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|--|---|
| Company: Tug Hill Operating, LLC | Local Co-ordinate Reference: Well Heaven Hill 2-02 HM (slot C) |
| Project: Marshall County, West Virginia | TVD Reference: RKB=1331+33 @ 1364.00usft (Nabors X08) |
| Site: Heaven Hill 2 | MD Reference: RKB=1331+33 @ 1364.00usft (Nabors X08) |
| Well: Heaven Hill 2-02 HM (slot C) | North Reference: Grid |
| Wellbore: Original Hole | Survey Calculation Method: Minimum Curvature |
| Design: Surveys Original Hole | Database: DB_Jul2216dt_v14 |

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|---|--|-------------------------------------|
| Project Marshall County, West Virginia | Map System: Universal Transverse Mercator (US Survey Feet) | System Datum: Mean Sea Level |
| Geo Datum: NAD83 West Virginia - HARN | <p style="text-align: right;">RECEIVED Office of Oil and Gas JUN 10 2020 WV Department of Environmental Protection</p> | |
| Map Zone: Zone 17N (84 to 78 W) | | |

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|--|-----------------------------------|-------------------------------------|------------------------------|
| Site Heaven Hill 2 | Site Position: | Northing: 14,457,660.30 usft | Latitude: 39.80995400 |
| From: Lat/Lon | Easting: 1,720,974.97 usft | Longitude: -80.71313800 | |
| Position Uncertainty: 0.00 usft | Slot Radius: 13-3/16 " | Grid Convergence: 0.18 ° | |

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|---------------------------------------|--------------------------------------|-------------------------------------|--------------------------------|
| Well Heaven Hill 2 HM (slot C) | Well Position +N/-S 0.00 usft | Northing: 14,457,711.60 usft | Latitude: 39.81009420 |
| | +E/-W 0.00 usft | Easting: 1,721,050.55 usft | Longitude: -80.71286830 |
| Position Uncertainty 0.00 usft | Wellhead Elevation: usft | Ground Level: 1,331.00 usft | |

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|-------------------------------|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore Original Hole | Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | | MF-2015 | 8/14/2017 | -8.69 | 66.96 | 52,166.97216810 |
| | | MF-2015 | 3/15/2018 | -8.71 | 66.91 | 52,099.60919974 |

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|-------------------------------------|--------------------------------|---------------------|----------------------|---------------------------|
| Design Surveys Original Hole | 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 | 150.00 |

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|-----------------------|-----------------------|--|------------------|----------------------------------|
| Survey Program | Date 7/18/2018 | | | |
| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description |
| 100.00 | 885 | Gyro (Original Hole) | NS-GYRO-MS | North sensing gyrocompassing m/s |
| 891.00 | 6,047 | MWD TIP=885 MD gyro 8 3/4 (Original Ho | MWD | MWD - Standard |
| 6,127.00 | 16,731 | MWD lat (Original Hole) | MWD | MWD - Standard |
| 16,779.00 | 16,779 | Projection (Original Hole) | MWD | MWD - Standard |

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 14,457,711.60 | 1,721,050.55 | 39.81009420 | -80.71286830 |
| 100.00 | 0.52 | 0.04 | 100.00 | 0.45 | -0.08 | 14,457,712.04 | 1,721,050.47 | 39.81009543 | -80.71286857 |
| Gyro | | | | | | | | | |
| 200.00 | 0.34 | 0.37 | 200.00 | 1.12 | -0.35 | 14,457,712.72 | 1,721,050.19 | 39.81009728 | -80.71286953 |
| 300.00 | 0.16 | 0.42 | 299.99 | 1.36 | -0.68 | 14,457,712.96 | 1,721,049.86 | 39.81009795 | -80.71287071 |
| 400.00 | 0.14 | 0.21 | 399.99 | 1.42 | -0.93 | 14,457,713.02 | 1,721,049.61 | 39.81009812 | -80.71287161 |
| 500.00 | 0.26 | 0.73 | 499.99 | 1.39 | -1.26 | 14,457,712.99 | 1,721,049.28 | 39.81009803 | -80.71287278 |
| 600.00 | 0.10 | 0.43 | 599.99 | 1.40 | -1.48 | 14,457,713.00 | 1,721,049.06 | 39.81009807 | -80.71287357 |

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| Company: | Tug Hill Operating LLC | Local Co-ordinate Reference: | Well Heaven Hill 2-02 HM (slot C) |
| Project: | Marshall County West Virginia | TVD Reference: | RKB=1331+33 @ 1364.00usft (Nabors X08) |
| Site: | Heaven Hill 2 | MD Reference: | RKB=1331+33 @ 1364.00usft (Nabors X08) |
| Well: | Heaven Hill 2-02-01 (slot C) | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | Surveys Original | Database: | DB_Jul2216dt_v14 |

