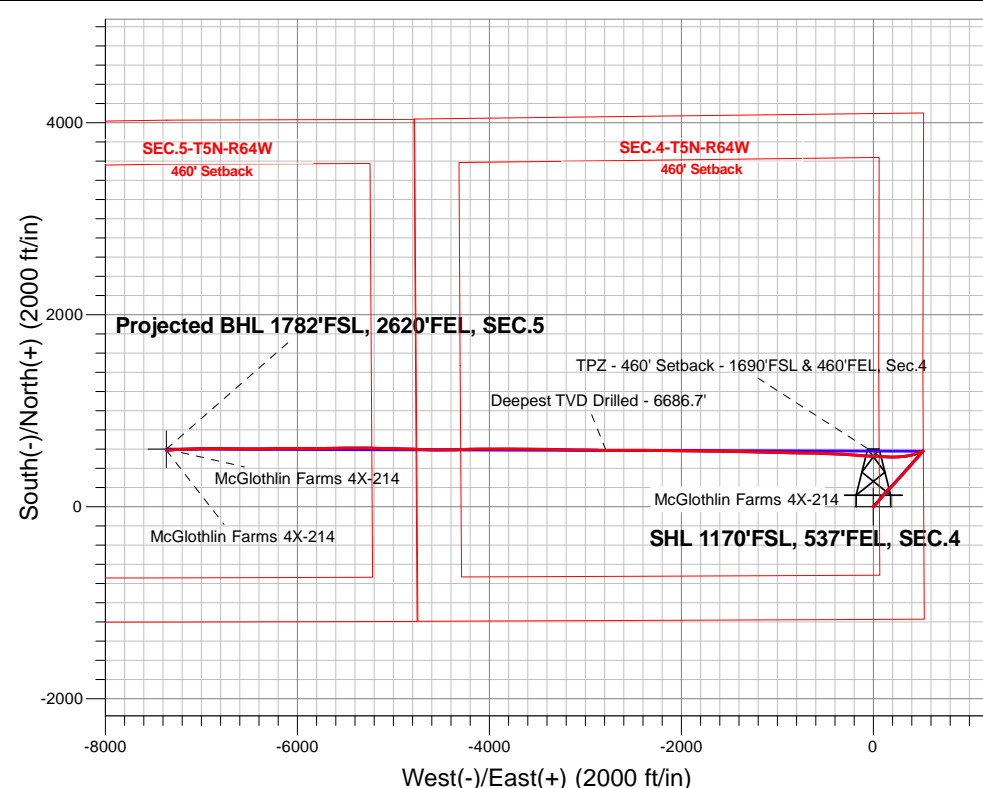
Ground Elevation: 4616.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1398802.67	3265134.52	40.424207	-104.547668	

Ensign Rig #161 - RKB - 23'WELL @ 4639.0ft (Ensign Rig #161 - RKB - 23')

FINAL SURVEY

Projected Bottom Hole Location
14,333'MD 6676'TVD 587'N & 7364'W of SHL
91.2 degree Incl @ 266.3 degree AZM





PDC Energy Inc. DJ Basin

SEC.4-T5N-R64W

McGlothlin Farms 5N64W4DX Pad Sec.4-T5N-R64W

McGlothlin Farms 4X-214

McGlothlin Farms 4X-214 Wellbore #1

Survey: Survey #1

Standard Survey Report

18 October, 2017

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well McGlothlin Farms 4X-214
Project:	SEC.4-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (Ensign Rig #161 - RKB - 23')
Site:	McGlothlin Farms 5N64W4DX Pad Sec.4-T5N-R64W	MD Reference:	WELL @ 4639.0ft (Ensign Rig #161 - RKB - 23')
Well:	McGlothlin Farms 4X-214	North Reference:	True
Wellbore:	McGlothlin Farms 4X-214 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	McGlothlin Farms 4X-214 Wellbore #1	Database:	US_EDM

