



Well: Old Crow S-13 HM (slot G)  
 Site: Old Crow Pad  
 Project: Marshall County, West Virginia.  
 Design: rev3  
 Rig: Nabors B 28

SECTION DETAILS

| Sec | MD       | Inc   | Azi    | TVD     | +N/-S    | +E/-W   | Dleg  | TFace   | Vsect   | Annotation                        |
|-----|----------|-------|--------|---------|----------|---------|-------|---------|---------|-----------------------------------|
| 1   | 6654.00  | 38.72 | 22.17  | 5643.87 | 2785.55  | 965.86  | 0.00  | 0.000   | -824.80 | Survey @ 6654.00 MD 5643.87 TVD   |
| 2   | 6754.00  | 38.72 | 22.17  | 5721.89 | 2843.47  | 989.46  | 0.00  | 0.000   | -839.09 | Proj. Begin 8.09°/100' build/turn |
| 3   | 6821.89  | 41.45 | 14.77  | 5773.86 | 2884.90  | 1003.21 | 8.09  | -63.075 | -851.85 | Begin 8.09°/100' build/turn       |
| 4   | 7677.48  | 50.00 | 119.19 | 6454.22 | 3015.12  | 1412.45 | 8.09  | 127.463 | -593.52 | Begin 10°/100' build/turn         |
| 5   | 8155.89  | 89.00 | 149.68 | 6622.00 | 2700.82  | 1710.69 | 10.00 | 43.188  | -168.40 | Begin 89.00° lateral              |
| 6   | 15911.50 | 89.00 | 149.68 | 6757.00 | -3993.07 | 5625.17 | 0.00  | 0.000   | 6898.34 | PBHL/TD 15911.50 MD/6757.00 TVD   |

ANNOTATIONS SURVEYS

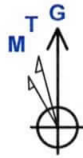
| MD       | Inc   | Azi    | TVD     | +N/-S    | +E/-W   | Vsect   | Annotation                                  |
|----------|-------|--------|---------|----------|---------|---------|---|
| 174.00   | 0.18  | 349.21 | 174.00  | 0.27     | -0.05   | -0.20   | MWD surveys                                 |
| 15834.00 | 90.46 | 148.00 | 6639.66 | -3943.98 | 5597.83 | 6847.63 | Survey @ 15834.00 MD 6639.66 TVD            |
| 15888.00 | 90.46 | 148.00 | 6639.23 | -3989.77 | 5626.44 | 6897.47 | Survey projected to 15888.00 MD 6639.23 TVD |

Geodetic System: Universal Transverse Mercator (US Survey Feet)  
 Datum: NAD83 West Virginia - HARN  
 Ellipsoid: GRS 1980  
 Zone: Zone 17N (84 W to 78 W)

System Datum: Mean Sea Level  
 Depth Reference: RKB=1265+26 @ 1291.00usft (Nabors B 28)

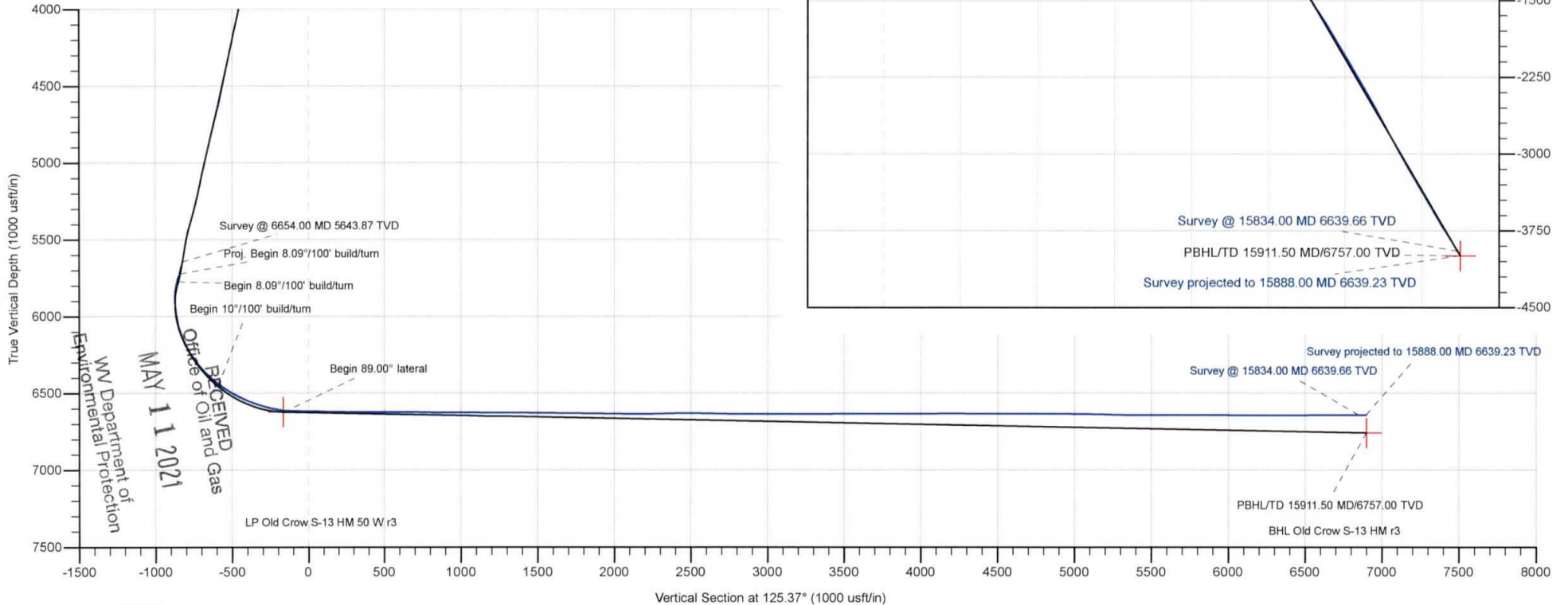
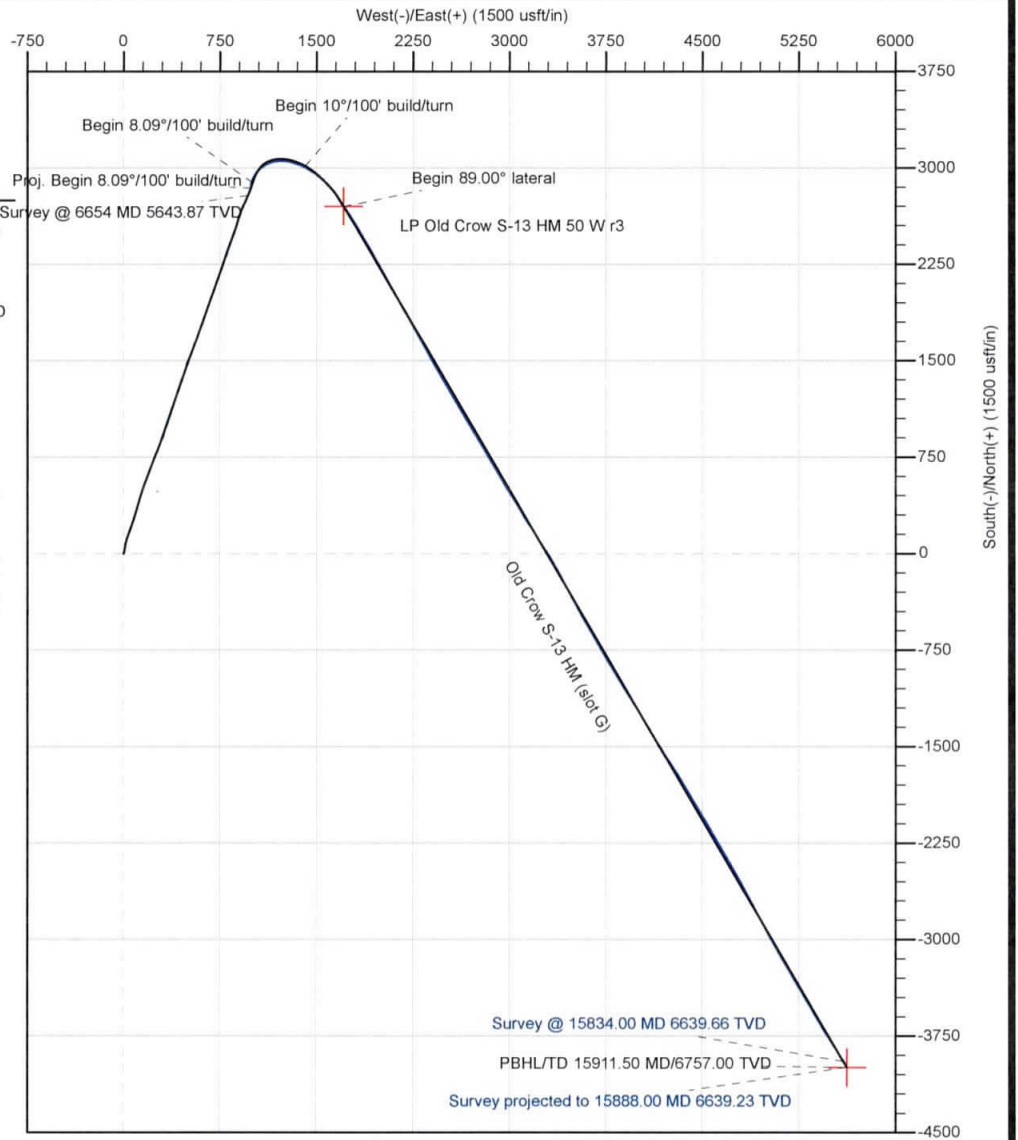
Northing: 14446132.86  
 Easting: 1707024.83  
 Latitude: 39.77840875  
 Longitude: -80.76292167

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.879°



Azimuths to Grid North  
 True North: -0.15°  
 Magnetic North: -8.88°

Magnetic Field  
 Strength: 51886.8snT  
 Dip Angle: 66.75°  
 Date: 12/17/2019  
 Model: IGRF2015



|                  |                                 |                                     |   |
|------------------|---------------------------------|-------------------------------------|---|
| <b>Company:</b>  | Tug Hill Operating LLC          | <b>Local Co-ordinate Reference:</b> | Well Old Crow S-13 HM (slot G)          |
| <b>Project:</b>  | Marshall County, West Virginia. | <b>TVD Reference:</b>               | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Site:</b>     | Old Crow Pad                    | <b>MD Reference:</b>                | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Well:</b>     | Old Crow S-13 HM (slot G)       | <b>North Reference:</b>             | Grid                                    |
| <b>Wellbore:</b> | Original Hole                   | <b>Survey Calculation Method:</b>   | Minimum Curvature                       |
| <b>Design:</b>   | Surveys Original Hole           | <b>Database:</b>                    | DB_Aug1919_v14                          |

|                    |  |                      |                |
|--------------------|--|----------------------|----------------|
| <b>Project</b>     | Marshall County, West Virginia.                |                      |                |
| <b>Map System:</b> | Universal Transverse Mercator (US Survey Feet) | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | NAD83 West Virginia - HARN                     |                      |                |
| <b>Map Zone:</b>   | Zone 17N (84 W to 78 W)                        |                      |                |

|                              |              |                     |                    |                          |              |
|------------------------------|--------------|---------------------|--------------------|--------------------------|--------------|
| <b>Site</b>                  | Old Crow Pad |                     |                    |                          |              |
| <b>Site Position:</b>        |              | <b>Northing:</b>    | 14,446,179.89 usft | <b>Latitude:</b>         | 39.77853828  |
| <b>From:</b>                 | Lat/Long     | <b>Easting:</b>     | 1,706,970.33 usft  | <b>Longitude:</b>        | -80.76311519 |
| <b>Position Uncertainty:</b> | 0.00 usft    | <b>Slot Radius:</b> | 13-3/16 "          | <b>Grid Convergence:</b> | 0.152 °      |

|                             |                           |           |                            |                    |                      |               |
|-----------------------------|---------------------------|-----------|----------------------------|--------------------|----------------------|---------------|
| <b>Well</b>                 | Old Crow S-13 HM (slot G) |           |                            |                    |                      |               |
| <b>Well Position</b>        | <b>+N/-S</b>              | 0.00 usft | <b>Northing:</b>           | 14,446,132.87 usft | <b>Latitude:</b>     | 39.77840875   |
|                             | <b>+E/-W</b>              | 0.00 usft | <b>Easting:</b>            | 1,707,024.83 usft  | <b>Longitude:</b>    | -80.76292167  |
| <b>Position Uncertainty</b> |                           | 0.00 usft | <b>Wellhead Elevation:</b> | usft               | <b>Ground Level:</b> | 1,265.00 usft |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | Original Hole     |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | IGRF2015          | 12/17/2019         | -8.727                 | 66.748               | 51,886.83676286            |

|                          |                       |                                |                     |                      |                      |
|--------------------------|-----------------------|--------------------------------|---------------------|----------------------|----------------------|
| <b>Design</b>            | Surveys Original Hole |                                |                     |                      |                      |
| <b>Audit Notes:</b>      |                       |                                |                     |                      |                      |
| <b>Version:</b>          | 1.0                   | <b>Phase:</b>                  | ACTUAL              | <b>Tie On Depth:</b> | 0.00                 |
| <b>Vertical Section:</b> |                       | <b>Depth From (TVD) (usft)</b> | <b>+N/-S (usft)</b> | <b>+E/-W (usft)</b>  | <b>Direction (°)</b> |
|                          |                       | 0.00                           | 0.00                | 0.00                 | 125.37               |