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| Survey | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
| 700.00 | 0.07 | 111.35 | 699.99 | 1.47 | -1.55 | 14,457,713.07 | 1,721,048.99 | 39.81009826 | -80.71287381 |
| 800.00 | 0.13 | 111.56 | 799.99 | 1.52 | -1.70 | 14,457,713.12 | 1,721,048.84 | 39.81009839 | -80.71287435 |
| 885.00 | 0.34 | 111.93 | 884.99 | 1.76 | -1.95 | 14,457,713.36 | 1,721,048.60 | 39.81009906 | -80.71287522 |
| 891.00 | 0.27 | 112.96 | 890.99 | 1.79 | -1.97 | 14,457,713.38 | 1,721,048.57 | 39.81009913 | -80.71287530 |
| 923.00 | 0.40 | 113.61 | 922.99 | 1.95 | -2.06 | 14,457,713.55 | 1,721,048.48 | 39.81009957 | -80.71287562 |
| 955.00 | 0.41 | 114.27 | 954.99 | 2.08 | -2.22 | 14,457,713.68 | 1,721,048.33 | 39.81009994 | -80.71287617 |
| MWD surveys | | | | | | | | | |
| 983.00 | 0.17 | 114.33 | 982.99 | 2.14 | -2.29 | 14,457,713.74 | 1,721,048.25 | 39.81010011 | -80.71287643 |
| 1,018.00 | 0.43 | 114.18 | 1,017.99 | 2.25 | -2.38 | 14,457,713.84 | 1,721,048.17 | 39.81010040 | -80.71287674 |
| 1,049.00 | 0.38 | 114.62 | 1,048.99 | 2.40 | -2.49 | 14,457,714.00 | 1,721,048.06 | 39.81010082 | -80.71287713 |
| 1,081.00 | 0.44 | 114.75 | 1,080.99 | 2.63 | -2.53 | 14,457,714.22 | 1,721,048.01 | 39.81010143 | -80.71287730 |
| 1,112.00 | 0.69 | 114.34 | 1,111.99 | 2.92 | -2.54 | 14,457,714.52 | 1,721,048.00 | 39.81010225 | -80.71287732 |
| 1,128.00 | 0.35 | 114.05 | 1,127.99 | 3.06 | -2.54 | 14,457,714.66 | 1,721,048.00 | 39.81010264 | -80.71287732 |
| 1,202.00 | 0.16 | 114.45 | 1,201.99 | 3.37 | -2.56 | 14,457,714.97 | 1,721,047.99 | 39.81010348 | -80.71287737 |
| 1,296.00 | 0.34 | 114.59 | 1,295.99 | 3.56 | -2.23 | 14,457,715.15 | 1,721,048.32 | 39.81010399 | -80.71287619 |
| 1,391.00 | 0.48 | 114.54 | 1,390.98 | 3.66 | -1.56 | 14,457,715.26 | 1,721,048.99 | 39.81010428 | -80.71287380 |
| 1,485.00 | 0.88 | 114.57 | 1,484.98 | 4.00 | -0.51 | 14,457,715.60 | 1,721,050.04 | 39.81010519 | -80.71287006 |
| 1,580.00 | 1.51 | 114.35 | 1,579.96 | 5.03 | 1.17 | 14,457,716.63 | 1,721,051.72 | 39.81010801 | -80.71286406 |
| 1,675.00 | 2.50 | 114.17 | 1,674.90 | 7.57 | 3.20 | 14,457,719.17 | 1,721,053.75 | 39.81011496 | -80.71285682 |
| 1,770.00 | 3.29 | 114.74 | 1,769.78 | 12.02 | 4.90 | 14,457,723.61 | 1,721,055.45 | 39.81012716 | -80.71285070 |
| 1,864.00 | 3.49 | 114.98 | 1,863.62 | 17.41 | 4.95 | 14,457,729.01 | 1,721,055.49 | 39.81014198 | -80.71285049 |
| 1,959.00 | 3.83 | 114.75 | 1,958.43 | 22.91 | 2.60 | 14,457,734.51 | 1,721,053.15 | 39.81015710 | -80.71285878 |
| 2,053.00 | 3.00 | 114.05 | 2,052.26 | 27.22 | -0.90 | 14,457,738.81 | 1,721,049.64 | 39.81016895 | -80.71287120 |
| 2,148.00 | 2.29 | 114.95 | 2,147.16 | 29.80 | -4.41 | 14,457,741.40 | 1,721,046.14 | 39.81017608 | -80.71288365 |
| 2,243.00 | 1.60 | 114.54 | 2,242.11 | 31.60 | -7.06 | 14,457,743.19 | 1,721,043.48 | 39.81018104 | -80.71289308 |
| 2,337.00 | 2.08 | 114.97 | 2,336.06 | 34.14 | -8.40 | 14,457,745.73 | 1,721,042.15 | 39.81018802 | -80.71289782 |
| 2,432.00 | 2.69 | 114.12 | 2,430.98 | 38.05 | -8.75 | 14,457,749.65 | 1,721,041.79 | 39.81019878 | -80.71289904 |
| 2,526.00 | 3.14 | 114.67 | 2,524.86 | 42.83 | -8.90 | 14,457,754.42 | 1,721,041.65 | 39.81021190 | -80.71289950 |
