

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

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Office of Oil and Gas

JAN 26 2023

WV Department of  
Environmental Protection

API 47-051-02239 County Marshall District Franklin  
Quad Powhatan Point 7.5' Pad Name Old Crow Field/Pool Name \_\_\_\_\_  
Farm name Donna Yoho Well Number Old Crow N-7HM  
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 4,403,199.66 Easting 520,291.14  
Landing Point of Curve Northing 4,404,155.4 Easting 521,305.9  
Bottom Hole Northing 4,406,586.7 Easting 519,880.6

Elevation (ft) 1,264.99' 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 7/26/2019 Date drilling commenced spud: 1/25/21 big rig: 10/10/2021 Date drilling ceased 4/5/2022  
Date completion activities began 8/23/2022 Date completion activities ceased 9/11/2022  
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 919' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1,353' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 821-827', 913-919' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:  
[Signature] 03/17/2023

API 47-051 - 02239 Farm name Donna Yoho Well number Old Crow N-7HM

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	36"	30"	120'	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"	3,027'	NEW	36#	N/A	Y
Intermediate 2							Y
Intermediate 3							
Production	8 1/2"	5 1/2"	18,059'	NEW	20#	N/A	Y
Tubing		2 7/8"	9,030'	NEW	4.7#	N/A	Y
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	65	15.6	1.21	78	0	8
Surface	A	1,090	15.6	1.2	908	0	8
Coal	A	1,090	15.6	1.2	908	0	8
Intermediate 1	A	880	15.5	1.38	638	0	8
Intermediate 2							
Intermediate 3							
Production	A	4,585	15.5	1.06	4,325	0	8
Tubing							

Drillers TD (ft) 18,095' Loggers TD (ft) n/a

Deepest formation penetrated Marcellus Plug back to (ft) n/a

Plug back procedure n/a

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Kick off depth (ft) 7,624'

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

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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 N-7HM  
PERFORATION RECORD**

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Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	8/23/2022	17,874	17,921	12	Marcellus
2	8/23/2022	17,672	17,820	36	Marcellus
3	8/23/2022	17,496	17,644	36	Marcellus
4	8/24/2022	17,320	17,468	36	Marcellus
5	8/24/2022	17,143	17,291	36	Marcellus
6	8/25/2022	16,967	17,115	36	Marcellus
7	8/25/2022	16,790	16,938	36	Marcellus
8	8/25/2022	16,614	16,762	36	Marcellus
9	8/26/2022	16,437	16,585	36	Marcellus
10	8/26/2022	16,261	16,409	36	Marcellus
11	8/27/2022	16,085	16,233	36	Marcellus
12	8/27/2022	15,908	16,056	36	Marcellus
13	8/27/2022	15,732	15,880	36	Marcellus
14	8/28/2022	15,555	15,703	36	Marcellus
15	8/28/2022	15,379	15,527	36	Marcellus
16	8/28/2022	15,203	15,351	36	Marcellus
17	8/29/2022	15,026	15,174	36	Marcellus
18	8/29/2022	14,850	14,998	36	Marcellus
19	8/29/2022	14,673	14,821	36	Marcellus
20	8/30/2022	14,497	14,645	36	Marcellus
21	8/30/2022	14,321	14,469	36	Marcellus
22	8/30/2022	14,144	14,292	36	Marcellus
23	8/31/2022	13,968	14,116	36	Marcellus
24	8/31/2022	13,791	13,939	36	Marcellus
25	8/31/2022	13,615	13,763	36	Marcellus
26	9/1/2022	13,439	13,587	36	Marcellus
27	9/1/2022	13,262	13,410	36	Marcellus
28	9/1/2022	13,086	13,234	36	Marcellus
29	9/2/2022	12,909	13,057	36	Marcellus
30	9/2/2022	12,733	12,881	36	Marcellus
31	9/2/2022	12,557	12,705	36	Marcellus
32	9/3/2022	12,380	12,528	36	Marcellus
33	9/3/2022	12,204	12,352	36	Marcellus
34	9/3/2022	12,027	12,175	36	Marcellus
35	9/4/2022	11,851	11,999	36	Marcellus
36	9/4/2022	11,675	11,823	36	Marcellus
37	9/5/2022	11,498	11,646	36	Marcellus
38	9/5/2022	11,322	11,470	36	Marcellus
39	9/5/2022	11,145	11,293	36	Marcellus
40	9/6/2022	10,969	11,117	36	Marcellus
41	9/6/2022	10,793	10,941	36	Marcellus

