

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

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JAN 26 2023
WV Department of
Environmental Protection

API 47-051-02270 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-19HU
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 4,403,194.88 Easting 520,296.67
Landing Point of Curve Northing 4,404,068.1 Easting 520,295.4
Bottom Hole Northing 4,407,637.0 Easting 518,209.9

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 9/13/2019 Date drilling commenced spud: 9/20/2019 big rig: 9/22/2019 Date drilling ceased 11/11/2019
Date completion activities began 10/2/2022 Date completion activities ceased 11/4/2022
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]
2023
03/17/2023

API 47- 051 - 02270 Farm name Donna Yoho Well number Old Crow N-19HU

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"	991'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	991'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	2,893'	NEW	36#	N/A	Y
Intermediate 2							Y
Intermediate 3							
Production	8 1/2"	5 1/2"	21,367'	NEW	20#	N/A	Y
Tubing		2 7/8"	10,684'	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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	A	65	15.6	1.21	78	0	8
Surface	A	1090	15.6	1.20	908	0	8
Coal	A	1090	15.6	1.20	908	0	8
Intermediate 1	A	815	15	1.4	582	0	8
Intermediate 2							
Intermediate 3							
Production	A	4,585	15.5	1.06	4,325	0	8
Tubing							

Drillers TD (ft) 21,400' 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) 7,034'

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 N-19HU
PERFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	10/2/2022	21,187	21,234	16	Marcellus
2	10/2/2022	20,986	21,133	48	Marcellus
3	10/3/2022	20,810	20,958	48	Marcellus
4	10/3/2022	20,635	20,782	48	Marcellus
5	10/3/2022	20,459	20,606	48	Marcellus
6	10/4/2022	20,283	20,431	48	Marcellus
7	10/4/2022	20,107	20,255	48	Marcellus
8	10/5/2022	19,932	20,079	48	Marcellus
9	10/5/2022	19,756	19,903	48	Marcellus
10	10/6/2022	19,580	19,728	48	Marcellus
11	10/6/2022	19,405	19,552	48	Marcellus
12	10/6/2022	19,229	19,376	48	Marcellus
13	10/7/2022	19,053	19,201	48	Marcellus
14	10/7/2022	18,878	19,025	48	Marcellus
15	10/8/2022	18,702	18,849	48	Marcellus
16	10/8/2022	18,526	18,674	48	Marcellus
17	10/9/2022	18,350	18,498	48	Marcellus
18	10/9/2022	18,175	18,322	48	Marcellus
19	10/9/2022	17,999	18,146	48	Marcellus
20	10/10/2022	17,823	17,971	48	Marcellus
21	10/10/2022	17,648	17,795	48	Marcellus
22	10/11/2022	17,472	17,619	48	Marcellus
23	10/11/2022	17,296	17,444	48	Marcellus
24	10/12/2022	17,121	17,268	48	Marcellus
25	10/12/2022	16,945	17,092	48	Marcellus
26	10/12/2022	16,769	16,917	48	Marcellus
27	10/13/2022	16,593	16,741	48	Marcellus
28	10/13/2022	16,418	16,565	48	Marcellus
29	10/14/2022	16,242	16,389	48	Marcellus
30	10/14/2022	16,066	16,214	48	Marcellus
31	10/15/2022	15,891	16,038	48	Marcellus
32	10/15/2022	15,715	15,862	48	Marcellus
33	10/15/2022	15,539	15,687	48	Marcellus
34	10/16/2022	15,364	15,511	48	Marcellus
35	10/16/2022	15,188	15,335	48	Marcellus
36	10/17/2022	15,012	15,160	48	Marcellus
37	10/17/2022	14,836	14,984	48	Marcellus
38	10/18/2022	14,661	14,808	48	Marcellus
39	10/18/2022	14,485	14,632	48	Marcellus
40	10/18/2022	14,309	14,457	48	Marcellus
41	10/19/2022	14,134	14,281	48	Marcellus

