

Extraction Oil & Gas

Adams County (NAD 83)

Sec 12-T01S-R66W

Duck Club 12W-20-6N

Wellbore #1

Design: Wellbore #1

Standard Survey Report

11 December, 2018



Survey Report



| | | | |
|------------------|-----------------------|-------------------------------------|--------------------------|
| Company: | Extraction Oil & Gas | Local Co-ordinate Reference: | Well Duck Club 12W-20-6N |
| Project: | Adams County (NAD 83) | TVD Reference: | KB=25 @ 5062.00usft |
| Site: | Sec 12-T01S-R66W | MD Reference: | KB=25 @ 5062.00usft |
| Well: | Duck Club 12W-20-6N | North Reference: | True |
| Wellbore: | Wellbore #1 | Survey Calculation Method: | Minimum Curvature |
| Design: | Wellbore #1 | Database: | EDM 5000.1 |

| | | | |
|--------------------|---------------------------|----------------------|----------------|
| Project | Adams County (NAD 83) | | |
| Map System: | US State Plane 1983 | System Datum: | Mean Sea Level |
| Geo Datum: | North American Datum 1983 | | |
| Map Zone: | Colorado Northern Zone | | |

| Site | | Sec 12-T01S-R66W | | | | | | |
|-----------------------|------|------------------|--------------|---------|------------|-------------------|------|---|
| Site Position: | | Northing: | 1,239,018.46 | usft | Latitude: | 39.98694 | | |
| From: | Map | Easting: | 3,214,796.41 | usft | Longitude: | -104.73343 | | |
| Position Uncertainty: | 0.00 | usft | Slot Radius: | 13-3/16 | " | Grid Convergence: | 0.50 | ° |

| Well | Duck Club 12W-20-6N | | | | | |
|----------------------|---------------------|-----------|---------------------|-------------------|---------------|---------------|
| Well Position | +N/-S | 0.00 usft | Northing: | 1,236,157.14 usft | Latitude: | 39.97907 |
| | +E/-W | 0.00 usft | Easting: | 3,215,515.54 usft | Longitude: | -104.73095 |
| Position Uncertainty | | 0.00 usft | Wellhead Elevation: | 0.00 usft | Ground Level: | 5,037.00 usft |

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|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | Wellbore #1 | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | HDGM | 11/6/2018 | 8.20 | 66.32 | 51,945 |

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|--------------------------|--------------------------------|---------------------|---------------------|----------------------|------|
| Design | Wellbore #1 | | | | |
| Audit Notes: | | | | | |
| Version: | 1.0 | Phase: | ACTUAL | Tie On Depth: | 0.00 |
| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) | |
| | 0.00 | 0.00 | 0.00 | 272.88 | |

| | | | | | |
|-----------------------|------------------|---------------------------------|------------------|--------------------|--|
| Survey Program | Date | 12/11/2018 | | | |
| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description | |
| 129.00 | 1,546.00 | Surface Surveys (Wellbore #1) | MWD | MWD - Standard | |
| 1,546.00 | 17,600.00 | Atlas MWD Surveys (Wellbore #1) | MWD | MWD - Standard | |

| | | | | | | | | | | |
|------------------------------|------------------------|--------------------|------------------------------|---------------------|---------------------|--------------------------------|--------------------------------|-------------------------------|------------------------------|--|
| Survey | | | | | | | | | | |
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 129.00 | 1.05 | 44.49 | 128.99 | 0.84 | 0.83 | -0.78 | 0.81 | 0.81 | 0.00 | |
| First Surface Survey | | | | | | | | | | |
| 225.00 | 0.31 | 117.70 | 224.99 | 1.35 | 1.67 | -1.60 | 1.05 | -0.77 | 76.26 | |
| 320.00 | 0.66 | 150.83 | 319.98 | 0.75 | 2.17 | -2.13 | 0.46 | 0.37 | 34.87 | |
| 415.00 | 1.01 | 168.59 | 414.97 | -0.55 | 2.60 | -2.63 | 0.45 | 0.37 | 18.69 | |
| 510.00 | 0.31 | 309.21 | 509.97 | -1.20 | 2.57 | -2.62 | 1.33 | -0.74 | 148.02 | |
| 604.00 | 0.53 | 302.09 | 603.97 | -0.81 | 2.00 | -2.04 | 0.24 | 0.23 | -7.57 | |
| 699.00 | 0.75 | 315.54 | 698.96 | -0.14 | 1.19 | -1.20 | 0.28 | 0.23 | 14.16 | |
| 795.00 | 1.05 | 308.68 | 794.95 | 0.86 | 0.07 | -0.02 | 0.33 | 0.31 | -7.15 | |