Project	SEC.4-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	McGlothlin Farms 5N64W4DX Pad Sec.4-T5N-R64W				
Site Position:		Northing:	1,398,838.61 usft	Latitude:	40.424309
From:	Lat/Long	Easting:	3,265,019.98 usft	Longitude:	-104.548078
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.62 °

Well	McGlothlin Farms 4X-214					
Well Position	+N/-S	0.0 ft	Northing:	1,398,802.68 usft	Latitude:	40.424207
	+E/-W	0.0 ft	Easting:	3,265,134.52 usft	Longitude:	-104.547668
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,616.0 ft

Wellbore	McGlothlin Farms 4X-214 Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/11/2017	7.89	66.88	52,502

Design	McGlothlin Farms 4X-214 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	274.56	

Survey Program	Date	10/18/2017			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
154.0	14,333.0	Survey #1 (McGlothlin Farms 4X-214 Well	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	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00	
200.0	0.14	204.80	200.0	-0.1	0.0	0.0	0.14	0.14	0.00	
300.0	0.26	174.56	300.0	-0.5	-0.1	0.1	0.16	0.12	-30.24	
400.0	0.34	172.03	400.0	-0.9	0.0	-0.1	0.08	0.08	-2.53	
500.0	0.36	153.15	500.0	-1.6	0.1	-0.2	0.12	0.02	-18.88	
600.0	0.38	158.94	600.0	-2.1	0.5	-0.6	0.04	0.02	5.79	
700.0	0.61	177.33	700.0	-2.9	0.6	-0.8	0.28	0.23	18.39	
800.0	1.31	74.62	800.0	-3.5	1.4	-1.7	1.57	0.70	-102.71	
900.0	2.66	48.84	899.9	-1.6	4.4	-4.6	1.58	1.35	-25.78	

