

State of West Virginia  
Department of Environmental Protection - Office of Oil and Gas  
Well Operator's Report of Well Work

API 47 - 051 - 02186 County Marshall District Franklin  
Quad Powhatan Point 7.5' Pad Name Old Crow Field/Pool Name \_\_\_\_\_  
Farm name Donna Vivian Yoho (TOD) Gary Lance Yoho Well Number Old Crow S-15HM  
Operator (as registered with the OOG) Tug Hill Operating, LLC  
Address 380 Southpointe Boulevard, Plaza II, Suite 200 City Canonsburg State PA Zip 15317

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4,403,185.33 Easting 520,307.74  
Landing Point of Curve Northing 4,403,906.9 Easting 521,421.2  
Bottom Hole Northing 4,401,673.0 Easting 522,718.8

Elevation (ft) 1,265' GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other \_\_\_\_\_  
Drilled with  Cable  Rotary

Drilling Media Surface hole  Air  Mud  Fresh Water Intermediate hole  Air  Mud  Fresh Water  Brine  
Production hole  Air  Mud  Fresh Water  Brine

Mud Type(s) and Additive(s)  
SOBM; Base oil, osmotic inhibitor, weighting agent, viscosifier, emulsifier, hardness buffer, fluid loss additive, LCM, Shale inhibitor, de-foamer, soaping agent, coagulant, flocculant; specific additives per WSSP and Permit.

Date permit issued 4/12/2019 Date drilling commenced 4/18/2019 Date drilling ceased 5/24/2019  
Date completion activities began 2/21/2021 Date completion activities ceased 3/8/2021  
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 912' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1346' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 814-820', 906-912' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

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Reviewed by:  
B.S.  
06/27/2021  
8-11-21

API 47-051 - 02186 Farm name Donna Vivian Yoho (TOD) Gary Lance Yoho Well number Old Crow S-15HM

| CASING STRINGS            | Hole Size | Casing Size | Depth   | New or Used | Grade wt/ft | Basket Depth(s) | Did cement circulate (Y/N)<br>* Provide details below* |
|---------------------------|-----------|-------------|---------|-------------|-------------|-----------------|--|
| Conductor                 | 36"       | 30"         | 100'    | NEW         | 94.5#       | N/A             | Y  |
| Surface                   | 17 1/2"   | 13 3/8"     | 1,014'  | NEW         | 54.5#       | N/A             | Y  |
| Coal                      | 17 1/2"   | 13 3/8"     | 1,014'  | NEW         | 54.5#       | N/A             | Y  |
| Intermediate 1            | 12 1/4"   | 9 5/8"      | 3,131'  | NEW         | 36#         | N/A             | Y  |
| Intermediate 2            |           |             |         |             |             |                 |  |
| Intermediate 3            |           |             |         |             |             |                 |  |
| Production                | 8 3/4"    | 5 1/2"      | 17,205' | NEW         | 20#         | N/A             | Y  |
| Tubing                    |           | 2 3/8"      | 8,603'  | NEW         | 4.7#        | N/A             |  |
| Packer type and depth set |           |             |         |             |             |                 |  |

Comment Details \_\_\_\_\_

| CEMENT DATA    | Class/Type of Cement | Number of Sacks | Slurry wt (ppg) | Yield (ft <sup>3</sup> /sks) | Volume (ft <sup>3</sup> ) | Cement Top (MD) | WOC (hrs) |
|----------------|----------------------|-----------------|-----------------|------------------------------|---------------------------|-----------------|-----------|
| Conductor      | A                    |                 | 15.6            | 1.19                         |                           | 0               | 8         |
| Surface        | A                    | 1,061           | 15.6            | 1.19                         | 1,281                     | 0               | 8         |
| Coal           | A                    | 1,061           | 15.6            | 1.19                         | 1,281                     | 0               | 8         |
| Intermediate 1 | A                    | 907             | 15.6            | 1.19                         | 1,250                     | 0               | 8         |
| Intermediate 2 |                      |                 |                 |                              |                           |                 |           |
| Intermediate 3 |                      |                 |                 |                              |                           |                 |           |
| Production     | A                    | 2,437           | 14.5            | 1.17                         | 2,839                     | 0               | 8         |
| Tubing         |                      |                 |                 |                              |                           |                 |           |

Drillers TD (ft) 17,250' Loggers TD (ft) n/a  
 Deepest formation penetrated Marcellus Plug back to (ft) n/a  
 Plug back procedure n/a

Kick off depth (ft) 7,385'

Check all wireline logs run  caliper  density  deviated/directional  induction  
 neutron  resistivity  gamma ray  temperature  sonic

Well cored  Yes  No Conventional Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING \_\_\_\_\_

3 centralizers on surface casing at equal distance.