Survey Report



| | | | |
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| Company: | Extraction Oil & Gas | Local Co-ordinate Reference: | Well Duck Club 12W-20-6N |
| Project: | Adams County (NAD 83) | TVD Reference: | KB=25 @ 5062.00usft |
| Site: | Sec 12-T01S-R66W | MD Reference: | KB=25 @ 5062.00usft |
| Well: | Duck Club 12W-20-6N | North Reference: | True |
| Wellbore: | Wellbore #1 | Survey Calculation Method: | Minimum Curvature |
| Design: | Wellbore #1 | Database: | EDM 5000.1 |

| Survey | | | | | | | | | |
|--|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 890.00 | 0.92 | 28.93 | 889.94 | 2.07 | -0.24 | 0.35 | 1.34 | -0.14 | 84.47 |
| 985.00 | 0.88 | 79.64 | 984.93 | 2.87 | 0.84 | -0.70 | 0.81 | -0.04 | 53.38 |
| 1,080.00 | 1.19 | 96.08 | 1,079.91 | 2.90 | 2.54 | -2.39 | 0.45 | 0.33 | 17.31 |
| 1,175.00 | 2.07 | 89.13 | 1,174.87 | 2.82 | 5.24 | -5.09 | 0.95 | 0.93 | -7.32 |
| 1,270.00 | 3.03 | 76.48 | 1,269.78 | 3.43 | 9.40 | -9.21 | 1.17 | 1.01 | -13.32 |
| 1,364.00 | 4.88 | 80.96 | 1,363.55 | 4.64 | 15.76 | -15.51 | 1.99 | 1.97 | 4.77 |
| 1,459.00 | 6.55 | 80.08 | 1,458.08 | 6.21 | 25.09 | -24.75 | 1.76 | 1.76 | -0.93 |
| 1,546.00 | 9.05 | 81.05 | 1,544.26 | 8.13 | 36.74 | -36.28 | 2.88 | 2.87 | 1.11 |
| Last Surface Survey - Tie into Surface Surveys | | | | | | | | | |
| 1,663.00 | 9.59 | 80.12 | 1,659.72 | 11.24 | 55.43 | -54.79 | 0.48 | 0.46 | -0.79 |
| First MWD Survey @ 1663' MD | | | | | | | | | |
| 1,758.00 | 11.98 | 89.81 | 1,753.04 | 12.63 | 73.09 | -72.36 | 3.15 | 2.52 | 10.20 |
| 1,854.00 | 16.26 | 90.21 | 1,846.12 | 12.61 | 96.50 | -95.75 | 4.46 | 4.46 | 0.42 |
| 1,950.00 | 17.94 | 86.02 | 1,937.88 | 13.59 | 124.69 | -123.85 | 2.17 | 1.75 | -4.36 |
| 2,046.00 | 20.15 | 81.26 | 2,028.62 | 17.13 | 155.79 | -154.74 | 2.81 | 2.30 | -4.96 |
| 2,141.00 | 22.05 | 78.00 | 2,117.25 | 23.32 | 189.41 | -188.00 | 2.35 | 2.00 | -3.43 |
| 2,237.00 | 23.95 | 77.12 | 2,205.62 | 31.41 | 226.04 | -224.17 | 2.01 | 1.98 | -0.92 |
| 2,333.00 | 24.26 | 75.89 | 2,293.24 | 40.56 | 264.16 | -261.79 | 0.61 | 0.32 | -1.28 |
| 2,429.00 | 26.78 | 75.84 | 2,379.87 | 50.66 | 304.26 | -301.33 | 2.63 | 2.63 | -0.05 |
| 2,524.00 | 28.81 | 78.00 | 2,463.91 | 60.66 | 347.41 | -343.92 | 2.39 | 2.14 | 2.27 |
| 2,619.00 | 27.09 | 78.09 | 2,547.82 | 69.88 | 390.97 | -386.97 | 1.81 | -1.81 | 0.09 |
| 2,715.00 | 28.06 | 77.43 | 2,632.92 | 79.31 | 434.40 | -429.86 | 1.06 | 1.01 | -0.69 |
| 2,810.00 | 25.98 | 77.43 | 2,717.54 | 88.70 | 476.52 | -471.46 | 2.19 | -2.19 | 0.00 |
| 2,906.00 | 28.90 | 75.67 | 2,802.74 | 99.02 | 519.53 | -513.90 | 3.16 | 3.04 | -1.83 |
| 3,001.00 | 28.19 | 74.57 | 2,886.19 | 110.67 | 563.40 | -557.13 | 0.93 | -0.75 | -1.16 |
| 3,097.00 | 26.07 | 72.54 | 2,971.62 | 123.04 | 605.39 | -598.44 | 2.41 | -2.21 | -2.11 |
| 3,192.00 | 27.18 | 76.95 | 3,056.56 | 134.20 | 646.44 | -638.88 | 2.39 | 1.17 | 4.64 |
| 3,288.00 | 29.83 | 79.10 | 3,140.91 | 143.67 | 691.26 | -683.17 | 2.96 | 2.76 | 2.24 |
| 3,383.00 | 28.24 | 78.13 | 3,223.97 | 152.76 | 736.46 | -727.85 | 1.75 | -1.67 | -1.02 |
| 3,479.00 | 28.63 | 80.56 | 3,308.39 | 161.20 | 781.37 | -772.29 | 1.27 | 0.41 | 2.53 |
| 3,574.00 | 26.69 | 79.90 | 3,392.53 | 168.68 | 824.83 | -815.32 | 2.07 | -2.04 | -0.69 |
| 3,669.00 | 27.71 | 83.78 | 3,477.03 | 174.82 | 867.80 | -857.92 | 2.15 | 1.07 | 4.08 |
| 3,765.00 | 25.67 | 84.22 | 3,562.80 | 179.33 | 910.68 | -900.52 | 2.13 | -2.13 | 0.46 |
| 3,860.00 | 26.03 | 84.48 | 3,648.29 | 183.41 | 951.90 | -941.48 | 0.40 | 0.38 | 0.27 |
| 3,956.00 | 28.15 | 77.61 | 3,733.78 | 190.29 | 995.00 | -984.18 | 3.93 | 2.21 | -7.16 |
| 4,051.00 | 26.87 | 81.53 | 3,818.04 | 198.26 | 1,038.13 | -1,026.86 | 2.33 | -1.35 | 4.13 |
| 4,146.00 | 27.93 | 81.88 | 3,902.38 | 204.57 | 1,081.39 | -1,069.75 | 1.13 | 1.12 | 0.37 |
| 4,242.00 | 28.90 | 78.58 | 3,986.82 | 212.34 | 1,126.39 | -1,114.30 | 1.92 | 1.01 | -3.44 |
| 4,337.00 | 25.06 | 78.93 | 4,071.47 | 220.75 | 1,168.65 | -1,156.08 | 4.05 | -4.04 | 0.37 |
| 4,432.00 | 26.43 | 76.02 | 4,157.04 | 229.72 | 1,208.91 | -1,195.85 | 1.96 | 1.44 | -3.06 |
| 4,528.00 | 27.80 | 78.00 | 4,242.49 | 239.54 | 1,251.55 | -1,237.93 | 1.71 | 1.43 | 2.06 |
| 4,623.00 | 28.90 | 75.40 | 4,326.09 | 249.93 | 1,295.43 | -1,281.24 | 1.74 | 1.16 | -2.74 |
| 4,719.00 | 24.48 | 72.93 | 4,411.85 | 261.62 | 1,336.92 | -1,322.09 | 4.75 | -4.60 | -2.57 |