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Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
42	10/19/2022	13,958	14,105	48	Marcellus
43	10/20/2022	13,782	13,930	48	Marcellus
44	10/20/2022	13,607	13,754	48	Marcellus
45	10/21/2022	13,431	13,578	48	Marcellus
46	10/21/2022	13,255	13,403	48	Marcellus
47	10/21/2022	13,079	13,227	48	Marcellus
48	10/22/2022	12,904	13,051	48	Marcellus
49	10/22/2022	12,728	12,875	48	Marcellus
50	10/23/2022	12,552	12,700	48	Marcellus
51	10/23/2022	12,377	12,524	48	Marcellus
52	10/24/2022	12,201	12,348	48	Marcellus
53	10/24/2022	12,025	12,173	48	Marcellus
54	10/24/2022	11,850	11,997	48	Marcellus
55	10/25/2022	11,674	11,821	48	Marcellus
56	10/25/2022	11,498	11,646	48	Marcellus
57	10/26/2022	11,322	11,470	48	Marcellus
58	10/26/2022	11,147	11,294	48	Marcellus
59	10/27/2022	10,971	11,118	48	Marcellus
60	10/27/2022	10,795	10,943	48	Marcellus
61	10/27/2022	10,620	10,767	48	Marcellus
62	10/28/2022	10,444	10,591	48	Marcellus
63	10/28/2022	10,268	10,416	48	Marcellus
64	10/29/2022	10,093	10,240	48	Marcellus
65	10/29/2022	9,917	10,064	48	Marcellus
66	10/30/2022	9,741	9,889	48	Marcellus
67	10/30/2022	9,565	9,713	48	Marcellus
68	10/30/2022	9,390	9,537	48	Marcellus
69	10/31/2022	9,214	9,361	48	Marcellus
70	10/31/2022	9,038	9,186	48	Marcellus
71	11/1/2022	8,863	9,010	48	Marcellus
72	11/1/2022	8,687	8,834	48	Marcellus
73	11/2/2022	8,511	8,659	48	Marcellus
74	11/3/2022	8,336	8,483	48	Marcellus
75	11/3/2022	8,160	8,307	48	Marcellus
76	11/4/2022	7,984	8,132	48	Marcellus
77	11/4/2022	7,808	7,956	48	Marcellus