|                       |                  |                            |                  |                    |  |
|-----------------------|------------------|----------------------------|------------------|--------------------|--|
| <b>Survey Program</b> | <b>Date</b>      | 1/2/2020                   |                  |                    |  |
| <b>From (usft)</b>    | <b>To (usft)</b> | <b>Survey (Wellbore)</b>   | <b>Tool Name</b> | <b>Description</b> |  |
| 174.00                | 994.00           | MWD surf (Original Hole)   | MWD              | MWD - Standard     |  |
| 1,066.00              | 2,912.00         | MWD int (Original Hole)    | MWD              | MWD - Standard     |  |
| 2,982.00              | 6,654.00         | MWD (Original Hole)        | MWD              | MWD - Standard     |  |
| 6,692.00              | 15,834.00        | MWD Lat (Original Hole)    | MWD              | MWD - Standard     |  |
| 15,888.00             | 15,888.00        | Projection (Original Hole) | MWD              | MWD - Standard     |  |

|                              |                        |                    |                              |                     |                     |                                |                                |                               |                              |
|------------------------------|------------------------|--------------------|------------------------------|---------------------|---------------------|--------------------------------|--------------------------------|-------------------------------|------------------------------|
| <b>Survey</b>                |                        |                    |                              |                     |                     |                                |                                |                               |                              |
| <b>Measured Depth (usft)</b> | <b>Inclination (°)</b> | <b>Azimuth (°)</b> | <b>Vertical Depth (usft)</b> | <b>+N/-S (usft)</b> | <b>+E/-W (usft)</b> | <b>Vertical Section (usft)</b> | <b>Dogleg Rate (°/100usft)</b> | <b>Build Rate (°/100usft)</b> | <b>Turn Rate (°/100usft)</b> |
| 0.00                         | 0.00                   | 0.00               | 0.00                         | 0.00                | 0.00                | 0.00                           | 0.00                           | 0.00                          | 0.00                         |
| 174.00                       | 0.18                   | 349.21             | 174.00                       | 0.27                | -0.05               | -0.20                          | 0.10                           | 0.10                          | 0.00                         |
| <b>MWD surveys</b>           |                        |                    |                              |                     |                     |                                |                                |                               |                              |
| 205.00                       | 0.48                   | 28.41              | 205.00                       | 0.43                | 0.00                | -0.25                          | 0.67                           | 0.97                          | 126.45                       |
| 236.00                       | 0.35                   | 359.40             | 236.00                       | 0.64                | 0.06                | -0.32                          | 0.67                           | 0.43                          | -93.58                       |
| 266.00                       | 0.22                   | 327.59             | 266.00                       | 0.78                | 0.03                | -0.43                          | 0.67                           | 0.43                          | -106.03                      |
| 296.00                       | 0.40                   | 39.22              | 296.00                       | 0.91                | 0.07                | -0.47                          | 1.30                           | 0.50                          | 238.77                       |

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|------------------|---------------------------------|-------------------------------------|---|
| <b>Company:</b>  | Tug Hill Operating LLC          | <b>Local Co-ordinate Reference:</b> | Well Old Crow S-13 HM (slot G)          |
| <b>Project:</b>  | Marshall County, West Virginia. | <b>TVD Reference:</b>               | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Site:</b>     | Old Crow Pad                    | <b>MD Reference:</b>                | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Well:</b>     | Old Crow S-13 HM (slot G)       | <b>North Reference:</b>             | Grid                                    |
| <b>Wellbore:</b> | Original Hole                   | <b>Survey Calculation Method:</b>   | Minimum Curvature                       |
| <b>Design:</b>   | Surveys Original Hole           | <b>Database:</b>                    | DB_Aug1919_v14                          |

| 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) |
| 326.00                | 0.35            | 173.86      | 326.00                | 0.90         | 0.14         | -0.41                   | 2.31                    | -0.17                  | 448.80                |
| 356.00                | 0.26            | 198.12      | 356.00                | 0.74         | 0.13         | -0.32                   | 0.52                    | -0.30                  | 80.87                 |
| 385.00                | 0.18            | 187.40      | 385.00                | 0.64         | 0.10         | -0.28                   | 0.31                    | -0.28                  | -36.97                |
| 415.00                | 0.22            | 202.96      | 415.00                | 0.54         | 0.08         | -0.25                   | 0.22                    | 0.13                   | 51.87                 |
| 446.00                | 0.31            | 227.57      | 446.00                | 0.42         | -0.01        | -0.25                   | 0.46                    | 0.29                   | 79.39                 |
| 475.00                | 0.26            | 283.73      | 475.00                | 0.39         | -0.13        | -0.33                   | 0.94                    | -0.17                  | 193.66                |
| 505.00                | 0.31            | 81.14       | 505.00                | 0.42         | -0.12        | -0.34                   | 1.86                    | 0.17                   | 524.70                |
| 535.00                | 0.18            | 244.00      | 535.00                | 0.41         | -0.08        | -0.30                   | 1.62                    | -0.43                  | 542.87                |
| 565.00                | 0.26            | 171.67      | 565.00                | 0.32         | -0.11        | -0.28                   | 0.89                    | 0.27                   | -241.10               |
| 595.00                | 0.26            | 115.59      | 595.00                | 0.22         | -0.04        | -0.16                   | 0.81                    | 0.00                   | -186.93               |
| 626.00                | 0.18            | 104.87      | 626.00                | 0.18         | 0.07         | -0.05                   | 0.29                    | -0.26                  | -34.58                |
| 657.00                | 0.35            | 228.88      | 656.99                | 0.11         | 0.05         | -0.02                   | 1.53                    | 0.55                   | 400.03                |
| 689.00                | 0.22            | 17.16       | 688.99                | 0.10         | -0.01        | -0.07                   | 1.72                    | -0.41                  | 463.38                |
| 720.00                | 0.31            | 81.14       | 719.99                | 0.17         | 0.09         | -0.02                   | 0.94                    | 0.29                   | 206.39                |
| 752.00                | 0.22            | 127.37      | 751.99                | 0.15         | 0.22         | 0.10                    | 0.70                    | -0.28                  | 144.47                |
| 782.00                | 0.31            | 140.55      | 781.99                | 0.05         | 0.32         | 0.23                    | 0.36                    | 0.30                   | 43.93                 |
| 813.00                | 0.26            | 71.91       | 812.99                | 0.01         | 0.44         | 0.36                    | 1.05                    | -0.16                  | -221.42               |
| 844.00                | 0.35            | 167.18      | 843.99                | -0.07        | 0.53         | 0.47                    | 1.47                    | 0.29                   | 307.32                |
| 876.00                | 0.40            | 252.35      | 875.99                | -0.19        | 0.45         | 0.48                    | 1.59                    | 0.16                   | 266.16                |
| 908.00                | 0.35            | 323.72      | 907.99                | -0.15        | 0.28         | 0.32                    | 1.37                    | -0.16                  | 223.03                |
| 939.00                | 0.31            | 337.43      | 938.99                | 0.00         | 0.19         | 0.15                    | 0.28                    | -0.13                  | 44.23                 |
| 971.00                | 0.48            | 215.52      | 970.99                | -0.02        | 0.08         | 0.08                    | 2.17                    | 0.53                   | -380.97               |
| 994.00                | 0.31            | 144.16      | 993.99                | -0.15        | 0.06         | 0.14                    | 2.09                    | -0.74                  | -310.26               |
| 1,066.00              | 0.44            | 229.41      | 1,065.99              | -0.49        | -0.03        | 0.26                    | 0.72                    | 0.18                   | 118.40                |
| 1,160.00              | 1.27            | 328.20      | 1,159.98              | 0.16         | -0.86        | -0.79                   | 1.50                    | 0.88                   | 105.10                |
| 1,256.00              | 1.19            | 5.91        | 1,255.96              | 2.05         | -1.31        | -2.26                   | 0.83                    | -0.08                  | 39.28                 |
| 1,351.00              | 1.63            | 48.09       | 1,350.93              | 3.94         | -0.21        | -2.45                   | 1.15                    | 0.46                   | 44.40                 |
| 1,444.00              | 1.49            | 23.48       | 1,443.90              | 5.93         | 1.26         | -2.41                   | 0.73                    | -0.15                  | -26.46                |
| 1,539.00              | 2.59            | 27.18       | 1,538.84              | 8.97         | 2.73         | -2.97                   | 1.17                    | 1.16                   | 3.89                  |
| 1,634.00              | 5.58            | 14.78       | 1,633.59              | 15.35        | 4.89         | -4.90                   | 3.26                    | 3.15                   | -13.05                |
| 1,729.00              | 8.53            | 10.39       | 1,727.86              | 26.75        | 7.34         | -9.50                   | 3.15                    | 3.11                   | -4.62                 |
| 1,825.00              | 11.87           | 9.68        | 1,822.33              | 43.49        | 10.28        | -16.79                  | 3.48                    | 3.48                   | -0.74                 |
| 1,920.00              | 15.47           | 8.63        | 1,914.62              | 65.65        | 13.83        | -26.73                  | 3.80                    | 3.79                   | -1.11                 |
| 2,015.00              | 18.33           | 13.46       | 2,005.52              | 92.72        | 19.21        | -38.00                  | 3.35                    | 3.01                   | 5.08                  |
| 2,110.00              | 21.66           | 18.74       | 2,094.78              | 123.86       | 28.32        | -48.60                  | 3.98                    | 3.51                   | 5.56                  |
| 2,205.00              | 25.66           | 20.32       | 2,181.78              | 159.76       | 41.10        | -58.96                  | 4.26                    | 4.21                   | 1.66                  |
| 2,300.00              | 29.49           | 20.85       | 2,265.97              | 200.92       | 56.57        | -70.17                  | 4.04                    | 4.03                   | 0.56                  |
| 2,395.00              | 31.38           | 17.68       | 2,347.89              | 246.34       | 72.41        | -83.55                  | 2.61                    | 1.99                   | -3.34                 |
| 2,489.00              | 32.83           | 16.45       | 2,427.51              | 294.10       | 87.06        | -99.25                  | 1.69                    | 1.54                   | -1.31                 |
| 2,584.00              | 34.67           | 16.01       | 2,506.50              | 344.78       | 101.81       | -116.56                 | 1.95                    | 1.94                   | -0.46                 |
| 2,679.00              | 35.77           | 17.33       | 2,584.11              | 397.26       | 117.53       | -134.12                 | 1.95                    | 1.16                   | 1.39                  |
| 2,774.00              | 36.25           | 17.51       | 2,660.95              | 450.55       | 134.25       | -151.33                 | 0.52                    | 0.99                   | 0.19                  |
| 2,868.00              | 37.18           | 17.77       | 2,736.30              | 504.10       | 151.28       | -168.44                 | 1.00                    | 0.99                   | 0.28                  |
| 2,912.00              | 38.85           | 18.65       | 2,770.97              | 529.84       | 159.75       | -176.43                 | 0.99                    | 0.99                   | 2.00                  |

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| <b>Project:</b>  | Marshall County, West Virginia. | <b>TVD Reference:</b>               | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Site:</b>     | Old Crow Pad                    | <b>MD Reference:</b>                | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Well:</b>     | Old Crow S-13 HM (slot G)       | <b>North Reference:</b>             | Grid                                    |
| <b>Wellbore:</b> | Original Hole                   | <b>Survey Calculation Method:</b>   | Minimum Curvature                       |
| <b>Design:</b>   | Surveys Original Hole           | <b>Database:</b>                    | DB_Aug1919_v14                          |

