



Well: Old Crow N-07 HM (slot C)
 Site: Old Crow Pad
 Project: Marshall County, West Virginia.
 Design: rev4
 Rig: Nabors X14

SECTION DETAILS

| Sec | MD | Inc | Azi | TVD | +N-S | +E-W | Dleg | TFace | Vsect | Annotation |
|-----|----------|-------|--------|---------|----------|----------|-------|---------|---------|---------------------------------|
| 1 | 2995.00 | 44.96 | 57.10 | 2776.51 | 478.68 | 560.40 | 0.00 | 0.00 | 407.85 | Survey @ 2995.00 MD 2776.51 TVD |
| 2 | 3195.00 | 44.96 | 57.10 | 2918.03 | 555.44 | 679.06 | 0.00 | 0.00 | 469.79 | KOP Begin 2°/100' build/turn |
| 3 | 3231.35 | 45.39 | 57.92 | 2943.66 | 569.29 | 700.81 | 2.00 | 53.71 | 480.93 | Begin 45.39° tangent |
| 4 | 7692.86 | 45.39 | 57.92 | 6076.69 | 2256.11 | 3392.24 | 0.00 | 0.00 | 1832.00 | Begin 8°/100' build/turn |
| 5 | 8193.29 | 50.00 | 3.11 | 6427.63 | 2554.34 | 3560.48 | 8.00 | -103.27 | 2107.84 | Begin 10°/100' build/turn |
| 6 | 8541.42 | 70.00 | 329.74 | 6604.53 | 2837.54 | 3482.89 | 10.00 | -64.87 | 2398.31 | Begin 10°/100' build |
| 7 | 8751.38 | 91.00 | 329.74 | 6639.00 | 3015.40 | 3379.11 | 10.00 | -0.01 | 2587.36 | Begin 91.00° lateral |
| 8 | 18127.27 | 91.00 | 329.74 | 6476.00 | 11112.25 | -1345.48 | 0.00 | 0.00 | 1193.41 | PBHL/TD 18127.27 MD 6476.00 TVD |

DESIGN TARGET DETAILS

| Name | TVD | +N-S | +E-W | Northing | Easting | Latitude | Longitude | Shape |
|--|---------|----------|----------|-------------|------------|-------------|--------------|-------|
| BHL Old Crow N-07 HM r4 - plan hits target center | 6476.00 | 11112.25 | -1345.48 | 14457276.46 | 1705643.02 | 39.80902200 | -80.76773700 | Point |
| LP Old Crow N-07 HM 50 E r4 - plan hits target center | 6639.00 | 3015.40 | 3379.11 | 14449179.61 | 1710367.61 | 39.78675102 | -80.75099366 | Point |

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+32.5 @ 1297.50usft (Nabors X14)

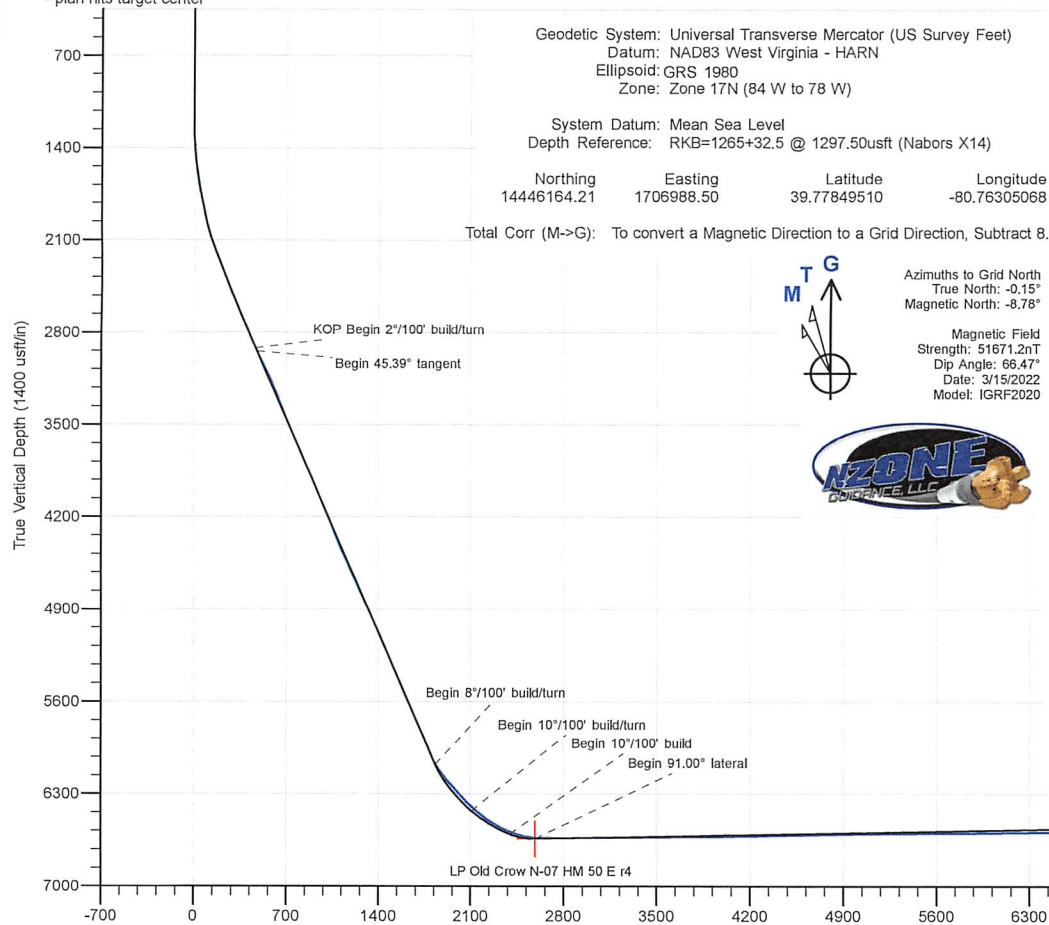
| Northing | Easting | Latitude | Longitude |
|-------------|------------|-------------|--------------|
| 14446164.21 | 1706988.50 | 39.77849510 | -80.76305068 |

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.78°



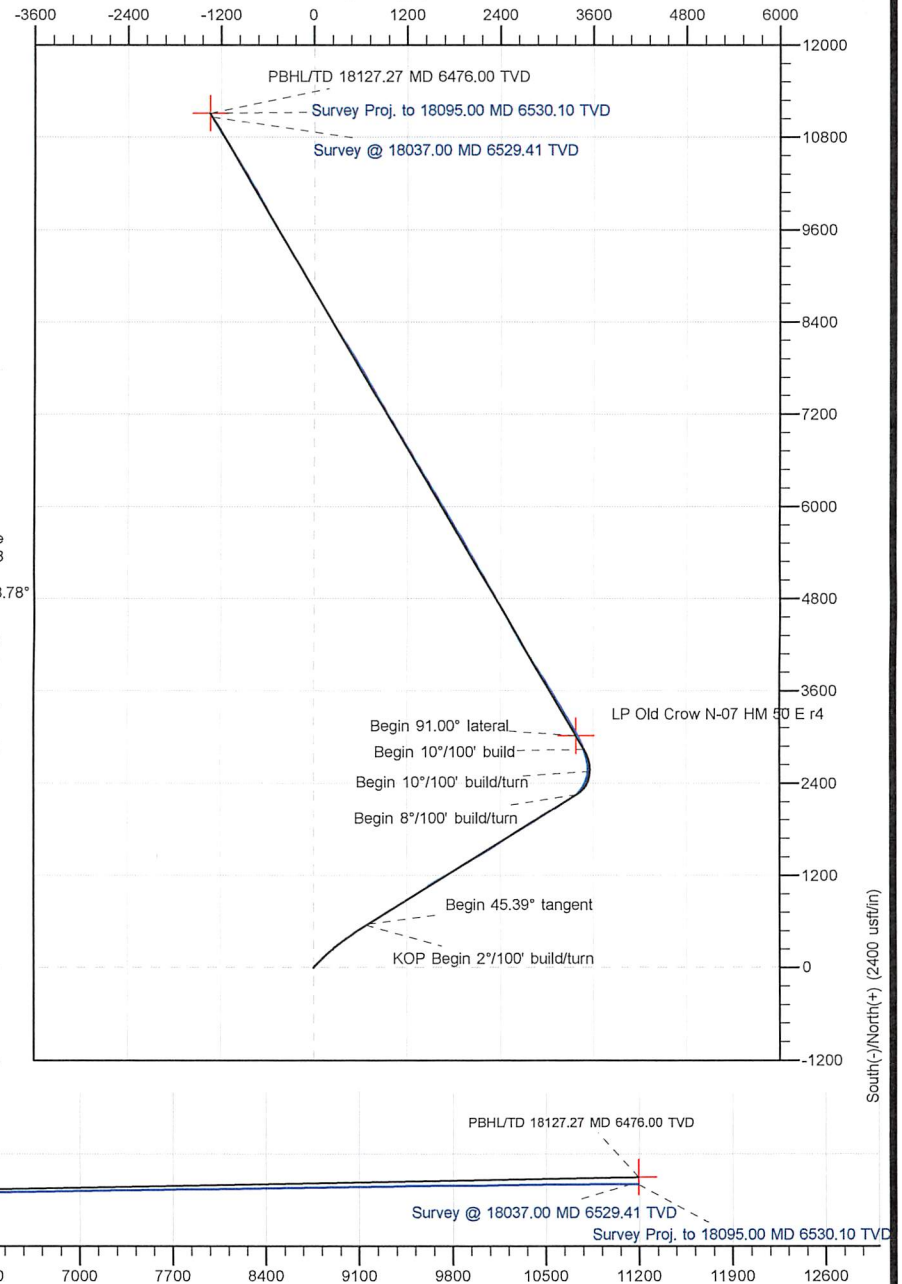
Azimuths to Grid North
 True North: -0.15°
 Magnetic North: -8.78°