Intermediate - 1 centralizer every other joint.

Production - one centralizer every other joint in lateral, one centralizer every joint through curve, one centralizer every other joint to surface.

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_

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**Old Crow S-15HM  
PEFORATION RECORD**

| Stage No. | Perforation Date | Perforated from MD ft. | Perforated to MD. Ft. | Number of Perforations | Formation(s) |
|-----------|------------------|------------------------|-----------------------|------------------------|--------------|
| 1         | 2/21/2021        | 17020                  | 17068                 | 48                     | Marcellus    |
| 2         | 2/21/2021        | 16817                  | 16969                 | 48                     | Marcellus    |
| 3         | 2/22/2021        | 16643                  | 16795                 | 48                     | Marcellus    |
| 4         | 2/22/2021        | 16469                  | 16621                 | 48                     | Marcellus    |
| 5         | 2/22/2021        | 16295                  | 16447                 | 48                     | Marcellus    |
| 6         | 2/22/2021        | 16121                  | 16273                 | 48                     | Marcellus    |
| 7         | 2/23/2021        | 15947                  | 16099                 | 48                     | Marcellus    |
| 8         | 2/23/2021        | 15773                  | 15925                 | 48                     | Marcellus    |
| 9         | 2/23/2021        | 15599                  | 15751                 | 48                     | Marcellus    |
| 10        | 2/23/2021        | 15425                  | 15577                 | 48                     | Marcellus    |
| 11        | 2/24/2021        | 15251                  | 15403                 | 48                     | Marcellus    |
| 12        | 2/24/2021        | 15077                  | 15229                 | 48                     | Marcellus    |
| 13        | 2/24/2021        | 14903                  | 15055                 | 48                     | Marcellus    |
| 14        | 2/25/2021        | 14729                  | 14881                 | 48                     | Marcellus    |
| 15        | 2/25/2021        | 14555                  | 14707                 | 48                     | Marcellus    |
| 16        | 2/25/2021        | 14381                  | 14533                 | 48                     | Marcellus    |
| 17        | 2/26/2021        | 14207                  | 14359                 | 48                     | Marcellus    |
| 18        | 2/26/2021        | 14033                  | 14185                 | 48                     | Marcellus    |
| 19        | 2/26/2021        | 13859                  | 14011                 | 48                     | Marcellus    |
| 20        | 2/27/2021        | 13685                  | 13837                 | 48                     | Marcellus    |
| 21        | 2/27/2021        | 13511                  | 13663                 | 48                     | Marcellus    |
| 22        | 2/27/2021        | 13337                  | 13489                 | 48                     | Marcellus    |
| 23        | 2/27/2021        | 13163                  | 13315                 | 48                     | Marcellus    |
| 24        | 2/28/2021        | 12989                  | 13141                 | 48                     | Marcellus    |
| 25        | 2/28/2021        | 12815                  | 12967                 | 48                     | Marcellus    |
| 26        | 2/28/2021        | 12641                  | 12793                 | 48                     | Marcellus    |
| 27        | 2/28/2021        | 12467                  | 12619                 | 48                     | Marcellus    |
| 28        | 3/1/2021         | 12293                  | 12445                 | 48                     | Marcellus    |
| 29        | 3/1/2021         | 12119                  | 12271                 | 48                     | Marcellus    |
| 30        | 3/1/2021         | 11945                  | 12097                 | 48                     | Marcellus    |
| 31        | 3/2/2021         | 11771                  | 11923                 | 48                     | Marcellus    |
| 32        | 3/2/2021         | 11597                  | 11749                 | 48                     | Marcellus    |
| 33        | 3/2/2021         | 11423                  | 11575                 | 48                     | Marcellus    |
| 34        | 3/3/2021         | 11249                  | 11401                 | 48                     | Marcellus    |
| 35        | 3/3/2021         | 11075                  | 11227                 | 48                     | Marcellus    |
| 36        | 3/3/2021         | 10901                  | 11053                 | 48                     | Marcellus    |
| 37        | 3/4/2021         | 10727                  | 10879                 | 48                     | Marcellus    |
| 38        | 3/4/2021         | 10553                  | 10705                 | 48                     | Marcellus    |
| 39        | 3/4/2021         | 10379                  | 10531                 | 48                     | Marcellus    |
| 40        | 3/4/2021         | 10205                  | 10357                 | 48                     | Marcellus    |
| 41        | 3/5/2021         | 10031                  | 10183                 | 48                     | Marcellus    |