| 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) |
| 2,982.00              | 40.69           | 19.00       | 2,824.77              | 572.22       | 174.20       | -189.18                 | 2.65                    | 2.63                   | 0.50                  |
| 3,057.00              | 40.87           | 20.50       | 2,881.56              | 618.32       | 190.76       | -202.37                 | 1.33                    | 0.24                   | 2.00                  |
| 3,155.00              | 42.67           | 22.60       | 2,954.65              | 679.02       | 214.75       | -217.94                 | 2.33                    | 1.84                   | 2.14                  |
| 3,249.00              | 40.47           | 20.14       | 3,024.98              | 737.08       | 237.50       | -233.00                 | 2.91                    | -2.34                  | -2.62                 |
| 3,344.00              | 41.00           | 21.73       | 3,096.97              | 794.98       | 259.66       | -248.45                 | 1.23                    | 0.56                   | 1.67                  |
| 3,438.00              | 40.03           | 21.20       | 3,168.43              | 851.81       | 282.00       | -263.12                 | 1.09                    | -1.03                  | -0.56                 |
| 3,533.00              | 38.85           | 19.79       | 3,241.80              | 908.33       | 303.14       | -278.60                 | 1.56                    | -1.24                  | -1.48                 |
| 3,628.00              | 39.29           | 19.18       | 3,315.55              | 964.78       | 323.11       | -294.99                 | 0.62                    | 0.46                   | -0.64                 |
| 3,722.00              | 39.86           | 18.21       | 3,388.01              | 1,021.50     | 342.30       | -312.18                 | 0.89                    | 0.61                   | -1.03                 |
| 3,816.00              | 39.07           | 17.16       | 3,460.58              | 1,078.42     | 360.46       | -330.32                 | 1.10                    | -0.84                  | -1.12                 |
| 3,910.00              | 38.01           | 18.03       | 3,534.10              | 1,134.25     | 378.16       | -348.21                 | 1.27                    | -1.13                  | 0.93                  |
| 4,004.00              | 38.98           | 18.39       | 3,607.67              | 1,189.83     | 396.44       | -365.47                 | 1.06                    | 1.03                   | 0.38                  |
| 4,099.00              | 40.08           | 19.88       | 3,680.94              | 1,246.95     | 416.27       | -382.36                 | 1.53                    | 1.16                   | 1.57                  |
| 4,193.00              | 41.00           | 19.97       | 3,752.38              | 1,304.39     | 437.09       | -398.63                 | 0.98                    | 0.98                   | 0.10                  |
| 4,287.00              | 40.61           | 19.00       | 3,823.53              | 1,362.29     | 457.58       | -415.44                 | 0.79                    | -0.41                  | -1.03                 |
| 4,381.00              | 40.39           | 17.59       | 3,895.01              | 1,420.25     | 476.75       | -433.36                 | 1.00                    | -0.23                  | -1.50                 |
| 4,476.00              | 39.95           | 19.62       | 3,967.61              | 1,478.33     | 496.29       | -451.04                 | 1.45                    | -0.46                  | 2.14                  |
| 4,571.00              | 40.56           | 21.29       | 4,040.11              | 1,535.84     | 517.75       | -466.84                 | 1.30                    | 0.64                   | 1.76                  |
| 4,666.00              | 40.43           | 19.97       | 4,112.35              | 1,593.57     | 539.48       | -482.53                 | 0.91                    | -0.14                  | -1.39                 |
| 4,760.00              | 38.63           | 19.09       | 4,184.85              | 1,649.95     | 559.49       | -498.85                 | 2.01                    | -1.91                  | -0.94                 |
| 4,855.00              | 37.53           | 20.14       | 4,259.63              | 1,705.14     | 579.15       | -514.77                 | 1.34                    | -1.16                  | 1.11                  |
| 4,949.00              | 38.19           | 19.79       | 4,333.85              | 1,759.36     | 598.85       | -530.09                 | 0.74                    | 0.70                   | -0.37                 |
| 5,044.00              | 38.89           | 20.67       | 4,408.15              | 1,814.90     | 619.32       | -545.55                 | 0.94                    | 0.74                   | 0.93                  |
| 5,138.00              | 38.06           | 18.83       | 4,481.74              | 1,869.94     | 639.09       | -561.29                 | 1.50                    | -0.88                  | -1.96                 |
| 5,233.00              | 38.41           | 19.88       | 4,556.37              | 1,925.41     | 658.58       | -577.50                 | 0.78                    | 0.37                   | 1.11                  |
| 5,328.00              | 39.46           | 19.09       | 4,630.26              | 1,981.69     | 678.49       | -593.85                 | 1.22                    | 1.11                   | -0.83                 |
| 5,422.00              | 40.83           | 19.53       | 4,702.12              | 2,038.88     | 698.53       | -610.61                 | 1.49                    | 1.46                   | 0.47                  |
| 5,517.00              | 41.18           | 19.70       | 4,773.81              | 2,097.59     | 719.45       | -627.54                 | 0.39                    | 0.37                   | 0.18                  |
| 5,611.00              | 39.77           | 19.62       | 4,845.31              | 2,155.05     | 739.98       | -644.06                 | 1.50                    | -1.50                  | -0.09                 |
| 5,706.00              | 38.54           | 17.77       | 4,918.98              | 2,211.86     | 759.22       | -661.25                 | 1.79                    | -1.29                  | -1.95                 |
| 5,800.00              | 38.58           | 17.95       | 4,992.48              | 2,267.63     | 777.19       | -678.88                 | 0.13                    | 0.04                   | 0.19                  |
| 5,895.00              | 38.58           | 19.79       | 5,066.75              | 2,323.69     | 796.35       | -695.71                 | 1.21                    | 0.00                   | 1.94                  |
| 5,990.00              | 38.45           | 19.88       | 5,141.08              | 2,379.33     | 816.42       | -711.55                 | 0.15                    | -0.14                  | 0.09                  |
| 6,085.00              | 41.48           | 20.23       | 5,213.89              | 2,436.65     | 837.35       | -727.66                 | 3.20                    | 3.19                   | 0.37                  |
| 6,180.00              | 43.55           | 20.41       | 5,283.91              | 2,496.85     | 859.64       | -744.33                 | 2.18                    | 2.18                   | 0.19                  |
| 6,275.00              | 42.63           | 16.01       | 5,353.30              | 2,558.46     | 879.94       | -763.45                 | 3.31                    | -0.97                  | -4.63                 |
| 6,369.00              | 41.84           | 17.24       | 5,422.90              | 2,619.00     | 898.01       | -783.75                 | 1.22                    | -0.84                  | 1.31                  |
| 6,464.00              | 38.67           | 23.48       | 5,495.42              | 2,676.52     | 919.24       | -799.74                 | 5.40                    | -3.34                  | 6.57                  |
| 6,559.00              | 38.54           | 23.48       | 5,569.66              | 2,730.89     | 942.85       | -811.95                 | 0.14                    | 0.14                   | 0.00                  |
| 6,654.00              | 38.72           | 22.17       | 5,643.87              | 2,785.55     | 965.86       | -824.84                 | 0.88                    | 0.19                   | -1.38                 |
| 6,692.00              | 38.77           | 19.77       | 5,673.51              | 2,807.75     | 974.37       | -830.75                 | 3.95                    | 0.13                   | -6.32                 |
| 6,739.00              | 39.69           | 14.32       | 5,709.93              | 2,836.15     | 983.06       | -840.10                 | 7.59                    | 1.96                   | 1.60                  |
| 6,787.00              | 41.10           | 10.98       | 5,746.49              | 2,866.49     | 989.86       | -852.12                 | 5.38                    | 2.14                   | -6.96                 |

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|------------------|---------------------------------|-------------------------------------|---|
| <b>Company:</b>  | Tug Hill Operating LLC          | <b>Local Co-ordinate Reference:</b> | Well Old Crow S-13 HM (slot G)          |
| <b>Project:</b>  | Marshall County, West Virginia. | <b>TVD Reference:</b>               | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Site:</b>     | Old Crow Pad                    | <b>MD Reference:</b>                | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Well:</b>     | Old Crow S-13 HM (slot G)       | <b>North Reference:</b>             | Grid                                    |
| <b>Wellbore:</b> | Original Hole                   | <b>Survey Calculation Method:</b>   | Minimum Curvature                       |
| <b>Design:</b>   | Surveys Original Hole           | <b>Database:</b>                    | DB_Aug1919_v14                          |

| 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) |
| 6,834.00              | 37.27           | 17.40       | 5,782.93              | 2,895.26     | 997.06       | -862.90                 | 11.86                   | -8.15                  | 13.66                 |
| 6,881.00              | 34.51           | 24.61       | 5,821.02              | 2,920.96     | 1,006.87     | -869.78                 | 10.73                   | -5.87                  | 15.34                 |
| 6,928.00              | 33.76           | 30.32       | 5,859.93              | 2,944.35     | 1,019.01     | -873.42                 | 7.00                    | -1.60                  | 12.15                 |
| 6,975.00              | 32.31           | 37.00       | 5,899.34              | 2,965.66     | 1,033.17     | -874.21                 | 8.34                    | -3.09                  | 14.21                 |
| 7,022.00              | 31.21           | 44.91       | 5,939.32              | 2,984.32     | 1,049.33     | -871.83                 | 9.16                    | -2.34                  | 16.83                 |
| 7,070.00              | 29.89           | 50.53       | 5,980.67              | 3,000.74     | 1,067.35     | -866.64                 | 6.55                    | -2.75                  | 11.71                 |
| 7,117.00              | 29.58           | 55.81       | 6,021.49              | 3,014.70     | 1,085.99     | -859.53                 | 5.61                    | -0.66                  | 11.23                 |
| 7,165.00              | 30.64           | 60.64       | 6,063.02              | 3,027.36     | 1,106.45     | -850.17                 | 5.51                    | 2.21                   | 10.06                 |
| 7,212.00              | 31.65           | 68.29       | 6,103.26              | 3,037.80     | 1,128.35     | -838.35                 | 8.68                    | 2.15                   | 16.28                 |
| 7,260.00              | 33.27           | 72.77       | 6,143.76              | 3,046.36     | 1,152.63     | -823.50                 | 6.04                    | 3.38                   | 9.33                  |
| 7,307.00              | 34.51           | 78.66       | 6,182.79              | 3,052.80     | 1,178.01     | -806.54                 | 7.47                    | 2.64                   | 12.53                 |
| 7,354.00              | 37.10           | 86.83       | 6,220.92              | 3,056.20     | 1,205.24     | -786.31                 | 11.56                   | 5.51                   | 17.38                 |
| 7,401.00              | 39.03           | 91.84       | 6,257.93              | 3,056.51     | 1,234.19     | -762.88                 | 7.75                    | 4.11                   | 10.66                 |
| 7,449.00              | 40.31           | 97.56       | 6,294.89              | 3,053.98     | 1,264.70     | -736.53                 | 8.06                    | 2.67                   | 11.92                 |
| 7,496.00              | 43.60           | 102.74      | 6,329.85              | 3,048.40     | 1,295.60     | -708.11                 | 10.16                   | 7.00                   | 11.02                 |
| 7,543.00              | 46.20           | 105.99      | 6,363.14              | 3,040.16     | 1,327.72     | -677.15                 | 7.38                    | 5.53                   | 6.91                  |
| 7,590.00              | 48.22           | 109.60      | 6,395.08              | 3,029.60     | 1,360.54     | -644.27                 | 7.09                    | 4.30                   | 7.68                  |
| 7,638.00              | 51.16           | 115.75      | 6,426.14              | 3,015.47     | 1,394.26     | -608.59                 | 11.53                   | 6.13                   | 12.81                 |
| 7,685.00              | 55.69           | 120.58      | 6,454.15              | 2,997.62     | 1,427.49     | -571.17                 | 12.68                   | 9.64                   | 10.28                 |
| 7,732.00              | 58.55           | 124.01      | 6,479.67              | 2,976.52     | 1,460.84     | -531.76                 | 8.64                    | 6.09                   | 7.30                  |
| 7,779.00              | 60.70           | 125.77      | 6,503.44              | 2,953.33     | 1,494.09     | -491.22                 | 5.60                    | 4.57                   | 3.74                  |
| 7,827.00              | 64.04           | 129.55      | 6,525.70              | 2,927.34     | 1,527.73     | -448.75                 | 9.85                    | 6.96                   | 7.88                  |
| 7,874.00              | 66.95           | 132.36      | 6,545.20              | 2,899.30     | 1,560.01     | -406.20                 | 8.24                    | 6.19                   | 5.98                  |
| 7,921.00              | 70.02           | 136.14      | 6,562.44              | 2,868.79     | 1,591.31     | -363.01                 | 9.93                    | 6.53                   | 8.04                  |
| 7,968.00              | 73.80           | 140.71      | 6,577.03              | 2,835.38     | 1,620.93     | -319.52                 | 12.25                   | 8.04                   | 9.72                  |
| 8,016.00              | 75.43           | 145.19      | 6,589.77              | 2,798.45     | 1,648.80     | -275.41                 | 9.62                    | 3.40                   | 9.33                  |
| 8,063.00              | 79.30           | 146.42      | 6,600.05              | 2,760.52     | 1,674.56     | -232.45                 | 8.62                    | 8.23                   | 2.62                  |
| 8,111.00              | 82.55           | 146.77      | 6,607.62              | 2,720.96     | 1,700.65     | -188.27                 | 6.81                    | 6.77                   | 0.73                  |
| 8,158.00              | 86.20           | 148.36      | 6,612.23              | 2,681.49     | 1,725.73     | -144.97                 | 8.46                    | 7.77                   | 3.38                  |
| 8,205.00              | 89.49           | 148.09      | 6,614.00              | 2,641.56     | 1,750.46     | -101.70                 | 7.02                    | 7.00                   | -0.57                 |
| 8,252.00              | 89.05           | 148.00      | 6,614.60              | 2,601.69     | 1,775.34     | -58.34                  | 0.96                    | -0.94                  | -0.19                 |
| 8,299.00              | 88.75           | 148.71      | 6,615.50              | 2,561.68     | 1,799.99     | -15.07                  | 1.64                    | -0.64                  | 1.51                  |
| 8,394.00              | 89.63           | 149.24      | 6,616.84              | 2,480.28     | 1,848.95     | 71.97                   | 1.08                    | 0.93                   | 0.56                  |
| 8,489.00              | 88.62           | 149.15      | 6,618.29              | 2,398.70     | 1,897.59     | 158.86                  | 1.07                    | -1.06                  | -0.09                 |
| 8,583.00              | 89.36           | 149.67      | 6,619.95              | 2,317.79     | 1,945.42     | 244.69                  | 0.96                    | 0.79                   | 0.55                  |
| 8,678.00              | 89.71           | 151.61      | 6,620.72              | 2,235.00     | 1,991.99     | 330.59                  | 2.08                    | 0.37                   | 2.04                  |
| 8,773.00              | 89.23           | 151.26      | 6,621.60              | 2,151.57     | 2,037.42     | 415.93                  | 0.63                    | -0.51                  | -0.37                 |
| 8,867.00              | 92.09           | 150.99      | 6,620.52              | 2,069.27     | 2,082.80     | 500.58                  | 3.06                    | 3.04                   | -0.29                 |
| 8,962.00              | 88.88           | 150.38      | 6,619.71              | 1,986.45     | 2,129.31     | 586.44                  | 3.44                    | 3.06                   | -0.64                 |
| 9,057.00              | 89.32           | 150.29      | 6,621.20              | 1,903.91     | 2,176.32     | 672.55                  | 0.89                    | 0.46                   | -0.09                 |
| 9,152.00              | 88.97           | 149.85      | 6,622.62              | 1,821.59     | 2,223.71     | 758.85                  | 1.60                    | 1.06                   | -0.46                 |
| 9,247.00              | 89.98           | 150.99      | 6,623.49              | 1,738.98     | 2,270.61     | 844.91                  | 0.73                    | 1.06                   | 1.20                  |
| 9,342.00              | 89.45           | 151.43      | 6,623.96              | 1,655.72     | 2,316.36     | 930.41                  | 0.73                    | 0.56                   | 0.46                  |