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Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
42	9/7/2022	10,616	10,764	36	Marcellus
43	9/7/2022	10,440	10,588	36	Marcellus
44	9/7/2022	10,263	10,411	36	Marcellus
45	9/8/2022	10,087	10,235	36	Marcellus
46	9/8/2022	9,911	10,059	36	Marcellus
47	9/9/2022	9,734	9,882	36	Marcellus
48	9/9/2022	9,558	9,706	36	Marcellus
49	9/10/2022	9,381	9,529	36	Marcellus
50	9/10/2022	9,205	9,353	36	Marcellus
51	9/11/2022	9,029	9,177	36	Marcellus

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STIMULATION INFORMATION PER STAGE

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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)
1	85.00	7863	6773	3444	254400	6,814	0
2	85.00	7455	4887	4477	457660	8,731	0
3	85.00	7270	5158	5647	446080	8,578	0
4	84.00	7387	5017	4867	449460	8,555	0
5	85.00	7256	4564	4801	442000	8,556	0
6	84.00	7240	5015	4361	445840	8,667	0
7	85.00	7301	4959	4530	442820	8,536	0
8	84.00	7259	5135	4789	445740	8,523	0
9	85.00	7228	5288	4639	446280	8,515	0
10	85.00	7037	5207	5286	446760	8,463	0
11	84.00	7107	5009	4896	442100	8,724	0
12	85.00	7202	4902	4475	442200	8,463	0
13	84.00	7066	4940	5010	445380	8,675	0
14	85.00	7005	4785	4945	445000	8,530	0
15	86.00	6911	5030	4801	441540	8,313	0
16	85.00	6977	4983	5009	442540	8,417	0
17	84.00	7075	4843	4713	450400	8,592	0
18	85.00	7029	4981	4533	440640	8,397	0
19	84.00	6855	4846	4910	446160	8,471	0
20	84.00	6969	5253	4726	442580	8,400	0
21	84.00	6730	4897	4956	442780	8,391	0
22	84.00	6889	4827	5711	449480	8,515	0
23	84.00	6984	5155	4462	448840	8,495	0
24	85.00	6893	4963	4637	446690	7,832	0
25	85.00	6686	5293	4854	438180	8,350	0
26	85.00	6790	4408	4673	434100	8,255	0
27	84.00	6492	4742	5193	445520	8,388	0
28	84.00	7024	5295	4356	448250	8,443	0
29	84.00	7179	4930	4368	443500	8,269	0
30	85.00	7127	4768	4708	438060	8,202	0
31	84.00	6776	4925	4754	447400	8,420	0
32	84.00	6730	5018	4519	435760	8,163	0



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	85.00	6616	4988	5004	443860	8,344	0
34	84.00	6851	4780	4601	445620	8,329	0
35	84.00	6877	4776	4958	444820	8,171	0
36	85.00	6468	4517	5305	439980	8,197	0
37	85.00	6676	5224	5587	436940	8,184	0
38	81.00	6533	5021	4810	447640	8,216	0
39	85.00	6514	5152	4932	440290	8,162	0
40	85.00	6718	4980	4628	449820	8,306	0
41	85.00	6458	4966	4911	451540	8,203	0
42	85.00	6453	5035	4766	443740	8,320	0
43	85.00	6669	4834	4636	444920	8,397	0
44	84.00	6614	5002	4286	449480	8,222	0
45	84.00	6667	4869	4619	448400	9,268	0
46	85.00	6531	4756	4559	453300	8,184	0
47	84.00	6303	4920	4794	438860	8,089	0
48	84.00	6232	5176	4488	439460	8,077	0
49	84.00	6435	5166	4452	445180	8,134	0
50	85.00	6529	5304	4320	372920	7,429	0
51	84.00	6220	5322	4762	436820	8,199	0