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|    |          |      |       |    |           |
|----|----------|------|-------|----|-----------|
| 42 | 3/5/2021 | 9857 | 10009 | 48 | Marcellus |
| 43 | 3/5/2021 | 9683 | 9835  | 48 | Marcellus |
| 44 | 3/5/2021 | 9509 | 9661  | 48 | Marcellus |
| 45 | 3/6/2021 | 9335 | 9487  | 48 | Marcellus |
| 46 | 3/6/2021 | 9161 | 9313  | 48 | Marcellus |
| 47 | 3/7/2021 | 8987 | 9139  | 48 | Marcellus |
| 48 | 3/7/2021 | 8813 | 8965  | 48 | Marcellus |
| 49 | 3/8/2021 | 8639 | 8791  | 48 | Marcellus |

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**OLD CROW S-15HM**  
**STIMULATION INFORMATION PER STAGE**

| Stage No. | Ave. Pump Rate (BPM) | Ave Treatment Pressure (PSI) | Max Breakdown Pressure (PSI) | ISIP (PSI) | Amount of Proppant (lbs) | Amount of Water (bbbls) | Amount of Nitrogen/other (units) |
|-----------|----------------------|------------------------------|------------------------------|------------|--------------------------|-------------------------|----------------------------------|
| 1         | 69                   | 7557                         | 5000                         | 3921       | 248560                   | 7895                    | 0                                |
| 2         | 89                   | 7752                         | 5665                         | 5314       | 447540                   | 8648                    | 0                                |
| 3         | 90                   | 7667                         | 5315                         | 5226       | 444440                   | 8419                    | 0                                |
| 4         | 90                   | 7785                         | 5605                         | 5002       | 443320                   | 8590                    | 0                                |
| 5         | 89                   | 7670                         | 5543                         | 4874       | 441720                   | 9661                    | 0                                |
| 6         | 90                   | 7797                         | 5239                         | 5476       | 446160                   | 8479                    | 0                                |
| 7         | 90                   | 7360                         | 5145                         | 5116       | 446240                   | 8375                    | 0                                |
| 8         | 90                   | 7392                         | 5322                         | 5159       | 440460                   | 8390                    | 0                                |
| 9         | 90                   | 7156                         | 4948                         | 5550       | 444200                   | 8576                    | 0                                |
| 10        | 90                   | 7080                         | 4967                         | 5556       | 443060                   | 8587                    | 0                                |
| 11        | 90                   | 7215                         | 5236                         | 5041       | 442049                   | 8511                    | 0                                |
| 12        | 90                   | 7251                         | 4972                         | 5274       | 442460                   | 9732                    | 0                                |
| 13        | 90                   | 7287                         | 5188                         | 5669       | 446960                   | 8388                    | 0                                |
| 14        | 90                   | 7253                         | 5275                         | 5121       | 442020                   | 8430                    | 0                                |
| 15        | 91                   | 7221                         | 6538                         | 5258       | 443260                   | 8386                    | 0                                |
| 16        | 90                   | 7133                         | 5149                         | 4645       | 441820                   | 8392                    | 0                                |
| 17        | 89                   | 7232                         | 5247                         | 5410       | 440000                   | 8453                    | 0                                |
| 18        | 88                   | 7081                         | 4970                         | 5360       | 447100                   | 8423                    | 0                                |
| 19        | 90                   | 7117                         | 5121                         | 5037       | 441680                   | 8266                    | 0                                |
| 20        | 90                   | 7180                         | 5263                         | 5073       | 441340                   | 8239                    | 0                                |
| 21        | 90                   | 7080                         | 5022                         | 5248       | 447520                   | 8414                    | 0                                |
| 22        | 90                   | 6952                         | 4997                         | 5235       | 447320                   | 8300                    | 0                                |
| 23        | 90                   | 7125                         | 5128                         | 4842       | 437060                   | 8240                    | 0                                |
| 24        | 88                   | 6954                         | 4950                         | 5076       | 440240                   | 8216                    | 0                                |
| 25        | 90                   | 7042                         | 5179                         | 4879       | 448100                   | 8311                    | 0                                |
| 26        | 90                   | 6982                         | 5303                         | 4699       | 449600                   | 8365                    | 0                                |
| 27        | 91                   | 6996                         | 9576                         | 4900       | 439249                   | 8240                    | 0                                |
| 28        | 87                   | 6936                         | 5083                         | 5522       | 444340                   | 8602                    | 0                                |
| 29        | 91                   | 7042                         | 5124                         | 4883       | 446380                   | 8283                    | 0                                |
| 30        | 90                   | 6994                         | 5294                         | 4746       | 441740                   | 8202                    | 0                                |
| 31        | 90                   | 7003                         | 5081                         | 5273       | 442780                   | 8229                    | 0                                |
| 32        | 90                   | 7018                         | 5176                         | 5235       | 447680                   | 8252                    | 0                                |