Magnetic Field
 Strength: 51671.2nT
 Dip Angle: 66.47°
 Date: 3/15/2022
 Model: IGRF2020



ANNOTATIONS SURVEYS

| MD | Inc | Azi | TVD | +N-S | +E-W | Vsect | Annotation |
|----------|-------|--------|---------|----------|----------|----------|---|
| 207.00 | 0.31 | 84.39 | 207.00 | 0.05 | 0.56 | -0.01 | MWD surveys |
| 18037.00 | 89.32 | 329.16 | 6529.41 | 11062.37 | -1317.02 | 11140.48 | Survey @ 18037.00 MD 6529.41 TVD |
| 18095.00 | 89.32 | 329.16 | 6530.10 | 11112.17 | -1346.75 | 11193.48 | Survey Proj. to 18095.00 MD 6530.10 TVD |





Survey Report - Geographic



| | | | |
|------------------|---------------------------------|-------------------------------------|--|
| Company: | Tug Hill Operating LLC | Local Co-ordinate Reference: | Well Old Crow N-07 HM (slot C) |
| Project: | Marshall County, West Virginia. | TVD Reference: | RKB=1265+32.5 @ 1297.50usft (Nabors X14) |
| Site: | Old Crow Pad | MD Reference: | RKB=1265+32.5 @ 1297.50usft (Nabors X14) |
| Well: | Old Crow N-07 HM (slot C) | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | Surveys Original Hole | Database: | DB_Feb2822 |

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

| | | | | | |
|------------------------------|--------------|---------------------|--------------------|--------------------------|--------------|
| Site | Old Crow Pad | | | | |
| Site Position: | | Northing: | 14,446,179.89 usft | Latitude: | 39.77853828 |
| From: | Lat/Long | Easting: | 1,706,970.33 usft | Longitude: | -80.76311519 |
| Position Uncertainty: | 0.00 usft | Slot Radius: | 13-3/16 " | Grid Convergence: | 0.15 ° |

| | | | | | | |
|-----------------------------|---------------------------|-----------|----------------------------|--------------------|----------------------|---------------|
| Well | Old Crow N-07 HM (slot C) | | | | | |
| Well Position | +N/-S | 0.00 usft | Northing: | 14,446,164.21 usft | Latitude: | 39.77849510 |
| | +E/-W | 0.00 usft | Easting: | 1,706,988.50 usft | Longitude: | -80.76305068 |
| Position Uncertainty | | 0.00 usft | Wellhead Elevation: | usft | Ground Level: | 1,265.00 usft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | Original Hole | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2020 | 3/15/2022 | -8.62 | 66.47 | 51,671.23139584 |

| | | | | | |
|--------------------------|--------------------------------|---------------------|---------------------|----------------------|------|
| Design | Surveys Original Hole | | | | |
| Audit Notes: | | | | | |
| Version: | 1.0 | Phase: | ACTUAL | Tie On Depth: | 0.00 |
| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) | |
| | 0.00 | 0.00 | 0.00 | 353.10 | |

| | | | | | |
|-----------------------|------------------|----------------------------|------------------|--------------------|--|
| Survey Program | Date | 4/2/2022 | | | |
| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description | |
| 207.00 | 1,000.00 | MWD surf (Original Hole) | MWD | MWD - Standard | |
| 1,072.00 | 2,995.00 | MWD int (Original Hole) | MWD | MWD - Standard | |
| 3,080.00 | 18,037.00 | MWD (Original Hole) | MWD | MWD - Standard | |
| 18,095.00 | 18,095.00 | Projection (Original Hole) | MWD | MWD - Standard | |

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WV Department of Environmental Protection

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 14,446,164.21 | 1,706,988.50 | 39.77849510 | -80.76305068 |
| 207.00 | 0.31 | 84.39 | 207.00 | 0.05 | 0.56 | 14,446,164.27 | 1,706,989.05 | 39.77849525 | -80.76304870 |
| MWD surveys | | | | | | | | | |
| 224.00 | 0.40 | 57.49 | 224.00 | 0.09 | 0.65 | 14,446,164.30 | 1,706,989.15 | 39.77849535 | -80.76304836 |
| 268.00 | 0.30 | 89.25 | 268.00 | 0.18 | 0.90 | 14,446,164.39 | 1,706,989.39 | 39.77849558 | -80.76304748 |
| 315.00 | 0.31 | 114.60 | 315.00 | 0.12 | 1.14 | 14,446,164.34 | 1,706,989.63 | 39.77849543 | -80.76304663 |
| 358.00 | 0.22 | 155.40 | 358.00 | 0.00 | 1.28 | 14,446,164.21 | 1,706,989.77 | 39.77849509 | -80.76304614 |
| 405.00 | 0.22 | 97.80 | 405.00 | -0.09 | 1.40 | 14,446,164.12 | 1,706,989.90 | 39.77849483 | -80.76304569 |
| 447.00 | 0.22 | 101.00 | 447.00 | -0.12 | 1.56 | 14,446,164.09 | 1,706,990.06 | 39.77849476 | -80.76304512 |