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| <b>Company:</b>  | Tug Hill Operating LLC          | <b>Local Co-ordinate Reference:</b> | Well Old Crow S-13 HM (slot G)          |
| <b>Project:</b>  | Marshall County, West Virginia. | <b>TVD Reference:</b>               | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Site:</b>     | Old Crow Pad                    | <b>MD Reference:</b>                | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Well:</b>     | Old Crow S-13 HM (slot G)       | <b>North Reference:</b>             | Grid                                    |
| <b>Wellbore:</b> | Original Hole                   | <b>Survey Calculation Method:</b>   | Minimum Curvature                       |
| <b>Design:</b>   | Surveys Original Hole           | <b>Database:</b>                    | DB_Aug1919_v14                          |

| 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) |
| 9,438.00              | 89.05           | 151.52      | 6,625.22              | 1,571.38     | 2,362.20     | 1,016.61                | 0.43                    | -0.42                  | 0.09                  |
| 9,532.00              | 90.24           | 150.38      | 6,625.80              | 1,489.21     | 2,407.84     | 1,101.39                | 1.75                    | 1.27                   | -1.21                 |
| 9,625.00              | 89.85           | 149.67      | 6,625.73              | 1,408.65     | 2,454.30     | 1,185.91                | 0.87                    | -0.42                  | -0.76                 |
| 9,720.00              | 89.89           | 150.99      | 6,625.95              | 1,326.11     | 2,501.33     | 1,272.03                | 1.39                    | 0.04                   | 1.39                  |
| 9,815.00              | 89.80           | 149.85      | 6,626.20              | 1,243.49     | 2,548.22     | 1,358.10                | 1.20                    | -0.09                  | -1.20                 |
| 9,910.00              | 90.15           | 150.38      | 6,626.24              | 1,161.13     | 2,595.56     | 1,444.37                | 0.67                    | 0.37                   | 0.56                  |
| 10,004.00             | 89.45           | 148.44      | 6,626.57              | 1,080.21     | 2,643.39     | 1,530.22                | 2.19                    | -0.74                  | -2.06                 |
| 10,099.00             | 89.41           | 148.53      | 6,627.52              | 999.23       | 2,693.05     | 1,617.58                | 0.10                    | -0.04                  | 0.09                  |
| 10,193.00             | 89.10           | 148.09      | 6,628.74              | 919.25       | 2,742.42     | 1,704.14                | 0.57                    | -0.33                  | -0.47                 |
| 10,286.00             | 89.63           | 149.67      | 6,629.77              | 839.64       | 2,790.48     | 1,789.41                | 1.79                    | 0.57                   | 1.70                  |
| 10,381.00             | 89.19           | 149.24      | 6,630.75              | 757.83       | 2,838.76     | 1,876.14                | 0.65                    | -0.46                  | -0.45                 |
| 10,475.00             | 89.93           | 149.94      | 6,631.47              | 676.77       | 2,886.34     | 1,961.86                | 1.08                    | 0.79                   | 0.74                  |
| 10,570.00             | 89.05           | 150.47      | 6,632.32              | 594.33       | 2,933.54     | 2,048.07                | 1.08                    | -0.93                  | 0.56                  |
| 10,665.00             | 89.32           | 148.36      | 6,633.67              | 512.56       | 2,981.87     | 2,134.81                | 2.24                    | 0.28                   | -2.22                 |
| 10,759.00             | 91.38           | 148.80      | 6,633.09              | 432.35       | 3,030.87     | 2,221.20                | 2.24                    | 2.19                   | 0.47                  |
| 10,853.00             | 90.68           | 148.80      | 6,631.40              | 351.96       | 3,079.56     | 2,307.43                | 0.74                    | -0.74                  | 0.00                  |
| 10,946.00             | 91.74           | 149.59      | 6,629.44              | 272.10       | 3,127.17     | 2,392.49                | 1.42                    | 1.14                   | 0.85                  |
| 11,041.00             | 89.41           | 148.62      | 6,628.49              | 190.59       | 3,175.95     | 2,479.44                | 2.66                    | -2.45                  | -1.02                 |
| 11,135.00             | 89.23           | 147.83      | 6,629.60              | 110.68       | 3,225.44     | 2,566.05                | 0.86                    | -0.19                  | -0.84                 |
| 11,230.00             | 88.09           | 147.83      | 6,631.82              | 30.29        | 3,276.01     | 2,653.82                | 1.20                    | -1.20                  | 0.00                  |
| 11,325.00             | 89.49           | 148.53      | 6,633.83              | -50.41       | 3,326.08     | 2,741.37                | 1.65                    | 1.47                   | 0.74                  |
| 11,420.00             | 89.49           | 150.64      | 6,634.68              | -132.33      | 3,374.17     | 2,828.00                | 2.22                    | 0.00                   | 2.22                  |
| 11,514.00             | 89.41           | 152.75      | 6,635.58              | -215.08      | 3,418.74     | 2,912.25                | 2.25                    | -0.09                  | 2.24                  |
| 11,609.00             | 90.95           | 150.73      | 6,635.28              | -298.75      | 3,463.72     | 2,997.35                | 2.67                    | 1.62                   | -2.13                 |
| 11,703.00             | 90.42           | 151.17      | 6,634.16              | -380.92      | 3,509.36     | 3,082.13                | 0.73                    | -0.56                  | 0.47                  |
| 11,797.00             | 90.29           | 150.47      | 6,633.57              | -462.99      | 3,555.19     | 3,167.01                | 0.76                    | -0.14                  | -0.74                 |
| 11,891.00             | 89.76           | 150.64      | 6,633.53              | -544.84      | 3,601.39     | 3,252.07                | 0.59                    | -0.56                  | 0.18                  |
| 11,985.00             | 90.37           | 150.20      | 6,633.43              | -626.59      | 3,647.80     | 3,337.23                | 0.80                    | 0.65                   | -0.47                 |
| 12,080.00             | 90.11           | 150.03      | 6,633.03              | -708.96      | 3,695.13     | 3,423.51                | 0.33                    | -0.27                  | -0.18                 |
| 12,174.00             | 90.29           | 149.59      | 6,632.70              | -790.21      | 3,742.40     | 3,509.08                | 0.51                    | 0.19                   | -0.47                 |
| 12,268.00             | 89.63           | 150.20      | 6,632.77              | -871.53      | 3,789.55     | 3,594.60                | 0.96                    | -0.70                  | 0.65                  |
| 12,362.00             | 89.89           | 148.53      | 6,633.16              | -952.40      | 3,837.45     | 3,680.48                | 1.80                    | 0.28                   | -1.78                 |
| 12,457.00             | 90.59           | 148.36      | 6,632.76              | -1,033.36    | 3,887.16     | 3,767.87                | 0.76                    | 0.74                   | -0.18                 |
| 12,552.00             | 90.51           | 148.62      | 6,631.85              | -1,114.34    | 3,936.81     | 3,855.24                | 0.29                    | -0.08                  | 0.27                  |
| 12,646.00             | 89.98           | 147.74      | 6,631.45              | -1,194.22    | 3,986.37     | 3,941.89                | 1.09                    | -0.56                  | -0.94                 |
| 12,739.00             | 89.85           | 150.11      | 6,631.59              | -1,273.86    | 4,034.37     | 4,027.13                | 2.55                    | -0.14                  | 2.55                  |
| 12,833.00             | 90.64           | 149.24      | 6,631.18              | -1,355.00    | 4,081.83     | 4,112.80                | 1.25                    | 0.84                   | -0.93                 |
| 12,928.00             | 90.11           | 149.24      | 6,630.56              | -1,436.63    | 4,130.42     | 4,199.67                | 0.56                    | -0.56                  | 0.00                  |
| 13,022.00             | 89.71           | 148.00      | 6,630.71              | -1,516.88    | 4,179.36     | 4,286.03                | 1.39                    | -0.43                  | -1.32                 |
| 13,116.00             | 89.32           | 147.30      | 6,631.50              | -1,596.29    | 4,229.66     | 4,373.01                | 0.63                    | -0.41                  | -0.74                 |
| 13,211.00             | 90.37           | 148.18      | 6,631.76              | -1,676.62    | 4,280.36     | 4,460.86                | 0.74                    | 0.74                   | 0.93                  |
| 13,305.00             | 89.67           | 148.18      | 6,631.73              | -1,756.49    | 4,329.92     | 4,547.51                | 0.74                    | -0.74                  | 0.00                  |
| 13,399.00             | 90.29           | 149.24      | 6,631.76              | -1,836.82    | 4,378.74     | 4,633.82                | 1.34                    | 0.66                   | 1.13                  |
| 13,494.00             | 89.71           | 148.18      | 6,631.76              | -1,918.00    | 4,428.08     | 4,721.04                | 1.27                    | 0.74                   | -1.12                 |

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| <b>Company:</b>  | Tug Hill Operating LLC          | <b>Local Co-ordinate Reference:</b> | Well Old Crow S-13 HM (slot G)          |
| <b>Project:</b>  | Marshall County, West Virginia. | <b>TVD Reference:</b>               | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Site:</b>     | Old Crow Pad                    | <b>MD Reference:</b>                | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Well:</b>     | Old Crow S-13 HM (slot G)       | <b>North Reference:</b>             | Grid                                    |
| <b>Wellbore:</b> | Original Hole                   | <b>Survey Calculation Method:</b>   | Minimum Curvature                       |
| <b>Design:</b>   | Surveys Original Hole           | <b>Database:</b>                    | DB_Aug1919_v14                          |

| 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) |
|--|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 13,588.00  | 89.49           | 149.24      | 6,632.42              | -1,998.33    | 4,476.90     | 4,807.34                | 1.15                    | -0.23                  | 1.13                  |
| 13,681.00  | 89.71           | 150.20      | 6,633.07              | -2,078.63    | 4,523.79     | 4,892.07                | 1.06                    | 0.24                   | 1.03                  |
| 13,775.00  | 89.93           | 148.27      | 6,633.36              | -2,159.40    | 4,571.87     | 4,978.03                | 2.07                    | 0.23                   | -2.05                 |
| 13,870.00  | 89.67           | 149.67      | 6,633.69              | -2,240.80    | 4,620.84     | 5,065.08                | 1.50                    | -0.27                  | 1.47                  |
| 13,964.00  | 87.96           | 150.38      | 6,635.64              | -2,322.21    | 4,667.80     | 5,150.49                | 1.97                    | -1.82                  | 0.76                  |
| 14,059.00  | 88.79           | 150.55      | 6,638.33              | -2,404.83    | 4,714.61     | 5,236.48                | 0.89                    | 0.87                   | 0.18                  |
| 14,153.00  | 88.09           | 150.73      | 6,640.89              | -2,486.73    | 4,760.68     | 5,321.46                | 0.77                    | -0.74                  | 0.19                  |
| 14,248.00  | 90.90           | 151.70      | 6,641.73              | -2,569.98    | 4,806.42     | 5,406.94                | 3.13                    | 2.96                   | 1.02                  |
| 14,342.00  | 90.64           | 151.78      | 6,640.47              | -2,652.76    | 4,850.92     | 5,491.15                | 0.29                    | -0.28                  | 0.09                  |
| 14,436.00  | 90.11           | 151.61      | 6,639.85              | -2,735.52    | 4,895.49     | 5,575.40                | 0.59                    | -0.56                  | -0.18                 |
| 14,531.00  | 89.63           | 151.52      | 6,640.07              | -2,819.06    | 4,940.72     | 5,660.65                | 0.51                    | -0.51                  | -0.09                 |
| 14,626.00  | 89.98           | 151.43      | 6,640.39              | -2,902.53    | 4,986.09     | 5,745.95                | 0.38                    | 0.37                   | -0.09                 |
| 14,720.00  | 89.54           | 151.61      | 6,640.78              | -2,985.15    | 5,030.91     | 5,830.33                | 0.51                    | -0.47                  | 0.19                  |
| 14,815.00  | 89.71           | 149.85      | 6,641.40              | -3,068.02    | 5,077.36     | 5,916.17                | 1.86                    | 0.18                   | -1.85                 |
| 14,909.00  | 89.32           | 149.41      | 6,642.20              | -3,149.12    | 5,124.88     | 6,001.87                | 0.63                    | -0.41                  | -0.47                 |
| 15,003.00  | 90.07           | 149.94      | 6,642.70              | -3,230.25    | 5,172.34     | 6,087.53                | 0.98                    | 0.80                   | 0.56                  |
| 15,097.00  | 89.49           | 150.38      | 6,643.06              | -3,311.79    | 5,219.11     | 6,172.87                | 0.77                    | -0.62                  | 0.47                  |
| 15,192.00  | 90.55           | 149.06      | 6,643.03              | -3,393.83    | 5,267.01     | 6,259.42                | 1.78                    | 1.12                   | -1.39                 |
| 15,287.00  | 90.37           | 149.41      | 6,642.27              | -3,475.45    | 5,315.61     | 6,346.29                | 0.41                    | -0.19                  | 0.37                  |
| 15,381.00  | 89.80           | 149.41      | 6,642.13              | -3,556.37    | 5,363.44     | 6,432.14                | 0.61                    | -0.61                  | 0.00                  |
| 15,476.00  | 90.86           | 149.67      | 6,641.58              | -3,638.26    | 5,411.60     | 6,518.81                | 1.15                    | 1.12                   | 0.27                  |
| 15,568.00  | 90.24           | 149.24      | 6,640.70              | -3,717.49    | 5,458.35     | 6,602.79                | 0.82                    | -0.67                  | -0.47                 |
| 15,663.00  | 90.02           | 148.27      | 6,640.48              | -3,798.71    | 5,507.63     | 6,689.99                | 1.05                    | -0.23                  | -1.02                 |
| 15,757.00  | 90.33           | 148.18      | 6,640.19              | -3,878.62    | 5,557.13     | 6,776.61                | 0.34                    | 0.33                   | -0.10                 |
| 15,834.00  | 90.46           | 148.00      | 6,639.66              | -3,943.98    | 5,597.83     | 6,847.63                | 0.29                    | 0.17                   | -0.23                 |
| <b>Survey @ 15834.00 MD 6639.66 TVD</b>            |                 |             |                       |              |              |                         |                         |                        |                       |
| 15,888.00  | 90.46           | 148.00      | 6,639.23              | -3,989.77    | 5,626.44     | 6,897.47                | 0.00                    | 0.00                   | 0.00                  |
| <b>Survey projected to 15888.00 MD 6639.23 TVD</b> |                 |             |                       |              |              |                         |                         |                        |                       |

