

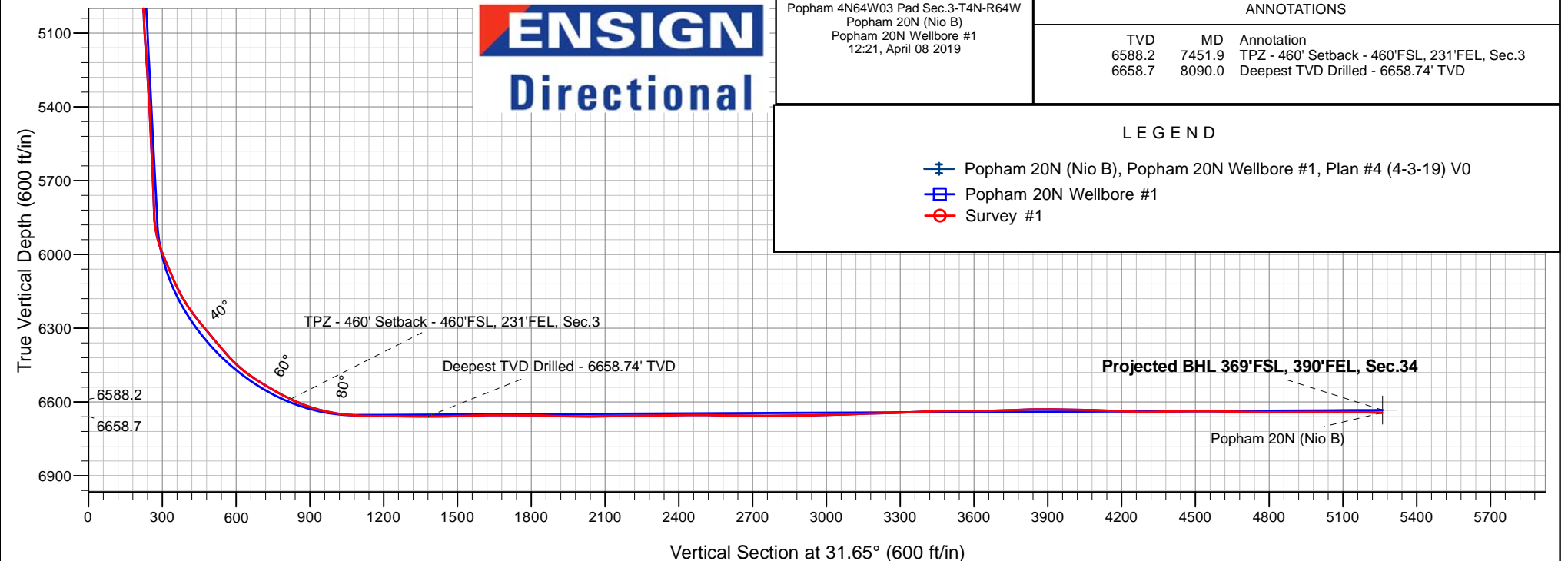
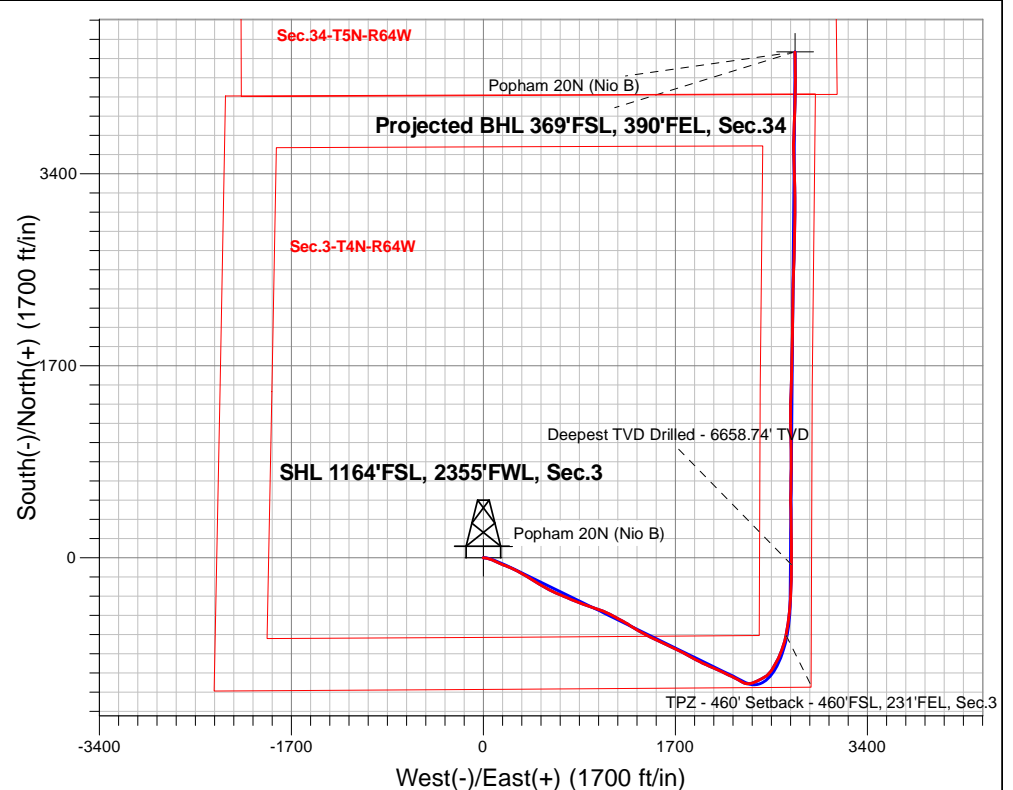
# PDC Energy Inc. DJ Basin

