

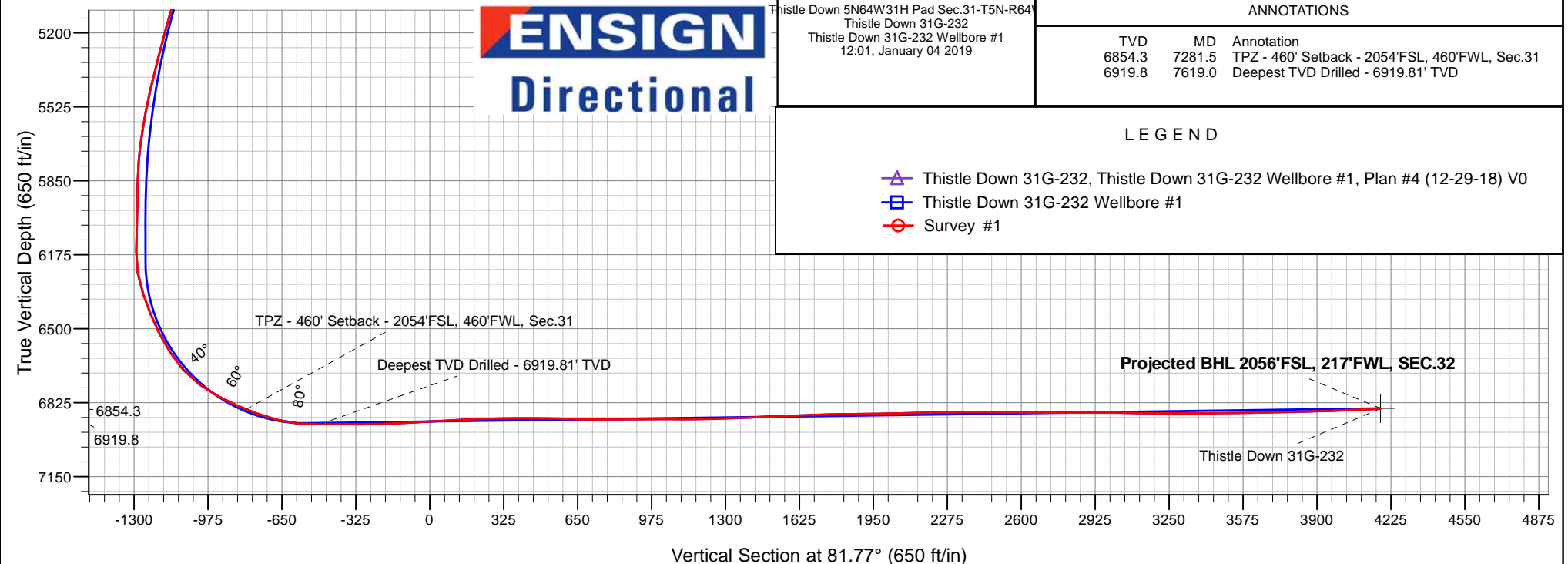
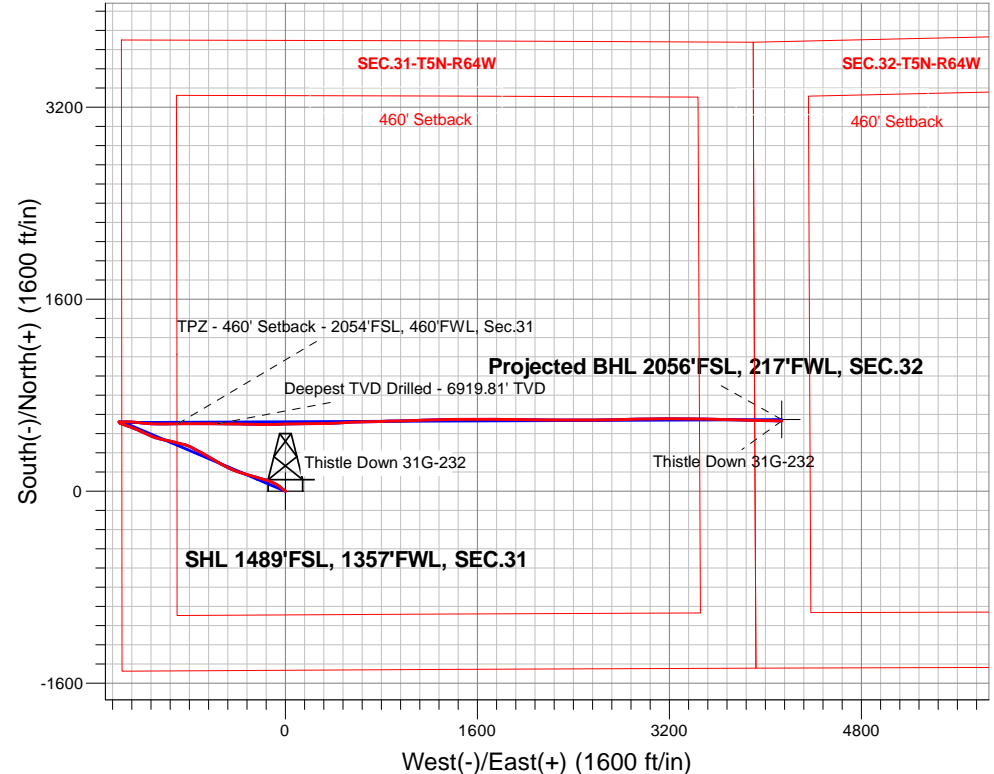
PDC Energy Inc. DJ Basin