Survey Report



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| Site: | Sec 12-T01S-R66W | MD Reference: | KB=25 @ 5062.00usft |
| Well: | Duck Club 12W-20-6N | North Reference: | True |
| Wellbore: | Wellbore #1 | Survey Calculation Method: | Minimum Curvature |
| Design: | Wellbore #1 | Database: | EDM 5000.1 |

| Survey | | | | | | | | | | |
|------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | |
| 4,814.00 | 25.50 | 72.71 | 4,497.95 | 273.48 | 1,375.26 | -1,359.79 | 1.08 | 1.07 | -0.23 | |
| 4,910.00 | 30.00 | 74.52 | 4,582.89 | 286.03 | 1,418.14 | -1,401.98 | 4.77 | 4.69 | 1.89 | |
| 5,028.00 | 27.18 | 77.43 | 4,686.50 | 299.78 | 1,472.89 | -1,455.97 | 2.66 | -2.39 | 2.47 | |
| 5,124.00 | 27.26 | 77.69 | 4,771.86 | 309.23 | 1,515.77 | -1,498.32 | 0.15 | 0.08 | 0.27 | |
| 5,219.00 | 27.88 | 85.49 | 4,856.10 | 315.62 | 1,559.19 | -1,541.36 | 3.85 | 0.65 | 8.21 | |
| 5,315.00 | 26.82 | 87.48 | 4,941.37 | 318.34 | 1,603.20 | -1,585.18 | 1.46 | -1.10 | 2.07 | |
| 5,411.00 | 29.25 | 85.67 | 5,026.10 | 321.06 | 1,648.23 | -1,630.02 | 2.68 | 2.53 | -1.89 | |
| 5,506.00 | 29.65 | 80.56 | 5,108.84 | 326.67 | 1,694.56 | -1,676.01 | 2.68 | 0.42 | -5.38 | |
| 5,601.00 | 29.65 | 80.56 | 5,191.40 | 334.38 | 1,740.92 | -1,721.93 | 0.00 | 0.00 | 0.00 | |
| 5,697.00 | 27.84 | 85.49 | 5,275.58 | 340.04 | 1,786.70 | -1,767.37 | 3.11 | -1.89 | 5.14 | |
| 5,793.00 | 27.71 | 88.14 | 5,360.52 | 342.52 | 1,831.36 | -1,811.84 | 1.29 | -0.14 | 2.76 | |
| 5,888.00 | 23.73 | 88.01 | 5,446.09 | 343.91 | 1,872.56 | -1,852.92 | 4.19 | -4.19 | -0.14 | |
| 5,984.00 | 21.79 | 81.04 | 5,534.63 | 347.35 | 1,909.47 | -1,889.61 | 3.46 | -2.02 | -7.26 | |
| 6,079.00 | 18.82 | 79.85 | 5,623.72 | 352.80 | 1,941.98 | -1,921.80 | 3.16 | -3.13 | -1.25 | |
| 6,175.00 | 15.33 | 79.77 | 5,715.47 | 357.78 | 1,969.72 | -1,949.26 | 3.64 | -3.64 | -0.08 | |
| 6,271.00 | 14.18 | 70.20 | 5,808.32 | 364.02 | 1,993.27 | -1,972.47 | 2.80 | -1.20 | -9.97 | |
| 6,366.00 | 11.14 | 70.73 | 5,901.00 | 370.99 | 2,012.89 | -1,991.71 | 3.20 | -3.20 | 0.56 | |
| 6,461.00 | 8.44 | 67.29 | 5,994.61 | 376.71 | 2,027.99 | -2,006.50 | 2.91 | -2.84 | -3.62 | |
| 6,557.00 | 6.67 | 66.68 | 6,089.77 | 381.64 | 2,039.61 | -2,017.86 | 1.85 | -1.84 | -0.64 | |
| 6,652.00 | 5.39 | 62.54 | 6,184.24 | 385.88 | 2,048.63 | -2,026.66 | 1.42 | -1.35 | -4.36 | |