Well Name: **Popham 20N (Nio B)**

Surface Location: Popham 4N64W03 Pad Sec.3-T4N-R64W  
 North American Datum 1983 , US State Plane 1983, Colorado Northern Zone  
 Ground Elevation: 4662.0  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1367182.533268306.01 40.337320 -104.537510  
 WELL @ 4685.0ft

## FINAL SURVEY

**Projected Bottom Hole Location**  
**12,630'MD 6644'TVD 4478'N & 2758'E of SHL**  
**89.00 degree Incl @ 358.28 degree AZM**



Popham 4N64W03 Pad Sec.3-T4N-R64W  
 Popham 20N (Nio B)  
 Popham 20N Wellbore #1  
 12:21, April 08 2019

### ANNOTATIONS

TVD	MD	Annotation
6588.2	7451.9	TPZ - 460' Setback - 460'FSL, 231'FEL, Sec.3
6658.7	8090.0	Deepest TVD Drilled - 6658.74' TVD

### LEGEND

- ⚓ Popham 20N (Nio B), Popham 20N Wellbore #1, Plan #4 (4-3-19) V0
- ▣ Popham 20N Wellbore #1
- ⊖ Survey #1



## **PDC Energy Inc. DJ Basin**

**SEC.3-T4N-R64W**

**Popham 4N64W03 Pad Sec.3-T4N-R64W**

**Popham 20N (Nio B)**

**Popham 20N Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**08 April, 2019**

<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Popham 20N (Nio B)
<b>Project:</b>	SEC.3-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4685.0ft
<b>Site:</b>	Popham 4N64W03 Pad Sec.3-T4N-R64W	<b>MD Reference:</b>	WELL @ 4685.0ft
<b>Well:</b>	Popham 20N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Popham 20N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Popham 20N Wellbore #1	<b>Database:</b>	US_EDM

<b>Project</b>	SEC.3-T4N-R64W, Weld County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site	Popham 4N64W03 Pad Sec.3-T4N-R64W				
Site Position:		Northing:	1,367,183.37 usft	Latitude:	40.337327
From:	Lat/Long	Easting:	3,268,156.99 usft	Longitude:	-104.538045
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.62 °