| 2,621.00 | 3.68 | 114.31 | 2,619.69 | 48.47 | -9.14 | 14,457,760.07 | 1,721,041.41 | 39.81022740 | -80.71290029 |
| 2,706.00 | 4.12 | 114.51 | 2,704.49 | 54.25 | -9.30 | 14,457,765.85 | 1,721,041.25 | 39.81024327 | -80.71290080 |
| 2,792.00 | 4.39 | 114.61 | 2,790.25 | 60.62 | -9.69 | 14,457,772.21 | 1,721,040.86 | 39.81026076 | -80.71290211 |
| 2,887.00 | 4.82 | 114.08 | 2,884.95 | 68.23 | -10.16 | 14,457,779.82 | 1,721,040.38 | 39.81028166 | -80.71290371 |
| 2,982.00 | 8.60 | 114.96 | 2,979.28 | 79.28 | -9.56 | 14,457,790.88 | 1,721,040.98 | 39.81031202 | -80.71290144 |
| 3,077.00 | 13.31 | 114.58 | 3,072.53 | 97.26 | -9.67 | 14,457,808.86 | 1,721,040.88 | 39.81036139 | -80.71290161 |
| 3,171.00 | 17.59 | 114.76 | 3,163.12 | 122.15 | -12.29 | 14,457,833.75 | 1,721,038.25 | 39.81042977 | -80.71291067 |
| 3,266.00 | 19.99 | 114.22 | 3,253.05 | 152.55 | -15.74 | 14,457,864.15 | 1,721,034.81 | 39.81051329 | -80.71292259 |
| 3,361.00 | 21.40 | 114.65 | 3,341.92 | 185.99 | -18.69 | 14,457,897.59 | 1,721,031.86 | 39.81060515 | -80.71293271 |
| 3,456.00 | 22.55 | 114.12 | 3,430.02 | 221.49 | -19.64 | 14,457,933.09 | 1,721,030.90 | 39.81070265 | -80.71293572 |
| 3,550.00 | 21.09 | 114.95 | 3,517.29 | 256.43 | -19.31 | 14,457,968.02 | 1,721,031.24 | 39.81079858 | -80.71293412 |
| 3,645.00 | 20.50 | 114.81 | 3,606.10 | 290.15 | -19.67 | 14,458,001.75 | 1,721,030.88 | 39.81089120 | -80.71293502 |
| 3,740.00 | 21.03 | 114.11 | 3,694.93 | 323.82 | -20.57 | 14,458,035.41 | 1,721,029.97 | 39.81098367 | -80.71293787 |
| 3,833.00 | 21.61 | 114.04 | 3,781.56 | 357.61 | -21.71 | 14,458,069.21 | 1,721,028.83 | 39.81107648 | -80.71294153 |
| 3,928.00 | 22.34 | 114.62 | 3,869.66 | 393.12 | -23.37 | 14,458,104.72 | 1,721,027.17 | 39.81117401 | -80.71294704 |
| 4,023.00 | 21.81 | 114.54 | 3,957.70 | 428.74 | -25.81 | 14,458,140.33 | 1,721,024.73 | 39.81127185 | -80.71295531 |
| 4,117.00 | 21.89 | 114.01 | 4,044.94 | 463.66 | -27.78 | 14,458,175.26 | 1,721,022.77 | 39.81136777 | -80.71296192 |
| 4,212.00 | 21.37 | 114.74 | 4,133.25 | 498.66 | -28.77 | 14,458,210.26 | 1,721,021.77 | 39.81146391 | -80.71296506 |
| 4,307.00 | 22.08 | 114.33 | 4,221.51 | 533.81 | -29.67 | 14,458,245.41 | 1,721,020.87 | 39.81156045 | -80.71296787 |
| 4,401.00 | 22.91 | 114.57 | 4,308.35 | 569.74 | -31.28 | 14,458,281.34 | 1,721,019.26 | 39.81165912 | -80.71297319 |
| 4,496.00 | 22.52 | 114.20 | 4,395.99 | 606.35 | -33.60 | 14,458,317.95 | 1,721,016.95 | 39.81175969 | -80.71298100 |
| 4,590.00 | 22.47 | 114.40 | 4,482.83 | 642.24 | -35.92 | 14,458,353.84 | 1,721,014.63 | 39.81185827 | -80.71298886 |
| 4,685.00 | 21.89 | 114.73 | 4,570.80 | 678.02 | -38.37 | 14,458,389.62 | 1,721,012.17 | 39.81195655 | -80.71299720 |
| 4,780.00 | 21.58 | 114.46 | 4,659.05 | 713.12 | -40.77 | 14,458,424.71 | 1,721,009.77 | 39.81205296 | -80.71300534 |
| 4,875.00 | 22.55 | 114.91 | 4,747.09 | 748.74 | -42.83 | 14,458,460.34 | 1,721,007.71 | 39.81215082 | -80.71301227 |
| 4,969.00 | 22.11 | 114.12 | 4,834.04 | 784.37 | -45.31 | 14,458,495.96 | 1,721,005.24 | 39.81224867 | -80.71302068 |
| 5,064.00 | 21.39 | 114.11 | 4,922.28 | 819.48 | -47.70 | 14,458,531.08 | 1,721,002.84 | 39.81234513 | -80.71302881 |