| 6,748.00 | 4.15 | 55.31 | 6,279.91 | 389.94 | 2,055.49 | -2,033.31 | 1.43 | -1.29 | -7.53 | |
| 6,843.00 | 2.56 | 61.96 | 6,374.74 | 392.89 | 2,060.19 | -2,037.85 | 1.72 | -1.67 | 7.00 | |
| 6,938.00 | 1.41 | 60.02 | 6,469.69 | 394.48 | 2,063.07 | -2,040.65 | 1.21 | -1.21 | -2.04 | |
| 7,034.00 | 0.27 | 18.42 | 6,565.67 | 395.28 | 2,064.17 | -2,041.71 | 1.27 | -1.19 | -43.33 | |
| 7,129.00 | 1.68 | 270.93 | 6,660.66 | 395.52 | 2,062.85 | -2,040.38 | 1.87 | 1.48 | -113.15 | |
| 7,225.00 | 13.48 | 269.03 | 6,755.65 | 395.35 | 2,050.21 | -2,027.76 | 12.29 | 12.29 | -1.98 | |
| 7,321.00 | 21.61 | 272.38 | 6,847.11 | 395.89 | 2,021.31 | -1,998.87 | 8.53 | 8.47 | 3.49 | |
| 7,417.00 | 29.70 | 270.75 | 6,933.58 | 396.94 | 1,979.80 | -1,957.36 | 8.46 | 8.43 | -1.70 | |
| 7,512.00 | 38.00 | 272.56 | 7,012.41 | 398.56 | 1,926.96 | -1,904.50 | 8.80 | 8.74 | 1.91 | |
| 7,608.00 | 45.69 | 270.71 | 7,083.87 | 400.31 | 1,862.99 | -1,840.53 | 8.11 | 8.01 | -1.93 | |
| 7,704.00 | 56.39 | 270.58 | 7,144.15 | 401.14 | 1,788.46 | -1,766.05 | 11.15 | 11.15 | -0.14 | |
| 7,799.00 | 67.48 | 270.22 | 7,188.77 | 401.71 | 1,704.76 | -1,682.43 | 11.68 | 11.67 | -0.38 | |
| 7,895.00 | 74.37 | 268.02 | 7,220.13 | 400.28 | 1,614.10 | -1,591.96 | 7.50 | 7.18 | -2.29 | |
| 7,990.00 | 84.36 | 268.64 | 7,237.64 | 397.57 | 1,520.89 | -1,499.00 | 10.54 | 10.52 | 0.65 | |
| 8,028.47 | 87.08 | 269.26 | 7,240.51 | 396.87 | 1,482.54 | -1,460.73 | 7.26 | 7.08 | 1.61 | |
| LP Duck Club 12W-20-6N | | | | | | | | | | |
| 8,086.00 | 91.16 | 270.18 | 7,241.39 | 396.59 | 1,425.03 | -1,403.31 | 7.26 | 7.08 | 1.60 | |
| 8,181.00 | 91.56 | 269.92 | 7,239.14 | 396.67 | 1,330.06 | -1,308.45 | 0.50 | 0.42 | -0.27 | |
| 8,276.00 | 89.93 | 270.71 | 7,237.90 | 397.19 | 1,235.07 | -1,213.56 | 1.91 | -1.72 | 0.83 | |
| 8,371.00 | 90.10 | 270.93 | 7,237.88 | 398.55 | 1,140.08 | -1,118.62 | 0.29 | 0.18 | 0.23 | |
| 8,467.00 | 90.10 | 270.80 | 7,237.71 | 400.00 | 1,044.09 | -1,022.68 | 0.14 | 0.00 | -0.14 | |
| 8,562.00 | 90.46 | 270.84 | 7,237.25 | 401.36 | 949.10 | -927.74 | 0.38 | 0.38 | 0.04 | |
| 8,658.00 | 90.81 | 271.11 | 7,236.18 | 402.99 | 853.12 | -831.80 | 0.46 | 0.36 | 0.28 | |
| 8,753.00 | 90.77 | 270.27 | 7,234.87 | 404.14 | 758.14 | -736.88 | 0.89 | -0.04 | -0.88 | |