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| Stage No. | Ave. Pump Rate (BPM) | Ave Treatment Pressure (PSI) | Max Breakdown Pressure (PSI) | ISIP (PSI) | Amount of Proppant (lbs) | Amount of Water (bbls) | Amount of Nitrogen/other (units) |
|-----------|----------------------|------------------------------|------------------------------|------------|--------------------------|------------------------|----------------------------------|
| 33        | 90                   | 6961                         | 5148                         | 5245       | 445720                   | 8396                   | 0                                |
| 34        | 90                   | 6847                         | 5037                         | 4558       | 440540                   | 8297                   | 0                                |
| 35        | 90                   | 6828                         | 5240                         | 5049       | 447000                   | 8261                   | 0                                |
| 36        | 90                   | 6763                         | 5446                         | 5154       | 438660                   | 8220                   | 0                                |
| 37        | 90                   | 6750                         | 5239                         | 4870       | 434900                   | 8211                   | 0                                |
| 38        | 89                   | 6906                         | 5628                         | 5275       | 439740                   | 8138                   | 0                                |
| 39        | 90                   | 7006                         | 5168                         | 4553       | 404580                   | 7613                   | 0                                |
| 40        | 90                   | 7017                         | 5372                         | 4608       | 436320                   | 8147                   | 0                                |
| 41        | 90                   | 6968                         | 5253                         | 4688       | 439580                   | 8359                   | 0                                |
| 42        | 90                   | 6879                         | 5347                         | 4953       | 450108                   | 8180                   | 0                                |
| 43        | 90                   | 6662                         | 5310                         | 5087       | 448460                   | 8205                   | 0                                |
| 44        | 90                   | 6805                         | 5453                         | 5078       | 441260                   | 8151                   | 0                                |
| 45        | 88                   | 6859                         | 5236                         | 4456       | 435500                   | 9831                   | 0                                |
| 46        | 90                   | 6836                         | 5344                         | 4800       | 449800                   | 8325                   | 0                                |
| 47        | 90                   | 6711                         | 5296                         | 5131       | 446600                   | 8445                   | 0                                |
| 48        | 91                   | 6574                         | 5353                         | 4942       | 447380                   | 8224                   | 0                                |
| 49        | 91                   | 6528                         | 5258                         | 5064       | 436080                   | 8048                   | 0                                |

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OLD CROW S-15HM

| LITHOLOGY/FORMATION | TOP DEPTH IN FT/<br>Name TVD | BOTTOM DEPTH<br>IN FT TVD | TOP DEPTH<br>IN FT MD | BOTTOM DEPTH<br>IN FT MD | DESCRIBE ROCK TYPE AND RECORD<br>QUANTITY AND TYPE OF FLUID |
|---------------------|------------------------------|---------------------------|-----------------------|--------------------------|---|
| Maxton              | 2013                         | 2103                      | 2072                  | 2176                     | Sandstone   |
| Big Lime            | 2103                         | 2173                      | 2176                  | 2259                     | Limestone   |
| Big Injun           | 2173                         | 2457                      | 2259                  | 2614                     | Sandstone   |
| Weir                | 2457                         | 2652                      | 2614                  | 2866                     | Sandstone   |
| Berea               | 2652                         | 2997                      | 2866                  | 3334                     | Sandstone   |
| Gordon              | 2997                         | 3051                      | 3334                  | 3410                     | Sandstone   |
| Fifty Foot          | 3051                         | 3599                      | 3410                  | 4145                     | Sandstone   |
| Speechley           | 3599                         | 5021                      | 4145                  | 6066                     | Sandstone   |
| Benson              | 5021                         | 5376                      | 6066                  | 6540                     | Sandstone   |
| Alexander           | 5376                         | 5970                      | 6540                  | 7324                     | Siltstone   |
| Rhinstreet          | 5970                         | 6414                      | 7324                  | 8009                     | Black shale   |
| Middlesex           | 6414                         | 6492                      | 8009                  | 8175                     | Black shale   |
| Geneseo/Burkett     | 6492                         | 6512                      | 8175                  | 8220                     | Black shale   |
| Tully               | 6512                         | 6554                      | 8220                  | 8331                     | Limestone   |
| Hamilton            | 6554                         | 6611                      | 8331                  | 8527                     | Grey shale  |
| Marcellus           | 6611                         | -                         | 8527                  | -                        | Black shale   |