WV Department of Environmental Protection

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|------------------|-------------------------------|-------------------------------------|--|
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| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | Surveys Originated | Database: | DB_Jul2216dt_v14 |

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| Survey | | | | | | | | | | |
|--|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude | |
| 5,159.00 | 21.16 | 29.69 | 5,010.81 | 853.93 | -48.67 | 14,458,565.53 | 1,721,001.88 | 39.81243974 | -80.71303186 | |
| 5,253.00 | 21.36 | 29.12 | 5,098.42 | 887.96 | -50.22 | 14,458,599.55 | 1,721,000.33 | 39.81253320 | -80.71303698 | |
| 5,348.00 | 21.88 | 29.08 | 5,186.74 | 922.73 | -54.13 | 14,458,634.33 | 1,720,996.42 | 39.81262872 | -80.71305051 | |
| 5,443.00 | 21.66 | 29.73 | 5,274.96 | 957.75 | -57.87 | 14,458,669.34 | 1,720,992.67 | 39.81272492 | -80.71306345 | |
| 5,538.00 | 21.77 | 29.51 | 5,363.22 | 992.83 | -59.94 | 14,458,704.43 | 1,720,990.60 | 39.81282129 | -80.71307042 | |
| 5,632.00 | 21.82 | 29.04 | 5,450.50 | 1,027.71 | -61.30 | 14,458,739.30 | 1,720,989.25 | 39.81291708 | -80.71307485 | |
| 5,727.00 | 21.45 | 29.96 | 5,538.81 | 1,062.70 | -62.82 | 14,458,774.29 | 1,720,987.72 | 39.81301319 | -80.71307988 | |
| 5,822.00 | 20.73 | 29.49 | 5,627.45 | 1,096.83 | -64.77 | 14,458,808.42 | 1,720,985.77 | 39.81310693 | -80.71308643 | |
| 5,916.00 | 19.89 | 29.09 | 5,715.60 | 1,129.40 | -66.61 | 14,458,841.00 | 1,720,983.94 | 39.81319640 | -80.71309258 | |
| 6,011.00 | 21.08 | 29.22 | 5,804.59 | 1,162.62 | -67.96 | 14,458,874.21 | 1,720,982.59 | 39.81328764 | -80.71309701 | |
| 6,047.00 | 21.68 | 29.06 | 5,838.12 | 1,175.73 | -68.38 | 14,458,887.33 | 1,720,982.16 | 39.81332366 | -80.71309838 | |
| Survey @ 6047.00 MD 5830.00 TVD | | | | | | | | | | |
| 6,127.00 | 22.24 | 29.66 | 5,912.32 | 1,205.64 | -68.44 | 14,458,917.23 | 1,720,982.10 | 39.81340578 | -80.71309826 | |
| 6,175.00 | 17.27 | 29.66 | 5,957.50 | 1,221.63 | -66.38 | 14,458,933.22 | 1,720,984.17 | 39.81344968 | -80.71309071 | |
| 6,222.00 | 14.37 | 29.41 | 6,002.75 | 1,233.14 | -61.23 | 14,458,944.74 | 1,720,989.32 | 39.81348126 | -80.71307224 | |
| 6,269.00 | 14.95 | 29.11 | 6,048.28 | 1,240.46 | -52.33 | 14,458,952.05 | 1,720,998.21 | 39.81350127 | -80.71304049 | |
| 6,316.00 | 15.91 | 29.42 | 6,093.60 | 1,244.41 | -40.54 | 14,458,956.01 | 1,721,010.00 | 39.81351203 | -80.71299846 | |
| 6,363.00 | 15.30 | 29.72 | 6,138.88 | 1,245.85 | -28.05 | 14,458,957.44 | 1,721,022.49 | 39.81351586 | -80.71295396 | |
| 6,411.00 | 14.33 | 29.73 | 6,185.30 | 1,244.57 | -15.92 | 14,458,956.17 | 1,721,034.62 | 39.81351224 | -80.71291078 | |
| 6,458.00 | 13.89 | 29.20 | 6,230.90 | 1,240.62 | -5.27 | 14,458,952.22 | 1,721,045.27 | 39.81350130 | -80.71287290 | |
| 6,506.00 | 12.84 | 29.19 | 6,277.60 | 1,234.53 | 3.94 | 14,458,946.12 | 1,721,054.49 | 39.81348448 | -80.71284016 | |
| 6,553.00 | 13.32 | 29.62 | 6,323.39 | 1,227.23 | 11.64 | 14,458,938.82 | 1,721,062.18 | 39.81346437 | -80.71281283 | |
| 6,601.00 | 15.96 | 29.29 | 6,369.82 | 1,218.14 | 19.67 | 14,458,929.73 | 1,721,070.22 | 39.81343934 | -80.71278433 | |
| 6,648.00 | 20.04 | 29.73 | 6,414.52 | 1,207.09 | 29.10 | 14,458,918.69 | 1,721,079.64 | 39.81340892 | -80.71275090 | |
| 6,696.00 | 24.00 | 29.65 | 6,459.00 | 1,193.37 | 40.74 | 14,458,904.97 | 1,721,091.28 | 39.81337113 | -80.71270960 | |
| 6,743.00 | 29.14 | 29.00 | 6,501.03 | 1,177.31 | 54.29 | 14,458,888.91 | 1,721,104.83 | 39.81332691 | -80.71266152 | |