Old Crow N-7HM

LITHOLOGY/FORMATION	TOP DEPTH IN FT/ Name TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID
Maxton	2015	2105	2037	2134	Sandstone
Big Lime	2105	2175	2134	2211	Limestone
Big Injun	2175	2459	2211	2537	Sandstone
Weir	2459	2654	2537	2757	Sandstone
Berea	2654	2999	2757	3158	Sandstone
Gordon	2999	3053	3158	3224	Sandstone
Fifty Foot	3053	3601	3224	3905	Sandstone
Speechley	3601	5023	3905	5659	Sandstone
Benson	5023	5378	5659	6099	Sandstone
Alexander	5378	5969	6099	6823	Siltstone
Rhinestreet	5969	6398	6823	7383	Black Shale
Middlesex	6398	6471	7383	7502	Black Shale
Geneseo/Burkett	6471	6498	7502	7552	Black Shale
Tully	6498	6538	7552	7640	Limestone
Hamilton	6538	6589	7640	7797	Gray Shale
Marcellus	6589	-	7797	-	Black Shale

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/23/2022
Job End Date:	9/11/2022
State:	West Virginia
County:	Marshall
API Number:	47-051-02239-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Old Crow N 7HM
Latitude:	39.77849510
Longitude:	-80.76305068
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,582
Total Base Water Volume (gal):	17,853,108
Total Base Non Water Volume:	0



## 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	86.58615	None
Sand (40/70 White Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	8.75248	None
Sand (100 Mesh Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	3.09708	None
Sand (30/50 White Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	1.17330	None
Hydrochloric Acid (7.5%)	CNR	Acidizing	Water	7732-18-5	85.00000	0.23151	None
			Hydrochloric Acid (Hydrogen Chloride)	7647-01-0	37.00000	0.10078	None
StimStream FR 9800	Chemstream	Friction Reducer	Alkanes, C16-20-iso-	90622-59-6	25.00000	0.01799	None
			Butene, homopolymer	9003-29-6	25.00000	0.01799	None
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00216	None



MC MX 9-4743	Multi-Chem	Biocide					
			Sodium Nitrate	7631-99-4	60.00000	0.02195	None
LD-7750W	Multi-Chem	Scale Inhibitor					
			Methanol	67-56-1	60.00000	0.00495	None
			Phosphonic Acid Salt	Proprietary	5.00000	0.00041	None
ProHib 100	CNR	Acid Inhibitor					
			2-Butoxyethanol	111-76-2	60.00000	0.00050	None
			Proprietary material	Proprietary	30.00000	0.00025	None
			Proprietary non-ionic surfactant	Proprietary	20.00000	0.00017	None
			Proprietary corrosion inhibitor	Proprietary	10.00000	0.00008	None
			Proprietary ethoxylated alcohol	Proprietary	10.00000	0.00008	None
ProFE 105	CNR	Iron Control					
			Citric Acid	77-92-9	20.00000	0.00020	None
			Acetic Acid	64-19-7	5.00000	0.00005	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) List					
			Water	7732-18-5	85.00000	0.23151	
			Butene, homopolymer	9003-29-6	25.00000	0.01799	
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00216	
			Phosphonic Acid Salt	Proprietary	5.00000	0.00041	
			Proprietary material	Proprietary	30.00000	0.00025	
			Proprietary non-ionic surfactant	Proprietary	20.00000	0.00017	
			Proprietary ethoxylated alcohol	Proprietary	10.00000	0.00008	
			Proprietary corrosion inhibitor	Proprietary	10.00000	0.00008	
			Acetic Acid	64-19-7	5.00000	0.00005	

\* 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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**OLD CROW N LEASE  
WELL 7HM  
TUG HILL OPERATING**

T.H. LATITUDE 39°47'30"  
B.H. LATITUDE 39°50'00"

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

NAD'83 S.P.C.(FT)	N. 468,162.89	E. 1,613,530.67
NAD'83 GEO.	LAT-(N) 39.778495	LONG-(W) 80.763051
NAD'83 UTM (M)	N. 4,403,199.66	E. 520,291.14