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                          |
|-----------------------|-----------------------|-------------------|--------------|----------------------------------|
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                                  |
| 174.00                | 174.00                | 0.27              | -0.05        | MWD surveys                      |
| 15,834.00             | 6,639.66              | -3,943.98         | 5,597.83     | Survey @ 15834.00 MD 6639.66 TVD |

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|------------------|---------------------------------|-------------------------------------|---|
| <b>Company:</b>  | Tug Hill Operating LLC          | <b>Local Co-ordinate Reference:</b> | Well Old Crow S-13 HM (slot G)          |
| <b>Project:</b>  | Marshall County, West Virginia. | <b>TVD Reference:</b>               | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Site:</b>     | Old Crow Pad                    | <b>MD Reference:</b>                | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Well:</b>     | Old Crow S-13 HM (slot G)       | <b>North Reference:</b>             | Grid                                    |
| <b>Wellbore:</b> | Original Hole                   | <b>Survey Calculation Method:</b>   | Minimum Curvature                       |
| <b>Design:</b>   | Surveys Original Hole           | <b>Database:</b>                    | DB_Aug1919_v14                          |

|                    |  |                      |                |
|--------------------|--|----------------------|----------------|
| <b>Project</b>     | Marshall County, West Virginia.                |                      |                |
| <b>Map System:</b> | Universal Transverse Mercator (US Survey Feet) | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | NAD83 West Virginia - HARN                     |                      |                |
| <b>Map Zone:</b>   | Zone 17N (84 W to 78 W)                        |                      |                |

|                              |              |                     |                    |                          |              |
|------------------------------|--------------|---------------------|--------------------|--------------------------|--------------|
| <b>Site</b>                  | Old Crow Pad |                     |                    |                          |              |
| <b>Site Position:</b>        |              | <b>Northing:</b>    | 14,446,179.89 usft | <b>Latitude:</b>         | 39.77853828  |
| <b>From:</b>                 | Lat/Long     | <b>Easting:</b>     | 1,706,970.33 usft  | <b>Longitude:</b>        | -80.76311519 |
| <b>Position Uncertainty:</b> | 0.00 usft    | <b>Slot Radius:</b> | 13-3/16 "          | <b>Grid Convergence:</b> | 0.152 °      |

|                             |                           |                            |                  |                      |                   |              |
|-----------------------------|---------------------------|----------------------------|------------------|----------------------|-------------------|--------------|
| <b>Well</b>                 | Old Crow S-13 HM (slot G) |                            |                  |                      |                   |              |
| <b>Well Position</b>        | <b>+N/-S</b>              | 0.00 usft                  | <b>Northing:</b> | 14,446,132.87 usft   | <b>Latitude:</b>  | 39.77840875  |
|                             | <b>+E/-W</b>              | 0.00 usft                  | <b>Easting:</b>  | 1,707,024.83 usft    | <b>Longitude:</b> | -80.76292167 |
| <b>Position Uncertainty</b> | 0.00 usft                 | <b>Wellhead Elevation:</b> | usft             | <b>Ground Level:</b> | 1,265.00 usft     |              |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | Original Hole     |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | IGRF2015          | 12/17/2019         | -8.727                 | 66.748               | 51,886.83676286            |

|                          |                                |                     |                     |                      |      |
|--------------------------|--------------------------------|---------------------|---------------------|----------------------|------|
| <b>Design</b>            | Surveys Original Hole          |                     |                     |                      |      |
| <b>Audit Notes:</b>      |                                |                     |                     |                      |      |
| <b>Version:</b>          | 1.0                            | <b>Phase:</b>       | ACTUAL              | <b>Tie On Depth:</b> | 0.00 |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (usft)</b> | <b>+N/-S (usft)</b> | <b>+E/-W (usft)</b> | <b>Direction (°)</b> |      |
|                          | 0.00                           | 0.00                | 0.00                | 125.37               |      |

|                       |                  |                            |                  |                    |  |
|-----------------------|------------------|----------------------------|------------------|--------------------|--|
| <b>Survey Program</b> | <b>Date</b>      | 1/2/2020                   |                  |                    |  |
| <b>From (usft)</b>    | <b>To (usft)</b> | <b>Survey (Wellbore)</b>   | <b>Tool Name</b> | <b>Description</b> |  |
| 174.00                | 994.00           | MWD surf (Original Hole)   | MWD              | MWD - Standard     |  |
| 1,066.00              | 2,912.00         | MWD int (Original Hole)    | MWD              | MWD - Standard     |  |
| 2,982.00              | 6,654.00         | MWD (Original Hole)        | MWD              | MWD - Standard     |  |
| 6,692.00              | 15,834.00        | MWD Lat (Original Hole)    | MWD              | MWD - Standard     |  |
| 15,888.00             | 15,888.00        | Projection (Original Hole) | MWD              | MWD - Standard     |  |

|                              |                        |                    |                              |                     |                     |                            |                           |                 |                  |  |
|------------------------------|------------------------|--------------------|------------------------------|---------------------|---------------------|----------------------------|---------------------------|-----------------|------------------|--|
| <b>Survey</b>                |                        |                    |                              |                     |                     |                            |                           |                 |                  |  |
| <b>Measured Depth (usft)</b> | <b>Inclination (°)</b> | <b>Azimuth (°)</b> | <b>Vertical Depth (usft)</b> | <b>+N/-S (usft)</b> | <b>+E/-W (usft)</b> | <b>Map Northing (usft)</b> | <b>Map Easting (usft)</b> | <b>Latitude</b> | <b>Longitude</b> |  |
| 0.00                         | 0.00                   | 0.00               | 0.00                         | 0.00                | 0.00                | 14,446,132.87              | 1,707,024.83              | 39.77840875     | -80.76292167     |  |
| 174.00                       | 0.18                   | 349.21             | 174.00                       | 0.27                | -0.05               | 14,446,133.14              | 1,707,024.77              | 39.77840875     | -80.76292185     |  |
| <b>MWD surveys</b>           |                        |                    |                              |                     |                     |                            |                           |                 |                  |  |
| 205.00                       | 0.48                   | 28.41              | 205.00                       | 0.43                | 0.00                | 14,446,133.30              | 1,707,024.83              | 39.77840875     | -80.76292166     |  |
| 236.00                       | 0.35                   | 359.40             | 236.00                       | 0.64                | 0.06                | 14,446,133.51              | 1,707,024.89              | 39.77841051     | -80.76292144     |  |
| 266.00                       | 0.22                   | 327.59             | 266.00                       | 0.78                | 0.03                | 14,446,133.65              | 1,707,024.86              | 39.77841089     | -80.76292156     |  |
| 296.00                       | 0.40                   | 39.22              | 296.00                       | 0.91                | 0.07                | 14,446,133.78              | 1,707,024.89              | 39.77841122     | -80.76292143     |  |
| 326.00                       | 0.35                   | 173.86             | 326.00                       | 0.90                | 0.14                | 14,446,133.77              | 1,707,024.97              | 39.77841122     | -80.76292116     |  |

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| <b>Company:</b>  | Tug Hill Operating LLC          | <b>Local Co-ordinate Reference:</b> | Well Old Crow S-13 HM (slot G)          |
| <b>Project:</b>  | Marshall County, West Virginia. | <b>TVD Reference:</b>               | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Site:</b>     | Old Crow Pad                    | <b>MD Reference:</b>                | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Well:</b>     | Old Crow S-13 HM (slot G)       | <b>North Reference:</b>             | Grid                                    |
| <b>Wellbore:</b> | Original Hole                   | <b>Survey Calculation Method:</b>   | Minimum Curvature                       |
| <b>Design:</b>   | Surveys Original Hole           | <b>Database:</b>                    | DB_Aug1919_v14                          |