Well	Popham 20N (Nio B)					
Well Position	+N/-S	0.0 ft	Northing:	1,367,182.53 usft	Latitude:	40.337320
	+E/-W	0.0 ft	Easting:	3,268,306.01 usft	Longitude:	-104.537510
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,662.0 ft

<b>Wellbore</b>	Popham 20N Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	4/1/2019	8.13	66.85	52,166

<b>Design</b>	Popham 20N Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	31.65	

<b>Survey Program</b>	<b>Date</b>	4/8/2019			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
156.0	12,630.0	Survey #1 (Popham 20N Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
1.0	0.00	76.03	1.0	0.0	0.0	0.0	0.17	0.17	0.00	
<b>SHL 1164'FSL, 2355'FWL, Sec.3</b>										
156.0	0.27	76.03	156.0	0.1	0.4	0.3	0.17	0.17	0.00	
251.0	1.16	264.44	251.0	0.0	-0.4	-0.2	1.50	0.94	-180.62	
346.0	0.66	132.43	346.0	-0.4	-0.9	-0.8	1.76	-0.53	-138.96	
442.0	2.28	93.70	442.0	-0.9	1.4	-0.1	1.89	1.69	-40.34	
537.0	4.95	91.14	536.8	-1.1	7.4	2.9	2.81	2.81	-2.69	
632.0	7.15	97.85	631.2	-2.0	17.3	7.4	2.43	2.32	7.06	
727.0	9.32	101.39	725.2	-4.3	30.7	12.4	2.34	2.28	3.73	
822.0	11.00	106.01	818.7	-8.3	47.0	17.5	1.96	1.77	4.86	