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Project:	SEC.4-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (Ensign Rig #161 - RKB - 23')
Site:	McGlothlin Farms 5N64W4DX Pad Sec.4-T5N-R64W	MD Reference:	WELL @ 4639.0ft (Ensign Rig #161 - RKB - 23')
Well:	McGlothlin Farms 4X-214	North Reference:	True
Wellbore:	McGlothlin Farms 4X-214 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	McGlothlin Farms 4X-214 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)
1,000.0	4.16	38.69	999.7	2.7	8.4	-8.2	1.61	1.50	-10.15
1,100.0	6.10	39.09	1,099.3	9.7	14.0	-13.2	1.94	1.94	0.40
1,200.0	7.71	37.30	1,198.6	19.1	21.4	-19.8	1.62	1.61	-1.79
1,300.0	9.37	37.89	1,297.5	30.9	30.5	-27.9	1.66	1.66	0.59
1,400.0	10.59	40.19	1,396.0	44.4	41.4	-37.8	1.29	1.23	2.31
1,500.0	10.17	39.91	1,494.3	58.2	53.0	-48.2	0.43	-0.43	-0.28
1,600.0	9.61	40.15	1,592.8	71.3	64.1	-58.2	0.56	-0.56	0.24
1,700.0	9.66	38.31	1,691.4	84.2	74.7	-67.7	0.31	0.05	-1.84
1,800.0	9.63	37.13	1,790.1	97.5	84.7	-76.7	0.20	-0.04	-1.18
1,900.0	10.10	40.33	1,888.6	110.8	95.7	-86.5	0.72	0.47	3.20
2,000.0	10.51	39.18	1,987.0	124.4	106.8	-96.6	0.46	0.41	-1.15
2,100.0	11.07	40.25	2,085.1	139.2	119.1	-107.7	0.59	0.56	1.07
2,200.0	10.12	40.35	2,183.4	153.1	131.1	-118.5	0.94	-0.94	0.10
2,300.0	9.68	41.96	2,282.0	166.0	142.0	-128.4	0.52	-0.44	1.61
2,400.0	10.15	46.51	2,380.5	178.3	154.0	-139.4	0.91	0.46	4.55
2,500.0	10.12	47.83	2,478.9	190.3	167.3	-151.6	0.24	-0.03	1.33
2,600.0	10.52	46.60	2,577.3	202.2	180.1	-163.5	0.46	0.40	-1.24
2,700.0	11.06	45.35	2,675.5	215.4	193.7	-176.0	0.59	0.55	-1.24
2,800.0	10.82	44.86	2,773.7	228.8	207.2	-188.4	0.26	-0.24	-0.49
2,900.0	10.63	43.91	2,872.0	242.1	220.2	-200.3	0.26	-0.20	-0.95
3,000.0	10.28	41.96	2,970.3	255.4	232.6	-211.6	0.49	-0.34	-1.96
3,100.0	9.70	39.03	3,068.8	268.6	244.0	-221.8	0.77	-0.58	-2.93
3,200.0	9.42	44.29	3,167.4	281.1	254.8	-231.6	0.92	-0.28	5.26
3,300.0	9.58	46.12	3,266.0	292.6	266.5	-242.4	0.34	0.16	1.83
3,400.0	9.02	42.85	3,364.7	304.1	278.0	-252.9	0.77	-0.56	-3.26
3,500.0	8.90	42.00	3,463.5	315.6	288.4	-262.4	0.18	-0.12	-0.85
3,600.0	9.31	42.92	3,562.2	327.3	299.1	-272.2	0.43	0.41	0.92
3,700.0	9.41	41.40	3,660.9	339.3	310.1	-282.1	0.27	0.10	-1.53
3,800.0	9.47	40.59	3,759.5	351.8	320.8	-291.8	0.15	0.06	-0.81
3,900.0	9.21	41.68	3,858.2	364.0	331.5	-301.5	0.32	-0.26	1.10
4,000.0	9.02	40.93	3,957.0	375.7	341.8	-310.9	0.22	-0.19	-0.75
4,100.0	9.99	40.26	4,055.6	388.3	352.6	-320.6	0.97	0.97	-0.67
4,200.0	10.12	39.12	4,154.0	402.0	364.0	-330.9	0.24	0.13	-1.14
4,300.0	9.77	36.65	4,252.6	415.2	374.3	-340.1	0.55	-0.35	-2.47
4,400.0	10.79	38.47	4,350.9	429.7	385.1	-349.7	1.06	1.01	1.82
4,500.0	10.65	40.63	4,449.1	444.0	397.4	-360.9	0.43	-0.14	2.16
4,600.0	10.33	41.06	4,547.5	457.8	408.8	-371.1	0.32	-0.31	0.43
4,700.0	10.12	44.77	4,645.9	470.9	421.2	-382.4	0.69	-0.21	3.71
4,800.0	9.35	46.18	4,744.4	482.7	433.3	-393.5	0.80	-0.77	1.41
4,900.0	8.60	45.01	4,843.2	493.6	444.5	-403.9	0.78	-0.75	-1.17
5,000.0	9.23	43.47	4,942.1	504.4	455.0	-413.4	0.68	0.63	-1.54
5,100.0	9.13	42.51	5,040.7	516.4	466.2	-423.6	0.18	-0.10	-0.96