Well Name: **Thistle Down 31G-232**

Surface Location: Thistle Down 5N64W31H Pad Sec.31-T5N-R64W
 North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
 Ground Elevation: 4805.0
 +N/-S+E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1372544.583251619.26 40.352520 -104.597170
 Original Well Elev WELL @ 4828.0ft (Original Well Elev)

FINAL SURVEY

Projected Bottom Hole Location
12,328'MD 6851'TVD 586'N & 4136'E of SHL
92.31 degree Incl @ 91.05 degree AZM



Thistle Down 5N64W31H Pad Sec.31-T5N-R64W
 Thistle Down 31G-232
 Thistle Down 31G-232 Wellbore #1
 12:01, January 04 2019

ANNOTATIONS

| TVD | MD | Annotation |
|--------|--------|--|
| 6854.3 | 7281.5 | TPZ - 460' Setback - 2054'FSL, 460'FWL, Sec.31 |
| 6919.8 | 7619.0 | Deepest TVD Drilled - 6919.81' TVD |

LEGEND

- Thistle Down 31G-232, Thistle Down 31G-232 Wellbore #1, Plan #4 (12-29-18) V0
- Thistle Down 31G-232 Wellbore #1
- Survey #1



PDC Energy Inc. DJ Basin

SEC.31-T5N-R64W

Thistle Down 5N64W31H Pad Sec.31-T5N-R64W

Thistle Down 31G-232

Thistle Down 31G-232 Wellbore #1

Survey: Survey #1

Standard Survey Report

04 January, 2019

| | | | |
|------------------|--|-------------------------------------|--------------------------------------|
| Company: | PDC Energy Inc. DJ Basin | Local Co-ordinate Reference: | Well Thistle Down 31G-232 |
| Project: | SEC.31-T5N-R64W | TVD Reference: | WELL @ 4828.0ft (Original Well Elev) |
| Site: | Thistle Down 5N64W31H Pad Sec.31-T5N-R64W | MD Reference: | WELL @ 4828.0ft (Original Well Elev) |
| Well: | Thistle Down 31G-232 | North Reference: | True |
| Wellbore: | Thistle Down 31G-232 Wellbore #1 | Survey Calculation Method: | Minimum Curvature |
| Design: | Thistle Down 31G-232 Wellbore #1 | Database: | US_EDM |

| | | | |
|--------------------|----------------------------------|----------------------|-----------------------------|
| Project | SEC.31-T5N-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 | Thistle Down 5N64W31H Pad Sec.31-T5N-R64W | | | | |
|-----------------------|---|--------------|-------------------|-------------------|-------------|
| Site Position: | | Northing: | 1,372,559.16 usft | Latitude: | 40.352560 |
| From: | Lat/Long | Easting: | 3,251,619.12 usft | Longitude: | -104.597170 |
| Position Uncertainty: | 0.0 ft | Slot Radius: | 13-3/16 " | Grid Convergence: | 0.58 ° |

| Well | Thistle Down 31G-232 | | | | | |
|----------------------|----------------------|--------|---------------------|-------------------|---------------|-------------|
| Well Position | +N/-S | 0.0 ft | Northing: | 1,372,544.58 usft | Latitude: | 40.352520 |
| | +E/-W | 0.0 ft | Easting: | 3,251,619.26 usft | Longitude: | -104.597170 |
| Position Uncertainty | | 0.0 ft | Wellhead Elevation: | 0.0 ft | Ground Level: | 4,805.0 ft |

| | | | | | |
|------------------|----------------------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | Thistle Down 31G-232 Wellbore #1 | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | HDGM | 12/29/2018 | 8.15 | 66.83 | 52,178 |