| 6,790.00 | 34.46 | 29.59 | 6,540.96 | 1,158.56 | 70.45 | 14,458,870.15 | 1,721,121.00 | 39.81327527 | -80.71260418 | |
| 6,837.00 | 39.52 | 29.15 | 6,578.49 | 1,137.43 | 89.24 | 14,458,849.03 | 1,721,139.78 | 39.81321708 | -80.71253753 | |
| 6,885.00 | 43.65 | 29.18 | 6,614.38 | 1,113.89 | 110.70 | 14,458,825.49 | 1,721,161.24 | 39.81315225 | -80.71246138 | |
| 6,932.00 | 47.74 | 29.74 | 6,647.20 | 1,089.32 | 133.65 | 14,458,800.92 | 1,721,184.19 | 39.81308456 | -80.71237992 | |
| 6,980.00 | 51.25 | 29.80 | 6,678.38 | 1,062.51 | 158.40 | 14,458,774.11 | 1,721,208.95 | 39.81301072 | -80.71229208 | |
| 7,028.00 | 54.90 | 29.91 | 6,707.21 | 1,033.61 | 183.63 | 14,458,745.21 | 1,721,234.18 | 39.81293113 | -80.71220257 | |
| 7,076.00 | 59.16 | 29.90 | 6,733.33 | 1,002.13 | 208.72 | 14,458,713.73 | 1,721,259.27 | 39.81284446 | -80.71211358 | |
| 7,123.00 | 63.03 | 29.80 | 6,756.05 | 968.70 | 232.68 | 14,458,680.30 | 1,721,283.22 | 39.81275244 | -80.71202866 | |
| 7,170.00 | 67.12 | 29.64 | 6,775.85 | 933.07 | 256.05 | 14,458,644.67 | 1,721,306.60 | 39.81265438 | -80.71194584 | |
| 7,217.00 | 70.77 | 29.75 | 6,792.74 | 895.60 | 278.83 | 14,458,607.19 | 1,721,329.37 | 39.81255127 | -80.71186516 | |
| 7,265.00 | 74.59 | 29.86 | 6,807.02 | 855.60 | 301.17 | 14,458,567.20 | 1,721,351.71 | 39.81244124 | -80.71178607 | |
| 7,312.00 | 78.11 | 29.18 | 6,818.11 | 815.09 | 322.23 | 14,458,526.68 | 1,721,372.78 | 39.81232979 | -80.71171151 | |
| 7,359.00 | 82.24 | 29.80 | 6,826.13 | 773.65 | 342.90 | 14,458,485.25 | 1,721,393.44 | 39.81221582 | -80.71163840 | |
| 7,406.00 | 86.37 | 29.67 | 6,830.80 | 731.54 | 363.22 | 14,458,443.14 | 1,721,413.77 | 39.81210000 | -80.71156651 | |
| 7,453.00 | 90.42 | 29.97 | 6,832.11 | 689.21 | 383.58 | 14,458,400.81 | 1,721,434.12 | 39.81198356 | -80.71149451 | |
| 7,548.00 | 91.38 | 29.31 | 6,830.62 | 605.65 | 428.68 | 14,458,317.24 | 1,721,479.23 | 39.81175368 | -80.71133485 | |
| 7,642.00 | 89.05 | 29.59 | 6,830.27 | 525.99 | 478.56 | 14,458,237.59 | 1,721,529.10 | 39.81153447 | -80.71115816 | |
| 7,737.00 | 87.82 | 29.15 | 6,832.86 | 446.92 | 531.15 | 14,458,158.52 | 1,721,581.70 | 39.81131686 | -80.71097179 | |
| 7,831.00 | 86.55 | 29.53 | 6,837.48 | 369.23 | 583.87 | 14,458,080.83 | 1,721,634.41 | 39.81110305 | -80.71078497 | |
| 7,926.00 | 86.20 | 29.92 | 6,843.48 | 291.36 | 637.94 | 14,458,002.95 | 1,721,688.49 | 39.81088870 | -80.71059330 | |
| 8,021.00 | 88.18 | 29.76 | 6,848.14 | 212.85 | 691.22 | 14,457,924.44 | 1,721,741.76 | 39.81067262 | -80.71040451 | |
| 8,115.00 | 86.86 | 29.84 | 6,852.21 | 132.96 | 740.56 | 14,457,844.56 | 1,721,791.10 | 39.81045279 | -80.71022973 | |
| 8,210.00 | 89.63 | 29.13 | 6,855.12 | 49.93 | 786.61 | 14,457,761.53 | 1,721,837.15 | 39.81022437 | -80.71006671 | |
| 8,305.00 | 91.38 | 29.25 | 6,854.28 | -33.70 | 831.65 | 14,457,677.90 | 1,721,882.20 | 39.80999430 | -80.70990726 | |
| 8,400.00 | 91.08 | 29.19 | 6,852.24 | -116.54 | 878.11 | 14,457,595.06 | 1,721,928.65 | 39.80976638 | -80.70974281 | |
| 8,495.00 | 89.32 | 29.37 | 6,851.91 | -199.04 | 925.20 | 14,457,512.56 | 1,721,975.75 | 39.80953939 | -80.70957606 | |
| 8,589.00 | 87.43 | 29.46 | 6,854.58 | -280.75 | 971.59 | 14,457,430.85 | 1,722,022.13 | 39.80931459 | -80.70941183 | |
| 8,684.00 | 87.30 | 29.19 | 6,858.94 | -363.20 | 1,018.57 | 14,457,348.40 | 1,722,069.12 | 39.80908773 | -80.70924548 | |
| 8,778.00 | 87.82 | 29.54 | 6,862.95 | -444.83 | 1,065.01 | 14,457,266.77 | 1,722,115.55 | 39.80886314 | -80.70908107 | |