LANDING POINT

NAD'83 S.P.C.(FT)	N. 471,122.4	E. 1,616,960.8
NAD'83 GEO.	LAT-(N) 39.786751	LONG-(W) 80.750994
NAD'83 UTM (M)	N. 4,404,118.8	E. 521,321.1

BOTTOM HOLE

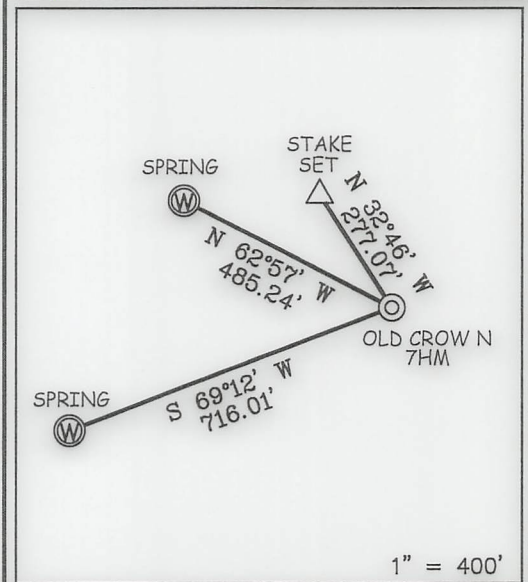
NAD'83 S.P.C.(FT)	N. 479,299.9	E. 1,612,370.6
NAD'83 GEO.	LAT-(N) 39.809022	LONG-(W) 80.767737
NAD'83 UTM (M)	N. 4,406,586.7	E. 519,881.0

T.H. LONGITUDE 80°45'00"  
B.H. LONGITUDE 80°45'00"  
4,798' T.H. A.D.  
8,856' B.H. A.D.

T.H. A.D.

B.H. A.D.

**REFERENCES**



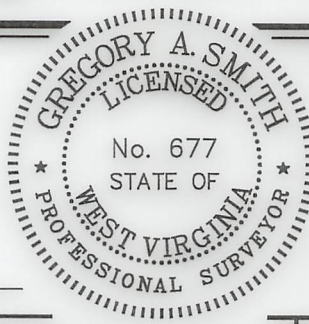
**NOTES ON SURVEY**

- 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.
- WELL SPOT CIRCLE & TOPO MARK SCALE ARE 1"=2000'
- THE ASSESSMENT OF THE 1/10 ACRE LOT, OWNED BY JASON J. STEED AND DESCRIBED AS THE SECOND PARCEL IN DEED BOOK 643 PAGE 319 AND CORRECTIVE DEED 843 PAGE 300, IS NOT CURRENTLY ACCOUNTED FOR WITHIN THE 135.61 ACRE ASSESSMENT OF SURFACE TAX MAP 5-9-13.2
- TAX MAPS AND TAX ASSESSMENTS FOR PARCELS 5-9-4, 5-9-35 AND 5-9-41 DO NOT APPEAR TO CORRECTLY DEPICT PARCEL BOUNDARIES AND/OR ACREAGES AS DESCRIBED IN THEIR RESPECTIVE DEEDS.
- PLAT UPDATED TO SHOW AS-DRILLED PATH.
- AS DRILLED DATA PROVIDED BY TUG HILL OPERATING.



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 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. 677 Gregory A. Smith

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
DATE JANUARY 17, 20 23  
REVISED \_\_\_\_\_, 20 \_\_\_\_\_  
OPERATORS WELL NO. \_\_\_\_\_ OLD CROW N-7HM  
API WELL NO. 47 — 051 — 02239  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8796P7HMAD.dwg  
OLD CROW NORTH 7HM REV3  
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 INJECTION \_\_\_\_\_ LIQUID \_\_\_\_\_ WASTE \_\_\_\_\_ IF \_\_\_\_\_  
"GAS" PRODUCTION X STORAGE \_\_\_\_\_ DEEP \_\_\_\_\_ SHALLOW X  
LOCATION :  
ELEVATION 1,264.99' 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: 6,751' / TMD: 18,070'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DARREN BROWN - CT CORPORATION  
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5098 WASHINGTON ST. W, STE 407  
FORT WORTH, TX 76107 CHARLESTON, WV 25313-1561