Survey Report



| | | | |
|------------------|-----------------------|-------------------------------------|--------------------------|
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| Project: | Adams County (NAD 83) | TVD Reference: | KB=25 @ 5062.00usft |
| Site: | Sec 12-T01S-R66W | MD Reference: | KB=25 @ 5062.00usft |
| Well: | Duck Club 12W-20-6N | North Reference: | True |
| Wellbore: | Wellbore #1 | Survey Calculation Method: | Minimum Curvature |
| Design: | Wellbore #1 | Database: | EDM 5000.1 |

| Survey | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 8,849.00 | 91.30 | 270.67 | 7,233.14 | 404.93 | 662.16 | -640.98 | 0.69 | 0.55 | 0.42 |
| 8,944.00 | 91.74 | 270.62 | 7,230.62 | 406.00 | 567.20 | -546.09 | 0.47 | 0.46 | -0.05 |
| 9,039.00 | 92.18 | 270.14 | 7,227.37 | 406.62 | 472.26 | -451.23 | 0.69 | 0.46 | -0.51 |
| 9,135.00 | 90.46 | 268.95 | 7,225.16 | 405.86 | 376.29 | -355.43 | 2.18 | -1.79 | -1.24 |
| 9,230.00 | 90.54 | 268.99 | 7,224.33 | 404.15 | 281.31 | -260.65 | 0.09 | 0.08 | 0.04 |
| 9,325.00 | 90.85 | 268.68 | 7,223.18 | 402.22 | 186.34 | -165.90 | 0.46 | 0.33 | -0.33 |
| 9,421.00 | 91.07 | 268.77 | 7,221.57 | 400.09 | 90.37 | -70.16 | 0.25 | 0.23 | 0.09 |
| 9,516.00 | 89.35 | 270.09 | 7,221.22 | 399.14 | -4.61 | 24.66 | 2.28 | -1.81 | 1.39 |
| 9,612.00 | 89.26 | 269.83 | 7,222.38 | 399.08 | -100.61 | 120.53 | 0.29 | -0.09 | -0.27 |
| 9,708.00 | 89.26 | 269.26 | 7,223.62 | 398.31 | -196.60 | 216.36 | 0.59 | 0.00 | -0.59 |
| 9,803.00 | 88.42 | 268.86 | 7,225.55 | 396.76 | -291.56 | 311.13 | 0.98 | -0.88 | -0.42 |
| 9,898.00 | 90.46 | 270.75 | 7,226.48 | 396.43 | -386.55 | 405.97 | 2.93 | 2.15 | 1.99 |
| 9,994.00 | 89.79 | 270.80 | 7,226.27 | 397.73 | -482.54 | 501.91 | 0.70 | -0.70 | 0.05 |
| 10,089.00 | 89.53 | 269.83 | 7,226.83 | 398.25 | -577.53 | 596.81 | 1.06 | -0.27 | -1.02 |
| 10,185.00 | 91.38 | 271.28 | 7,226.07 | 399.18 | -673.52 | 692.72 | 2.45 | 1.93 | 1.51 |
| 10,281.00 | 91.56 | 270.40 | 7,223.61 | 400.59 | -769.48 | 788.63 | 0.94 | 0.19 | -0.92 |
| 10,376.00 | 92.80 | 269.78 | 7,219.99 | 400.74 | -864.41 | 883.45 | 1.46 | 1.31 | -0.65 |
| 10,472.00 | 91.16 | 270.40 | 7,216.67 | 400.89 | -960.35 | 979.27 | 1.83 | -1.71 | 0.65 |
| 10,567.00 | 89.35 | 269.87 | 7,216.25 | 401.11 | -1,055.34 | 1,074.16 | 1.99 | -1.91 | -0.56 |
| 10,662.00 | 89.57 | 269.30 | 7,217.15 | 400.43 | -1,150.33 | 1,168.99 | 0.64 | 0.23 | -0.60 |
| 10,758.00 | 89.93 | 268.24 | 7,217.57 | 398.36 | -1,246.31 | 1,264.75 | 1.17 | 0.38 | -1.10 |
| 10,853.00 | 89.31 | 271.02 | 7,218.20 | 397.75 | -1,341.29 | 1,359.58 | 3.00 | -0.65 | 2.93 |
| 10,949.00 | 89.97 | 270.53 | 7,218.80 | 399.05 | -1,437.28 | 1,455.51 | 0.86 | 0.69 | -0.51 |
| 11,044.00 | 89.13 | 271.02 | 7,219.55 | 400.33 | -1,532.27 | 1,550.45 | 1.02 | -0.88 | 0.52 |
| 11,140.00 | 89.88 | 270.75 | 7,220.37 | 401.82 | -1,628.25 | 1,646.38 | 0.83 | 0.78 | -0.28 |
| 11,235.00 | 89.09 | 270.49 | 7,221.23 | 402.85 | -1,723.24 | 1,741.30 | 0.88 | -0.83 | -0.27 |
| 11,331.00 | 89.57 | 269.92 | 7,222.35 | 403.19 | -1,819.24 | 1,837.19 | 0.78 | 0.50 | -0.59 |
| 11,426.00 | 89.93 | 270.18 | 7,222.77 | 403.27 | -1,914.23 | 1,932.08 | 0.47 | 0.38 | 0.27 |
| 11,521.00 | 90.54 | 269.78 | 7,222.38 | 403.24 | -2,009.23 | 2,026.95 | 0.77 | 0.64 | -0.42 |
| 11,617.00 | 88.69 | 270.31 | 7,223.02 | 403.31 | -2,105.23 | 2,122.83 | 2.00 | -1.93 | 0.55 |
| 11,712.00 | 88.78 | 269.52 | 7,225.12 | 403.17 | -2,200.20 | 2,217.68 | 0.84 | 0.09 | -0.83 |
| 11,808.00 | 89.62 | 269.61 | 7,226.46 | 402.44 | -2,296.19 | 2,313.51 | 0.88 | 0.88 | 0.09 |
| 11,904.00 | 89.75 | 268.81 | 7,226.99 | 401.12 | -2,392.18 | 2,409.31 | 0.84 | 0.14 | -0.83 |
| 11,999.00 | 89.75 | 268.42 | 7,227.40 | 398.82 | -2,487.15 | 2,504.04 | 0.41 | 0.00 | -0.41 |
| 12,095.00 | 89.93 | 267.93 | 7,227.67 | 395.77 | -2,583.10 | 2,599.72 | 0.54 | 0.19 | -0.51 |
| 12,190.00 | 90.63 | 268.29 | 7,227.21 | 392.63 | -2,678.05 | 2,694.39 | 0.83 | 0.74 | 0.38 |
| 12,285.00 | 88.25 | 270.09 | 7,228.13 | 391.29 | -2,773.02 | 2,789.18 | 3.14 | -2.51 | 1.89 |
| 12,381.00 | 88.16 | 269.87 | 7,231.14 | 391.26 | -2,868.97 | 2,885.01 | 0.25 | -0.09 | -0.23 |
| 12,477.00 | 89.13 | 272.91 | 7,233.41 | 393.59 | -2,964.91 | 2,980.93 | 3.32 | 1.01 | 3.17 |
| 12,572.00 | 89.09 | 272.21 | 7,234.89 | 397.83 | -3,059.80 | 3,075.92 | 0.74 | -0.04 | -0.74 |
| 12,668.00 | 90.10 | 272.47 | 7,235.57 | 401.75 | -3,155.72 | 3,171.91 | 1.09 | 1.05 | 0.27 |
| 12,763.00 | 89.75 | 272.34 | 7,235.69 | 405.73 | -3,250.63 | 3,266.91 | 0.39 | -0.37 | -0.14 |
| 12,858.00 | 91.21 | 272.43 | 7,234.89 | 409.69 | -3,345.54 | 3,361.90 | 1.54 | 1.54 | 0.09 |