WV Department of Environmental Protection

| | | | |
|------------------|-------------------------------|-------------------------------------|--|
| Company: | Tug Hill Operating, LLC | Local Co-ordinate Reference: | Well Heaven Hill 2-02 HM (slot C) |
| Project: | Marshall County West Virginia | TVD Reference: | RKB=1331+33 @ 1364.00usft (Nabors X08) |
| Site: | Heaven Hill 2 | MD Reference: | RKB=1331+33 @ 1364.00usft (Nabors X08) |
| Well: | Heaven Hill 2-02 HM (slot C) | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | Surveys Original | Database: | DB_Jul2216dt_v14 |

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Office of Oil and Gas
JUN 10 2020

| Survey | | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude | |
| 8,873.00 | 88.18 | 02 | 6,866.26 | -527.28 | 1,112.08 | 14,457,184.31 | 1,722,162.62 | 39.80863629 | -80.70891442 | |
| 8,968.00 | 88.13 | 75 | 6,869.32 | -609.42 | 1,159.72 | 14,457,102.18 | 1,722,210.26 | 39.80841030 | -80.70874573 | |
| 9,062.00 | 90.07 | 81 | 6,870.80 | -691.04 | 1,206.31 | 14,457,020.56 | 1,722,256.86 | 39.80818574 | -80.70858077 | |
| 9,157.00 | 89.63 | 63 | 6,871.05 | -773.90 | 1,252.77 | 14,456,937.70 | 1,722,303.32 | 39.80795776 | -80.70841629 | |
| 9,251.00 | 90.46 | 07 | 6,870.97 | -855.99 | 1,298.56 | 14,456,855.60 | 1,722,349.11 | 39.80773190 | -80.70825421 | |
| 9,346.00 | 89.27 | 10 | 6,871.20 | -938.74 | 1,345.22 | 14,456,772.85 | 1,722,395.76 | 39.80750423 | -80.70808904 | |
| 9,441.00 | 88.79 | 05 | 6,872.80 | -1,020.65 | 1,393.32 | 14,456,690.95 | 1,722,443.86 | 39.80727887 | -80.70791872 | |
| 9,535.00 | 88.31 | 84 | 6,875.18 | -1,101.57 | 1,441.09 | 14,456,610.03 | 1,722,491.63 | 39.80705621 | -80.70774956 | |
| 9,630.00 | 88.79 | 19 | 6,877.59 | -1,183.83 | 1,488.55 | 14,456,527.77 | 1,722,539.10 | 39.80682988 | -80.70758151 | |
| 9,725.00 | 89.58 | 84 | 6,878.94 | -1,266.10 | 1,536.02 | 14,456,445.49 | 1,722,586.57 | 39.80660351 | -80.70741343 | |
| 9,819.00 | 89.85 | 46 | 6,879.41 | -1,347.63 | 1,582.81 | 14,456,363.97 | 1,722,633.36 | 39.80637919 | -80.70724779 | |
| 9,914.00 | 90.07 | 02 | 6,879.47 | -1,430.10 | 1,629.96 | 14,456,281.50 | 1,722,680.51 | 39.80615228 | -80.70708085 | |
| 10,008.00 | 90.68 | 10 | 6,878.86 | -1,511.55 | 1,676.88 | 14,456,200.04 | 1,722,727.42 | 39.80592817 | -80.70691475 | |
| 10,102.00 | 89.76 | 31 | 6,878.50 | -1,592.71 | 1,724.30 | 14,456,118.88 | 1,722,774.84 | 39.80570486 | -80.70674686 | |
| 10,197.00 | 88.84 | 87 | 6,879.66 | -1,674.22 | 1,773.09 | 14,456,037.38 | 1,722,823.64 | 39.80548060 | -80.70657407 | |
| 10,292.00 | 89.45 | 73 | 6,881.07 | -1,755.03 | 1,823.01 | 14,455,956.57 | 1,722,873.55 | 39.80525820 | -80.70639729 | |
| 10,386.00 | 87.43 | 08 | 6,883.63 | -1,834.63 | 1,872.93 | 14,455,876.97 | 1,722,923.47 | 39.80503915 | -80.70622046 | |
| 10,480.00 | 87.65 | 75 | 6,887.67 | -1,915.06 | 1,921.42 | 14,455,796.54 | 1,722,971.96 | 39.80481785 | -80.70604876 | |
| 10,574.00 | 88.97 | 60 | 6,890.44 | -1,996.97 | 1,967.43 | 14,455,714.63 | 1,723,017.97 | 39.80459248 | -80.70588588 | |
| 10,669.00 | 89.27 | 86 | 6,891.90 | -2,080.63 | 2,012.42 | 14,455,630.97 | 1,723,062.96 | 39.80436232 | -80.70572667 | |
| 10,763.00 | 90.24 | 60 | 6,892.30 | -2,163.42 | 2,056.94 | 14,455,548.18 | 1,723,107.48 | 39.80413457 | -80.70556912 | |
| 10,858.00 | 89.76 | 16 | 6,892.30 | -2,246.81 | 2,102.44 | 14,455,464.79 | 1,723,152.99 | 39.80390514 | -80.70540807 | |
| 10,952.00 | 90.64 | 60 | 6,891.97 | -2,329.32 | 2,147.47 | 14,455,382.28 | 1,723,198.01 | 39.80367813 | -80.70524873 | |
| 11,047.00 | 89.71 | 51 | 6,891.68 | -2,412.85 | 2,192.72 | 14,455,298.75 | 1,723,243.26 | 39.80344833 | -80.70508859 | |
| 11,141.00 | 87.03 | 35 | 6,894.36 | -2,494.15 | 2,239.79 | 14,455,217.45 | 1,723,290.33 | 39.80322464 | -80.70492196 | |