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Old Crow N-19HU
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 (bbls)	Amount of Nitrogen/other (units)
1	81.00	7473	6045	4014	243820	6,809	0
2	84.00	7354	4811	4261	436160	8,643	0
3	84.00	7239	4993	4308	436180	8,531	0
4	84.00	7089	5025	4736	446320	8,386	0
5	84.00	7043	5111	4786	438360	8,436	0
6	84.00	7081	4742	4671	446920	8,734	0
7	84.00	7021	4832	4773	434920	8,517	0
8	84.00	7013	5063	4632	437000	8,537	0
9	83.00	6967	4941	5001	432700	8,373	0
10	84.00	6850	4690	4678	435510	8,579	0
11	84.00	6906	4808	5128	441340	8,625	0
12	84.00	6822	4721	5084	444500	8,583	0
13	85.00	6900	4937	5250	443060	8,498	0
14	82.00	6694	4736	5195	444720	8,567	0
15	83.00	6731	4777	4605	434400	8,480	0
16	84.00	6897	4959	5124	441900	8,485	0
17	83.00	6914	4719	4762	443140	8,479	0
18	84.00	6861	4774	4627	445900	8,583	0
19	82.00	6662	4626	4657	446670	8,530	0
20	83.00	6691	4603	4665	447460	8,652	0
21	85.00	6810	4647	5001	440760	8,459	0
22	84.00	6703	4620	4329	438540	8,454	0
23	84.00	6693	4700	4621	440240	8,483	0
24	85.00	6738	4519	4656	441060	8,478	0
25	83.00	6819	4570	4846	449180	8,566	0
26	84.00	6705	4727	4951	435420	8,401	0
27	84.00	6885	4334	4597	440986	8,504	0
28	84.00	6920	4519	5022	439340	8,406	0
29	83.00	6623	4904	4810	448960	8,601	0
30	83.00	6709	4821	5185	450860	8,587	0
31	84.00	6602	4519	5014	441880	8,379	0
32	84.00	6693	4683	4836	435420	8,233	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	83.00	6487	4554	5090	440960	8,541	0
34	84.00	6555	4650	4606	436800	8,387	0
35	84.00	6578	4660	5052	442760	8,483	0
36	83.00	6588	4651	4751	448940	8,518	0
37	83.00	6534	4696	5039	437880	8,217	0
38	84.00	6555	4690	5034	446820	8,420	0
39	85.00	6454	4542	4970	446560	8,434	0
40	84.00	6455	4684	4982	448240	8,590	0
41	84.00	6583	4717	4728	447860	8,385	0
42	85.00	6521	4581	4964	448980	8,443	0
43	84.00	6387	4850	4931	440240	8,201	0
44	84.00	6465	4744	4793	449660	8,353	0
45	85.00	6473	4633	5482	441780	8,342	0
46	83.00	6544	4628	4812	437400	8,234	0
47	84.00	6510	4753	4949	439860	8,307	0
48	84.00	6446	4853	5056	446480	8,379	0
49	84.00	6393	4752	5361	441300	8,276	0
50	83.00	6427	5019	4830	437700	8,264	0
51	82.00	6365	4438	4776	444700	8,313	0
52	84.00	6256	4570	4618	440100	8,241	0
53	84.00	6460	4919	5202	448560	8,421	0
54	84.00	6301	4702	4903	440920	8,220	0
55	83.00	6256	4541	4830	440760	8,168	0
56	84.00	6372	4642	4901	446400	8,183	0
57	84.00	6296	4705	5255	447060	8,248	0
58	84.00	6468	4844	5131	441590	8,190	0
59	83.00	6396	4832	5447	449660	8,136	0
60	83.00	6183	4878	5115	444920	7,999	0
61	83.00	6175	4691	4929	440180	8,336	0
62	84.00	6213	4830	4937	448740	8,358	0
63	83.00	6180	4605	4631	445460	8,188	0
64	84.00	6202	4826	5000	447060	8,188	0
65	84.00	6175	4977	5140	447220	8,192	0
66	84.00	6198	4915	5467	445780	8,198	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)
67	84.00	6382	4667	5462	447220	8,233	0
68	84.00	6098	4807	4786	445960	8,334	0
69	84.00	6168	4912	5529	447660	8,302	0
70	84.00	6171	4946	5198	447520	8,271	0
71	84.00	6033	4993	5124	445300	8,232	0
72	84.00	5885	4665	5084	445880	8,154	0
73	84.00	5963	4769	5195	447820	8,033	0
74	85.00	6102	4745	4781	446820	8,179	0
75	84.00	6065	4828	5145	447560	8,446	0
76	84.00	6038	4700	5587	447100	8,043	0
77	84.00	5998	4816	5002	445400	8,280	0

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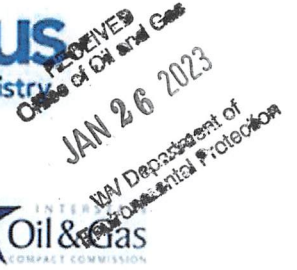
Old Crow N-19HU

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	2005	2095	2005	2095	Sandstone
Big Lime	2095	2165	2095	2165	Limestone
Big Injun	2165	2449	2165	2450	Sandstone
Weir	2449	2644	2450	2645	Sandstone
Berea	2644	2989	2645	2990	Sandstone
Gordon	2989	3043	2990	3044	Sandstone
Fifty Foot	3043	3591	3044	3602	Sandstone
Speechley	3591	5013	3602	5366	Sandstone
Benson	5013	5368	5366	5839	Sandstone
Alexander	5368	5962	5839	6635	Siltstone
Rhinestreet	5962	6394	6635	7220	Black Shale
Middlesex	6394	6468	7220	7341	Black Shale
Geneseo/Burkett	6468	6492	7341	7386	Black Shale
Tully	6492	6532	7386	7478	Limestone
Hamilton	6532	6579	7478	7623	Gray Shale
Marcellus	6579	-	7623	-	Black Shale