| Survey                |                 |             |                       |              |              |                     |                    |             |              |  |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude    | Longitude    |  |
| 356.00                | 0.26            | 198.12      | 356.00                | 0.74         | 0.13         | 14,446,133.61       | 1,707,024.96       | 39.77841079 | -80.76292120 |  |
| 385.00                | 0.18            | 187.40      | 385.00                | 0.64         | 0.10         | 14,446,133.50       | 1,707,024.93       | 39.77841050 | -80.76292129 |  |
| 415.00                | 0.22            | 202.96      | 415.00                | 0.54         | 0.08         | 14,446,133.40       | 1,707,024.90       | 39.77841022 | -80.76292140 |  |
| 446.00                | 0.31            | 227.57      | 446.00                | 0.42         | -0.01        | 14,446,133.29       | 1,707,024.82       | 39.77840992 | -80.76292170 |  |
| 475.00                | 0.26            | 283.73      | 475.00                | 0.39         | -0.13        | 14,446,133.25       | 1,707,024.69       | 39.77840982 | -80.76292213 |  |
| 505.00                | 0.31            | 81.14       | 505.00                | 0.42         | -0.12        | 14,446,133.28       | 1,707,024.71       | 39.77840990 | -80.76292208 |  |
| 535.00                | 0.18            | 244.00      | 535.00                | 0.41         | -0.08        | 14,446,133.27       | 1,707,024.75       | 39.77840987 | -80.76292195 |  |
| 565.00                | 0.26            | 171.67      | 565.00                | 0.32         | -0.11        | 14,446,133.19       | 1,707,024.71       | 39.77840963 | -80.76292207 |  |
| 595.00                | 0.26            | 115.59      | 595.00                | 0.22         | -0.04        | 14,446,133.09       | 1,707,024.78       | 39.77840937 | -80.76292181 |  |
| 626.00                | 0.18            | 104.87      | 626.00                | 0.18         | 0.07         | 14,446,133.05       | 1,707,024.90       | 39.77840925 | -80.76292142 |  |
| 657.00                | 0.35            | 228.88      | 656.99                | 0.11         | 0.05         | 14,446,132.97       | 1,707,024.87       | 39.77840904 | -80.76292151 |  |
| 689.00                | 0.22            | 17.16       | 688.99                | 0.10         | -0.01        | 14,446,132.97       | 1,707,024.82       | 39.77840903 | -80.76292171 |  |
| 720.00                | 0.31            | 81.14       | 719.99                | 0.17         | 0.09         | 14,446,133.04       | 1,707,024.92       | 39.77840922 | -80.76292135 |  |
| 752.00                | 0.22            | 127.37      | 751.99                | 0.15         | 0.22         | 14,446,133.01       | 1,707,025.05       | 39.77840915 | -80.76292087 |  |
| 782.00                | 0.31            | 140.55      | 781.99                | 0.05         | 0.32         | 14,446,132.92       | 1,707,025.15       | 39.77840888 | -80.76292052 |  |
| 813.00                | 0.26            | 71.91       | 812.99                | 0.01         | 0.44         | 14,446,132.87       | 1,707,025.27       | 39.77840876 | -80.76292010 |  |
| 844.00                | 0.35            | 167.18      | 843.99                | -0.07        | 0.53         | 14,446,132.80       | 1,707,025.36       | 39.77840857 | -80.76291978 |  |
| 876.00                | 0.40            | 252.35      | 875.99                | -0.19        | 0.45         | 14,446,132.67       | 1,707,025.27       | 39.77840821 | -80.76292009 |  |
| 908.00                | 0.35            | 323.72      | 907.99                | -0.15        | 0.28         | 14,446,132.72       | 1,707,025.11       | 39.77840834 | -80.76292067 |  |
| 939.00                | 0.31            | 337.43      | 938.99                | 0.00         | 0.19         | 14,446,132.87       | 1,707,025.02       | 39.77840876 | -80.76292098 |  |
| 971.00                | 0.48            | 215.52      | 970.99                | -0.02        | 0.08         | 14,446,132.84       | 1,707,024.91       | 39.77840868 | -80.76292138 |  |
| 994.00                | 0.31            | 144.16      | 993.99                | -0.15        | 0.06         | 14,446,132.71       | 1,707,024.89       | 39.77840833 | -80.76292145 |  |
| 1,066.00              | 0.44            | 229.41      | 1,065.99              | -0.49        | -0.03        | 14,446,132.38       | 1,707,024.79       | 39.77840740 | -80.76292180 |  |
| 1,160.00              | 1.27            | 328.20      | 1,159.98              | 0.16         | -0.86        | 14,446,133.03       | 1,707,023.97       | 39.77840919 | -80.76292472 |  |
| 1,256.00              | 1.19            | 5.91        | 1,255.96              | 2.05         | -1.31        | 14,446,134.92       | 1,707,023.51       | 39.77841440 | -80.76292633 |  |
| 1,351.00              | 1.63            | 48.09       | 1,350.93              | 3.94         | -0.21        | 14,446,136.81       | 1,707,024.62       | 39.77841957 | -80.76292237 |  |
| 1,444.00              | 1.49            | 23.48       | 1,443.90              | 5.93         | 1.26         | 14,446,138.80       | 1,707,026.08       | 39.77842503 | -80.76291714 |  |
| 1,539.00              | 2.59            | 27.18       | 1,538.84              | 8.97         | 2.73         | 14,446,141.84       | 1,707,027.56       | 39.77843338 | -80.76291187 |  |
| 1,634.00              | 5.58            | 14.78       | 1,633.59              | 15.35        | 4.89         | 14,446,148.22       | 1,707,029.72       | 39.77845087 | -80.76290412 |  |
| 1,729.00              | 8.53            | 10.39       | 1,727.86              | 26.75        | 7.34         | 14,446,159.62       | 1,707,032.17       | 39.77848216 | -80.76289529 |  |
| 1,825.00              | 11.87           | 9.68        | 1,822.33              | 43.49        | 10.28        | 14,446,176.36       | 1,707,035.11       | 39.77852811 | -80.76288465 |  |
| 1,920.00              | 15.47           | 8.63        | 1,914.62              | 65.65        | 13.83        | 14,446,198.52       | 1,707,038.66       | 39.77858896 | -80.76287183 |  |
| 2,015.00              | 18.33           | 13.46       | 2,005.52              | 92.72        | 19.21        | 14,446,225.58       | 1,707,044.04       | 39.77866323 | -80.76285242 |  |
| 2,110.00              | 21.66           | 18.74       | 2,094.78              | 123.86       | 28.32        | 14,446,256.72       | 1,707,053.15       | 39.77874869 | -80.76281969 |  |
| 2,205.00              | 25.66           | 20.32       | 2,181.78              | 159.76       | 41.10        | 14,446,292.63       | 1,707,065.93       | 39.77884721 | -80.76277387 |  |
| 2,300.00              | 29.49           | 20.85       | 2,265.97              | 200.92       | 56.57        | 14,446,333.79       | 1,707,081.40       | 39.77896012 | -80.76271841 |  |
| 2,395.00              | 31.38           | 17.68       | 2,347.89              | 246.34       | 72.41        | 14,446,379.21       | 1,707,097.24       | 39.77908475 | -80.76266162 |  |
| 2,489.00              | 32.83           | 16.45       | 2,427.51              | 294.10       | 87.06        | 14,446,426.97       | 1,707,111.89       | 39.77921581 | -80.76260902 |  |
| 2,584.00              | 34.67           | 16.01       | 2,506.50              | 344.78       | 101.81       | 14,446,477.64       | 1,707,126.63       | 39.77935486 | -80.76255606 |  |
| 2,679.00              | 35.77           | 17.33       | 2,584.11              | 397.26       | 117.53       | 14,446,530.12       | 1,707,142.36       | 39.77949887 | -80.76249960 |  |
| 2,774.00              | 36.25           | 17.51       | 2,660.95              | 450.55       | 134.25       | 14,446,583.41       | 1,707,159.08       | 39.77964510 | -80.76243958 |  |
| 2,868.00              | 37.18           | 17.77       | 2,736.30              | 504.10       | 151.28       | 14,446,636.97       | 1,707,176.11       | 39.77979205 | -80.76237846 |  |
| 2,912.00              | 38.85           | 18.65       | 2,770.97              | 529.84       | 159.75       | 14,446,662.71       | 1,707,184.58       | 39.77986267 | -80.76234806 |  |
| 2,982.00              | 40.69           | 19.00       | 2,824.77              | 572.22       | 174.20       | 14,446,705.09       | 1,707,199.03       | 39.77997896 | -80.76229622 |  |
| 3,057.00              | 40.87           | 20.50       | 2,881.56              | 618.32       | 190.76       | 14,446,751.19       | 1,707,215.58       | 39.78010545 | -80.76223687 |  |
| 3,155.00              | 42.67           | 22.60       | 2,954.65              | 679.02       | 214.75       | 14,446,811.89       | 1,707,239.58       | 39.78027197 | -80.76215089 |  |
| 3,249.00              | 40.47           | 20.14       | 3,024.98              | 737.08       | 237.50       | 14,446,869.95       | 1,707,262.33       | 39.78043126 | -80.76206936 |  |
| 3,344.00              | 41.00           | 21.73       | 3,096.97              | 794.98       | 259.66       | 14,446,927.85       | 1,707,284.48       | 39.78059009 | -80.76198996 |  |
| 3,438.00              | 40.03           | 21.20       | 3,168.43              | 851.81       | 282.00       | 14,446,984.68       | 1,707,306.83       | 39.78074600 | -80.76190988 |  |
| 3,533.00              | 38.85           | 19.79       | 3,241.80              | 908.33       | 303.14       | 14,447,041.20       | 1,707,327.97       | 39.78090107 | -80.76183411 |  |
| 3,628.00              | 39.29           | 19.18       | 3,315.55              | 964.78       | 323.11       | 14,447,097.64       | 1,707,347.94       | 39.78105654 | -80.76176249 |  |
| 3,722.00              | 39.86           | 18.21       | 3,388.01              | 1,021.50     | 342.30       | 14,447,154.37       | 1,707,367.13       | 39.78121159 | -80.76169364 |  |
| 3,816.00              | 39.07           | 17.16       | 3,460.58              | 1,078.42     | 360.46       | 14,447,211.29       | 1,707,385.28       | 39.78136827 | -80.76162848 |  |
| 3,910.00              | 38.01           | 18.03       | 3,534.10              | 1,134.25     | 378.16       | 14,447,267.12       | 1,707,402.98       | 39.78152096 | -80.76156496 |  |
| 4,004.00              | 38.98           | 18.39       | 3,607.67              | 1,189.83     | 396.44       | 14,447,322.70       | 1,707,421.27       | 39.78167346 | -80.76149934 |  |

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|                  |                                 |                                     |   |
|------------------|---------------------------------|-------------------------------------|---|
| <b>Company:</b>  | Tug Hill Operating LLC          | <b>Local Co-ordinate Reference:</b> | Well Old Crow S-13 HM (slot G)          |
| <b>Project:</b>  | Marshall County, West Virginia. | <b>TVD Reference:</b>               | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Site:</b>     | Old Crow Pad                    | <b>MD Reference:</b>                | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Well:</b>     | Old Crow S-13 HM (slot G)       | <b>North Reference:</b>             | Grid                                    |
| <b>Wellbore:</b> | Original Hole                   | <b>Survey Calculation Method:</b>   | Minimum Curvature                       |
| <b>Design:</b>   | Surveys Original Hole           | <b>Database:</b>                    | DB_Aug1919_v14                          |