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

|                                |                         |
|--------------------------------|-------------------------|
| Job Start Date:                | 2/21/2021               |
| Job End Date:                  | 3/8/2021                |
| State:                         | West Virginia           |
| County:                        | Marshall                |
| API Number:                    | 47-051-02186-00-00      |
| Operator Name:                 | Tug Hill Operating, LLC |
| Well Name and Number:          | Old Crow S 15HM         |
| Latitude:                      | 39.77836557             |
| Longitude:                     | -80.76285717            |
| Datum:                         | NAD27                   |
| Federal Well:                  | NO                      |
| Indian Well:                   | NO                      |
| True Vertical Depth:           | 6,655                   |
| Total Base Water Volume (gal): | 17,284,890              |
| Total Base Non Water Volume:   | 0                       |



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## Hydraulic Fracturing Fluid Composition:

| Trade Name                  | Supplier           | Purpose            | Ingredients                           | Chemical Abstract Service Number (CAS #) | Maximum Ingredient Concentration in Additive (% by mass)** | Maximum Ingredient Concentration in HF Fluid (% by mass)** | Comments |
|-----------------------------|--------------------|--------------------|---------------------------------------|--|--|--|----------|
| Water                       | Tug Hill Operating | Carrier/Base Fluid | Water                                 | 7732-18-5                                | 100.00000  | 86.64073   | None     |
| Sand (40/70 White Proppant) | ProFrac            | Proppant           | Silica Substrate                      | 14808-60-7                               | 100.00000  | 8.63373  | None     |
| Sand (100 Mesh Proppant)    | ProFrac            | Proppant           | Silica Substrate                      | 14808-60-7                               | 100.00000  | 3.10435  | None     |
| Sand (30/50 White Proppant) | ProFrac            | Proppant           | Silica Substrate                      | 14808-60-7                               | 100.00000  | 1.16929  | None     |
| Hydrochloric Acid (7.5%)    | PVS                | Acidizing          | Water                                 | 7732-18-5                                | 85.00000   | 0.27903  | None     |
|                             |                    |                    | Hydrochloric Acid (Hydrogen Chloride) | 7647-01-0                                | 37.00000   | 0.12146  | None     |
| StimStream FR 9800          | Chemstream         | Friction Reducer   | Butene, homopolymer                   | 9003-29-6                                | 25.00000   | 0.01905  | None     |
|                             |                    |                    | Alkanes, C16-20-iso-                  | 90622-59-6                               | 25.00000   | 0.01905  | None     |
|                             |                    |                    | Ethoxylated alcohols (C12-18)         | 68213-23-0                               | 3.00000  | 0.00229  | None     |

|  |              |                           |  |             |           |         |      |
|--|--------------|---------------------------|--|-------------|-----------|---------|------|
| MC MX 9-4743   | Multi-Chem   | Biocide                   |  |             |           |         |      |
|  |              |                           | Sodium Nitrate                             | 7631-99-4   | 60.00000  | 0.02207 | None |
| LD-7750W   | Multi-Chem   | Scale Inhibitor           |  |             |           |         |      |
|  |              |                           | Methanol                                   | 67-56-1     | 60.00000  | 0.00506 | None |
|  |              |                           | Phosphonic Acid Salt                       | Proprietary | 5.00000   | 0.00042 | None |
| ProFE 105  | ProFrac      | Iron Control              |  |             |           |         |      |
|  |              |                           | Citric Acid                                | 77-92-9     | 100.00000 | 0.00121 | None |
| ProHib 100   | ProFrac      | Acid Inhibitor            |  |             |           |         |      |
|  |              |                           | 2-Propyn-1-ol compound w/<br>methyloxirane | 38172-91-7  | 15.00000  | 0.00015 | None |
| Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS. |              |                           |  |             |           |         |      |
| Other Chemical(s)  | Listed Above | See Trade Name(s)<br>List |  |             |           |         |      |
|  |              |                           | Water                                      | 7732-18-5   | 85.00000  | 0.27903 |      |
|  |              |                           | Butene, homopolymer                        | 9003-29-6   | 25.00000  | 0.01905 |      |
|  |              |                           | Ethoxylated alcohols (C12-18)              | 68213-23-0  | 3.00000   | 0.00229 |      |
|  |              |                           | Phosphonic Acid Salt                       | Proprietary | 5.00000   | 0.00042 |      |

\* Total Water Volume sources may include fresh water, produced water, and/or recycled water

\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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7,427' B.H. A.D.

3,614' T.H. A.D.