| | | | | | |
|-------------------|----------------------------------|---------------|---------------|------------------|-----|
| Design | Thistle Down 31G-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 | 81.77 | |

| | | | | | |
|-----------------------|----------------|---|------------------|--------------------|--|
| Survey Program | Date | 1/4/2019 | | | |
| From (ft) | To (ft) | Survey (Wellbore) | Tool Name | Description | |
| 156.0 | 12,328.0 | Survey #1 (Thistle Down 31G-232 Wellbor | 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 | 14.80 | 1.0 | 0.0 | 0.0 | 0.0 | 0.26 | 0.26 | 0.00 | |
| SHL 1489'FSL, 1357'FWL, SEC.31 | | | | | | | | | | |
| 156.0 | 0.40 | 14.80 | 156.0 | 0.5 | 0.1 | 0.2 | 0.26 | 0.26 | 0.00 | |
| 251.0 | 0.50 | 33.10 | 251.0 | 1.2 | 0.5 | 0.6 | 0.18 | 0.11 | 19.26 | |
| 346.0 | 0.50 | 53.30 | 346.0 | 1.8 | 1.0 | 1.3 | 0.18 | 0.00 | 21.26 | |
| 441.0 | 1.40 | 307.10 | 441.0 | 2.7 | 0.4 | 0.8 | 1.70 | 0.95 | -111.79 | |
| 537.0 | 4.20 | 298.50 | 536.9 | 5.1 | -3.6 | -2.8 | 2.94 | 2.92 | -8.96 | |
| 632.0 | 6.90 | 302.50 | 631.4 | 9.8 | -11.5 | -10.0 | 2.87 | 2.84 | 4.21 | |
| 727.0 | 10.20 | 308.20 | 725.3 | 18.1 | -22.9 | -20.1 | 3.58 | 3.47 | 6.00 | |