| Survey                |                 |             |                       |              |              |                     |                    |             |              |  |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude    | Longitude    |  |
| 4,099.00              | 40.08           | 19.88       | 3,680.94              | 1,246.95     | 416.27       | 14,447,379.81       | 1,707,441.10       | 39.78183017 | -80.76142823 |  |
| 4,193.00              | 41.00           | 19.97       | 3,752.38              | 1,304.39     | 437.09       | 14,447,437.25       | 1,707,461.92       | 39.78198777 | -80.76135357 |  |
| 4,287.00              | 40.61           | 19.00       | 3,823.53              | 1,362.29     | 457.58       | 14,447,495.16       | 1,707,482.41       | 39.78214665 | -80.76128008 |  |
| 4,381.00              | 40.39           | 17.59       | 3,895.01              | 1,420.25     | 476.75       | 14,447,553.12       | 1,707,501.57       | 39.78230568 | -80.76121132 |  |
| 4,476.00              | 39.95           | 19.62       | 3,967.61              | 1,478.33     | 496.29       | 14,447,611.19       | 1,707,521.12       | 39.78246502 | -80.76114120 |  |
| 4,571.00              | 40.56           | 21.29       | 4,040.11              | 1,535.84     | 517.75       | 14,447,668.70       | 1,707,542.57       | 39.78262280 | -80.76106428 |  |
| 4,666.00              | 40.43           | 19.97       | 4,112.35              | 1,593.57     | 539.48       | 14,447,726.44       | 1,707,564.31       | 39.78278119 | -80.76098636 |  |
| 4,760.00              | 38.63           | 19.09       | 4,184.85              | 1,649.95     | 559.49       | 14,447,782.82       | 1,707,584.32       | 39.78293588 | -80.76091461 |  |
| 4,855.00              | 37.53           | 20.14       | 4,259.63              | 1,705.14     | 579.15       | 14,447,838.01       | 1,707,603.98       | 39.78308731 | -80.76084409 |  |
| 4,949.00              | 38.19           | 19.79       | 4,333.85              | 1,759.36     | 598.85       | 14,447,892.23       | 1,707,623.68       | 39.78323607 | -80.76077347 |  |
| 5,044.00              | 38.89           | 20.67       | 4,408.15              | 1,814.90     | 619.32       | 14,447,947.77       | 1,707,644.15       | 39.78338844 | -80.76070008 |  |
| 5,138.00              | 38.06           | 18.83       | 4,481.74              | 1,869.94     | 639.09       | 14,448,002.80       | 1,707,663.92       | 39.78353944 | -80.76062918 |  |
| 5,233.00              | 38.41           | 19.88       | 4,556.37              | 1,925.41     | 658.58       | 14,448,058.27       | 1,707,683.40       | 39.78369163 | -80.76055929 |  |
| 5,328.00              | 39.46           | 19.09       | 4,630.26              | 1,981.69     | 678.49       | 14,448,114.55       | 1,707,703.31       | 39.78384605 | -80.76048789 |  |
| 5,422.00              | 40.83           | 19.53       | 4,702.12              | 2,038.88     | 698.53       | 14,448,171.75       | 1,707,723.35       | 39.78400297 | -80.76041600 |  |
| 5,517.00              | 41.18           | 19.70       | 4,773.81              | 2,097.59     | 719.45       | 14,448,230.46       | 1,707,744.28       | 39.78416406 | -80.76034096 |  |
| 5,611.00              | 39.77           | 19.62       | 4,845.31              | 2,155.05     | 739.98       | 14,448,287.92       | 1,707,764.81       | 39.78432171 | -80.76026734 |  |
| 5,706.00              | 38.54           | 17.77       | 4,918.98              | 2,211.86     | 759.22       | 14,448,344.73       | 1,707,784.05       | 39.78447758 | -80.76019832 |  |
| 5,800.00              | 38.58           | 17.95       | 4,992.48              | 2,267.63     | 777.19       | 14,448,400.50       | 1,707,803.02       | 39.78463060 | -80.76013382 |  |
| 5,895.00              | 38.58           | 19.79       | 5,066.75              | 2,323.69     | 796.35       | 14,448,456.55       | 1,707,821.17       | 39.78478440 | -80.76006509 |  |
| 5,990.00              | 38.45           | 19.88       | 5,141.08              | 2,379.33     | 816.42       | 14,448,512.20       | 1,707,841.25       | 39.78493708 | -80.75999311 |  |
| 6,085.00              | 41.48           | 20.23       | 5,213.89              | 2,436.65     | 837.35       | 14,448,569.51       | 1,707,862.18       | 39.78509432 | -80.75991806 |  |
| 6,180.00              | 43.55           | 20.41       | 5,283.91              | 2,496.85     | 859.64       | 14,448,629.71       | 1,707,884.47       | 39.78525948 | -80.75983813 |  |
| 6,275.00              | 42.63           | 16.01       | 5,353.30              | 2,558.46     | 879.94       | 14,448,691.32       | 1,707,904.76       | 39.78542853 | -80.75976531 |  |
| 6,369.00              | 41.84           | 17.24       | 5,422.90              | 2,619.00     | 898.01       | 14,448,751.86       | 1,707,922.83       | 39.78559466 | -80.75970041 |  |
| 6,464.00              | 38.67           | 23.48       | 5,495.42              | 2,676.52     | 919.24       | 14,448,809.39       | 1,707,944.06       | 39.78575247 | -80.75962429 |  |
| 6,559.00              | 38.54           | 23.48       | 5,569.66              | 2,730.89     | 942.85       | 14,448,863.75       | 1,707,967.68       | 39.78590160 | -80.75953970 |  |
| 6,654.00              | 38.72           | 22.17       | 5,643.87              | 2,785.55     | 965.86       | 14,448,918.41       | 1,707,990.68       | 39.78605155 | -80.75945729 |  |
| 6,692.00              | 38.77           | 19.77       | 5,673.51              | 2,807.75     | 974.37       | 14,448,940.62       | 1,707,999.19       | 39.78611246 | -80.75942678 |  |
| 6,739.00              | 39.69           | 14.32       | 5,709.93              | 2,836.15     | 983.06       | 14,448,969.02       | 1,708,007.89       | 39.78619039 | -80.75939557 |  |
| 6,787.00              | 41.10           | 10.98       | 5,746.49              | 2,866.49     | 989.86       | 14,448,999.36       | 1,708,014.68       | 39.78627368 | -80.75937109 |  |
| 6,834.00              | 37.27           | 17.40       | 5,782.93              | 2,895.26     | 997.06       | 14,449,028.13       | 1,708,021.89       | 39.78635263 | -80.75934517 |  |
| 6,881.00              | 34.51           | 24.61       | 5,821.02              | 2,920.96     | 1,006.87     | 14,449,053.83       | 1,708,031.69       | 39.78642314 | -80.75931001 |  |
| 6,928.00              | 33.76           | 30.32       | 5,859.93              | 2,944.35     | 1,019.01     | 14,449,077.21       | 1,708,043.83       | 39.78648726 | -80.75926657 |  |
| 6,975.00              | 32.31           | 37.00       | 5,899.34              | 2,965.66     | 1,033.17     | 14,449,098.53       | 1,708,057.99       | 39.78654569 | -80.75921597 |  |
| 7,022.00              | 31.21           | 44.91       | 5,939.32              | 2,984.32     | 1,049.33     | 14,449,117.19       | 1,708,074.15       | 39.78659683 | -80.75915826 |  |
| 7,070.00              | 29.89           | 50.53       | 5,980.67              | 3,000.74     | 1,067.35     | 14,449,133.61       | 1,708,092.17       | 39.78664177 | -80.75909396 |  |
| 7,117.00              | 29.58           | 55.81       | 6,021.49              | 3,014.70     | 1,085.99     | 14,449,147.57       | 1,708,110.81       | 39.78667999 | -80.75902748 |  |
| 7,165.00              | 30.64           | 60.64       | 6,063.02              | 3,027.36     | 1,106.45     | 14,449,160.23       | 1,708,131.27       | 39.78671460 | -80.75895451 |  |
| 7,212.00              | 31.65           | 68.29       | 6,103.26              | 3,037.80     | 1,128.35     | 14,449,170.67       | 1,708,153.18       | 39.78674310 | -80.75887644 |  |
| 7,260.00              | 33.27           | 72.77       | 6,143.76              | 3,046.36     | 1,152.63     | 14,449,179.23       | 1,708,177.46       | 39.78676643 | -80.75878993 |  |
| 7,307.00              | 34.51           | 78.66       | 6,182.79              | 3,052.80     | 1,178.01     | 14,449,185.66       | 1,708,202.83       | 39.78678392 | -80.75869954 |  |
| 7,354.00              | 37.10           | 86.83       | 6,220.92              | 3,056.20     | 1,205.24     | 14,449,189.07       | 1,708,230.06       | 39.78679307 | -80.75860258 |  |
| 7,401.00              | 39.03           | 91.84       | 6,257.93              | 3,056.51     | 1,234.19     | 14,449,189.38       | 1,708,259.02       | 39.78679370 | -80.75849951 |  |
| 7,449.00              | 40.31           | 97.56       | 6,294.89              | 3,053.98     | 1,264.70     | 14,449,186.85       | 1,708,289.53       | 39.78678653 | -80.75839093 |  |
| 7,496.00              | 43.60           | 102.74      | 6,329.85              | 3,048.40     | 1,295.60     | 14,449,181.27       | 1,708,320.42       | 39.78677099 | -80.75828101 |  |
| 7,543.00              | 46.20           | 105.99      | 6,363.14              | 3,040.16     | 1,327.72     | 14,449,173.02       | 1,708,352.54       | 39.78674810 | -80.75816674 |  |
| 7,590.00              | 48.22           | 109.60      | 6,395.08              | 3,029.60     | 1,360.54     | 14,449,162.47       | 1,708,385.37       | 39.78671887 | -80.75805000 |  |
| 7,638.00              | 51.16           | 115.75      | 6,426.14              | 3,015.47     | 1,394.26     | 14,449,148.33       | 1,708,419.09       | 39.78667980 | -80.75793009 |  |
| 7,685.00              | 55.69           | 120.58      | 6,454.15              | 2,997.62     | 1,427.49     | 14,449,130.49       | 1,708,452.32       | 39.78663055 | -80.75781199 |  |
| 7,732.00              | 58.55           | 124.01      | 6,479.67              | 2,976.52     | 1,460.84     | 14,449,109.39       | 1,708,485.66       | 39.78657236 | -80.75769350 |  |
| 7,779.00              | 60.70           | 125.77      | 6,503.44              | 2,953.33     | 1,494.09     | 14,449,086.20       | 1,708,518.97       | 39.78650841 | -80.75757535 |  |
| 7,827.00              | 64.04           | 129.55      | 6,525.70              | 2,927.34     | 1,527.73     | 14,449,060.21       | 1,708,552.55       | 39.78643679 | -80.75745586 |  |
| 7,874.00              | 66.95           | 132.36      | 6,545.20              | 2,899.30     | 1,560.01     | 14,449,032.17       | 1,708,584.83       | 39.78636958 | -80.75734121 |  |
| 7,921.00              | 70.02           | 136.14      | 6,562.44              | 2,868.79     | 1,591.31     | 14,449,001.66       | 1,708,616.13       | 39.78629853 | -80.75723009 |  |

|                  |                                 |                                     |   |
|------------------|---------------------------------|-------------------------------------|---|
| <b>Company:</b>  | Tug Hill Operating LLC          | <b>Local Co-ordinate Reference:</b> | Well Old Crow S-13 HM (slot G)          |
| <b>Project:</b>  | Marshall County, West Virginia. | <b>TVD Reference:</b>               | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Site:</b>     | Old Crow Pad                    | <b>MD Reference:</b>                | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Well:</b>     | Old Crow S-13 HM (slot G)       | <b>North Reference:</b>             | Grid                                    |
| <b>Wellbore:</b> | Original Hole                   | <b>Survey Calculation Method:</b>   | Minimum Curvature                       |
| <b>Design:</b>   | Surveys Original Hole           | <b>Database:</b>                    | DB_Aug1919_v14                          |

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude    | Longitude    |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|
| 7,968.00              | 73.80           | 140.71      | 6,577.03              | 2,835.38     | 1,620.93     | 14,448,968.24       | 1,708,645.75       | 39.78618354 | -80.75712498 |
| 8,016.00              | 75.43           | 145.19      | 6,589.77              | 2,798.45     | 1,648.80     | 14,448,931.31       | 1,708,673.62       | 39.78608191 | -80.75702613 |
| 8,063.00              | 79.30           | 146.42      | 6,600.05              | 2,760.52     | 1,674.56     | 14,448,893.39       | 1,708,699.39       | 39.78597756 | -80.75693478 |
| 8,111.00              | 82.55           | 146.77      | 6,607.62              | 2,720.96     | 1,700.65     | 14,448,853.82       | 1,708,725.48       | 39.78586871 | -80.75684229 |
| 8,158.00              | 86.20           | 148.36      | 6,612.23              | 2,681.49     | 1,725.73     | 14,448,814.35       | 1,708,750.56       | 39.78576013 | -80.75675339 |
| 8,205.00              | 89.49           | 148.09      | 6,614.00              | 2,641.56     | 1,750.46     | 14,448,774.43       | 1,708,775.29       | 39.78565031 | -80.75666575 |
| 8,252.00              | 89.05           | 148.00      | 6,614.60              | 2,601.69     | 1,775.34     | 14,448,734.56       | 1,708,800.16       | 39.78554062 | -80.75657760 |
| 8,299.00              | 88.75           | 148.71      | 6,615.50              | 2,561.68     | 1,799.99     | 14,448,694.55       | 1,708,824.81       | 39.78543057 | -80.75649023 |
| 8,394.00              | 89.63           | 149.24      | 6,616.84              | 2,480.28     | 1,848.95     | 14,448,613.15       | 1,708,873.77       | 39.78520666 | -80.75631674 |
| 8,489.00              | 88.62           | 149.15      | 6,618.29              | 2,398.70     | 1,897.59     | 14,448,531.56       | 1,708,922.42       | 39.78498224 | -80.75614438 |
| 8,583.00              | 89.36           | 149.67      | 6,619.95              | 2,317.79     | 1,945.42     | 14,448,450.66       | 1,708,970.25       | 39.78475969 | -80.75597491 |
| 8,678.00              | 89.71           | 151.61      | 6,620.72              | 2,235.00     | 1,991.99     | 14,448,367.87       | 1,709,016.82       | 39.78453198 | -80.75580993 |
| 8,773.00              | 89.23           | 151.26      | 6,621.60              | 2,151.57     | 2,037.42     | 14,448,284.44       | 1,709,062.24       | 39.78430251 | -80.75564906 |
| 8,867.00              | 92.09           | 150.99      | 6,620.52              | 2,069.27     | 2,082.80     | 14,448,202.14       | 1,709,107.63       | 39.78407615 | -80.75548831 |
| 8,962.00              | 88.88           | 150.38      | 6,619.71              | 1,986.45     | 2,129.31     | 14,448,119.32       | 1,709,154.13       | 39.78384836 | -80.75532357 |
| 9,057.00              | 89.32           | 150.29      | 6,621.20              | 1,903.91     | 2,176.32     | 14,448,036.78       | 1,709,201.15       | 39.78362133 | -80.75515704 |
| 9,152.00              | 88.97           | 149.85      | 6,622.62              | 1,821.59     | 2,223.71     | 14,447,954.46       | 1,709,248.54       | 39.78339490 | -80.75498914 |
| 9,247.00              | 89.98           | 150.99      | 6,623.49              | 1,738.98     | 2,270.61     | 14,447,871.85       | 1,709,295.43       | 39.78316767 | -80.75482303 |
| 9,342.00              | 89.45           | 151.43      | 6,623.96              | 1,655.72     | 2,316.36     | 14,447,788.59       | 1,709,341.18       | 39.78293868 | -80.75466099 |
| 9,438.00              | 89.05           | 151.52      | 6,625.22              | 1,571.38     | 2,362.20     | 14,447,704.25       | 1,709,387.02       | 39.78270672 | -80.75449864 |
| 9,532.00              | 90.24           | 150.38      | 6,625.80              | 1,489.21     | 2,407.84     | 14,447,622.08       | 1,709,432.66       | 39.78248072 | -80.75433699 |
| 9,625.00              | 89.85           | 149.67      | 6,625.73              | 1,408.65     | 2,454.30     | 14,447,541.52       | 1,709,479.13       | 39.78225913 | -80.75417238 |
| 9,720.00              | 89.89           | 150.99      | 6,625.95              | 1,326.11     | 2,501.33     | 14,447,458.98       | 1,709,526.15       | 39.78203209 | -80.75400581 |
| 9,815.00              | 89.80           | 149.85      | 6,626.20              | 1,243.49     | 2,548.22     | 14,447,376.36       | 1,709,573.05       | 39.78180484 | -80.75383970 |
| 9,910.00              | 90.15           | 150.38      | 6,626.24              | 1,161.13     | 2,595.56     | 14,447,293.99       | 1,709,620.38       | 39.78157828 | -80.75367202 |
| 10,004.00             | 89.45           | 148.44      | 6,626.57              | 1,080.21     | 2,643.39     | 14,447,213.08       | 1,709,668.21       | 39.78135571 | -80.75350256 |
| 10,099.00             | 89.41           | 148.53      | 6,627.52              | 999.23       | 2,693.05     | 14,447,132.10       | 1,709,717.87       | 39.78113293 | -80.75332660 |
| 10,193.00             | 89.10           | 148.09      | 6,628.74              | 919.25       | 2,742.42     | 14,447,052.12       | 1,709,767.25       | 39.78091292 | -80.75315164 |
| 10,286.00             | 89.63           | 149.67      | 6,629.77              | 839.64       | 2,790.48     | 14,446,972.51       | 1,709,815.31       | 39.78069393 | -80.75298135 |
| 10,381.00             | 89.19           | 149.24      | 6,630.75              | 757.83       | 2,838.76     | 14,446,890.70       | 1,709,863.59       | 39.78046889 | -80.75281032 |
| 10,475.00             | 89.93           | 149.94      | 6,631.47              | 676.77       | 2,886.34     | 14,446,809.63       | 1,709,911.16       | 39.78024590 | -80.75264176 |
| 10,570.00             | 89.05           | 150.47      | 6,632.32              | 594.33       | 2,933.54     | 14,446,727.20       | 1,709,958.37       | 39.78001915 | -80.75247456 |
| 10,665.00             | 89.32           | 148.36      | 6,633.67              | 512.56       | 2,981.87     | 14,446,645.43       | 1,710,006.70       | 39.77979422 | -80.75230334 |
| 10,759.00             | 91.38           | 148.80      | 6,633.09              | 432.35       | 3,030.87     | 14,446,565.22       | 1,710,055.70       | 39.77957356 | -80.75212973 |
| 10,853.00             | 90.68           | 148.80      | 6,631.40              | 351.96       | 3,079.56     | 14,446,484.83       | 1,710,104.38       | 39.77935242 | -80.75195723 |
| 10,946.00             | 91.74           | 149.59      | 6,629.44              | 272.10       | 3,127.17     | 14,446,404.97       | 1,710,152.00       | 39.77913274 | -80.75178854 |
| 11,041.00             | 89.41           | 148.62      | 6,628.49              | 190.59       | 3,175.95     | 14,446,323.46       | 1,710,200.77       | 39.77890852 | -80.75161575 |
| 11,135.00             | 89.23           | 147.83      | 6,629.60              | 110.68       | 3,225.44     | 14,446,243.55       | 1,710,250.27       | 39.77868870 | -80.75144037 |
| 11,230.00             | 88.09           | 147.83      | 6,631.82              | 30.29        | 3,276.01     | 14,446,163.16       | 1,710,300.83       | 39.77846754 | -80.75126118 |
| 11,325.00             | 89.49           | 148.53      | 6,633.83              | -50.41       | 3,326.08     | 14,446,082.46       | 1,710,350.91       | 39.77824553 | -80.75108375 |
| 11,420.00             | 89.49           | 150.64      | 6,634.68              | -132.33      | 3,374.17     | 14,446,000.54       | 1,710,399.00       | 39.77802019 | -80.75091339 |
| 11,514.00             | 89.41           | 152.75      | 6,635.58              | -215.08      | 3,418.74     | 14,445,917.79       | 1,710,443.57       | 39.77779259 | -80.75075559 |
| 11,609.00             | 90.95           | 150.73      | 6,635.28              | -298.75      | 3,463.72     | 14,445,834.12       | 1,710,488.54       | 39.77756247 | -80.75059634 |
| 11,703.00             | 90.42           | 151.17      | 6,634.16              | -380.92      | 3,509.36     | 14,445,751.95       | 1,710,534.18       | 39.77733646 | -80.75043471 |
| 11,797.00             | 90.29           | 150.47      | 6,633.57              | -462.99      | 3,555.19     | 14,445,669.88       | 1,710,580.01       | 39.77711073 | -80.75027241 |
| 11,891.00             | 89.76           | 150.64      | 6,633.53              | -544.84      | 3,601.39     | 14,445,588.02       | 1,710,626.22       | 39.77688557 | -80.75010875 |
| 11,985.00             | 90.37           | 150.20      | 6,633.43              | -626.59      | 3,647.80     | 14,445,506.27       | 1,710,672.62       | 39.77666071 | -80.74994441 |
| 12,080.00             | 90.11           | 150.03      | 6,633.03              | -708.96      | 3,695.13     | 14,445,423.91       | 1,710,719.96       | 39.77643415 | -80.74977676 |
| 12,174.00             | 90.29           | 149.59      | 6,632.70              | -790.21      | 3,742.40     | 14,445,342.66       | 1,710,767.23       | 39.77621065 | -80.74960933 |
| 12,268.00             | 89.63           | 150.20      | 6,632.77              | -871.53      | 3,789.55     | 14,445,261.34       | 1,710,814.37       | 39.77598696 | -80.74944233 |
| 12,362.00             | 89.89           | 148.53      | 6,633.16              | -952.40      | 3,837.45     | 14,445,180.46       | 1,710,862.27       | 39.77576449 | -80.74927267 |
| 12,457.00             | 90.59           | 148.36      | 6,632.76              | -1,033.36    | 3,887.16     | 14,445,099.51       | 1,710,911.99       | 39.77554179 | -80.74909653 |
| 12,552.00             | 90.51           | 148.62      | 6,631.85              | -1,114.34    | 3,936.81     | 14,445,018.52       | 1,710,961.63       | 39.77531899 | -80.74892063 |
| 12,646.00             | 89.98           | 147.74      | 6,631.45              | -1,194.22    | 3,986.37     | 14,444,938.65       | 1,711,011.20       | 39.77509626 | -80.74874504 |
| 12,739.00             | 89.85           | 150.11      | 6,631.59              | -1,273.86    | 4,034.37     | 14,444,859.00       | 1,711,059.19       | 39.77487355 | -80.74857500 |