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/2/2022
Job End Date:	11/4/2022
State:	West Virginia
County:	Marshall
API Number:	47-051-02270-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Old Crow N 19HU
Latitude:	39.77845193
Longitude:	-80.76298617
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,254
Total Base Water Volume (gal):	27,024,396
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	86.58590	None
Sand (40/70 White Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	8.74983	None
Sand (100 Mesh Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	3.08353	None
Sand (30/50 White Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	1.19653	None
Hydrochloric Acid (7.5%)	CNR	Acidizing	Water	7732-18-5	85.00000	0.22637	None
			Hydrochloric Acid (Hydrogen Chloride)	7647-01-0	37.00000	0.09854	None
StimStream FR 9800	Chemstream	Friction Reducer	Alkanes, C16-20-iso-	90622-59-6	25.00000	0.01784	None
			Butene, homopolymer	9003-29-6	25.00000	0.01784	None
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00214	None

MC MX 9-4743	Multi-Chem	Biocide					
			Sodium Nitrate	7631-99-4	60.00000	0.02189	None
LD-7750W	Multi-Chem	Scale Inhibitor					
			Methanol	67-56-1	60.00000	0.00497	None
			Phosphonic Acid Salt	Proprietary	5.00000	0.00041	None
ProHib 100	CNR	Acid Inhibitor					
			2-Butoxyethanol	111-76-2	60.00000	0.00048	None
			Proprietary material	Proprietary	30.00000	0.00024	None
			Proprietary non-ionic surfactant	Proprietary	20.00000	0.00016	None
			Proprietary ethoxylated alcohol	Proprietary	10.00000	0.00008	None
			Proprietary corrosion inhibitor	Proprietary	10.00000	0.00008	None
ProFE 105	CNR	Iron Control					
			Citric Acid	77-92-9	20.00000	0.00019	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	0.22637	
			Butene, homopolymer	9003-29-6	25.00000	0.01784	
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00214	
			Phosphonic Acid Salt	Proprietary	5.00000	0.00041	
			Proprietary material	Proprietary	30.00000	0.00024	
			Proprietary non-ionic surfactant	Proprietary	20.00000	0.00016	
			Proprietary corrosion inhibitor	Proprietary	10.00000	0.00008	
			Proprietary ethoxylated alcohol	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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10,458' B.H. A.D.

3,650' T.H. A.D.

**OLD CROW N LEASE
WELL 19HU
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. 468,146.92	E. 1,613,548.58
NAD'83 GEO.	LAT-(N) 39.778452	LONG-(W) 80.762986
NAD'83 UTM (M)	N. 4,403,194.88	E. 520,296.67
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 470,948.2	E. 1,613,625.0
NAD'83 GEO.	LAT-(N) 39.786145	LONG-(W) 80.762854
NAD'83 UTM (M)	N. 4,404,048.7	E. 520,305.7
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 482,841.4	E. 1,606,945.8
NAD'83 GEO.	LAT-(N) 39.818532	LONG-(W) 80.787226
NAD'83 UTM (M)	N. 4,407,638.0	E. 518,210.3

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

5,395' B.H. A.D. 4,814' T.H. A.D.

B.H. A.D.

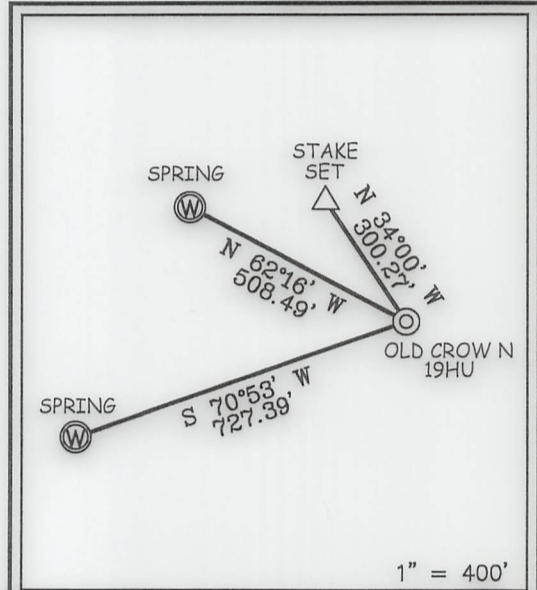
T.H. A.D.

NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS OR DWELLINGS > 2500 SQ. FT. WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'.
- BASED ON WV DOT COUNTY ROUTE 74 IS A 40' STRIP OF LAND ACQUIRED IN NUMEROUS DEEDS.
- THIS WELL PLAT PERTAINS TO A RE-PERMIT OF A PREVIOUSLY PROPOSED OLD CROW N-19HU, THAT WAS PARTIALLY DRILLED AND PLUGGED, AS SHOWN HEREON AND IDENTIFIED AS AN AS-DRILLED PATH. THIS CURRENT PROPOSED LATERAL RETAINS THE NAME OF THE PREVIOUSLY PERMITTED OLD CROW N-19HU LATERAL, HOWEVER THESE DESIGN PLANS INTEGRATE A NEW TOP HOLE LOCATION AS WELL AS PARTIAL LATERAL DESIGN OF A PREVIOUSLY PROPOSED OLD CROW N-03HM. THE TARGET FORMATION OF THIS PROPOSED OLD CROW N-19HU LATERAL IS MARCELLUS AND NOT POINT PLEASANT, AS PREVIOUSLY PERMITTED.
- ALL AS-DRILLED, LATERAL DESIGN AND RE-PERMIT INFORMATION PROVIDED TO SLS BY TUG HILL OPERATING, LLC.
- PLAT UPDATED TO SHOW AS-DRILLED PATH.

MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
5-8A-13	LETHA I. RUCKMAN	2.993
5-8A-14	BOARD OF EDUCATION	137 SQ RODS
5-8A-34	NORMAN G. JOHNSON ET UX - LIFE	11,123 SQ. FT.
5-9-1.1	FRANK C. CLARK	0.52
5-9-1.4	SHELDON R. RUCKMAN ET AL - LIFE	4.49
5-9-4.2	LINDA J. SIMMONS	0.80
5-9-4.13	SAMUEL LEE CANTERBURY, ET UX	0.9284
5-9-25	DELBERT K. & LINDA K. MYERS	14.49
5-9-27	JOHN F. KAZEMKA	4.02
5-9-28	WILLIAM N. & DOLORES E. MCDONOUGH - LIFE	4.01
5-9-30	MATTHEW B. GRIFFITH	2.708
5-9-30.3	MATTHEW B. GRIFFITH	0.82
5-9-32	SANDRA J. BONNETTE	2.321
5-9-32.9	LIONEL E. HENRY, SR., ET AL	1.269
5-9-33.1	DANIELS FAMILY TRUST	1
5-9-33.2	DANIELS FAMILY TRUST	1.534
5-9-33.3	RALPH EARL DUNLAP - LIFE	0.50
5-9-34	LOUIS D. & PATRICIA L. VAN SCYOC	0.850
5-9-34.3	SANDRA J. BONNETTE	1.988
5-9-34.6	EARL B. SUTER, JR., ET UX	0.085
5-9-36	FRANK T. & ANNA M. WALKER	PARCEL
5-9-37	FRANK T. & ANNA M. WALKER	10.857
5-9-38	SHIRLEY A. HILL EST.	3.331

REFERENCES



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
sllsvv.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 _____
OPERATORS WELL NO. OLD CROW N-19HU
API WELL NO. 47 - 051 - 02270
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8796P19HUAD.dwg
OLD CROW NORTH 3HM 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 LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW
LOCATION: GROUND = 1,288.00' ELEVATION PROPOSED = 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 CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE 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: 6,727' / TMD: 21,418'