**OLD CROW S LEASE  
WELL 15HM  
TUG HILL OPERATING**

T.H. LATITUDE 39°47'30"  
B.H. LATITUDE 39°47'30"

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

|                   |                   |                    |
|-------------------|-------------------|--------------------|
| NAD'83 S.P.C.(FT) | N. 468,114.95     | E. 1,613,584.39    |
| NAD'83 GEO.       | LAT-(N) 39.778366 | LONG-(W) 80.762857 |
| NAD'83 UTM (M)    | N. 4,403,185.33   | E. 520,307.74      |

LANDING POINT

|                   |                   |                    |
|-------------------|-------------------|--------------------|
| NAD'83 S.P.C.(FT) | N. 470,687.1      | E. 1,617,103.5     |
| NAD'83 GEO.       | LAT-(N) 39.785561 | LONG-(W) 80.750465 |
| NAD'83 UTM (M)    | N. 4,403,986.8    | E. 521,366.8       |

BOTTOM HOLE

|                   |                   |                    |
|-------------------|-------------------|--------------------|
| NAD'83 S.P.C.(FT) | N. 463,020.6      | E. 1,621,410.1     |
| NAD'83 GEO.       | LAT-(N) 39.764680 | LONG-(W) 80.734766 |
| NAD'83 UTM (M)    | N. 4,401,673.1    | E. 522,717.8       |

T.H. LONGITUDE 80°45'00"  
B.H. LONGITUDE 80°42'30"

| MAP/PARCEL | ADJOINING SURFACE OWNER LIST | ACRES     |
|------------|------------------------------|-----------|
| 5-10-5     | WILLIAM F. RULONG, ET AL     | 27.50     |
| 5-10-6     | WILLIAM F. RULONG, ET AL     | P/O ACRE  |
| 5-10-7     | WILLIAM F. RULONG, ET AL     | 22.872    |
| 5-10-8     | WILLIAM F. RULONG, ET AL     | 70.6672   |
| 5-10-11    | JOSEPH LEE CROW              | P/O PCL 5 |
| 5-10-13.1  | DAVID LEE QUIGLEY, JR.       | 2.88      |
| 5-16-10    | FRANK P. LAUTAR EST.         | 5.00      |

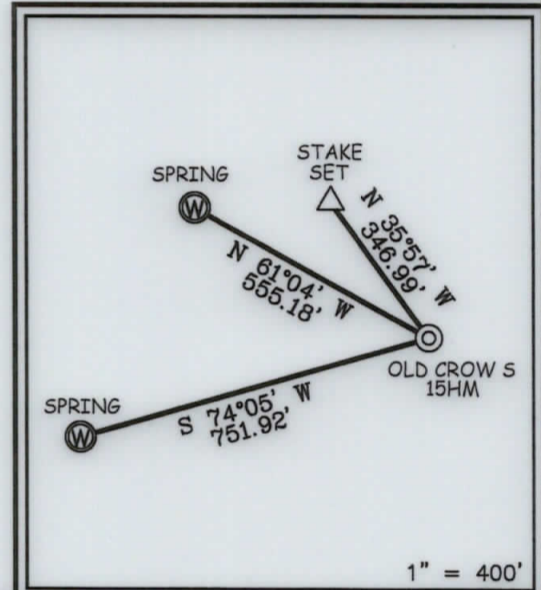
T.H.  
A.D.

**NOTES ON SURVEY**

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS > 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
2. WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'
3. AS-DRILLED DATA PROVIDED BY TUG HILL OPERATING, LLC.
4. PLAT UPDATED TO SHOW AS-DRILLED PATH.

B.H.  
A.D.

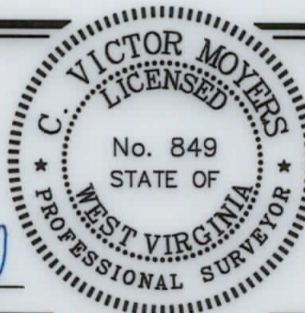
**REFERENCES**



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 25351 | 304.462.5634  
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952  
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296  
slsvv.com

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 849 *C. Victor Moyers*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
DATE JUNE 10, 20 20  
REVISED \_\_\_\_\_, 20 \_\_\_\_\_  
OPERATORS WELL NO. OLD CROW S-15HM  
API WELL NO. 47 - 051 - 02186  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8796P15HMAD.dwg  
OLD CROW NORTH 15HM REV0  
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

STATE OF WEST VIRGINIA  
DIVISION OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS



WELL TYPE: OIL \_\_\_\_\_ GAS X LIQUID INJECTION \_\_\_\_\_ WASTE DISPOSAL \_\_\_\_\_ IF "GAS" PRODUCTION X STORAGE \_\_\_\_\_ DEEP \_\_\_\_\_ SHALLOW X

LOCATION:  
ELEVATION 1,265' WATERSHED TRIBUTARY OF FISH CREEK (HUC-10)  
DISTRICT FRANKLIN COUNTY MARSHALL QUADRANGLE POWHATAN POINT 7.5'