03/17/2023

COUNTY NAME PERMIT

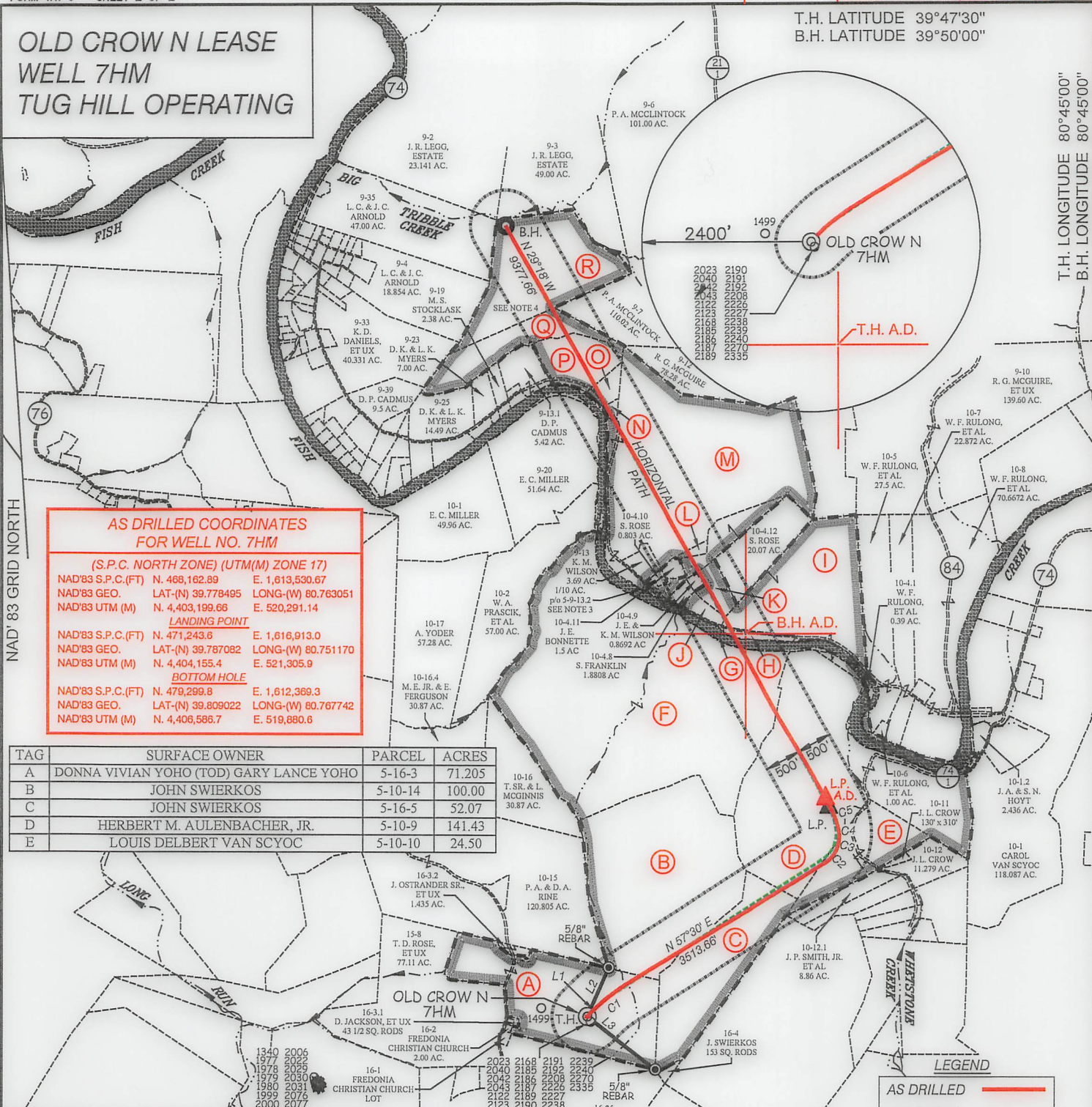


**OLD CROW N LEASE  
WELL 7HM  
TUG HILL OPERATING**

T.H. LATITUDE 39°47'30"  
B.H. LATITUDE 39°50'00"