| | | | |
|------------------|--|-------------------------------------|--------------------------------------|
| Company: | PDC Energy Inc. DJ Basin | Local Co-ordinate Reference: | Well Thistle Down 31G-232 |
| Project: | SEC.31-T5N-R64W | TVD Reference: | WELL @ 4828.0ft (Original Well Elev) |
| Site: | Thistle Down 5N64W31H Pad Sec.31-T5N-R64W | MD Reference: | WELL @ 4828.0ft (Original Well Elev) |
| Well: | Thistle Down 31G-232 | North Reference: | True |
| Wellbore: | Thistle Down 31G-232 Wellbore #1 | Survey Calculation Method: | Minimum Curvature |
| Design: | Thistle Down 31G-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) | |
| 823.0 | 12.50 | 309.60 | 819.5 | 30.0 | -37.6 | -32.9 | 2.41 | 2.40 | 1.46 | |
| 918.0 | 15.00 | 307.10 | 911.7 | 44.0 | -55.3 | -48.5 | 2.70 | 2.63 | -2.63 | |
| 1,014.0 | 16.00 | 300.80 | 1,004.2 | 58.2 | -76.6 | -67.5 | 2.04 | 1.04 | -6.56 | |
| 1,109.0 | 16.30 | 295.80 | 1,095.5 | 70.7 | -99.9 | -88.7 | 1.50 | 0.32 | -5.26 | |
| 1,205.0 | 17.80 | 288.90 | 1,187.3 | 81.4 | -125.9 | -112.9 | 2.62 | 1.56 | -7.19 | |
| 1,300.0 | 18.50 | 287.70 | 1,277.6 | 90.7 | -154.0 | -139.4 | 0.84 | 0.74 | -1.26 | |
| 1,395.0 | 19.30 | 286.60 | 1,367.4 | 99.7 | -183.4 | -167.2 | 0.92 | 0.84 | -1.16 | |
| 1,490.0 | 20.30 | 286.40 | 1,456.8 | 108.9 | -214.2 | -196.4 | 1.06 | 1.05 | -0.21 | |
| 1,586.0 | 19.70 | 286.10 | 1,547.0 | 118.0 | -245.7 | -226.3 | 0.63 | -0.63 | -0.31 | |
| 1,681.0 | 16.00 | 287.50 | 1,637.4 | 126.4 | -273.6 | -252.7 | 3.92 | -3.89 | 1.47 | |
| 1,777.0 | 14.00 | 284.00 | 1,730.2 | 133.2 | -297.5 | -275.4 | 2.29 | -2.08 | -3.65 | |
| 1,872.0 | 13.40 | 282.10 | 1,822.5 | 138.3 | -319.4 | -296.4 | 0.79 | -0.63 | -2.00 | |
| 1,967.0 | 14.60 | 286.40 | 1,914.6 | 144.0 | -341.7 | -317.6 | 1.67 | 1.26 | 4.53 | |
| 2,062.0 | 13.60 | 290.20 | 2,006.8 | 151.2 | -363.6 | -338.3 | 1.43 | -1.05 | 4.00 | |
| 2,158.0 | 13.40 | 288.20 | 2,100.1 | 158.6 | -384.8 | -358.2 | 0.53 | -0.21 | -2.08 | |
| 2,253.0 | 14.00 | 292.60 | 2,192.4 | 166.5 | -405.9 | -377.9 | 1.27 | 0.63 | 4.63 | |
| 2,348.0 | 12.50 | 290.40 | 2,284.9 | 174.5 | -426.1 | -396.8 | 1.67 | -1.58 | -2.32 | |
| 2,505.0 | 11.10 | 290.80 | 2,438.6 | 185.7 | -456.2 | -424.9 | 0.89 | -0.89 | 0.25 | |
| 2,658.0 | 14.80 | 298.66 | 2,587.7 | 200.4 | -487.1 | -453.4 | 2.67 | 2.42 | 5.14 | |
| 2,753.0 | 15.75 | 298.64 | 2,679.3 | 212.4 | -509.1 | -473.4 | 1.00 | 1.00 | -0.02 | |
| 2,848.0 | 18.91 | 298.41 | 2,770.0 | 225.9 | -533.9 | -496.1 | 3.33 | 3.33 | -0.24 | |
| 2,943.0 | 19.47 | 300.42 | 2,859.7 | 241.2 | -561.1 | -520.8 | 0.91 | 0.59 | 2.12 | |
| 3,038.0 | 19.26 | 300.12 | 2,949.3 | 257.1 | -588.3 | -545.5 | 0.24 | -0.22 | -0.32 | |
| 3,133.0 | 18.70 | 299.91 | 3,039.2 | 272.5 | -615.1 | -569.8 | 0.59 | -0.59 | -0.22 | |
| 3,228.0 | 18.50 | 300.52 | 3,129.2 | 287.8 | -641.3 | -593.5 | 0.29 | -0.21 | 0.64 | |
| 3,324.0 | 18.14 | 300.09 | 3,220.3 | 303.0 | -667.3 | -617.1 | 0.40 | -0.38 | -0.45 | |
| 3,419.0 | 17.60 | 298.85 | 3,310.8 | 317.4 | -692.7 | -640.2 | 0.70 | -0.57 | -1.31 | |
| 3,514.0 | 16.48 | 298.80 | 3,401.6 | 330.8 | -717.1 | -662.4 | 1.18 | -1.18 | -0.05 | |
| 3,609.0 | 15.86 | 297.99 | 3,492.8 | 343.4 | -740.4 | -683.6 | 0.69 | -0.65 | -0.85 | |
| 3,705.0 | 15.86 | 298.05 | 3,585.2 | 355.7 | -763.5 | -704.8 | 0.02 | 0.00 | 0.06 | |
| 3,801.0 | 16.57 | 295.33 | 3,677.4 | 367.7 | -787.5 | -726.7 | 1.08 | 0.74 | -2.83 | |
| 3,896.0 | 17.00 | 292.39 | 3,768.3 | 378.8 | -812.5 | -750.0 | 1.00 | 0.45 | -3.09 | |
| 3,992.0 | 19.71 | 283.95 | 3,859.4 | 388.1 | -841.2 | -777.1 | 3.95 | 2.82 | -8.79 | |
| 4,087.0 | 19.21 | 283.97 | 3,949.0 | 395.7 | -872.0 | -806.4 | 0.53 | -0.53 | 0.02 | |
| 4,183.0 | 19.13 | 284.36 | 4,039.7 | 403.4 | -902.5 | -835.5 | 0.16 | -0.08 | 0.41 | |
| 4,279.0 | 18.64 | 283.24 | 4,130.5 | 410.8 | -932.7 | -864.3 | 0.63 | -0.51 | -1.17 | |
| 4,374.0 | 18.49 | 282.73 | 4,220.6 | 417.6 | -962.2 | -892.5 | 0.23 | -0.16 | -0.54 | |
| 4,469.0 | 18.19 | 283.20 | 4,310.7 | 424.3 | -991.3 | -920.4 | 0.35 | -0.32 | 0.49 | |
| 4,565.0 | 17.62 | 282.77 | 4,402.1 | 431.0 | -1,020.1 | -947.9 | 0.61 | -0.59 | -0.45 | |
| 4,660.0 | 17.14 | 282.29 | 4,492.8 | 437.1 | -1,047.8 | -974.4 | 0.53 | -0.51 | -0.51 | |
| 4,756.0 | 17.08 | 285.95 | 4,584.5 | 444.0 | -1,075.1 | -1,000.6 | 1.12 | -0.06 | 3.81 | |
| 4,851.0 | 17.39 | 294.13 | 4,675.3 | 453.6 | -1,101.5 | -1,025.3 | 2.57 | 0.33 | 8.61 | |