<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Popham 20N (Nio B)
<b>Project:</b>	SEC.3-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4685.0ft
<b>Site:</b>	Popham 4N64W03 Pad Sec.3-T4N-R64W	<b>MD Reference:</b>	WELL @ 4685.0ft
<b>Well:</b>	Popham 20N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Popham 20N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Popham 20N Wellbore #1	<b>Database:</b>	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)
918.0	12.29	110.30	912.8	-14.4	65.4	22.0	1.62	1.34	4.47
1,013.0	14.40	114.70	1,005.2	-22.9	85.6	25.4	2.46	2.22	4.63
1,108.0	15.60	113.75	1,097.0	-32.9	108.0	28.6	1.29	1.26	-1.00
1,203.0	17.09	115.38	1,188.1	-44.1	132.3	31.9	1.64	1.57	1.72
1,299.0	19.35	112.25	1,279.3	-56.1	159.8	36.0	2.56	2.35	-3.26
1,394.0	23.05	111.12	1,367.9	-68.8	191.7	42.0	3.92	3.89	-1.19
1,489.0	24.15	112.58	1,454.9	-83.0	227.0	48.5	1.31	1.16	1.54
1,595.0	23.78	114.03	1,551.8	-100.0	266.5	54.7	0.66	-0.35	1.37
1,676.0	24.16	118.87	1,625.8	-114.7	296.0	57.7	2.47	0.47	5.98
1,772.0	24.88	120.53	1,713.1	-134.4	330.6	59.0	1.04	0.75	1.73
1,867.0	27.06	121.85	1,798.5	-156.0	366.1	59.3	2.37	2.29	1.39
1,963.0	28.86	120.32	1,883.3	-179.2	404.7	59.8	2.02	1.88	-1.59
2,058.0	29.85	121.74	1,966.1	-203.2	444.6	60.3	1.27	1.04	1.49
2,153.0	29.50	121.25	2,048.7	-227.8	484.7	60.4	0.45	-0.37	-0.52
2,247.0	28.84	120.32	2,130.8	-251.2	524.1	61.1	0.85	-0.70	-0.99
2,342.0	30.06	116.51	2,213.5	-273.4	565.1	63.8	2.35	1.28	-4.01
2,437.0	29.03	116.02	2,296.1	-294.1	607.1	68.1	1.11	-1.08	-0.52
2,533.0	30.25	114.71	2,379.6	-314.5	650.0	73.4	1.44	1.27	-1.36
2,628.0	29.10	113.51	2,462.1	-333.7	693.0	79.5	1.36	-1.21	-1.26
2,723.0	30.46	112.29	2,544.6	-352.0	736.4	86.7	1.57	1.43	-1.28
2,818.0	29.97	111.90	2,626.7	-370.0	780.7	94.6	0.56	-0.52	-0.41
2,914.0	29.61	111.71	2,710.0	-387.7	825.0	102.8	0.39	-0.38	-0.20
3,009.0	29.61	111.39	2,792.6	-405.0	868.7	111.0	0.17	0.00	-0.34
3,105.0	29.05	109.62	2,876.3	-421.5	912.7	120.1	1.08	-0.58	-1.84
3,200.0	28.73	108.39	2,959.4	-436.4	956.1	130.1	0.71	-0.34	-1.29
3,295.0	28.79	110.60	3,042.7	-451.7	999.2	139.7	1.12	0.06	2.33
3,390.0	27.40	108.74	3,126.5	-466.7	1,041.3	149.0	1.73	-1.46	-1.96
3,486.0	26.36	113.36	3,212.2	-482.3	1,081.8	157.0	2.43	-1.08	4.81
3,581.0	28.42	118.58	3,296.5	-501.5	1,121.0	161.3	3.33	2.17	5.49
3,677.0	26.58	117.21	3,381.7	-522.2	1,160.2	164.2	2.03	-1.92	-1.43
3,773.0	28.25	119.38	3,466.9	-543.2	1,199.1	166.7	2.03	1.74	2.26
3,868.0	28.13	117.88	3,550.6	-564.7	1,238.5	169.1	0.76	-0.13	-1.58
3,965.0	30.69	122.18	3,635.1	-588.6	1,279.6	170.3	3.42	2.64	4.43
4,060.0	30.71	121.77	3,716.8	-614.2	1,320.8	170.1	0.22	0.02	-0.43
4,156.0	30.35	121.41	3,799.5	-639.8	1,362.3	170.1	0.42	-0.38	-0.38
4,251.0	29.42	118.99	3,881.9	-663.6	1,403.2	171.3	1.60	-0.98	-2.55
4,347.0	28.27	116.96	3,966.0	-685.3	1,444.1	174.2	1.57	-1.20	-2.11
4,442.0	27.64	116.25	4,049.9	-705.3	1,483.9	178.2	0.75	-0.66	-0.75
4,538.0	26.38	115.30	4,135.4	-724.3	1,523.2	182.6	1.39	-1.31	-0.99
4,633.0	24.94	114.75	4,221.0	-741.7	1,560.4	187.3	1.54	-1.52	-0.58
4,729.0	26.20	114.57	4,307.6	-758.9	1,598.1	192.4	1.31	1.31	-0.19
4,824.0	25.34	114.07	4,393.2	-776.0	1,635.7	197.6	0.93	-0.91	-0.53
4,920.0	27.25	116.31	4,479.2	-794.1	1,674.2	202.4	2.24	1.99	2.33