SURFACE OWNER DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO ACREAGE 71.205±  
ROYALTY OWNER DONNA VIVIAN YOHO, ET AL ACREAGE 71.205±

PROPOSED WORK:  
DRILL X CONVERT \_\_\_\_\_ DRILL DEEPER \_\_\_\_\_ REDRILL \_\_\_\_\_ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION \_\_\_\_\_ PERFORATE NEW FORMATION \_\_\_\_\_ PLUG AND ABANDON \_\_\_\_\_ CLEAN OUT AND REPLUG \_\_\_\_\_ OTHER \_\_\_\_\_

PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION MARCELLUS  
ESTIMATED DEPTH TVD: 6,726' / TMD: 17,358'

COUNTY NAME  
PERMIT

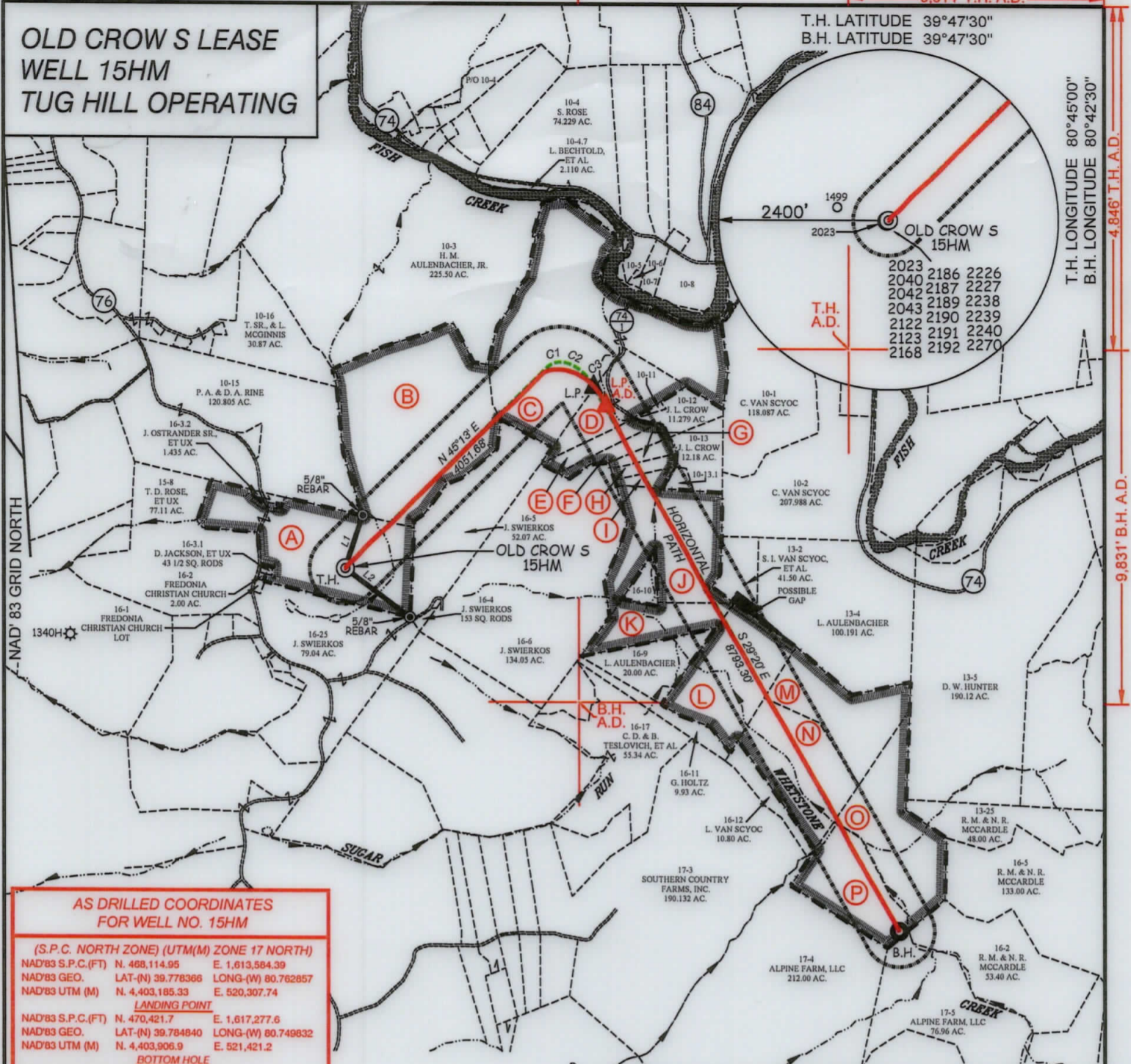
08/27/2021

WELL OPERATOR TUG HILL OPERATING, LLC  
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107

DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM  
ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313



**OLD CROW S LEASE  
WELL 15HM  
TUG HILL OPERATING**



**AS DRILLED COORDINATES  
FOR WELL NO. 15HM**

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

|                   |                   |                    |
|-------------------|-------------------|--------------------|
| NAD'83 S.P.C.(FT) | N. 468,114.95     | E. 1,613,584.39    |
| NAD'83 GEO.       | LAT-(N) 39.778366 | LONG-(W) 80.762857 |
| NAD'83 UTM (M)    | N. 4,403,185.33   | E. 520,307.74      |

**LANDING POINT**

|                   |                   |                    |
|-------------------|-------------------|--------------------|
| NAD'83 S.P.C.(FT) | N. 470,421.7      | E. 1,617,277.6     |
| NAD'83 GEO.       | LAT-(N) 39.784840 | LONG-(W) 80.749832 |
| NAD'83 UTM (M)    | N. 4,403,906.9    | E. 521,421.2       |

**BOTTOM HOLE**

|                   |                   |                    |
|-------------------|-------------------|--------------------|
| NAD'83 S.P.C.(FT) | N. 463,020.1      | E. 1,621,413.3     |
| NAD'83 GEO.       | LAT-(N) 39.764679 | LONG-(W) 80.734755 |
| NAD'83 UTM (M)    | N. 4,401,673.0    | E. 522,718.8       |

| CURVE | ARC LENGTH | RADIUS  | CHORD BEARING | CHORD LENGTH |
|-------|------------|---------|---------------|--------------|
| C1    | 239.35'    | 276.11' | N 75°50' E    | 231.92'      |
| C2    | 248.89'    | 505.05' | S 64°42' E    | 246.38'      |
| C3    | 306.43'    | 811.25' | S 39°58' E    | 304.61'      |

**LEGEND**

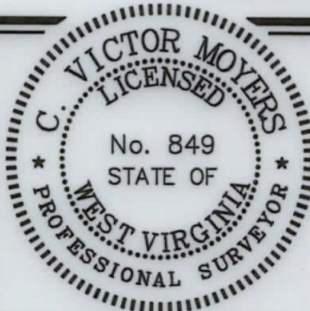
AS DRILLED —  
PROPOSED - - -

| TAG | SURFACE OWNER                           | PARCEL    | ACRES  |
|-----|---|-----------|--------|
| A   | DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO | 5-16-3    | 71.205 |
| B   | JOHN SWIERKOS                           | 5-10-14   | 100.00 |
| C   | HERBERT M. AULENBACHER, JR.             | 5-10-9    | 141.43 |
| D   | LOUIS DELBERT VAN SCYOC                 | 5-10-10   | 24.50  |
| E   | JOHN PAUL SMITH, JR., ET AL             | 5-10-12.1 | 8.86   |
| F   | LOUIS AULENBACHER                       | 5-10-22   | 6.461  |
| G   | LOUIS AULENBACHER                       | 5-10-21   | 3.677  |
| H   | LOUIS AULENBACHER                       | 5-10-20   | 3.554  |
| I   | BRADLEY L. & CONNIE L. HUBBARD          | 5-10-19   | 3.209  |
| J   | LOUIS AULENBACHER                       | 5-16-7    | 50.00  |
| K   | LOUIS AULENBACHER                       | 5-16-8    | 21.00  |
| L   | LOUIS VAN SCYOC                         | 9-13-3    | 52.40  |
| M   | SYLVIA I. VAN SCYOC, ET AL              | 9-13-2    | 41.5   |
| N   | LOUIS VAN SCYOC                         | 5-13-1    | 46.13  |
| O   | ROBERT N. & NANCY R. MCCARDLE           | 9-16-1    | 46.80  |
| P   | DAVID ALAN RUBCICH, ET AL               | 5-16-13   | 33.31  |



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254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296  
slsw.com

| LINE | BEARING    | DISTANCE |
|------|------------|----------|
| L1   | N 18°37' E | 783.29'  |
| L2   | S 53°08' E | 1144.31' |



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

P.S. 849 *C. Victor Moyers*

**LEGEND**

- LEASE LINE
- SURFACE LINE
- WELL LATERAL
- OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- TAX MAP-PARCEL
- SURFACE OWNER (SEE TABLE)
- LEASE # (SEE WW-6A1)

SCALE 1" = 2000' FILE NO. 8796P15HMAD.dwg  
DATE JUNE 10, 20 20  
REVISED \_\_\_\_\_, 20 \_\_\_\_\_  
OPERATORS WELL NO. OLD CROW S-15HM  
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