| | | | |
|------------------|--|-------------------------------------|--------------------------------------|
| Company: | PDC Energy Inc. DJ Basin | Local Co-ordinate Reference: | Well Thistle Down 31G-232 |
| Project: | SEC.31-T5N-R64W | TVD Reference: | WELL @ 4828.0ft (Original Well Elev) |
| Site: | Thistle Down 5N64W31H Pad Sec.31-T5N-R64W | MD Reference: | WELL @ 4828.0ft (Original Well Elev) |
| Well: | Thistle Down 31G-232 | North Reference: | True |
| Wellbore: | Thistle Down 31G-232 Wellbore #1 | Survey Calculation Method: | Minimum Curvature |
| Design: | Thistle Down 31G-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) |
| 4,946.0 | 16.80 | 292.48 | 4,766.1 | 464.7 | -1,127.2 | -1,049.1 | 0.80 | -0.62 | -1.74 |
| 5,042.0 | 16.25 | 293.61 | 4,858.1 | 475.4 | -1,152.3 | -1,072.4 | 0.66 | -0.57 | 1.18 |
| 5,137.0 | 17.70 | 294.40 | 4,949.0 | 486.7 | -1,177.6 | -1,095.9 | 1.55 | 1.53 | 0.83 |
| 5,233.0 | 18.39 | 294.94 | 5,040.2 | 499.1 | -1,204.6 | -1,120.8 | 0.74 | 0.72 | 0.56 |
| 5,328.0 | 17.96 | 294.10 | 5,130.5 | 511.4 | -1,231.6 | -1,145.8 | 0.53 | -0.45 | -0.88 |
| 5,424.0 | 17.48 | 292.25 | 5,221.9 | 522.9 | -1,258.4 | -1,170.7 | 0.77 | -0.50 | -1.93 |
| 5,519.0 | 16.71 | 292.29 | 5,312.7 | 533.5 | -1,284.3 | -1,194.8 | 0.81 | -0.81 | 0.04 |
| 5,614.0 | 14.99 | 288.49 | 5,404.1 | 542.5 | -1,308.6 | -1,217.5 | 2.11 | -1.81 | -4.00 |
| 5,710.0 | 13.61 | 288.06 | 5,497.2 | 550.0 | -1,331.1 | -1,238.7 | 1.44 | -1.44 | -0.45 |
| 5,805.0 | 10.89 | 288.67 | 5,590.0 | 556.3 | -1,350.2 | -1,256.7 | 2.87 | -2.86 | 0.64 |
| 5,900.0 | 8.48 | 288.92 | 5,683.6 | 561.5 | -1,365.4 | -1,271.0 | 2.54 | -2.54 | 0.26 |
| 5,996.0 | 4.62 | 295.79 | 5,779.0 | 565.4 | -1,375.5 | -1,280.5 | 4.10 | -4.02 | 7.16 |
| 6,091.0 | 2.41 | 329.68 | 5,873.8 | 568.8 | -1,380.0 | -1,284.4 | 3.10 | -2.33 | 35.67 |
| 6,186.0 | 2.40 | 321.61 | 5,968.7 | 572.1 | -1,382.2 | -1,286.2 | 0.36 | -0.01 | -8.49 |
| 6,282.0 | 2.64 | 317.31 | 6,064.6 | 575.3 | -1,385.0 | -1,288.4 | 0.32 | 0.25 | -4.48 |
| 6,377.0 | 2.10 | 317.53 | 6,159.5 | 578.2 | -1,387.6 | -1,290.6 | 0.57 | -0.57 | 0.23 |
| 6,473.0 | 9.37 | 98.69 | 6,255.2 | 578.3 | -1,381.1 | -1,284.1 | 11.55 | 7.57 | 147.04 |
| 6,568.0 | 19.81 | 89.06 | 6,347.0 | 577.4 | -1,357.3 | -1,260.7 | 11.25 | 10.99 | -10.14 |
| 6,664.0 | 21.01 | 87.15 | 6,437.0 | 578.5 | -1,323.8 | -1,227.4 | 1.43 | 1.25 | -1.99 |
| 6,759.0 | 28.05 | 92.82 | 6,523.3 | 578.3 | -1,284.4 | -1,188.5 | 7.81 | 7.41 | 5.97 |
| 6,855.0 | 34.09 | 97.10 | 6,605.5 | 573.8 | -1,235.2 | -1,140.3 | 6.70 | 6.29 | 4.46 |
| 6,950.0 | 41.56 | 97.07 | 6,680.5 | 566.7 | -1,177.4 | -1,084.2 | 7.86 | 7.86 | -0.03 |
| 7,046.0 | 56.23 | 92.50 | 6,743.5 | 561.0 | -1,105.5 | -1,013.9 | 15.69 | 15.28 | -4.76 |
| 7,141.0 | 59.45 | 89.72 | 6,794.1 | 559.5 | -1,025.1 | -934.5 | 4.20 | 3.39 | -2.93 |
| 7,237.0 | 66.85 | 88.59 | 6,837.4 | 560.7 | -939.5 | -849.6 | 7.78 | 7.71 | -1.18 |
| 7,281.5 | 68.43 | 88.91 | 6,854.3 | 561.6 | -898.4 | -808.8 | 3.60 | 3.54 | 0.72 |
| TPZ - 460' Setback - 2054'FSL, 460'FWL, Sec.31 | | | | | | | | | |
| 7,333.0 | 70.25 | 89.27 | 6,872.5 | 562.4 | -850.2 | -761.0 | 3.60 | 3.54 | 0.70 |
| 7,427.0 | 75.81 | 89.07 | 6,899.9 | 563.7 | -760.4 | -671.9 | 5.92 | 5.91 | -0.21 |
| 7,523.0 | 84.72 | 90.85 | 6,916.1 | 563.8 | -665.8 | -578.3 | 9.46 | 9.28 | 1.85 |
| 7,568.2 | 87.62 | 90.90 | 6,919.1 | 563.1 | -620.8 | -533.8 | 6.43 | 6.43 | 0.10 |
| LPL 2068'FSL, 738'FWL, SEC.31 | | | | | | | | | |
| 7,619.0 | 90.89 | 90.95 | 6,919.8 | 562.2 | -570.0 | -483.7 | 6.43 | 6.43 | 0.10 |
| Deepest TVD Drilled - 6919.81' TVD | | | | | | | | | |
| 7,714.0 | 90.00 | 90.78 | 6,919.1 | 560.8 | -475.0 | -389.9 | 0.95 | -0.94 | -0.18 |
| 7,809.0 | 89.66 | 90.54 | 6,919.4 | 559.7 | -380.0 | -296.0 | 0.44 | -0.36 | -0.25 |
| 7,905.0 | 92.36 | 90.69 | 6,917.7 | 558.7 | -284.0 | -201.2 | 2.82 | 2.81 | 0.16 |
| 8,000.0 | 92.58 | 91.08 | 6,913.6 | 557.2 | -189.1 | -107.4 | 0.47 | 0.23 | 0.41 |
| 8,096.0 | 93.01 | 88.62 | 6,908.9 | 557.5 | -93.2 | -12.5 | 2.60 | 0.45 | -2.56 |
| 8,192.0 | 93.62 | 89.14 | 6,903.3 | 559.3 | 2.6 | 82.6 | 0.83 | 0.64 | 0.54 |
| 8,287.0 | 92.31 | 88.82 | 6,898.4 | 561.0 | 97.4 | 176.7 | 1.42 | -1.38 | -0.34 |
| 8,383.0 | 90.87 | 89.09 | 6,895.8 | 562.8 | 193.4 | 271.9 | 1.53 | -1.50 | 0.28 |
| 8,478.0 | 91.25 | 89.39 | 6,894.0 | 564.0 | 288.4 | 366.1 | 0.51 | 0.40 | 0.32 |