Survey Report - Geographic



| | | | |
|------------------|---------------------------------|-------------------------------------|--|
| Company: | Tug Hill Operating LLC | Local Co-ordinate Reference: | Well Old Crow N-07 HM (slot C) |
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| Site: | Old Crow Pad | MD Reference: | RKB=1265+32.5 @ 1297.50usft (Nabors X14) |
| Well: | Old Crow N-07 HM (slot C) | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | Surveys Original Hole | Database: | DB_Feb2822 |

| Survey | | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude | |
| 494.00 | 0.22 | 90.90 | 494.00 | -0.14 | 1.74 | 14,446,164.07 | 1,706,990.24 | 39.77849471 | -80.76304448 | |
| 537.00 | 0.09 | 136.07 | 537.00 | -0.16 | 1.85 | 14,446,164.05 | 1,706,990.34 | 39.77849464 | -80.76304411 | |
| 584.00 | 0.09 | 104.35 | 584.00 | -0.20 | 1.91 | 14,446,164.01 | 1,706,990.40 | 39.77849454 | -80.76304389 | |
| 627.00 | 0.09 | 252.09 | 627.00 | -0.22 | 1.91 | 14,446,163.99 | 1,706,990.41 | 39.77849449 | -80.76304389 | |
| 674.00 | 0.31 | 200.41 | 674.00 | -0.35 | 1.83 | 14,446,163.86 | 1,706,990.33 | 39.77849413 | -80.76304417 | |
| 717.00 | 0.22 | 236.45 | 716.99 | -0.50 | 1.72 | 14,446,163.71 | 1,706,990.22 | 39.77849370 | -80.76304456 | |
| 764.00 | 0.22 | 237.76 | 763.99 | -0.60 | 1.57 | 14,446,163.61 | 1,706,990.07 | 39.77849344 | -80.76304510 | |
| 812.00 | 0.09 | 86.77 | 811.99 | -0.65 | 1.53 | 14,446,163.56 | 1,706,990.02 | 39.77849331 | -80.76304525 | |
| 859.00 | 0.09 | 353.96 | 858.99 | -0.61 | 1.56 | 14,446,163.60 | 1,706,990.06 | 39.77849341 | -80.76304513 | |
| 906.00 | 0.09 | 294.10 | 905.99 | -0.56 | 1.52 | 14,446,163.65 | 1,706,990.02 | 39.77849356 | -80.76304526 | |
| 953.00 | 0.09 | 126.23 | 952.99 | -0.57 | 1.52 | 14,446,163.65 | 1,706,990.02 | 39.77849354 | -80.76304528 | |
| 1,000.00 | 0.09 | 180.20 | 999.99 | -0.62 | 1.55 | 14,446,163.59 | 1,706,990.05 | 39.77849338 | -80.76304517 | |
| 1,072.00 | 0.40 | 205.33 | 1,071.99 | -0.91 | 1.44 | 14,446,163.31 | 1,706,989.94 | 39.77849260 | -80.76304556 | |
| 1,119.00 | 0.70 | 221.06 | 1,118.99 | -1.27 | 1.18 | 14,446,162.94 | 1,706,989.68 | 39.77849160 | -80.76304648 | |
| 1,167.00 | 1.01 | 240.84 | 1,166.99 | -1.70 | 0.62 | 14,446,162.51 | 1,706,989.12 | 39.77849043 | -80.76304849 | |
| 1,214.00 | 0.88 | 248.31 | 1,213.98 | -2.04 | -0.08 | 14,446,162.18 | 1,706,988.42 | 39.77848951 | -80.76305097 | |
| 1,261.00 | 0.48 | 5.29 | 1,260.98 | -1.97 | -0.39 | 14,446,162.24 | 1,706,988.10 | 39.77848969 | -80.76305210 | |
| 1,308.00 | 2.20 | 29.55 | 1,307.96 | -0.99 | 0.07 | 14,446,163.22 | 1,706,988.57 | 39.77849238 | -80.76305044 | |
| 1,355.00 | 4.00 | 36.27 | 1,354.89 | 1.12 | 1.48 | 14,446,165.33 | 1,706,989.98 | 39.77849815 | -80.76304539 | |
| 1,402.00 | 5.49 | 39.31 | 1,401.73 | 4.18 | 3.88 | 14,446,168.39 | 1,706,992.38 | 39.77850654 | -80.76303683 | |
| 1,449.00 | 7.29 | 39.66 | 1,448.44 | 8.21 | 7.21 | 14,446,172.43 | 1,706,995.70 | 39.77851760 | -80.76302495 | |
| 1,496.00 | 9.01 | 39.57 | 1,494.96 | 13.34 | 11.45 | 14,446,177.56 | 1,706,999.95 | 39.77853167 | -80.76300978 | |
| 1,544.00 | 10.48 | 40.65 | 1,542.27 | 19.55 | 16.69 | 14,446,183.77 | 1,707,005.19 | 39.77854868 | -80.76299108 | |
| 1,591.00 | 11.69 | 40.50 | 1,588.39 | 26.42 | 22.57 | 14,446,190.63 | 1,707,011.07 | 39.77856749 | -80.76297010 | |
| 1,638.00 | 12.80 | 40.26 | 1,634.32 | 34.01 | 29.03 | 14,446,198.23 | 1,707,017.52 | 39.77858830 | -80.76294704 | |
| 1,685.00 | 14.39 | 40.03 | 1,680.00 | 42.46 | 36.15 | 14,446,206.67 | 1,707,024.65 | 39.77861144 | -80.76292162 | |
| 1,731.00 | 16.18 | 40.16 | 1,724.37 | 51.73 | 43.96 | 14,446,215.95 | 1,707,032.46 | 39.77863686 | -80.76289373 | |
| 1,778.00 | 17.85 | 43.25 | 1,769.31 | 61.99 | 53.12 | 14,446,226.20 | 1,707,041.62 | 39.77866495 | -80.76286103 | |
| 1,825.00 | 18.56 | 46.85 | 1,813.96 | 72.35 | 63.51 | 14,446,236.56 | 1,707,052.01 | 39.77869333 | -80.76282394 | |
| 1,872.00 | 19.01 | 48.42 | 1,858.46 | 82.54 | 74.70 | 14,446,246.76 | 1,707,063.19 | 39.77872125 | -80.76278404 | |
| 1,919.00 | 19.75 | 49.88 | 1,902.80 | 92.74 | 86.49 | 14,446,256.96 | 1,707,074.99 | 39.77874917 | -80.76274195 | |
| 1,966.00 | 20.55 | 46.48 | 1,946.92 | 103.54 | 98.55 | 14,446,267.75 | 1,707,087.05 | 39.77877874 | -80.76269894 | |
| 2,013.00 | 22.26 | 44.46 | 1,990.68 | 115.58 | 110.77 | 14,446,279.79 | 1,707,099.26 | 39.77881170 | -80.76265534 | |
| 2,060.00 | 24.67 | 43.83 | 2,033.79 | 129.01 | 123.80 | 14,446,293.22 | 1,707,112.29 | 39.77884849 | -80.76260884 | |
| 2,107.00 | 26.82 | 45.46 | 2,076.12 | 143.52 | 138.15 | 14,446,307.74 | 1,707,126.64 | 39.77888825 | -80.76255762 | |
| 2,154.00 | 28.60 | 45.53 | 2,117.73 | 158.84 | 153.73 | 14,446,323.05 | 1,707,142.23 | 39.77893020 | -80.76250200 | |
| 2,201.00 | 30.37 | 45.70 | 2,158.64 | 175.02 | 170.27 | 14,446,339.23 | 1,707,158.76 | 39.77897452 | -80.76244300 | |
| 2,248.00 | 32.46 | 46.80 | 2,198.75 | 191.95 | 187.97 | 14,446,356.17 | 1,707,176.46 | 39.77902089 | -80.76237984 | |
| 2,295.00 | 34.30 | 47.61 | 2,237.99 | 209.52 | 206.94 | 14,446,373.73 | 1,707,195.44 | 39.77906899 | -80.76231213 | |
| 2,342.00 | 35.50 | 48.33 | 2,276.54 | 227.52 | 226.92 | 14,446,391.73 | 1,707,215.42 | 39.77911828 | -80.76224086 | |
| 2,390.00 | 35.18 | 48.36 | 2,315.69 | 245.97 | 247.66 | 14,446,410.19 | 1,707,236.16 | 39.77916881 | -80.76216685 | |
| 2,437.00 | 34.29 | 48.25 | 2,354.32 | 263.79 | 267.66 | 14,446,428.00 | 1,707,256.16 | 39.77921758 | -80.76209551 | |
| 2,484.00 | 34.04 | 49.55 | 2,393.21 | 281.14 | 287.55 | 14,446,445.35 | 1,707,276.04 | 39.77926509 | -80.76202456 | |
| 2,531.00 | 35.80 | 52.66 | 2,431.75 | 298.01 | 308.49 | 14,446,462.22 | 1,707,296.99 | 39.77931128 | -80.76194966 | |
| 2,578.00 | 39.03 | 53.74 | 2,469.07 | 315.11 | 331.36 | 14,446,479.32 | 1,707,319.86 | 39.77935806 | -80.76186830 | |
| 2,625.00 | 41.21 | 53.25 | 2,505.01 | 333.13 | 355.70 | 14,446,497.34 | 1,707,344.20 | 39.77940736 | -80.76178149 | |
| 2,672.00 | 42.34 | 52.27 | 2,540.06 | 352.08 | 380.62 | 14,446,516.29 | 1,707,369.12 | 39.77945922 | -80.76169260 | |
| 2,719.00 | 42.50 | 53.83 | 2,574.76 | 371.13 | 405.96 | 14,446,535.34 | 1,707,394.46 | 39.77951137 | -80.76160224 | |
| 2,767.00 | 41.95 | 55.60 | 2,610.31 | 389.77 | 432.29 | 14,446,553.98 | 1,707,420.78 | 39.77956235 | -80.76150835 | |
| 2,814.00 | 41.62 | 54.27 | 2,645.35 | 407.76 | 457.92 | 14,446,571.97 | 1,707,446.42 | 39.77961157 | -80.76141695 | |
| 2,861.00 | 42.13 | 53.70 | 2,680.35 | 426.20 | 483.30 | 14,446,590.42 | 1,707,471.79 | 39.77966205 | -80.76132645 | |
| 2,908.00 | 44.05 | 54.55 | 2,714.67 | 445.01 | 509.31 | 14,446,609.23 | 1,707,497.81 | 39.77971352 | -80.76123367 | |
| 2,955.00 | 44.93 | 57.49 | 2,748.20 | 463.41 | 536.62 | 14,446,627.63 | 1,707,525.12 | 39.77976385 | -80.76113629 | |
| 2,995.00 | 44.96 | 57.10 | 2,776.51 | 478.68 | 560.40 | 14,446,642.89 | 1,707,548.90 | 39.77980560 | -80.76105151 | |
| 3,080.00 | 43.87 | 58.02 | 2,837.23 | 510.59 | 610.60 | 14,446,674.81 | 1,707,599.10 | 39.77989288 | -80.76087253 | |