<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Popham 20N (Nio B)
<b>Project:</b>	SEC.3-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4685.0ft
<b>Site:</b>	Popham 4N64W03 Pad Sec.3-T4N-R64W	<b>MD Reference:</b>	WELL @ 4685.0ft
<b>Well:</b>	Popham 20N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Popham 20N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Popham 20N Wellbore #1	<b>Database:</b>	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)
5,015.0	27.77	117.37	4,563.5	-813.9	1,713.3	206.1	0.75	0.55	1.12
5,111.0	27.64	117.04	4,648.5	-834.3	1,753.0	209.5	0.21	-0.14	-0.34
5,206.0	31.32	118.69	4,731.2	-856.2	1,794.3	212.6	3.97	3.87	1.74
5,302.0	29.74	118.04	4,813.9	-879.4	1,837.3	215.4	1.68	-1.65	-0.68
5,397.0	28.79	117.10	4,896.7	-900.9	1,878.4	218.7	1.11	-1.00	-0.99
5,492.0	28.13	116.70	4,980.3	-921.3	1,918.8	222.4	0.72	-0.69	-0.42
5,587.0	26.70	115.25	5,064.6	-940.5	1,958.1	226.7	1.66	-1.51	-1.53
5,682.0	25.03	113.89	5,150.1	-957.7	1,995.8	231.8	1.87	-1.76	-1.43
5,778.0	27.01	112.93	5,236.3	-974.5	2,034.4	237.8	2.11	2.06	-1.00
5,873.0	26.03	115.92	5,321.3	-992.0	2,073.0	243.2	1.74	-1.03	3.15
5,967.0	24.08	113.14	5,406.5	-1,008.5	2,109.2	248.1	2.42	-2.07	-2.96
6,062.0	25.79	116.70	5,492.7	-1,025.4	2,145.5	252.7	2.39	1.80	3.75
6,157.0	25.81	115.32	5,578.2	-1,043.6	2,182.7	256.8	0.63	0.02	-1.45
6,251.0	27.96	117.10	5,662.0	-1,062.4	2,220.8	260.8	2.44	2.29	1.89
6,347.0	28.40	119.19	5,746.6	-1,083.8	2,260.8	263.6	1.13	0.46	2.18
6,441.0	26.61	117.33	5,830.0	-1,104.3	2,299.0	266.1	2.11	-1.90	-1.98
6,537.0	25.26	95.87	5,916.5	-1,116.3	2,338.6	276.7	9.83	-1.41	-22.35
6,632.0	27.97	68.97	6,001.8	-1,110.4	2,379.7	303.3	12.90	2.85	-28.32
6,728.0	26.80	65.61	6,087.0	-1,093.4	2,420.4	339.1	2.02	-1.22	-3.50
6,822.0	32.88	63.98	6,168.5	-1,073.4	2,462.7	378.3	6.52	6.47	-1.73
6,917.0	39.41	52.57	6,245.3	-1,043.7	2,509.9	428.4	9.85	6.87	-12.01
7,012.0	40.67	33.02	6,318.3	-999.2	2,550.9	487.7	13.27	1.33	-20.58
7,107.0	39.24	28.94	6,391.1	-947.0	2,582.3	548.7	3.14	-1.51	-4.29
7,201.0	49.26	26.36	6,458.4	-888.9	2,612.6	614.0	10.83	10.66	-2.74
7,296.0	58.54	20.55	6,514.3	-818.5	2,642.9	689.8	10.94	9.77	-6.12
7,392.0	61.97	14.05	6,562.0	-739.0	2,667.5	770.5	6.88	3.57	-6.77
7,451.9	66.11	11.85	6,588.2	-686.5	2,679.6	821.5	7.66	6.91	-3.66
TPZ - 460' Setback - 460'FSL, 231'FEL, Sec.3									
7,488.0	68.62	10.60	6,602.1	-653.8	2,686.1	852.7	7.66	6.95	-3.48
7,583.0	76.17	7.34	6,630.8	-564.4	2,700.1	936.2	8.59	7.95	-3.43
7,678.0	83.04	4.73	6,648.0	-471.6	2,709.9	1,020.4	7.72	7.23	-2.75
7,740.5	86.22	3.93	6,653.8	-409.5	2,714.6	1,075.7	5.24	5.08	-1.28
LPL 737'FSL, 195'FEL, Sec.3									
7,773.0	87.87	3.52	6,655.5	-377.2	2,716.7	1,104.3	5.24	5.08	-1.27
7,898.0	90.15	3.49	6,657.6	-252.4	2,724.4	1,214.5	1.82	1.82	-0.02
7,994.0	89.39	0.24	6,658.0	-156.5	2,727.5	1,297.8	3.48	-0.79	-3.39
8,090.0	89.76	359.80	6,658.7	-60.5	2,727.5	1,379.6	0.60	0.39	-0.46
Deepest TVD Drilled - 6658.74' TVD									
8,185.0	91.04	359.96	6,658.1	34.5	2,727.3	1,460.3	1.36	1.35	0.17
8,281.0	91.52	359.53	6,655.9	130.5	2,726.9	1,541.8	0.67	0.50	-0.45
8,376.0	91.37	359.63	6,653.5	225.5	2,726.2	1,622.3	0.19	-0.16	0.11
8,472.0	89.25	358.44	6,653.0	321.4	2,724.6	1,703.2	2.53	-2.21	-1.24
8,568.0	89.90	358.16	6,653.7	417.4	2,721.7	1,783.3	0.74	0.68	-0.29
8,663.0	88.43	0.98	6,655.1	512.4	2,721.0	1,863.8	3.35	-1.55	2.97