| | | | |
|------------------|--|-------------------------------------|--------------------------------------|
| Company: | PDC Energy Inc. DJ Basin | Local Co-ordinate Reference: | Well Thistle Down 31G-232 |
| Project: | SEC.31-T5N-R64W | TVD Reference: | WELL @ 4828.0ft (Original Well Elev) |
| Site: | Thistle Down 5N64W31H Pad Sec.31-T5N-R64W | MD Reference: | WELL @ 4828.0ft (Original Well Elev) |
| Well: | Thistle Down 31G-232 | North Reference: | True |
| Wellbore: | Thistle Down 31G-232 Wellbore #1 | Survey Calculation Method: | Minimum Curvature |
| Design: | Thistle Down 31G-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) |
| 8,574.0 | 89.27 | 87.72 | 6,893.6 | 566.5 | 384.3 | 461.4 | 2.70 | -2.06 | -1.74 |
| 8,669.0 | 88.97 | 87.15 | 6,895.0 | 570.7 | 479.2 | 555.9 | 0.68 | -0.32 | -0.60 |
| 8,765.0 | 88.29 | 87.11 | 6,897.3 | 575.5 | 575.1 | 651.5 | 0.71 | -0.71 | -0.04 |
| 8,861.0 | 89.95 | 88.46 | 6,898.8 | 579.2 | 671.0 | 746.9 | 2.23 | 1.73 | 1.41 |
| 8,956.0 | 90.43 | 89.13 | 6,898.5 | 581.2 | 766.0 | 841.2 | 0.87 | 0.51 | 0.71 |
| 9,052.0 | 90.48 | 88.60 | 6,897.7 | 583.1 | 861.9 | 936.5 | 0.55 | 0.05 | -0.55 |
| 9,147.0 | 90.09 | 88.22 | 6,897.2 | 585.8 | 956.9 | 1,030.9 | 0.57 | -0.41 | -0.40 |
| 9,242.0 | 89.69 | 87.71 | 6,897.4 | 589.1 | 1,051.8 | 1,125.3 | 0.68 | -0.42 | -0.54 |
| 9,338.0 | 91.95 | 88.41 | 6,896.0 | 592.4 | 1,147.8 | 1,220.7 | 2.46 | 2.35 | 0.73 |
| 9,433.0 | 91.87 | 88.93 | 6,892.9 | 594.6 | 1,242.7 | 1,315.0 | 0.55 | -0.08 | 0.55 |
| 9,529.0 | 92.14 | 88.94 | 6,889.5 | 596.4 | 1,338.6 | 1,410.2 | 0.28 | 0.28 | 0.01 |
| 9,624.0 | 91.98 | 89.50 | 6,886.1 | 597.7 | 1,433.5 | 1,504.3 | 0.61 | -0.17 | 0.59 |
| 9,720.0 | 92.02 | 89.42 | 6,882.8 | 598.6 | 1,529.5 | 1,599.4 | 0.09 | 0.04 | -0.08 |
| 9,816.0 | 92.54 | 89.29 | 6,878.9 | 599.7 | 1,625.4 | 1,694.5 | 0.56 | 0.54 | -0.14 |
| 9,911.0 | 90.88 | 90.56 | 6,876.1 | 599.8 | 1,720.3 | 1,788.5 | 2.20 | -1.75 | 1.34 |
| 10,006.0 | 90.38 | 90.57 | 6,875.1 | 598.8 | 1,815.3 | 1,882.3 | 0.53 | -0.53 | 0.01 |
| 10,101.0 | 91.44 | 90.31 | 6,873.6 | 598.1 | 1,910.3 | 1,976.2 | 1.15 | 1.12 | -0.27 |
| 10,197.0 | 91.03 | 90.15 | 6,871.5 | 597.7 | 2,006.3 | 2,071.2 | 0.46 | -0.43 | -0.17 |