Survey Report - Geographic



| | | | |
|------------------|---------------------------------|-------------------------------------|--|
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| Site: | Old Crow Pad | MD Reference: | RKB=1265+32.5 @ 1297.50usft (Nabors X14) |
| Well: | Old Crow N-07 HM (slot C) | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | Surveys Original Hole | Database: | DB_Feb2822 |

| Survey | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|-------------|-------------|---------------------|--------------------|-------------|--------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N-S (usft) | +E-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
| 3,174.00 | 47.12 | 57.49 | 2,903.11 | 546.36 | 667.29 | 14,446,710.58 | 1,707,655.79 | 39.77999070 | -80.76067042 |
| 3,270.00 | 47.21 | 57.40 | 2,968.38 | 584.25 | 726.63 | 14,446,748.46 | 1,707,715.12 | 39.78009429 | -80.76045886 |
| 3,364.00 | 48.00 | 56.79 | 3,031.76 | 621.96 | 784.91 | 14,446,786.17 | 1,707,773.40 | 39.78019744 | -80.76025105 |
| 3,458.00 | 47.12 | 57.75 | 3,095.19 | 659.47 | 843.26 | 14,446,823.68 | 1,707,831.76 | 39.78030002 | -80.76004300 |
| 3,552.00 | 45.01 | 58.63 | 3,160.41 | 695.16 | 900.78 | 14,446,859.37 | 1,707,889.27 | 39.78039760 | -80.75983794 |
| 3,646.00 | 44.22 | 58.10 | 3,227.32 | 729.78 | 956.99 | 14,446,893.99 | 1,707,945.48 | 39.78049228 | -80.75963754 |
| 3,740.00 | 43.25 | 58.37 | 3,295.24 | 763.99 | 1,012.23 | 14,446,928.21 | 1,708,000.73 | 39.78058582 | -80.75944056 |
| 3,834.00 | 43.43 | 57.67 | 3,363.61 | 798.16 | 1,066.96 | 14,446,962.37 | 1,708,055.45 | 39.78067925 | -80.75924545 |
| 3,928.00 | 44.22 | 56.96 | 3,431.42 | 833.31 | 1,121.74 | 14,446,997.53 | 1,708,110.23 | 39.78077539 | -80.75905013 |
| 4,022.00 | 45.23 | 57.58 | 3,498.21 | 869.07 | 1,177.38 | 14,447,033.29 | 1,708,165.88 | 39.78087319 | -80.75885172 |
| 4,116.00 | 46.07 | 58.46 | 3,563.92 | 904.67 | 1,234.40 | 14,447,068.88 | 1,708,222.90 | 39.78097052 | -80.75864843 |
| 4,210.00 | 45.36 | 58.37 | 3,629.55 | 939.92 | 1,291.73 | 14,447,104.13 | 1,708,280.22 | 39.78106689 | -80.75844405 |
| 4,304.00 | 44.13 | 57.58 | 3,696.31 | 975.00 | 1,347.83 | 14,447,139.21 | 1,708,336.32 | 39.78116282 | -80.75824403 |
| 4,399.00 | 44.75 | 56.79 | 3,764.14 | 1,011.05 | 1,403.73 | 14,447,175.26 | 1,708,392.22 | 39.78126141 | -80.75804471 |
| 4,493.00 | 45.58 | 57.14 | 3,830.42 | 1,047.39 | 1,459.61 | 14,447,211.60 | 1,708,448.10 | 39.78136079 | -80.75784545 |
| 4,588.00 | 46.15 | 58.72 | 3,896.57 | 1,083.58 | 1,517.38 | 14,447,247.79 | 1,708,505.88 | 39.78145976 | -80.75763946 |
| 4,682.00 | 45.05 | 58.02 | 3,962.34 | 1,118.80 | 1,574.57 | 14,447,283.01 | 1,708,563.07 | 39.78155605 | -80.75743557 |
| 4,777.00 | 45.23 | 57.93 | 4,029.35 | 1,154.51 | 1,631.66 | 14,447,318.72 | 1,708,620.16 | 39.78165369 | -80.75723202 |
| 4,871.00 | 45.36 | 57.84 | 4,095.48 | 1,190.02 | 1,688.25 | 14,447,354.24 | 1,708,676.74 | 39.78175081 | -80.75703026 |
| 4,965.00 | 45.98 | 58.90 | 4,161.16 | 1,225.28 | 1,745.50 | 14,447,389.50 | 1,708,733.99 | 39.78184721 | -80.75682613 |
| 5,059.00 | 44.66 | 58.54 | 4,227.26 | 1,259.98 | 1,802.62 | 14,447,424.20 | 1,708,791.12 | 39.78194208 | -80.75662247 |
| 5,153.00 | 45.14 | 58.63 | 4,293.84 | 1,294.57 | 1,859.25 | 14,447,458.78 | 1,708,847.74 | 39.78203664 | -80.75642058 |
| 5,248.00 | 45.63 | 58.81 | 4,360.56 | 1,329.68 | 1,917.04 | 14,447,493.89 | 1,708,905.54 | 39.78213263 | -80.75621452 |
| 5,342.00 | 46.07 | 59.16 | 4,426.04 | 1,364.43 | 1,974.85 | 14,447,528.65 | 1,708,963.34 | 39.78222764 | -80.75600843 |
| 5,437.00 | 46.51 | 58.28 | 4,491.69 | 1,400.09 | 2,033.53 | 14,447,564.30 | 1,709,022.03 | 39.78232512 | -80.75579920 |
| 5,531.00 | 45.85 | 58.10 | 4,556.77 | 1,435.84 | 2,091.17 | 14,447,600.05 | 1,709,079.66 | 39.78242287 | -80.75559370 |
| 5,625.00 | 46.29 | 58.28 | 4,621.99 | 1,471.52 | 2,148.70 | 14,447,635.73 | 1,709,137.19 | 39.78252043 | -80.75538857 |
| 5,718.00 | 46.11 | 58.28 | 4,686.35 | 1,506.81 | 2,205.79 | 14,447,671.02 | 1,709,194.29 | 39.78261692 | -80.75518499 |
| 5,812.00 | 45.85 | 57.67 | 4,751.68 | 1,542.66 | 2,263.10 | 14,447,706.87 | 1,709,251.60 | 39.78271493 | -80.75498066 |
| 5,906.00 | 45.63 | 57.31 | 4,817.28 | 1,578.84 | 2,319.87 | 14,447,743.05 | 1,709,308.37 | 39.78281387 | -80.75477823 |
| 6,000.00 | 45.45 | 57.40 | 4,883.12 | 1,615.03 | 2,376.37 | 14,447,779.24 | 1,709,364.86 | 39.78291283 | -80.75457679 |
| 6,094.00 | 45.32 | 56.96 | 4,949.14 | 1,651.29 | 2,432.60 | 14,447,815.51 | 1,709,421.10 | 39.78301201 | -80.75437627 |
| 6,188.00 | 45.19 | 57.05 | 5,015.31 | 1,687.65 | 2,488.59 | 14,447,851.86 | 1,709,477.09 | 39.78311143 | -80.75417660 |
| 6,283.00 | 44.62 | 57.23 | 5,082.60 | 1,724.04 | 2,544.93 | 14,447,888.25 | 1,709,533.42 | 39.78321094 | -80.75397573 |
| 6,375.00 | 45.45 | 58.54 | 5,147.61 | 1,758.64 | 2,600.06 | 14,447,922.85 | 1,709,588.56 | 39.78330554 | -80.75377914 |
| 6,469.00 | 47.08 | 59.07 | 5,212.59 | 1,793.81 | 2,658.16 | 14,447,958.03 | 1,709,646.66 | 39.78340170 | -80.75357200 |
| 6,563.00 | 45.19 | 58.81 | 5,277.73 | 1,828.77 | 2,716.21 | 14,447,992.99 | 1,709,704.71 | 39.78349727 | -80.75336501 |
| 6,658.00 | 45.41 | 58.28 | 5,344.55 | 1,864.01 | 2,773.82 | 14,448,028.22 | 1,709,762.31 | 39.78359361 | -80.75315963 |
| 6,752.00 | 45.71 | 58.28 | 5,410.37 | 1,899.30 | 2,830.90 | 14,448,063.51 | 1,709,819.40 | 39.78369008 | -80.75295607 |
| 6,846.00 | 43.91 | 58.19 | 5,477.05 | 1,934.17 | 2,887.23 | 14,448,098.38 | 1,709,875.72 | 39.78378543 | -80.75275525 |
| 6,941.00 | 44.31 | 57.14 | 5,545.26 | 1,969.54 | 2,943.09 | 14,448,133.75 | 1,709,931.59 | 39.78388213 | -80.75255604 |
| 7,035.00 | 44.97 | 57.23 | 5,612.15 | 2,005.33 | 2,998.60 | 14,448,169.55 | 1,709,987.10 | 39.78398001 | -80.75235810 |
| 7,129.00 | 45.23 | 57.23 | 5,678.50 | 2,041.37 | 3,054.59 | 14,448,205.59 | 1,710,043.09 | 39.78407856 | -80.75215845 |
| 7,223.00 | 45.23 | 56.96 | 5,744.70 | 2,077.63 | 3,110.62 | 14,448,241.84 | 1,710,099.11 | 39.78417769 | -80.75195866 |
| 7,317.00 | 45.32 | 57.58 | 5,810.85 | 2,113.74 | 3,166.80 | 14,448,277.95 | 1,710,155.30 | 39.78427643 | -80.75175832 |
| 7,411.00 | 45.67 | 57.40 | 5,876.74 | 2,149.77 | 3,223.33 | 14,448,313.98 | 1,710,211.83 | 39.78437495 | -80.75155672 |
| 7,505.00 | 44.09 | 56.61 | 5,943.35 | 2,185.88 | 3,278.97 | 14,448,350.09 | 1,710,267.46 | 39.78447370 | -80.75135834 |
| 7,530.00 | 43.60 | 56.87 | 5,961.38 | 2,195.38 | 3,293.45 | 14,448,359.59 | 1,710,281.94 | 39.78449968 | -80.75130670 |
| 7,583.00 | 44.22 | 58.54 | 5,999.56 | 2,215.01 | 3,324.52 | 14,448,379.22 | 1,710,313.01 | 39.78455336 | -80.75119591 |
| 7,624.00 | 44.84 | 58.19 | 6,028.79 | 2,230.09 | 3,349.00 | 14,448,394.31 | 1,710,337.49 | 39.78459459 | -80.75110862 |
| 7,718.00 | 47.03 | 48.35 | 6,094.24 | 2,270.47 | 3,402.93 | 14,448,434.69 | 1,710,391.43 | 39.78470507 | -80.75091624 |
| 7,765.00 | 46.90 | 39.21 | 6,126.35 | 2,295.22 | 3,426.66 | 14,448,459.44 | 1,710,415.15 | 39.78477287 | -80.75083155 |
| 7,813.00 | 46.64 | 35.08 | 6,159.24 | 2,323.09 | 3,447.77 | 14,448,487.30 | 1,710,436.26 | 39.78484923 | -80.75075613 |
| 7,860.00 | 46.33 | 30.86 | 6,191.61 | 2,351.67 | 3,466.31 | 14,448,515.88 | 1,710,454.81 | 39.78492758 | -80.75068984 |
| 7,907.00 | 46.15 | 26.55 | 6,224.12 | 2,381.43 | 3,482.61 | 14,448,545.64 | 1,710,471.10 | 39.78500918 | -80.75063153 |