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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)
5,200.0	8.52	41.00	5,139.5	527.8	476.4	-432.9	0.65	-0.61	-1.51
5,300.0	7.67	37.39	5,238.5	538.7	485.4	-441.0	0.99	-0.85	-3.62
5,400.0	7.08	34.66	5,337.7	549.0	492.8	-447.6	0.69	-0.60	-2.72
5,500.0	5.58	38.75	5,437.1	558.1	499.4	-453.4	1.56	-1.50	4.09
5,600.0	4.75	34.73	5,536.7	565.1	504.8	-458.3	0.91	-0.83	-4.02
5,700.0	4.31	28.79	5,636.4	571.8	509.0	-461.9	0.64	-0.44	-5.94
5,800.0	3.65	37.48	5,736.1	577.7	512.7	-465.2	0.89	-0.66	8.68
5,900.0	1.66	67.59	5,836.0	580.7	516.0	-468.2	2.37	-1.99	30.11
6,000.0	0.45	108.89	5,936.0	581.3	518.2	-470.3	1.36	-1.21	41.30
6,100.0	6.76	243.73	6,035.8	578.4	513.1	-465.5	7.08	6.31	134.84
6,200.0	12.25	249.11	6,134.3	572.0	497.9	-450.9	5.55	5.49	5.38
6,300.0	18.42	247.20	6,230.8	562.2	473.4	-427.2	6.20	6.18	-1.91
6,400.0	27.61	248.69	6,322.8	547.6	437.4	-392.4	9.20	9.18	1.49
6,500.0	36.59	257.41	6,407.4	532.6	386.6	-343.0	10.09	8.99	8.72
6,600.0	46.87	265.26	6,482.1	523.3	321.0	-278.4	11.51	10.27	7.85
6,700.0	58.71	266.61	6,542.1	517.3	241.5	-199.6	11.89	11.84	1.35
6,800.0	65.86	271.88	6,588.4	516.7	152.9	-111.3	8.53	7.15	5.27
6,885.2	70.20	272.84	6,620.3	520.0	74.0	-32.4	5.20	5.09	1.13
TPZ - 460' Setback - 1690'FSL & 460'FEL, Sec.4									
6,900.0	71.05	272.95	6,625.2	520.7	60.1	-18.5	5.77	5.73	0.75
7,000.0	77.37	273.37	6,652.7	526.2	-35.9	77.6	6.34	6.33	0.42
7,100.0	84.87	273.47	6,667.7	531.7	-134.5	176.4	7.50	7.50	0.10
7,200.0	88.87	274.30	6,672.2	538.9	-234.1	276.2	4.08	3.99	0.83
7,300.0	89.24	273.35	6,673.8	545.6	-333.9	376.2	1.01	0.37	-0.94
7,400.0	89.47	272.50	6,675.0	550.7	-433.7	476.2	0.88	0.23	-0.85
7,500.0	90.03	271.67	6,675.5	554.4	-533.7	576.1	1.00	0.56	-0.83
7,600.0	89.88	271.41	6,675.2	556.8	-633.6	675.9	0.31	-0.15	-0.27
7,700.0	89.57	271.09	6,675.9	559.2	-733.6	775.7	0.44	-0.31	-0.31
7,800.0	89.58	271.12	6,676.6	560.8	-833.6	875.5	0.03	0.01	0.03
7,900.0	89.50	271.08	6,677.4	563.0	-933.6	975.4	0.09	-0.08	-0.05
8,000.0	89.15	270.48	6,678.5	564.4	-1,033.5	1,075.1	0.69	-0.35	-0.59
8,100.0	89.30	271.48	6,680.0	565.7	-1,133.5	1,174.9	1.01	0.14	1.00
8,200.0	89.09	271.51	6,681.3	568.6	-1,233.5	1,274.8	0.21	-0.21	0.03
8,300.0	88.83	271.57	6,683.1	571.2	-1,333.4	1,374.6	0.26	-0.25	0.06
8,400.0	89.94	271.43	6,684.4	573.9	-1,433.4	1,474.5	1.11	1.10	-0.14
8,500.0	89.64	270.94	6,684.6	576.0	-1,533.4	1,574.3	0.57	-0.30	-0.49
8,600.0	91.73	271.00	6,683.5	577.6	-1,633.3	1,674.1	2.10	2.09	0.06
8,700.0	92.18	270.71	6,680.1	579.1	-1,733.3	1,773.8	0.54	0.45	-0.29
8,800.0	90.65	271.18	6,677.6	580.8	-1,833.2	1,873.6	1.61	-1.53	0.48
8,900.0	89.93	270.81	6,677.2	582.6	-1,933.2	1,973.4	0.81	-0.72	-0.37
9,000.0	90.33	269.94	6,677.0	583.2	-2,033.2	2,073.1	0.95	0.40	-0.86
9,100.0	90.91	269.71	6,675.7	582.7	-2,133.2	2,172.8	0.62	0.58	-0.23
9,200.0	89.67	270.49	6,675.1	582.8	-2,233.2	2,272.4	1.46	-1.24	0.77