Survey Report



| | | | |
|------------------|-----------------------|-------------------------------------|--------------------------|
| Company: | Extraction Oil & Gas | Local Co-ordinate Reference: | Well Duck Club 12W-20-6N |
| Project: | Adams County (NAD 83) | TVD Reference: | KB=25 @ 5062.00usft |
| Site: | Sec 12-T01S-R66W | MD Reference: | KB=25 @ 5062.00usft |
| Well: | Duck Club 12W-20-6N | North Reference: | True |
| Wellbore: | Wellbore #1 | Survey Calculation Method: | Minimum Curvature |
| Design: | Wellbore #1 | Database: | EDM 5000.1 |

| Survey | | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | |
| 12,954.00 | 91.47 | 271.94 | 7,232.65 | 413.35 | -3,441.45 | 3,457.87 | 0.58 | 0.27 | -0.51 | |
| 13,050.00 | 90.46 | 270.71 | 7,231.03 | 415.57 | -3,537.41 | 3,553.81 | 1.66 | -1.05 | -1.28 | |
| 13,146.00 | 90.77 | 270.40 | 7,230.00 | 416.50 | -3,633.40 | 3,649.73 | 0.46 | 0.32 | -0.32 | |
| 13,241.00 | 91.07 | 270.45 | 7,228.48 | 417.20 | -3,728.38 | 3,744.63 | 0.32 | 0.32 | 0.05 | |
| 13,336.00 | 89.57 | 270.49 | 7,227.95 | 417.98 | -3,823.37 | 3,839.54 | 1.58 | -1.58 | 0.04 | |
| 13,431.00 | 88.82 | 270.00 | 7,229.28 | 418.39 | -3,918.36 | 3,934.43 | 0.94 | -0.79 | -0.52 | |
| 13,527.00 | 88.11 | 269.34 | 7,231.85 | 417.83 | -4,014.32 | 4,030.25 | 1.01 | -0.74 | -0.69 | |
| 13,623.00 | 90.41 | 269.83 | 7,233.09 | 417.14 | -4,110.31 | 4,126.07 | 2.45 | 2.40 | 0.51 | |
| 13,718.00 | 89.84 | 268.99 | 7,232.88 | 416.16 | -4,205.30 | 4,220.90 | 1.07 | -0.60 | -0.88 | |
| 13,814.00 | 89.93 | 268.07 | 7,233.08 | 413.70 | -4,301.27 | 4,316.62 | 0.96 | 0.09 | -0.96 | |
| 13,909.00 | 89.88 | 267.93 | 7,233.23 | 410.38 | -4,396.21 | 4,411.27 | 0.16 | -0.05 | -0.15 | |
| 14,005.00 | 89.97 | 269.17 | 7,233.36 | 407.95 | -4,492.18 | 4,507.00 | 1.30 | 0.09 | 1.29 | |
| 14,101.00 | 90.15 | 268.29 | 7,233.26 | 405.82 | -4,588.15 | 4,602.75 | 0.94 | 0.19 | -0.92 | |
| 14,196.00 | 90.06 | 271.46 | 7,233.09 | 405.62 | -4,683.14 | 4,697.60 | 3.34 | -0.09 | 3.34 | |
| 14,291.00 | 89.97 | 270.62 | 7,233.06 | 407.34 | -4,778.12 | 4,792.55 | 0.89 | -0.09 | -0.88 | |
| 14,387.00 | 89.93 | 269.65 | 7,233.14 | 407.57 | -4,874.12 | 4,888.44 | 1.01 | -0.04 | -1.01 | |
| 14,482.00 | 89.88 | 269.39 | 7,233.30 | 406.77 | -4,969.12 | 4,983.28 | 0.28 | -0.05 | -0.27 | |
| 14,578.00 | 89.57 | 269.21 | 7,233.76 | 405.60 | -5,065.11 | 5,079.09 | 0.37 | -0.32 | -0.19 | |
| 14,673.00 | 89.26 | 268.59 | 7,234.73 | 403.78 | -5,160.09 | 5,173.86 | 0.73 | -0.33 | -0.65 | |