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|                  |                                 |                                     |   |
|------------------|---------------------------------|-------------------------------------|---|
| <b>Company:</b>  | Tug Hill Operating LLC          | <b>Local Co-ordinate Reference:</b> | Well Old Crow S-13 HM (slot G)          |
| <b>Project:</b>  | Marshall County, West Virginia. | <b>TVD Reference:</b>               | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Site:</b>     | Old Crow Pad                    | <b>MD Reference:</b>                | RKB=1265+26 @ 1291.00usft (Nabors B 28) |
| <b>Well:</b>     | Old Crow S-13 HM (slot G)       | <b>North Reference:</b>             | Grid                                    |
| <b>Wellbore:</b> | Original Hole                   | <b>Survey Calculation Method:</b>   | Minimum Curvature                       |
| <b>Design:</b>   | Surveys Original Hole           | <b>Database:</b>                    | DB_Aug1919_v14                          |

| Survey   |                 |             |                       |              |              |                     |                    |             |              |  |
|--|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (usft)                              | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude    | Longitude    |  |
| 12,833.00  | 90.64           | 149.24      | 6,631.18              | -1,355.00    | 4,081.83     | 14,444,777.87       | 1,711,106.65       | 39.77465697 | -80.74840690 |  |
| 12,928.00  | 90.11           | 149.24      | 6,630.56              | -1,436.63    | 4,130.42     | 14,444,696.23       | 1,711,155.24       | 39.77443240 | -80.74823480 |  |
| 13,022.00  | 89.71           | 148.00      | 6,630.71              | -1,516.88    | 4,179.36     | 14,444,615.99       | 1,711,204.19       | 39.77421164 | -80.74806140 |  |
| 13,116.00  | 89.32           | 147.30      | 6,631.50              | -1,596.29    | 4,229.66     | 14,444,536.58       | 1,711,254.48       | 39.77399318 | -80.74788319 |  |
| 13,211.00  | 90.37           | 148.18      | 6,631.76              | -1,676.62    | 4,280.36     | 14,444,456.24       | 1,711,305.19       | 39.77377217 | -80.74770353 |  |
| 13,305.00  | 89.67           | 148.18      | 6,631.73              | -1,756.49    | 4,329.92     | 14,444,376.37       | 1,711,354.75       | 39.77355243 | -80.74752794 |  |
| 13,399.00  | 90.29           | 149.24      | 6,631.76              | -1,836.82    | 4,378.74     | 14,444,296.05       | 1,711,403.57       | 39.77333146 | -80.74735499 |  |
| 13,494.00  | 89.71           | 148.18      | 6,631.76              | -1,918.00    | 4,428.08     | 14,444,214.87       | 1,711,452.91       | 39.77310813 | -80.74718021 |  |
| 13,588.00  | 89.49           | 149.24      | 6,632.42              | -1,998.33    | 4,476.90     | 14,444,134.54       | 1,711,501.73       | 39.77288716 | -80.74700727 |  |
| 13,681.00  | 89.71           | 150.20      | 6,633.07              | -2,078.63    | 4,523.79     | 14,444,054.23       | 1,711,548.62       | 39.77266625 | -80.74684120 |  |
| 13,775.00  | 89.93           | 148.27      | 6,633.36              | -2,159.40    | 4,571.87     | 14,443,973.46       | 1,711,596.70       | 39.77244406 | -80.74667089 |  |
| 13,870.00  | 89.67           | 149.67      | 6,633.69              | -2,240.80    | 4,620.84     | 14,443,892.06       | 1,711,645.67       | 39.77222013 | -80.74649743 |  |
| 13,964.00  | 87.96           | 150.38      | 6,635.64              | -2,322.21    | 4,667.80     | 14,443,810.66       | 1,711,692.62       | 39.77199620 | -80.74633115 |  |
| 14,059.00  | 88.79           | 150.55      | 6,638.33              | -2,404.83    | 4,714.61     | 14,443,728.03       | 1,711,739.43       | 39.77176894 | -80.74616539 |  |
| 14,153.00  | 88.09           | 150.73      | 6,640.89              | -2,486.73    | 4,760.68     | 14,443,646.14       | 1,711,785.50       | 39.77154367 | -80.74600225 |  |
| 14,248.00  | 90.90           | 151.70      | 6,641.73              | -2,569.98    | 4,806.42     | 14,443,562.89       | 1,711,831.24       | 39.77131469 | -80.74584032 |  |
| 14,342.00  | 90.64           | 151.78      | 6,640.47              | -2,652.76    | 4,850.92     | 14,443,480.10       | 1,711,875.74       | 39.77108698 | -80.74568277 |  |
| 14,436.00  | 90.11           | 151.61      | 6,639.85              | -2,735.52    | 4,895.49     | 14,443,397.34       | 1,711,920.31       | 39.77085936 | -80.74552499 |  |
| 14,531.00  | 89.63           | 151.52      | 6,640.07              | -2,819.06    | 4,940.72     | 14,443,313.81       | 1,711,965.55       | 39.77062958 | -80.74536485 |  |
| 14,626.00  | 89.98           | 151.43      | 6,640.39              | -2,902.53    | 4,986.09     | 14,443,230.34       | 1,712,010.92       | 39.77040001 | -80.74520424 |  |
| 14,720.00  | 89.54           | 151.61      | 6,640.78              | -2,985.15    | 5,030.91     | 14,443,147.71       | 1,712,055.74       | 39.77017275 | -80.74504556 |  |
| 14,815.00  | 89.71           | 149.85      | 6,641.40              | -3,068.02    | 5,077.36     | 14,443,064.85       | 1,712,102.18       | 39.76994481 | -80.74488111 |  |
| 14,909.00  | 89.32           | 149.41      | 6,642.20              | -3,149.12    | 5,124.88     | 14,442,983.75       | 1,712,149.71       | 39.76972172 | -80.74471280 |  |
| 15,003.00  | 90.07           | 149.94      | 6,642.70              | -3,230.25    | 5,172.34     | 14,442,902.61       | 1,712,197.17       | 39.76949853 | -80.74454473 |  |
| 15,097.00  | 89.49           | 150.38      | 6,643.06              | -3,311.79    | 5,219.11     | 14,442,821.08       | 1,712,243.94       | 39.76927424 | -80.74437910 |  |
| 15,192.00  | 90.55           | 149.06      | 6,643.03              | -3,393.83    | 5,267.01     | 14,442,739.04       | 1,712,291.84       | 39.76904857 | -80.74420947 |  |
| 15,287.00  | 90.37           | 149.41      | 6,642.27              | -3,475.45    | 5,315.61     | 14,442,657.41       | 1,712,340.43       | 39.76882402 | -80.74403737 |  |
| 15,381.00  | 89.80           | 149.41      | 6,642.13              | -3,556.37    | 5,363.44     | 14,442,576.50       | 1,712,388.27       | 39.76860142 | -80.74386796 |  |
| 15,476.00  | 90.86           | 149.67      | 6,641.58              | -3,638.26    | 5,411.60     | 14,442,494.61       | 1,712,436.42       | 39.76837616 | -80.74369741 |  |
| 15,568.00  | 90.24           | 149.24      | 6,640.70              | -3,717.49    | 5,458.35     | 14,442,415.38       | 1,712,483.18       | 39.76815821 | -80.74353184 |  |
| 15,663.00  | 90.02           | 148.27      | 6,640.48              | -3,798.71    | 5,507.63     | 14,442,334.16       | 1,712,532.45       | 39.76793477 | -80.74335730 |  |
| 15,757.00  | 90.33           | 148.18      | 6,640.19              | -3,878.62    | 5,557.13     | 14,442,254.25       | 1,712,581.95       | 39.76771492 | -80.74318197 |  |
| 15,834.00  | 90.46           | 148.00      | 6,639.66              | -3,943.98    | 5,597.83     | 14,442,188.89       | 1,712,622.65       | 39.76753510 | -80.74303780 |  |
| <b>Survey @ 15834.00 MD 6639.66 TVD</b>            |                 |             |                       |              |              |                     |                    |             |              |  |
| 15,888.00  | 90.46           | 148.00      | 6,639.23              | -3,989.77    | 5,626.44     | 14,442,143.10       | 1,712,651.27       | 39.76740911 | -80.74293643 |  |
| <b>Survey projected to 15888.00 MD 6639.23 TVD</b> |                 |             |                       |              |              |                     |                    |             |              |  |

| Design Annotations    |                       |                   |              |   |  |
|-----------------------|-----------------------|-------------------|--------------|---|--|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                                     |  |
|                       |                       | +N/-S (usft)      | +E/-W (usft) |   |  |
| 174.00                | 174.00                | 0.27              | -0.05        | MWD surveys                                 |  |
| 15,834.00             | 6,639.66              | -3,943.98         | 5,597.83     | Survey @ 15834.00 MD 6639.66 TVD            |  |
| 15,888.00             | 6,639.23              | -3,989.77         | 5,626.44     | Survey projected to 15888.00 MD 6639.23 TVD |  |

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