| 11,236.00 | 87.43 | 43 | 6,898.95 | -2,574.96 | 2,289.52 | 14,455,136.64 | 1,723,340.07 | 39.80300226 | -80.70474583 | |
| 11,331.00 | 89.41 | 51 | 6,901.57 | -2,657.16 | 2,337.04 | 14,455,054.43 | 1,723,387.58 | 39.80277608 | -80.70457761 | |
| 11,426.00 | 90.99 | 65 | 6,901.24 | -2,741.10 | 2,381.52 | 14,454,970.50 | 1,723,432.06 | 39.80254516 | -80.70442023 | |
| 11,520.00 | 91.16 | 27 | 6,899.47 | -2,824.81 | 2,424.24 | 14,454,886.79 | 1,723,474.79 | 39.80231489 | -80.70426909 | |
| 11,615.00 | 91.78 | 74 | 6,897.04 | -2,909.43 | 2,467.35 | 14,454,802.17 | 1,723,517.89 | 39.80208211 | -80.70411660 | |
| 11,709.00 | 91.65 | 04 | 6,894.22 | -2,992.69 | 2,510.89 | 14,454,718.91 | 1,723,561.44 | 39.80185307 | -80.70396254 | |
| 11,804.00 | 90.68 | 66 | 6,892.29 | -3,075.63 | 2,557.16 | 14,454,635.96 | 1,723,607.70 | 39.80162486 | -80.70379881 | |
| 11,899.00 | 89.63 | 52 | 6,892.03 | -3,157.14 | 2,605.95 | 14,454,554.46 | 1,723,656.50 | 39.80140058 | -80.70362602 | |
| 11,993.00 | 88.18 | 79 | 6,893.83 | -3,237.40 | 2,654.84 | 14,454,474.20 | 1,723,705.39 | 39.80117972 | -80.70345291 | |
| 12,088.00 | 88.22 | 82 | 6,896.81 | -3,318.19 | 2,704.73 | 14,454,393.41 | 1,723,755.27 | 39.80095739 | -80.70327624 | |
| 12,183.00 | 89.80 | 52 | 6,898.46 | -3,398.89 | 2,754.82 | 14,454,312.71 | 1,723,805.37 | 39.80073532 | -80.70309884 | |
| 12,277.00 | 90.46 | 61 | 6,898.24 | -3,479.09 | 2,803.85 | 14,454,232.50 | 1,723,854.39 | 39.80051461 | -80.70292524 | |
| 12,372.00 | 90.99 | 08 | 6,897.04 | -3,559.95 | 2,853.70 | 14,454,151.64 | 1,723,904.24 | 39.80029210 | -80.70274871 | |
| 12,466.00 | 89.93 | 70 | 6,896.29 | -3,640.00 | 2,902.96 | 14,454,071.59 | 1,723,953.51 | 39.80007181 | -80.70257425 | |
| 12,561.00 | 89.19 | 29 | 6,897.01 | -3,720.56 | 2,953.31 | 14,453,991.04 | 1,724,003.86 | 39.79985013 | -80.70239595 | |
| 12,656.00 | 88.92 | 49 | 6,898.58 | -3,801.45 | 3,003.09 | 14,453,910.15 | 1,724,053.64 | 39.79962753 | -80.70221966 | |
| 12,751.00 | 88.62 | 43 | 6,900.62 | -3,882.82 | 3,052.07 | 14,453,828.77 | 1,724,102.61 | 39.79940360 | -80.70204627 | |
| 12,845.00 | 88.84 | 02 | 6,902.70 | -3,963.56 | 3,100.15 | 14,453,748.03 | 1,724,150.70 | 39.79918143 | -80.70187603 | |
| 12,940.00 | 89.93 | 66 | 6,903.72 | -4,045.70 | 3,147.88 | 14,453,665.90 | 1,724,198.42 | 39.79895543 | -80.70170708 | |
| 13,034.00 | 89.85 | 96 | 6,903.90 | -4,126.53 | 3,195.85 | 14,453,585.07 | 1,724,246.40 | 39.79873300 | -80.70153723 | |
| 13,128.00 | 91.03 | 19 | 6,903.18 | -4,207.58 | 3,243.45 | 14,453,504.02 | 1,724,294.00 | 39.79850998 | -80.70136873 | |
| 13,223.00 | 91.08 | 75 | 6,901.43 | -4,289.81 | 3,290.99 | 14,453,421.78 | 1,724,341.53 | 39.79828371 | -80.70120047 | |
| 13,318.00 | 91.34 | 58 | 6,899.43 | -4,371.79 | 3,338.96 | 14,453,339.81 | 1,724,389.50 | 39.79805815 | -80.70103066 | |
| 13,413.00 | 90.51 | 19 | 6,897.89 | -4,453.95 | 3,386.61 | 14,453,257.64 | 1,724,437.16 | 39.79783207 | -80.70086196 | |
| 13,508.00 | 90.15 | 10 | 6,897.35 | -4,536.35 | 3,433.91 | 14,453,175.25 | 1,724,484.45 | 39.79760537 | -80.70069457 | |
| 13,602.00 | 90.59 | 10 | 6,896.74 | -4,617.83 | 3,480.76 | 14,453,093.76 | 1,724,531.31 | 39.79738115 | -80.70052872 | |
| 13,697.00 | 88.35 | 28 | 6,897.62 | -4,700.25 | 3,527.98 | 14,453,011.34 | 1,724,578.53 | 39.79715437 | -80.70036158 | |
| 13,791.00 | 89.32 | 42 | 6,899.53 | -4,782.33 | 3,573.76 | 14,452,929.27 | 1,724,624.31 | 39.79692855 | -80.70019959 | |
| 13,886.00 | 90.37 | 51 | 6,899.79 | -4,865.79 | 3,619.14 | 14,452,845.81 | 1,724,669.69 | 39.79669893 | -80.70003902 | |
| 13,981.00 | 90.73 | 95 | 6,898.87 | -4,949.45 | 3,664.13 | 14,452,762.15 | 1,724,714.68 | 39.79646876 | -80.69987984 | |