Survey Report - Geographic



| | | | |
|------------------|---------------------------------|-------------------------------------|--|
| Company: | Tug Hill Operating LLC | Local Co-ordinate Reference: | Well Old Crow N-07 HM (slot C) |
| Project: | Marshall County, West Virginia. | TVD Reference: | RKB=1265+32.5 @ 1297.50usft (Nabors X14) |
| Site: | Old Crow Pad | MD Reference: | RKB=1265+32.5 @ 1297.50usft (Nabors X14) |
| Well: | Old Crow N-07 HM (slot C) | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | Surveys Original Hole | Database: | DB_Feb2822 |

| Survey | | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude | |
| 7,954.00 | 46.02 | 22.42 | 6,256.73 | 2,412.23 | 3,496.64 | 14,448,576.44 | 1,710,485.13 | 39.78509365 | -80.75058129 | |
| 8,001.00 | 45.89 | 20.93 | 6,289.40 | 2,443.62 | 3,509.11 | 14,448,607.83 | 1,710,497.61 | 39.78517977 | -80.75053656 | |
| 8,048.00 | 45.54 | 16.01 | 6,322.23 | 2,475.51 | 3,519.77 | 14,448,639.72 | 1,710,508.27 | 39.78526727 | -80.75049831 | |
| 8,095.00 | 46.42 | 11.00 | 6,354.90 | 2,508.36 | 3,527.65 | 14,448,672.57 | 1,710,516.14 | 39.78535741 | -80.75046995 | |
| 8,142.00 | 47.30 | 5.37 | 6,387.05 | 2,542.28 | 3,532.51 | 14,448,706.49 | 1,710,521.01 | 39.78545053 | -80.75045229 | |
| 8,187.00 | 49.01 | 359.39 | 6,417.09 | 2,575.74 | 3,533.88 | 14,448,739.95 | 1,710,522.38 | 39.78554242 | -80.75044709 | |
| 8,234.00 | 50.77 | 355.26 | 6,447.37 | 2,611.63 | 3,532.19 | 14,448,775.85 | 1,710,520.68 | 39.78564100 | -80.75045276 | |
| 8,282.00 | 52.40 | 351.84 | 6,477.20 | 2,648.99 | 3,527.95 | 14,448,813.20 | 1,710,516.45 | 39.78574363 | -80.75046747 | |
| 8,329.00 | 56.26 | 349.20 | 6,504.61 | 2,686.64 | 3,521.64 | 14,448,850.85 | 1,710,510.14 | 39.78584706 | -80.75048955 | |
| 8,375.00 | 59.03 | 346.74 | 6,529.23 | 2,724.63 | 3,513.53 | 14,448,888.84 | 1,710,502.03 | 39.78595147 | -80.75051804 | |
| 8,422.00 | 62.11 | 342.78 | 6,552.32 | 2,764.10 | 3,502.76 | 14,448,928.32 | 1,710,491.25 | 39.78605995 | -80.75055601 | |
| 8,470.00 | 66.15 | 340.59 | 6,573.27 | 2,805.09 | 3,489.18 | 14,448,969.30 | 1,710,477.67 | 39.78617261 | -80.75060395 | |
| 8,517.00 | 69.98 | 339.27 | 6,590.82 | 2,846.03 | 3,474.21 | 14,449,010.24 | 1,710,462.71 | 39.78628516 | -80.75065681 | |
| 8,564.00 | 72.88 | 337.42 | 6,605.79 | 2,887.43 | 3,457.77 | 14,449,051.64 | 1,710,446.26 | 39.78639898 | -80.75071493 | |
| 8,611.00 | 76.00 | 334.70 | 6,618.40 | 2,928.80 | 3,439.39 | 14,449,093.01 | 1,710,427.89 | 39.78651273 | -80.75077994 | |
| 8,659.00 | 80.00 | 333.38 | 6,628.37 | 2,971.00 | 3,418.84 | 14,449,135.21 | 1,710,407.34 | 39.78662879 | -80.75085267 | |
| 8,706.00 | 85.85 | 332.24 | 6,634.16 | 3,012.47 | 3,397.53 | 14,449,176.68 | 1,710,386.03 | 39.78674283 | -80.75092811 | |
| 8,753.00 | 89.36 | 331.62 | 6,636.12 | 3,053.90 | 3,375.44 | 14,449,218.11 | 1,710,363.94 | 39.78685677 | -80.75100634 | |
| 8,847.00 | 90.68 | 329.51 | 6,636.09 | 3,135.75 | 3,329.25 | 14,449,299.97 | 1,710,317.75 | 39.78708194 | -80.75116996 | |
| 8,941.00 | 90.29 | 329.86 | 6,635.30 | 3,216.90 | 3,281.81 | 14,449,381.11 | 1,710,270.30 | 39.78730514 | -80.75133805 | |
| 9,036.00 | 90.81 | 329.51 | 6,634.38 | 3,298.90 | 3,233.86 | 14,449,463.12 | 1,710,222.35 | 39.78753071 | -80.75150792 | |
| 9,131.00 | 89.63 | 328.54 | 6,634.02 | 3,380.35 | 3,184.96 | 14,449,544.57 | 1,710,173.46 | 39.78775477 | -80.75168116 | |
| 9,225.00 | 91.16 | 328.90 | 6,633.37 | 3,460.69 | 3,136.16 | 14,449,624.90 | 1,710,124.66 | 39.78797575 | -80.75185410 | |
| 9,320.00 | 90.99 | 329.25 | 6,631.59 | 3,542.17 | 3,087.35 | 14,449,706.38 | 1,710,075.84 | 39.78819989 | -80.75202706 | |
| 9,414.00 | 90.95 | 329.51 | 6,630.00 | 3,623.05 | 3,039.48 | 14,449,787.26 | 1,710,027.97 | 39.78842238 | -80.75219667 | |