| 10,293.0 | 91.04 | 91.41 | 6,869.7 | 596.4 | 2,102.3 | 2,166.0 | 1.31 | 0.01 | 1.31 |
| 10,388.0 | 91.65 | 91.13 | 6,867.5 | 594.3 | 2,197.2 | 2,259.6 | 0.71 | 0.64 | -0.29 |
| 10,484.0 | 90.20 | 90.23 | 6,866.0 | 593.2 | 2,293.2 | 2,354.5 | 1.78 | -1.51 | -0.94 |
| 10,580.0 | 89.06 | 90.52 | 6,866.6 | 592.5 | 2,389.2 | 2,449.4 | 1.23 | -1.19 | 0.30 |
| 10,675.0 | 89.32 | 89.68 | 6,867.9 | 592.4 | 2,484.2 | 2,543.4 | 0.93 | 0.27 | -0.88 |
| 10,771.0 | 89.67 | 89.55 | 6,868.8 | 593.0 | 2,580.2 | 2,638.5 | 0.39 | 0.36 | -0.14 |
| 10,866.0 | 89.93 | 88.75 | 6,869.1 | 594.4 | 2,675.2 | 2,732.7 | 0.89 | 0.27 | -0.84 |
| 10,962.0 | 90.05 | 88.34 | 6,869.1 | 596.9 | 2,771.1 | 2,828.0 | 0.45 | 0.13 | -0.43 |
| 11,057.0 | 90.18 | 87.96 | 6,868.9 | 599.9 | 2,866.1 | 2,922.4 | 0.42 | 0.14 | -0.40 |
| 11,153.0 | 89.41 | 90.02 | 6,869.3 | 601.6 | 2,962.1 | 3,017.7 | 2.29 | -0.80 | 2.15 |
| 11,248.0 | 89.07 | 90.64 | 6,870.5 | 601.1 | 3,057.0 | 3,111.6 | 0.74 | -0.36 | 0.65 |
| 11,344.0 | 89.33 | 89.46 | 6,871.9 | 601.0 | 3,153.0 | 3,206.6 | 1.26 | 0.27 | -1.23 |
| 11,440.0 | 89.90 | 88.61 | 6,872.5 | 602.6 | 3,249.0 | 3,301.8 | 1.07 | 0.59 | -0.89 |
| 11,535.0 | 90.43 | 88.79 | 6,872.3 | 604.8 | 3,344.0 | 3,396.1 | 0.59 | 0.56 | 0.19 |
| 11,631.0 | 90.85 | 92.01 | 6,871.2 | 604.1 | 3,440.0 | 3,491.0 | 3.38 | 0.44 | 3.35 |
| 11,726.0 | 90.87 | 92.01 | 6,869.8 | 600.8 | 3,534.9 | 3,584.5 | 0.02 | 0.02 | 0.00 |
| 11,822.0 | 91.12 | 91.79 | 6,868.1 | 597.6 | 3,630.8 | 3,679.0 | 0.35 | 0.26 | -0.23 |
| 11,917.0 | 91.50 | 91.63 | 6,865.9 | 594.8 | 3,725.8 | 3,772.5 | 0.43 | 0.40 | -0.17 |
| 12,013.0 | 91.65 | 91.38 | 6,863.3 | 592.2 | 3,821.7 | 3,867.1 | 0.30 | 0.16 | -0.26 |
| 12,109.0 | 91.87 | 91.23 | 6,860.3 | 590.0 | 3,917.6 | 3,961.7 | 0.28 | 0.23 | -0.16 |
| 12,205.0 | 92.61 | 90.85 | 6,856.6 | 588.3 | 4,013.5 | 4,056.4 | 0.87 | 0.77 | -0.40 |
| 12,271.0 | 92.31 | 91.05 | 6,853.7 | 587.2 | 4,079.5 | 4,121.5 | 0.55 | -0.45 | 0.30 |
| 12,327.4 | 92.31 | 91.05 | 6,851.5 | 586.2 | 4,135.8 | 4,177.2 | 0.00 | 0.00 | 0.00 |
| Projected BHL 2056'FSL, 217'FWL, SEC.32 | | | | | | | | | |
| 12,328.0 | 92.31 | 91.05 | 6,851.4 | 586.2 | 4,136.4 | 4,177.7 | 0.00 | 0.00 | 0.00 |