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<b>Project:</b>	SEC.3-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4685.0ft
<b>Site:</b>	Popham 4N64W03 Pad Sec.3-T4N-R64W	<b>MD Reference:</b>	WELL @ 4685.0ft
<b>Well:</b>	Popham 20N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Popham 20N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Popham 20N Wellbore #1	<b>Database:</b>	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)
8,759.0	88.37	0.19	6,657.8	608.3	2,722.0	1,946.0	0.82	-0.06	-0.82
8,854.0	90.50	0.96	6,658.7	703.3	2,723.0	2,027.4	2.38	2.24	0.81
8,949.0	90.43	0.25	6,658.0	798.3	2,724.0	2,108.8	0.75	-0.07	-0.75
9,044.0	90.69	0.43	6,657.0	893.3	2,724.5	2,189.9	0.33	0.27	0.19
9,140.0	90.54	359.90	6,656.0	989.3	2,724.8	2,271.8	0.57	-0.16	-0.55
9,236.0	91.00	358.79	6,654.7	1,085.3	2,723.7	2,352.9	1.25	0.48	-1.16
9,332.0	91.45	358.01	6,652.7	1,181.2	2,721.0	2,433.2	0.94	0.47	-0.81
9,427.0	88.70	359.64	6,652.5	1,276.2	2,719.1	2,513.0	3.36	-2.89	1.72
9,523.0	89.21	2.16	6,654.3	1,372.1	2,720.6	2,595.5	2.68	0.53	2.63
9,618.0	89.15	1.69	6,655.6	1,467.1	2,723.8	2,678.0	0.50	-0.06	-0.49
9,714.0	90.19	1.93	6,656.2	1,563.0	2,726.8	2,761.3	1.11	1.08	0.25
9,809.0	90.61	1.67	6,655.5	1,658.0	2,729.8	2,843.7	0.52	0.44	-0.27
9,904.0	90.36	1.19	6,654.7	1,752.9	2,732.2	2,925.8	0.57	-0.26	-0.51
10,000.0	92.01	0.85	6,652.7	1,848.9	2,733.9	3,008.4	1.75	1.72	-0.35
10,095.0	92.20	0.58	6,649.3	1,943.8	2,735.1	3,089.8	0.35	0.20	-0.28
10,191.0	90.93	1.46	6,646.6	2,039.8	2,736.8	3,172.4	1.61	-1.32	0.92
10,286.0	91.39	0.94	6,644.7	2,134.7	2,738.8	3,254.3	0.73	0.48	-0.55
10,382.0	91.80	0.76	6,642.0	2,230.7	2,740.2	3,336.7	0.47	0.43	-0.19
10,477.0	92.60	0.54	6,638.4	2,325.6	2,741.3	3,418.1	0.87	0.84	-0.23
10,573.0	89.50	2.12	6,636.6	2,421.5	2,743.5	3,500.9	3.62	-3.23	1.65
10,668.0	90.31	1.98	6,636.8	2,516.5	2,746.9	3,583.5	0.87	0.85	-0.15
10,764.0	90.82	1.88	6,635.8	2,612.4	2,750.1	3,666.9	0.54	0.53	-0.10
10,859.0	91.64	1.27	6,633.8	2,707.4	2,752.7	3,749.1	1.08	0.86	-0.64
10,955.0	91.97	0.48	6,630.8	2,803.3	2,754.2	3,831.5	0.89	0.34	-0.82
11,050.0	89.44	1.81	6,629.6	2,898.3	2,756.1	3,913.4	3.01	-2.66	1.40
11,145.0	89.02	0.72	6,630.9	2,993.2	2,758.2	3,995.3	1.23	-0.44	-1.15
11,241.0	88.48	359.78	6,633.0	3,089.2	2,758.6	4,077.2	1.13	-0.56	-0.98
11,337.0	88.15	359.02	6,635.8	3,185.2	2,757.6	4,158.4	0.86	-0.34	-0.79
11,432.0	87.93	358.98	6,639.1	3,280.1	2,755.9	4,238.3	0.24	-0.23	-0.04
11,527.0	90.87	358.93	6,640.0	3,375.1	2,754.2	4,318.3	3.10	3.09	-0.05
11,623.0	90.94	358.23	6,638.5	3,471.0	2,751.8	4,398.7	0.73	0.07	-0.73
11,718.0	90.96	357.73	6,637.0	3,566.0	2,748.5	4,477.8	0.53	0.02	-0.53
11,814.0	89.01	0.36	6,637.0	3,661.9	2,746.9	4,558.6	3.41	-2.03	2.74
11,910.0	88.87	2.08	6,638.8	3,757.9	2,748.9	4,641.4	1.80	-0.15	1.79
12,006.0	88.78	2.34	6,640.7	3,853.8	2,752.6	4,725.0	0.29	-0.09	0.27
12,101.0	90.15	2.26	6,641.6	3,948.7	2,756.4	4,807.8	1.44	1.44	-0.08
12,197.0	90.34	1.33	6,641.2	4,044.7	2,759.4	4,891.0	0.99	0.20	-0.97
12,292.0	89.93	1.08	6,641.0	4,139.6	2,761.4	4,972.9	0.51	-0.43	-0.26
12,387.0	89.98	0.26	6,641.1	4,234.6	2,762.6	5,054.4	0.86	0.05	-0.86
12,483.0	89.49	359.22	6,641.5	4,330.6	2,762.1	5,135.9	1.20	-0.51	-1.08
12,570.0	89.00	358.28	6,642.6	4,417.6	2,760.2	5,208.9	1.22	-0.56	-1.08
12,630.0	89.00	358.28	6,643.7	4,477.6	2,758.4	5,259.0	0.00	0.00	0.00
Projected BHL 369'FSL, 390'FEL, Sec.34									