| 9,508.00 | 90.11 | 328.46 | 6,629.13 | 3,703.60 | 2,991.04 | 14,449,867.82 | 1,709,979.54 | 39.78864397 | -80.75236828 | |
| 9,603.00 | 89.93 | 328.81 | 6,629.10 | 3,784.72 | 2,941.60 | 14,449,948.93 | 1,709,930.09 | 39.78886712 | -80.75254350 | |
| 9,695.00 | 91.60 | 327.93 | 6,627.87 | 3,863.04 | 2,893.36 | 14,450,027.26 | 1,709,881.85 | 39.78908258 | -80.75271446 | |
| 9,789.00 | 91.69 | 327.75 | 6,625.17 | 3,942.59 | 2,843.34 | 14,450,106.80 | 1,709,831.84 | 39.78930141 | -80.75289172 | |
| 9,882.00 | 91.47 | 327.49 | 6,622.60 | 4,021.10 | 2,793.56 | 14,450,185.31 | 1,709,782.05 | 39.78951740 | -80.75306818 | |
| 9,976.00 | 89.67 | 327.84 | 6,621.67 | 4,100.51 | 2,743.28 | 14,450,264.73 | 1,709,731.78 | 39.78973588 | -80.75324636 | |
| 10,070.00 | 89.23 | 328.46 | 6,622.57 | 4,180.36 | 2,693.68 | 14,450,344.57 | 1,709,682.18 | 39.78995552 | -80.75342215 | |
| 10,165.00 | 90.15 | 328.98 | 6,623.09 | 4,261.54 | 2,644.36 | 14,450,425.76 | 1,709,632.86 | 39.79017886 | -80.75359695 | |
| 10,259.00 | 90.64 | 330.30 | 6,622.44 | 4,342.65 | 2,596.85 | 14,450,506.86 | 1,709,583.35 | 39.79040195 | -80.75376527 | |
| 10,353.00 | 90.64 | 329.95 | 6,621.39 | 4,424.15 | 2,550.03 | 14,450,588.37 | 1,709,538.53 | 39.79062614 | -80.75393115 | |
| 10,448.00 | 90.99 | 330.30 | 6,620.04 | 4,506.52 | 2,502.72 | 14,450,670.73 | 1,709,491.21 | 39.79085270 | -80.75409878 | |
| 10,542.00 | 90.37 | 330.04 | 6,618.92 | 4,588.06 | 2,455.96 | 14,450,752.27 | 1,709,444.46 | 39.79107698 | -80.75426443 | |
| 10,636.00 | 91.65 | 331.01 | 6,617.26 | 4,669.88 | 2,409.72 | 14,450,834.09 | 1,709,398.21 | 39.79130202 | -80.75442825 | |
| 10,729.00 | 91.96 | 330.92 | 6,614.33 | 4,751.15 | 2,364.60 | 14,450,915.36 | 1,709,353.10 | 39.79152556 | -80.75458806 | |
| 10,823.00 | 90.90 | 330.92 | 6,611.99 | 4,833.27 | 2,318.93 | 14,450,997.49 | 1,709,307.43 | 39.79175143 | -80.75474985 | |
| 10,917.00 | 90.24 | 330.74 | 6,611.05 | 4,915.35 | 2,273.12 | 14,451,079.56 | 1,709,261.61 | 39.79197718 | -80.75491214 | |
| 11,011.00 | 90.68 | 330.48 | 6,610.30 | 4,997.25 | 2,226.99 | 14,451,161.46 | 1,709,215.49 | 39.79220244 | -80.75507557 | |
| 11,104.00 | 91.65 | 329.86 | 6,608.41 | 5,077.91 | 2,180.74 | 14,451,242.12 | 1,709,169.23 | 39.79242430 | -80.75523943 | |
| 11,198.00 | 91.96 | 329.34 | 6,605.45 | 5,158.94 | 2,133.20 | 14,451,323.16 | 1,709,121.69 | 39.79264720 | -80.75540790 | |
| 11,293.00 | 90.90 | 330.21 | 6,603.08 | 5,241.00 | 2,085.39 | 14,451,405.21 | 1,709,073.88 | 39.79287291 | -80.75557729 | |
| 11,387.00 | 89.98 | 330.92 | 6,602.35 | 5,322.86 | 2,039.20 | 14,451,487.08 | 1,709,027.69 | 39.79309808 | -80.75574094 | |
| 11,480.00 | 90.77 | 331.01 | 6,601.75 | 5,404.17 | 1,994.06 | 14,451,568.39 | 1,708,982.56 | 39.79332171 | -80.75590084 | |
| 11,574.00 | 90.46 | 331.01 | 6,600.74 | 5,486.39 | 1,948.51 | 14,451,650.60 | 1,708,937.00 | 39.79354784 | -80.75606222 | |
| 11,668.00 | 89.71 | 331.01 | 6,600.60 | 5,568.61 | 1,902.95 | 14,451,732.82 | 1,708,891.44 | 39.79377399 | -80.75622361 | |
| 11,763.00 | 91.34 | 330.04 | 6,599.73 | 5,651.31 | 1,856.21 | 14,451,815.52 | 1,708,844.70 | 39.79400144 | -80.75638920 | |
| 11,857.00 | 91.03 | 330.04 | 6,597.78 | 5,732.73 | 1,809.27 | 14,451,896.94 | 1,708,797.77 | 39.79422540 | -80.75655550 | |
| 11,951.00 | 90.46 | 330.04 | 6,596.56 | 5,814.16 | 1,762.34 | 14,451,978.38 | 1,708,750.83 | 39.79444938 | -80.75672182 | |
| 12,045.00 | 89.89 | 329.07 | 6,596.27 | 5,895.20 | 1,714.71 | 14,452,059.41 | 1,708,703.20 | 39.79467229 | -80.75689060 | |
| 12,139.00 | 89.32 | 328.98 | 6,596.92 | 5,975.79 | 1,666.33 | 14,452,140.01 | 1,708,654.83 | 39.79489398 | -80.75706205 | |
| 12,233.00 | 90.55 | 329.25 | 6,597.03 | 6,056.46 | 1,618.08 | 14,452,220.67 | 1,708,606.57 | 39.79511588 | -80.75723305 | |