| | | | |
|------------------|--|-------------------------------------|--------------------------------------|
| Company: | PDC Energy Inc. DJ Basin | Local Co-ordinate Reference: | Well Thistle Down 31G-232 |
| Project: | SEC.31-T5N-R64W | TVD Reference: | WELL @ 4828.0ft (Original Well Elev) |
| Site: | Thistle Down 5N64W31H Pad Sec.31-T5N-R64W | MD Reference: | WELL @ 4828.0ft (Original Well Elev) |
| Well: | Thistle Down 31G-232 | North Reference: | True |
| Wellbore: | Thistle Down 31G-232 Wellbore #1 | Survey Calculation Method: | Minimum Curvature |
| Design: | Thistle Down 31G-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) |

| 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 1489'FSL, 1357'FW | 0.00 | 0.00 | 1.0 | 0.0 | 0.0 | 1,372,544.59 | 3,251,619.26 | 40.352520 | -104.597170 |
| - survey hits target center | | | | | | | | | |
| - Point | | | | | | | | | |
| Projected BHL 2056'FSL | 0.00 | 0.00 | 6,850.0 | 597.9 | 4,136.0 | 1,373,184.56 | 3,255,748.78 | 40.354160 | -104.582331 |
| - survey misses target center by 11.8ft at 12327.4ft MD (6851.5 TVD, 586.2 N, 4135.8 E) | | | | | | | | | |
| - Point | | | | | | | | | |

| Survey Annotations | | | | | |
|---------------------|---------------------|-------------------|------------|--|--|
| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates | | | |
| | | +N/-S (ft) | +E/-W (ft) | Comment | |
| 7,281.5 | 6,854.3 | 561.6 | -898.4 | TPZ - 460' Setback - 2054'FSL, 460'FWL, Sec.31 | |
| 7,619.0 | 6,919.8 | 562.2 | -570.0 | Deepest TVD Drilled - 6919.81' TVD | |

| | | |
|-------------------|--------------------|-------------|
| Checked By: _____ | Approved By: _____ | Date: _____ |
|-------------------|--------------------|-------------|