WV Department of Environmental Protection

| | | | |
|------------------|-------------------------------|-------------------------------------|--|
| Company: | Tug Hill Operating Co | Local Co-ordinate Reference: | Well Heaven Hill 2-02 HM (slot C) |
| Project: | Marshall County West Virginia | TVD Reference: | RKB=1331+33 @ 1364.00usft (Nabors X08) |
| Site: | Heaven Hill 2 | MD Reference: | RKB=1331+33 @ 1364.00usft (Nabors X08) |
| Well: | Heaven Hill 2-02 HM (slot C) | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | Surveys Original | Database: | DB_Jul2216dt_v14 |

| Survey | | | | | | | | | | |
|--|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude | |
| 14,076.00 | 89.98 | 102.21 | 6,898.29 | -5,033.39 | 3,708.61 | 14,452,678.21 | 1,724,759.16 | 39.79623783 | -80.69972248 | |
| 14,170.00 | 90.59 | 102.48 | 6,897.82 | -5,116.65 | 3,752.24 | 14,452,594.95 | 1,724,802.79 | 39.79600877 | -80.69956815 | |
| 14,264.00 | 90.24 | 102.95 | 6,897.14 | -5,199.81 | 3,796.06 | 14,452,511.79 | 1,724,846.61 | 39.79577999 | -80.69941314 | |
| 14,359.00 | 90.46 | 103.54 | 6,896.56 | -5,283.09 | 3,841.76 | 14,452,428.50 | 1,724,892.31 | 39.79555086 | -80.69925144 | |
| 14,453.00 | 90.33 | 103.72 | 6,895.91 | -5,365.01 | 3,887.86 | 14,452,346.59 | 1,724,938.41 | 39.79532547 | -80.69908830 | |
| 14,548.00 | 90.20 | 103.66 | 6,895.47 | -5,447.44 | 3,935.09 | 14,452,264.16 | 1,724,985.63 | 39.79509867 | -80.69892116 | |
| 14,643.00 | 88.57 | 104.17 | 6,896.49 | -5,528.78 | 3,984.13 | 14,452,182.81 | 1,725,034.68 | 39.79487481 | -80.69874753 | |
| 14,737.00 | 89.01 | 104.26 | 6,898.47 | -5,608.67 | 4,033.63 | 14,452,102.93 | 1,725,084.18 | 39.79465497 | -80.69857226 | |
| 14,832.00 | 88.92 | 103.82 | 6,900.19 | -5,689.26 | 4,083.91 | 14,452,022.34 | 1,725,134.45 | 39.79443319 | -80.69839423 | |
| 14,926.00 | 89.45 | 104.58 | 6,901.53 | -5,769.56 | 4,132.74 | 14,451,942.03 | 1,725,183.28 | 39.79421220 | -80.69822137 | |
| 15,021.00 | 90.11 | 104.28 | 6,901.89 | -5,851.78 | 4,180.34 | 14,451,859.82 | 1,725,230.88 | 39.79398598 | -80.69805290 | |
| 15,115.00 | 89.71 | 104.37 | 6,902.04 | -5,933.45 | 4,226.87 | 14,451,778.15 | 1,725,277.42 | 39.79376126 | -80.69788820 | |
| 15,209.00 | 91.34 | 104.39 | 6,901.18 | -6,015.95 | 4,271.89 | 14,451,695.65 | 1,725,322.44 | 39.79353426 | -80.69772892 | |
| 15,303.00 | 91.47 | 104.13 | 6,898.87 | -6,099.12 | 4,315.63 | 14,451,612.47 | 1,725,366.18 | 39.79330545 | -80.69757420 | |
| 15,397.00 | 91.87 | 104.21 | 6,896.13 | -6,182.21 | 4,359.50 | 14,451,529.38 | 1,725,410.04 | 39.79307685 | -80.69741904 | |
| 15,492.00 | 89.98 | 104.63 | 6,894.60 | -6,265.62 | 4,404.94 | 14,451,445.98 | 1,725,455.48 | 39.79284737 | -80.69725829 | |
| 15,586.00 | 89.45 | 104.66 | 6,895.07 | -6,347.14 | 4,451.73 | 14,451,364.45 | 1,725,502.27 | 39.79262305 | -80.69709269 | |
| 15,680.00 | 89.10 | 104.70 | 6,896.26 | -6,427.86 | 4,499.89 | 14,451,283.73 | 1,725,550.43 | 39.79240093 | -80.69692223 | |
| 15,775.00 | 89.54 | 104.79 | 6,897.39 | -6,509.07 | 4,549.17 | 14,451,202.53 | 1,725,599.72 | 39.79217746 | -80.69674775 | |
| 15,869.00 | 90.37 | 104.31 | 6,897.46 | -6,589.68 | 4,597.51 | 14,451,121.91 | 1,725,648.06 | 39.79195562 | -80.69657662 | |
| 15,964.00 | 89.49 | 104.31 | 6,897.58 | -6,671.38 | 4,646.00 | 14,451,040.22 | 1,725,696.55 | 39.79173082 | -80.69640500 | |
| 16,058.00 | 89.85 | 104.05 | 6,898.12 | -6,752.10 | 4,694.16 | 14,450,959.50 | 1,725,744.71 | 39.79150868 | -80.69623453 | |
| 16,153.00 | 90.20 | 104.10 | 6,898.08 | -6,834.02 | 4,742.27 | 14,450,877.58 | 1,725,792.81 | 39.79128327 | -80.69606426 | |
| 16,248.00 | 91.21 | 104.19 | 6,896.91 | -6,916.40 | 4,789.56 | 14,450,795.19 | 1,725,840.10 | 39.79105658 | -80.69589692 | |
| 16,343.00 | 89.05 | 104.10 | 6,896.69 | -6,998.79 | 4,836.85 | 14,450,712.81 | 1,725,887.39 | 39.79082988 | -80.69572957 | |
| 16,437.00 | 89.67 | 104.31 | 6,897.74 | -7,079.95 | 4,884.26 | 14,450,631.65 | 1,725,934.81 | 39.79060656 | -80.69556176 | |
| 16,531.00 | 89.85 | 104.87 | 6,898.13 | -7,160.60 | 4,932.55 | 14,450,551.00 | 1,725,983.09 | 39.79038463 | -80.69539084 | |
| 16,626.00 | 89.76 | 104.96 | 6,898.46 | -7,241.95 | 4,981.60 | 14,450,469.64 | 1,726,032.14 | 39.79016074 | -80.69521722 | |
| 16,721.00 | 90.68 | 104.31 | 6,898.09 | -7,323.50 | 5,030.33 | 14,450,388.10 | 1,726,080.88 | 39.78993634 | -80.69504472 | |
| 16,731.00 | 90.73 | 104.23 | 6,897.97 | -7,332.09 | 5,035.44 | 14,450,379.50 | 1,726,085.99 | 39.78991269 | -80.69502663 | |
| Survey @ 16731.00 MD 6897.97 TVD | | | | | | | | | | |
| 16,779.00 | 90.73 | 104.23 | 6,897.36 | -7,373.33 | 5,060.00 | 14,450,338.26 | 1,726,110.54 | 39.78979921 | -80.69493972 | |
| Survey projected to 16779.00 MD 6897.36 TVD | | | | | | | | | | |

| Design Annotations | | | | | |
|-----------------------|-----------------------|-------------------|--------------|---|--|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment | |
| | | +N/-S (usft) | +E/-W (usft) | | |
| 100.00 | 100.00 | 0.45 | -0.08 | Gyro | <p>RECEIVED Office of Oil and Gas</p> <p>JUN 10 2020</p> <p>TVDWV Department of Environmental Protection</p> |
| 955.00 | 954.99 | 2.08 | -2.22 | MWD surveys | |
| 6,047.00 | 6,838.12 | 1,175.73 | -68.38 | Survey @ 6047.00 MD 5838.12 TVD | |
| 16,731.00 | 6,897.97 | -7,332.09 | 5,035.44 | Survey @ 16731.00 MD 6897.97 TVD | |
| 16,779.00 | 6,897.36 | -7,373.33 | 5,060.00 | Survey projected to 16779.00 MD 6897.36 TVD | |