Survey Report - Geographic



| | | | |
|------------------|---------------------------------|-------------------------------------|--|
| Company: | Tug Hill Operating LLC | Local Co-ordinate Reference: | Well Old Crow N-07 HM (slot C) |
| Project: | Marshall County, West Virginia. | TVD Reference: | RKB=1265+32.5 @ 1297.50usft (Nabors X14) |
| Site: | Old Crow Pad | MD Reference: | RKB=1265+32.5 @ 1297.50usft (Nabors X14) |
| Well: | Old Crow N-07 HM (slot C) | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | Surveys Original Hole | Database: | DB_Feb2822 |

| Survey | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
| 12,327.00 | 90.29 | 328.90 | 6,596.34 | 6,137.10 | 1,569.77 | 14,452,301.31 | 1,708,558.27 | 39.79533768 | -80.75740425 |
| 12,422.00 | 89.89 | 328.46 | 6,596.19 | 6,218.25 | 1,520.39 | 14,452,382.46 | 1,708,508.89 | 39.79556092 | -80.75757927 |
| 12,516.00 | 91.03 | 329.07 | 6,595.44 | 6,298.62 | 1,471.65 | 14,452,462.83 | 1,708,460.14 | 39.79578200 | -80.75775203 |
| 12,610.00 | 90.73 | 329.07 | 6,593.99 | 6,379.24 | 1,423.34 | 14,452,543.46 | 1,708,411.83 | 39.79600378 | -80.75792324 |
| 12,704.00 | 90.02 | 328.98 | 6,593.38 | 6,459.84 | 1,374.96 | 14,452,624.05 | 1,708,363.46 | 39.79622546 | -80.75809469 |
| 12,798.00 | 90.90 | 329.86 | 6,592.62 | 6,540.76 | 1,327.14 | 14,452,704.97 | 1,708,315.64 | 39.79644805 | -80.75826416 |
| 12,892.00 | 91.12 | 329.77 | 6,590.96 | 6,622.00 | 1,279.89 | 14,452,786.21 | 1,708,268.38 | 39.79667151 | -80.75843162 |
| 12,986.00 | 90.64 | 329.16 | 6,589.52 | 6,702.95 | 1,232.13 | 14,452,867.17 | 1,708,220.63 | 39.79689419 | -80.75860085 |
| 13,080.00 | 91.34 | 329.86 | 6,587.90 | 6,783.94 | 1,184.45 | 14,452,948.16 | 1,708,172.94 | 39.79711696 | -80.75876985 |
| 13,174.00 | 90.24 | 329.25 | 6,586.60 | 6,864.97 | 1,136.82 | 14,453,029.19 | 1,708,125.32 | 39.79733984 | -80.75893863 |
| 13,268.00 | 90.99 | 329.86 | 6,585.59 | 6,946.01 | 1,089.20 | 14,453,110.22 | 1,708,077.69 | 39.79756273 | -80.75910742 |
| 13,363.00 | 90.55 | 329.86 | 6,584.32 | 7,028.15 | 1,041.50 | 14,453,192.37 | 1,708,029.99 | 39.79778868 | -80.75927644 |
| 13,457.00 | 91.34 | 329.77 | 6,582.77 | 7,109.40 | 994.24 | 14,453,273.61 | 1,707,982.74 | 39.79801214 | -80.75944391 |
| 13,552.00 | 91.12 | 329.34 | 6,580.73 | 7,191.28 | 946.12 | 14,453,355.49 | 1,707,934.61 | 39.79823737 | -80.75961447 |
| 13,646.00 | 90.81 | 329.77 | 6,579.14 | 7,272.31 | 898.49 | 14,453,436.52 | 1,707,886.99 | 39.79846024 | -80.75978325 |
| 13,740.00 | 90.24 | 331.80 | 6,578.28 | 7,354.34 | 852.62 | 14,453,518.55 | 1,707,841.11 | 39.79868587 | -80.75994580 |
| 13,834.00 | 91.60 | 331.27 | 6,576.77 | 7,436.96 | 807.82 | 14,453,601.18 | 1,707,796.32 | 39.79891310 | -80.76010450 |
| 13,929.00 | 91.21 | 331.09 | 6,574.44 | 7,520.17 | 762.04 | 14,453,684.39 | 1,707,750.54 | 39.79914195 | -80.76026670 |
| 14,023.00 | 90.37 | 331.18 | 6,573.15 | 7,602.48 | 716.67 | 14,453,766.70 | 1,707,705.16 | 39.79936834 | -80.76042746 |
| 14,117.00 | 90.20 | 330.21 | 6,572.68 | 7,684.45 | 670.66 | 14,453,848.67 | 1,707,659.15 | 39.79959378 | -80.76059049 |
| 14,211.00 | 91.03 | 328.98 | 6,571.67 | 7,765.52 | 623.09 | 14,453,929.73 | 1,707,611.58 | 39.79981676 | -80.76075908 |
| 14,306.00 | 90.46 | 328.81 | 6,570.43 | 7,846.85 | 574.01 | 14,454,011.07 | 1,707,562.51 | 39.80004048 | -80.76093303 |
| 14,398.00 | 89.67 | 328.46 | 6,570.33 | 7,925.41 | 526.13 | 14,454,089.62 | 1,707,514.63 | 39.80026567 | -80.76110277 |
| 14,492.00 | 90.29 | 328.72 | 6,570.36 | 8,005.63 | 477.14 | 14,454,169.85 | 1,707,465.64 | 39.80047725 | -80.76127642 |
| 14,587.00 | 91.34 | 328.28 | 6,569.01 | 8,086.62 | 427.51 | 14,454,250.84 | 1,707,416.01 | 39.80070003 | -80.76145236 |
| 14,682.00 | 91.12 | 328.10 | 6,566.97 | 8,167.34 | 377.45 | 14,454,331.55 | 1,707,365.94 | 39.80092206 | -80.76162984 |
| 14,776.00 | 90.73 | 327.75 | 6,565.46 | 8,246.98 | 327.54 | 14,454,411.19 | 1,707,316.03 | 39.80114114 | -80.76180679 |
| 14,871.00 | 90.20 | 329.51 | 6,564.68 | 8,328.08 | 278.09 | 14,454,492.30 | 1,707,266.58 | 39.80136424 | -80.76198209 |
| 14,965.00 | 91.25 | 329.95 | 6,563.49 | 8,409.26 | 230.71 | 14,454,573.47 | 1,707,219.20 | 39.80158752 | -80.76215001 |
| 15,059.00 | 90.86 | 329.51 | 6,561.76 | 8,490.43 | 183.33 | 14,454,654.64 | 1,707,171.83 | 39.80181078 | -80.76231792 |
| 15,153.00 | 90.15 | 329.07 | 6,560.94 | 8,571.24 | 135.33 | 14,454,735.46 | 1,707,123.83 | 39.80203306 | -80.76248807 |
| 15,247.00 | 90.77 | 329.77 | 6,560.18 | 8,652.17 | 87.51 | 14,454,816.38 | 1,707,076.01 | 39.80225565 | -80.76265756 |
| 15,342.00 | 90.73 | 330.30 | 6,558.94 | 8,734.46 | 40.07 | 14,454,898.67 | 1,707,028.56 | 39.80248199 | -80.76282572 |
| 15,436.00 | 91.52 | 330.65 | 6,557.09 | 8,816.24 | -6.25 | 14,454,980.45 | 1,706,982.25 | 39.80270691 | -80.76298985 |
| 15,530.00 | 90.68 | 330.39 | 6,555.29 | 8,898.05 | -52.50 | 14,455,062.26 | 1,706,936.00 | 39.80293193 | -80.76315375 |
| 15,625.00 | 90.99 | 330.57 | 6,553.90 | 8,980.71 | -99.30 | 14,455,144.92 | 1,706,889.19 | 39.80315927 | -80.76331962 |
| 15,719.00 | 90.29 | 329.95 | 6,552.85 | 9,062.32 | -145.93 | 14,455,226.54 | 1,706,842.57 | 39.80338374 | -80.76348487 |
| 15,813.00 | 90.99 | 330.39 | 6,551.80 | 9,143.86 | -192.68 | 14,455,308.08 | 1,706,795.81 | 39.80360801 | -80.76365058 |
| 15,907.00 | 90.33 | 329.77 | 6,550.72 | 9,225.33 | -239.57 | 14,455,389.54 | 1,706,748.93 | 39.80383207 | -80.76381674 |
| 16,002.00 | 91.60 | 329.69 | 6,549.12 | 9,307.36 | -287.45 | 14,455,471.58 | 1,706,701.05 | 39.80405771 | -80.76398645 |
| 16,094.00 | 91.47 | 329.07 | 6,546.66 | 9,386.51 | -334.29 | 14,455,550.72 | 1,706,654.21 | 39.80427539 | -80.76415249 |
| 16,189.00 | 91.08 | 329.16 | 6,544.54 | 9,468.01 | -383.04 | 14,455,632.23 | 1,706,605.45 | 39.80449959 | -80.76432532 |
| 16,283.00 | 90.59 | 329.34 | 6,543.17 | 9,548.79 | -431.10 | 14,455,713.00 | 1,706,557.40 | 39.80472177 | -80.76449567 |
| 16,378.00 | 89.85 | 329.34 | 6,542.81 | 9,630.51 | -479.54 | 14,455,794.72 | 1,706,508.95 | 39.80494654 | -80.76466740 |
| 16,472.00 | 90.55 | 330.39 | 6,542.48 | 9,711.80 | -526.73 | 14,455,876.01 | 1,706,461.76 | 39.80517013 | -80.76483466 |
| 16,566.00 | 90.07 | 330.83 | 6,541.97 | 9,793.70 | -572.86 | 14,455,957.91 | 1,706,415.63 | 39.80539539 | -80.76499815 |
| 16,660.00 | 91.08 | 330.39 | 6,541.03 | 9,875.60 | -618.99 | 14,456,039.81 | 1,706,369.51 | 39.80562063 | -80.76516163 |
| 16,755.00 | 90.51 | 330.48 | 6,539.71 | 9,958.22 | -665.86 | 14,456,122.43 | 1,706,322.64 | 39.80584787 | -80.76532774 |
| 16,849.00 | 89.76 | 330.74 | 6,539.49 | 10,040.12 | -711.99 | 14,456,204.34 | 1,706,276.51 | 39.80607312 | -80.76549124 |
| 16,943.00 | 91.21 | 330.39 | 6,538.69 | 10,121.98 | -758.18 | 14,456,286.20 | 1,706,230.32 | 39.80629827 | -80.76565495 |
| 17,036.00 | 90.73 | 329.95 | 6,537.12 | 10,202.65 | -804.44 | 14,456,368.86 | 1,706,184.06 | 39.80652013 | -80.76581889 |
| 17,130.00 | 90.07 | 329.25 | 6,536.46 | 10,283.72 | -852.00 | 14,456,447.94 | 1,706,136.50 | 39.80674312 | -80.76598751 |
| 17,225.00 | 91.12 | 329.42 | 6,535.47 | 10,365.43 | -900.45 | 14,456,529.65 | 1,706,088.05 | 39.80696786 | -80.76615926 |
| 17,319.00 | 90.99 | 329.16 | 6,533.74 | 10,446.24 | -948.45 | 14,456,610.45 | 1,706,040.05 | 39.80719012 | -80.76632941 |
| 17,411.00 | 90.20 | 328.72 | 6,532.79 | 10,525.04 | -995.91 | 14,456,689.25 | 1,705,992.59 | 39.80740688 | -80.76649768 |