<b>Company:</b>	PDC Energy Inc. DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Popham 20N (Nio B)
<b>Project:</b>	SEC.3-T4N-R64W	<b>TVD Reference:</b>	WELL @ 4685.0ft
<b>Site:</b>	Popham 4N64W03 Pad Sec.3-T4N-R64W	<b>MD Reference:</b>	WELL @ 4685.0ft
<b>Well:</b>	Popham 20N (Nio B)	<b>North Reference:</b>	True
<b>Wellbore:</b>	Popham 20N Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Popham 20N Wellbore #1	<b>Database:</b>	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)

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
SHL 1164'FSL, 2355'FW	0.00	0.00	1.0	0.0	0.0	1,367,182.55	3,268,306.01	40.337320	-104.537510
- survey hits target center									
- Point									
Projected BHL 369'FSL,	0.00	0.00	6,633.0	4,478.9	2,760.4	1,371,690.90	3,271,017.51	40.349614	-104.527607
- survey misses target center by 10.9ft at 12630.0ft MD (6643.7 TVD, 4477.6 N, 2758.4 E)									
- Point									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,451.9	6,588.2	-686.5	2,679.6	TPZ - 460' Setback - 460'FSL, 231'FEL, Sec.3
8,090.0	6,658.7	-60.5	2,727.5	Deepest TVD Drilled - 6658.74' TVD

Checked By: _____	Approved By: _____	Date: _____
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