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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)
9,300.0	88.33	271.20	6,677.2	584.6	-2,333.1	2,372.2	1.52	-1.34	0.72
9,400.0	88.53	270.47	6,680.0	586.1	-2,433.1	2,472.0	0.76	0.20	-0.73
9,500.0	88.69	269.60	6,682.2	586.3	-2,533.1	2,571.6	0.89	0.16	-0.87
9,600.0	88.82	269.55	6,684.6	584.9	-2,633.0	2,671.2	0.14	0.13	-0.05
9,700.0	89.34	270.19	6,686.1	585.2	-2,733.0	2,770.9	0.82	0.52	0.64
9,751.1	89.40	269.81	6,686.7	585.2	-2,784.1	2,821.8	0.74	0.10	-0.73
Deepest TVD Drilled - 6686.7'									
9,800.0	90.28	270.58	6,686.8	585.4	-2,833.0	2,870.6	2.40	1.81	1.57
9,900.0	91.36	271.29	6,685.0	587.4	-2,933.0	2,970.4	1.29	1.08	0.71
10,000.0	91.97	270.62	6,682.2	589.2	-3,032.9	3,070.2	0.91	0.61	-0.68
10,100.0	91.67	270.83	6,678.7	590.1	-3,132.8	3,169.8	0.37	-0.30	0.21
10,200.0	90.22	271.54	6,676.9	592.2	-3,232.8	3,269.6	1.61	-1.45	0.71
10,300.0	89.99	271.12	6,677.1	594.8	-3,332.8	3,369.5	0.48	-0.23	-0.42
10,400.0	90.49	270.44	6,676.7	596.1	-3,432.7	3,469.3	0.84	0.49	-0.68
10,500.0	89.63	270.79	6,676.4	597.0	-3,532.7	3,569.0	0.93	-0.86	0.35
10,600.0	89.83	270.73	6,677.1	598.5	-3,632.7	3,668.8	0.22	0.21	-0.06
10,700.0	91.00	270.52	6,676.4	599.5	-3,732.7	3,768.6	1.19	1.17	-0.21
10,800.0	89.38	270.21	6,675.9	600.2	-3,832.7	3,868.3	1.65	-1.62	-0.30
10,900.0	89.90	269.20	6,676.6	599.7	-3,932.7	3,967.9	1.14	0.53	-1.01
11,000.0	88.53	270.17	6,678.0	599.2	-4,032.7	4,067.6	1.68	-1.37	0.97
11,100.0	89.03	269.52	6,680.2	599.0	-4,132.7	4,167.2	0.82	0.50	-0.65
11,200.0	89.38	268.59	6,681.6	597.3	-4,232.6	4,266.7	0.99	0.35	-0.92
11,300.0	90.06	268.06	6,682.1	594.2	-4,332.6	4,366.1	0.86	0.68	-0.53
11,400.0	90.98	268.95	6,681.2	591.6	-4,432.5	4,465.6	1.28	0.92	0.89
11,500.0	91.31	270.24	6,678.9	590.5	-4,532.5	4,565.1	1.33	0.34	1.28
11,600.0	89.97	272.24	6,677.6	593.2	-4,632.5	4,665.0	2.41	-1.34	2.00
11,700.0	88.94	271.96	6,679.0	596.9	-4,732.4	4,764.9	1.06	-1.03	-0.28
11,800.0	89.64	271.30	6,680.4	599.9	-4,832.3	4,864.7	0.96	0.70	-0.66
11,900.0	90.17	271.15	6,680.3	601.6	-4,932.3	4,964.5	0.55	0.53	-0.15
12,000.0	90.49	271.55	6,680.0	604.3	-5,032.3	5,064.4	0.52	0.32	0.41
12,100.0	90.68	271.40	6,678.6	606.8	-5,132.2	5,164.2	0.24	0.19	-0.15
12,200.0	89.12	270.99	6,678.4	609.0	-5,232.2	5,264.1	1.61	-1.56	-0.41
12,300.0	88.51	270.57	6,681.1	610.3	-5,332.2	5,363.8	0.73	-0.60	-0.42
12,400.0	89.30	269.90	6,683.1	610.8	-5,432.1	5,463.5	1.04	0.79	-0.68
12,500.0	90.32	268.74	6,683.4	609.7	-5,532.1	5,563.1	1.54	1.02	-1.16
12,600.0	91.66	268.40	6,681.8	607.0	-5,632.1	5,662.5	1.39	1.35	-0.34
12,700.0	91.28	269.12	6,678.8	604.7	-5,732.0	5,761.9	0.82	-0.39	0.72
12,800.0	90.59	270.06	6,677.2	604.0	-5,832.0	5,861.5	1.16	-0.68	0.94
12,900.0	89.44	270.47	6,677.2	604.5	-5,932.0	5,961.3	1.23	-1.16	0.41
13,000.0	90.05	269.84	6,677.8	604.9	-6,032.0	6,061.0	0.87	0.61	-0.62
13,100.0	87.85	270.00	6,679.5	604.7	-6,132.0	6,160.6	2.21	-2.20	0.15
13,200.0	88.53	269.57	6,682.7	604.3	-6,231.9	6,260.2	0.80	0.68	-0.43