| | | | |
|------------------|---------------------------------|-------------------------------------|--|
| Company: | Tug Hill Operating LLC | Local Co-ordinate Reference: | Well Old Crow N-07 HM (slot C) |
| Project: | Marshall County, West Virginia. | TVD Reference: | RKB=1265+32.5 @ 1297.50usft (Nabors X14) |
| Site: | Old Crow Pad | MD Reference: | RKB=1265+32.5 @ 1297.50usft (Nabors X14) |
| Well: | Old Crow N-07 HM (slot C) | North Reference: | Grid |
| Wellbore: | Original Hole | Survey Calculation Method: | Minimum Curvature |
| Design: | Surveys Original Hole | Database: | DB_Feb2822 |

| Survey | | | | | | | | | | |
|---|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude | |
| 17,506.00 | 91.03 | 329.34 | 6,531.77 | 10,606.49 | -1,044.79 | 14,456,770.70 | 1,705,943.70 | 39.80763091 | -80.76667099 | |
| 17,600.00 | 90.59 | 329.25 | 6,530.44 | 10,687.30 | -1,092.78 | 14,456,851.52 | 1,705,895.71 | 39.80785319 | -80.76684113 | |
| 17,694.00 | 89.98 | 329.07 | 6,529.97 | 10,768.01 | -1,140.97 | 14,456,932.23 | 1,705,847.52 | 39.80807518 | -80.76701197 | |
| 17,788.00 | 90.68 | 329.34 | 6,529.43 | 10,848.76 | -1,189.10 | 14,457,012.97 | 1,705,799.40 | 39.80829727 | -80.76718258 | |
| 17,882.00 | 90.24 | 329.16 | 6,528.68 | 10,929.54 | -1,237.16 | 14,457,093.75 | 1,705,751.34 | 39.80851946 | -80.76735296 | |
| 17,976.00 | 89.58 | 328.81 | 6,528.82 | 11,010.10 | -1,285.59 | 14,457,174.31 | 1,705,702.91 | 39.80874104 | -80.76752468 | |
| 18,037.00 | 89.32 | 329.16 | 6,529.41 | 11,062.37 | -1,317.02 | 14,457,226.59 | 1,705,671.48 | 39.80888483 | -80.76763612 | |
| Survey @ 18037.00 MD 6529.41 TVD | | | | | | | | | | |
| 18,095.00 | 89.32 | 329.16 | 6,530.10 | 11,112.17 | -1,346.75 | 14,457,276.38 | 1,705,641.75 | 39.80902179 | -80.76774152 | |
| Survey Proj. to 18095.00 MD 6530.10 TVD | | | | | | | | | | |

| Design Annotations | | | | | |
|-----------------------|-----------------------|-------------------|--------------|---|--|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment | |
| | | +N/-S (usft) | +E/-W (usft) | | |
| 207.00 | 207.00 | 0.05 | 0.56 | MWD surveys | |
| 18,037.00 | 6,529.41 | 11,062.37 | -1,317.02 | Survey @ 18037.00 MD 6529.41 TVD | |
| 18,095.00 | 6,530.10 | 11,112.17 | -1,346.75 | Survey Proj. to 18095.00 MD 6530.10 TVD | |

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