| 14,769.00 | 89.31 | 268.33 | 7,235.93 | 401.20 | -5,256.04 | 5,269.56 | 0.28 | 0.05 | -0.27 | |
| 14,865.00 | 89.31 | 267.36 | 7,237.09 | 397.59 | -5,351.97 | 5,365.18 | 1.01 | 0.00 | -1.01 | |
| 14,960.00 | 91.25 | 271.90 | 7,236.62 | 396.97 | -5,446.94 | 5,460.00 | 5.20 | 2.04 | 4.78 | |
| 15,055.00 | 91.78 | 272.16 | 7,234.11 | 400.34 | -5,541.84 | 5,554.96 | 0.62 | 0.56 | 0.27 | |
| 15,150.00 | 90.94 | 272.69 | 7,231.86 | 404.36 | -5,636.73 | 5,649.93 | 1.05 | -0.88 | 0.56 | |
| 15,245.00 | 89.53 | 271.99 | 7,231.47 | 408.23 | -5,731.65 | 5,744.92 | 1.66 | -1.48 | -0.74 | |
| 15,340.00 | 88.95 | 271.46 | 7,232.73 | 411.09 | -5,826.59 | 5,839.89 | 0.83 | -0.61 | -0.56 | |
| 15,435.00 | 88.95 | 271.06 | 7,234.47 | 413.18 | -5,921.56 | 5,934.84 | 0.42 | 0.00 | -0.42 | |
| 15,531.00 | 88.47 | 270.53 | 7,236.63 | 414.51 | -6,017.52 | 6,030.75 | 0.74 | -0.50 | -0.55 | |
| 15,626.00 | 89.75 | 270.67 | 7,238.10 | 415.51 | -6,112.50 | 6,125.66 | 1.36 | 1.35 | 0.15 | |
| 15,722.00 | 90.32 | 270.49 | 7,238.05 | 416.48 | -6,208.50 | 6,221.58 | 0.62 | 0.59 | -0.19 | |
| 15,817.00 | 89.09 | 270.45 | 7,238.53 | 417.26 | -6,303.49 | 6,316.49 | 1.30 | -1.29 | -0.04 | |
| 15,913.00 | 89.00 | 270.36 | 7,240.13 | 417.94 | -6,399.48 | 6,412.39 | 0.13 | -0.09 | -0.09 | |
| 16,008.00 | 88.73 | 269.92 | 7,242.02 | 418.17 | -6,494.46 | 6,507.26 | 0.54 | -0.28 | -0.46 | |
| 16,104.00 | 89.66 | 268.15 | 7,243.37 | 416.55 | -6,590.43 | 6,603.03 | 2.08 | 0.97 | -1.84 | |
| 16,199.00 | 89.48 | 267.62 | 7,244.08 | 413.05 | -6,685.36 | 6,697.67 | 0.59 | -0.19 | -0.56 | |
| 16,295.00 | 89.84 | 268.81 | 7,244.65 | 410.06 | -6,781.31 | 6,793.35 | 1.30 | 0.38 | 1.24 | |
| 16,390.00 | 90.94 | 270.93 | 7,244.00 | 409.84 | -6,876.30 | 6,888.21 | 2.51 | 1.16 | 2.23 | |
| 16,485.00 | 91.56 | 270.67 | 7,241.93 | 411.17 | -6,971.27 | 6,983.12 | 0.71 | 0.65 | -0.27 | |
| 16,581.00 | 89.79 | 270.67 | 7,240.80 | 412.29 | -7,067.25 | 7,079.04 | 1.84 | -1.84 | 0.00 | |
| 16,676.00 | 89.62 | 270.36 | 7,241.29 | 413.14 | -7,162.25 | 7,173.96 | 0.37 | -0.18 | -0.33 | |
| 16,771.00 | 89.53 | 270.05 | 7,241.99 | 413.48 | -7,257.24 | 7,268.85 | 0.34 | -0.09 | -0.33 | |
| 16,867.00 | 91.74 | 270.71 | 7,240.93 | 414.12 | -7,353.23 | 7,364.75 | 2.40 | 2.30 | 0.69 | |
| 16,962.00 | 91.91 | 270.00 | 7,237.90 | 414.71 | -7,448.18 | 7,459.61 | 0.77 | 0.18 | -0.75 | |
| 17,058.00 | 90.77 | 271.11 | 7,235.66 | 415.64 | -7,544.14 | 7,555.50 | 1.66 | -1.19 | 1.16 | |