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well McGlothlin Farms 4X-214
Project:	SEC.4-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (Ensign Rig #161 - RKB - 23')
Site:	McGlothlin Farms 5N64W4DX Pad Sec.4-T5N-R64W	MD Reference:	WELL @ 4639.0ft (Ensign Rig #161 - RKB - 23')
Well:	McGlothlin Farms 4X-214	North Reference:	True
Wellbore:	McGlothlin Farms 4X-214 Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	McGlothlin Farms 4X-214 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)
13,300.0	89.95	268.30	6,683.9	602.3	-6,331.9	6,359.7	1.90	1.42	-1.27
13,400.0	89.31	269.89	6,684.7	600.8	-6,431.8	6,459.3	1.72	-0.64	1.59
13,500.0	90.52	270.63	6,684.9	601.4	-6,531.8	6,559.0	1.41	1.20	0.73
13,600.0	91.50	270.22	6,682.7	602.1	-6,631.8	6,658.7	1.06	0.98	-0.41
13,700.0	90.52	270.23	6,681.4	602.5	-6,731.8	6,758.4	0.98	-0.98	0.01
13,800.0	91.35	270.08	6,679.4	602.7	-6,831.8	6,858.1	0.84	0.82	-0.15
13,900.0	90.08	269.97	6,677.9	603.0	-6,931.8	6,957.8	1.27	-1.27	-0.11
14,000.0	89.17	268.96	6,679.2	602.0	-7,031.8	7,057.4	1.36	-0.91	-1.01
14,100.0	90.09	268.11	6,679.7	599.4	-7,131.7	7,156.8	1.25	0.92	-0.85
14,200.0	90.78	267.19	6,679.0	595.4	-7,231.6	7,256.1	1.15	0.69	-0.92
14,300.0	91.20	266.30	6,677.1	589.6	-7,331.4	7,355.1	0.99	0.42	-0.89

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL 1170'FSL, 537'FEL, - hit/miss target - Shape - Point	0.00	0.00	1.0	0.0	0.0	1,398,802.68	3,265,134.52	40.424207	-104.547668
BHL 1793'FSL, 2621'FEI - survey misses target center by 35.2ft at 14300.0ft MD (6677.1 TVD, 589.6 N, -7331.4 E) - Point	0.00	0.00	6,680.0	598.9	-7,365.2	1,399,322.47	3,257,763.61	40.425848	-104.574122

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
6,885.2	6,620.3	520.0	74.0	TPZ - 460' Setback - 1690'FSL & 460'FEL, Sec.4
9,751.1	6,686.7	585.2	-2,784.1	Deepest TVD Drilled - 6686.7'

Checked By: _____	Approved By: _____	Date: _____
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