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

NAD'83 GRID NORTH



**AS DRILLED COORDINATES FOR WELL NO. 7HM**

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

NAD'83 S.P.C.(FT)	N. 468,162.89	E. 1,613,530.67
NAD'83 GEO.	LAT-(N) 39.778495	LONG-(W) 80.763051
NAD'83 UTM (M)	N. 4,403,199.66	E. 520,291.14

**LANDING POINT**

NAD'83 S.P.C.(FT)	N. 471,243.6	E. 1,616,913.0
NAD'83 GEO.	LAT-(N) 39.787082	LONG-(W) 80.751170
NAD'83 UTM (M)	N. 4,404,155.4	E. 521,305.9

**BOTTOM HOLE**

NAD'83 S.P.C.(FT)	N. 479,299.8	E. 1,612,369.3
NAD'83 GEO.	LAT-(N) 39.809022	LONG-(W) 80.767742
NAD'83 UTM (M)	N. 4,406,586.7	E. 519,880.6

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	JOHN SWIERKOS	5-16-5	52.07
D	HERBERT M. AULENBACHER, JR.	5-10-9	141.43
E	LOUIS DELBERT VAN SCYOC	5-10-10	24.50

TAG	SURFACE OWNER	PARCEL	ACRES
F	HERBERT M. AULENBACHER, JR.	5-10-3	225.50
G	STATE OF WEST VIRGINIA (FISH CREEK)	N/A	N/A
H	CARL J. & LAURA A. GILBERT	5-10-4.7	2.110
I	SHEENA ROSE	5-10-4	74.229
J	JACK E. RECTOR	5-10-4.2	2.887
K	KAREN L. ANKROM	5-10-4.3	5.697
L	SHEENA ROSE	5-9-16	1.65
M	JASON J. STEED	5-9-13.2	135.61
N	DENNIS P. CADMUS	5-9-14	136 POLES
O	DENNIS P. CADMUS	5-9-15	3.85
P	DENNIS P. CADMUS	5-9-17	28.063
Q	DENNIS P. CADMUS	5-9-24	21 AC 49 P
R	LLOYD C. & JUDITH C. ARNOLD	5-9-41	93.00

**CURVE TABLE**

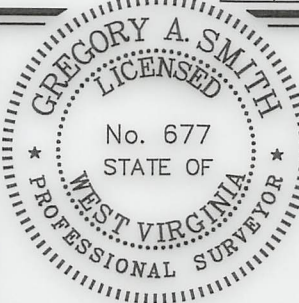
CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	275.68'	1568.10'	N 52°05' E	275.32'
C2	177.02'	378.34'	N 41°48' E	175.41'
C3	197.37'	461.18'	N 15°18' E	195.87'
C4	182.22'	648.19'	N 05°07' W	181.62'
C5	240.70'	871.45'	N 21°11' W	239.94'

**LINE TABLE**

LINE	BEARING	DISTANCE
L1	N 45°57' E	255.96'
L2	N 23°38' E	757.90'
L3	S 52°51' E	1216.06'



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634  
 1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952  
 254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296  
 slsvw.com



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

P.S. 677 *Gregory A. Smith*

**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. 8796P7HMAD.dwg  
 OLD CROW NORTH 7HM REV3  
 DATE JANUARY 17, 20 23  
 REVISED \_\_\_\_\_, 20 \_\_\_\_\_  
 OPERATORS WELL NO. OLD CROW N-7HM  
 API WELL 47 — 051 — 02239  
 NO. STATE COUNTY PERMIT

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



WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DARREN BROWN - CT CORPORATION  
 ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5098 WASHINGTON ST. W, STE 407  
 FORT WORTH, TX 76107 CHARLESTON, WV 25313-1561

COUNTY NAME PERMIT

03/17/2023