Survey Report



| | | | |
|------------------|-----------------------|-------------------------------------|--------------------------|
| Company: | Extraction Oil & Gas | Local Co-ordinate Reference: | Well Duck Club 12W-20-6N |
| Project: | Adams County (NAD 83) | TVD Reference: | KB=25 @ 5062.00usft |
| Site: | Sec 12-T01S-R66W | MD Reference: | KB=25 @ 5062.00usft |
| Well: | Duck Club 12W-20-6N | North Reference: | True |
| Wellbore: | Wellbore #1 | Survey Calculation Method: | Minimum Curvature |
| Design: | Wellbore #1 | Database: | EDM 5000.1 |

| Survey | | | | | | | | | |
|--|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 17,153.00 | 91.25 | 271.06 | 7,233.98 | 417.44 | -7,639.11 | 7,650.44 | 0.51 | 0.51 | -0.05 |
| 17,249.00 | 88.42 | 270.58 | 7,234.26 | 418.81 | -7,735.09 | 7,746.36 | 2.99 | -2.95 | -0.50 |
| 17,344.00 | 88.33 | 270.22 | 7,236.95 | 419.47 | -7,830.05 | 7,841.24 | 0.39 | -0.09 | -0.38 |
| 17,439.00 | 88.11 | 270.22 | 7,239.90 | 419.84 | -7,925.00 | 7,936.09 | 0.23 | -0.23 | 0.00 |
| 17,535.00 | 87.45 | 269.34 | 7,243.62 | 419.47 | -8,020.93 | 8,031.88 | 1.15 | -0.69 | -0.92 |
| Last MWD Survey @ 17535' MD | | | | | | | | | |
| 17,600.00 | 87.45 | 269.34 | 7,246.52 | 418.72 | -8,085.86 | 8,096.69 | 0.00 | 0.00 | 0.00 |
| Projection to TD @ 17600' MD 2429' FNL/ 2125' FEL - PBHL Duck Club 12W-20-6N | | | | | | | | | |

| Design Targets | | | | | | | | | |
|--|---------------|--------------|------------|--------------|--------------|-----------------|----------------|----------|------------|
| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
| 30° Inclination @ 7420.4 - actual wellpath misses target center by 0.01usft at 7420.43usft MD (6936.55 TVD, 396.96 N, 1978.09 E) - Point | 0.00 | 0.00 | 6,936.56 | 396.96 | 1,978.09 | 1,236,571.24 | 3,217,490.11 | 39.98016 | -104.72389 |
| 70° Inclination @ 7834.1 - actual wellpath misses target center by 0.01usft at 7834.10usft MD (7201.50 TVD, 401.60 N, 1672.05 E) - Point | 0.00 | 0.00 | 7,201.51 | 401.60 | 1,672.04 | 1,236,573.23 | 3,217,184.04 | 39.98017 | -104.72499 |
| Cross @ 10197.99' MD - actual wellpath misses target center by 0.05usft at 10197.98usft MD (7225.75 TVD, 399.46 N, -686.50 E) - Point | 0.00 | 0.00 | 7,225.79 | 399.43 | -686.50 | 1,236,550.60 | 3,214,825.60 | 39.98017 | -104.73340 |
| Cross @ 15475.46' MD - actual wellpath hits target center - Point | 0.00 | 0.00 | 7,235.28 | 413.85 | -5,962.00 | 1,236,519.27 | 3,209,550.18 | 39.98021 | -104.75223 |

| Design Annotations | | | | |
|-----------------------|-----------------------|-------------------|--------------|---|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment |
| | | +N/-S (usft) | +E/-W (usft) | |
| 129.00 | 128.99 | 0.84 | 0.83 | First Surface Survey |
| 1,546.00 | 1,544.26 | 8.13 | 36.74 | Last Surface Survey |
| 1,546.00 | 1,544.26 | 8.13 | 36.74 | Tie into Surface Surveys |
| 1,663.00 | 1,659.72 | 11.24 | 55.43 | First MWD Survey @ 1663' MD |
| 17,535.00 | 7,243.62 | 419.47 | -8,020.93 | Last MWD Survey @ 17535' MD |
| 17,600.00 | 7,246.52 | 418.72 | -8,085.86 | Projection to TD @ 17600' MD 2429' FNL/ 2125' FEL |

Checked By: _____ Approved By: _____ Date: _____