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

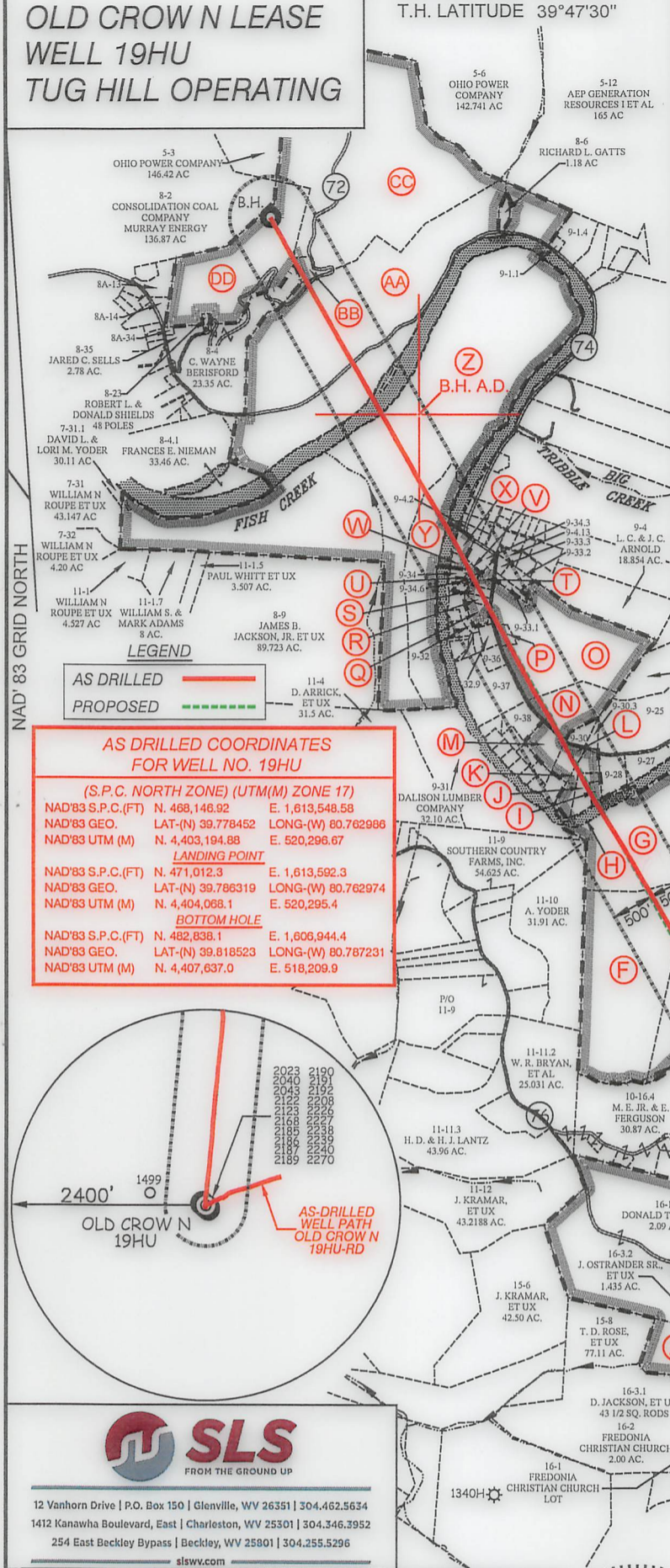
OLD CROW N LEASE WELL 19HU TUG HILL OPERATING

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

TAG	SURFACE OWNER	PARCEL	ACRES
A	DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO	5-16-3	71.205
B	PAUL ANDREW & DEBRA A. RINE	5-10-15	120.805
C	JOHN SWIERKOS	5-10-14	100.00
D	HERBERT M. AULENBACHER, JR.	5-10-3	225.50
E	WILLIAM A. PRASCIC, ET AL	5-10-2	52.00
F	ALVIN A. YODER	5-10-17	57.28
G	EDWIN C. MILLER	5-10-1	49.96
H	STATE OF WEST VIRGINIA (FISH CREEK)	N/A	N/A
I	JAMES E. & HARLEY J. MCDONOUGH	5-9-29.1	1.026
J	JAMES E. & HARLEY J. MCDONOUGH	5-9-29.2	2.807
K	JAMES M. & ROBERTA L. STERN	5-9-29	3.1777
L	DAVID JR. & MELISSA LOVE	5-9-30.1	2.518
M	SHIRLEY A. HILL ESTATE	5-9-40	368'x425'
N	DENNIS P. CADMUS	5-9-39	9.5
O	KEITH D. DANIELS, ET UX	5-9-33	40.331
P	DAVID D. & CHRISTINE S. DANIELS	5-9-33.4	1.025
Q	TIMOTHY Q. HOYT, ET UX	5-9-32.11	1.717
R	TIMOTHY Q. HOYT, ET UX	5-9-32.10	0.588
S	TIMOTHY Q. HOYT, ET UX	5-9-32.8	0.711
T	GARNET D. MIDCAP	5-9-32.5	270'x390'
U	MILLARD BONETTE, ET UX	5-9-34.2	0.76
V	MILLARD BONETTE, JR., ET UX	5-9-34.5	0.444
W	LOUIS D. VAN SCYOC	5-9-34.1	0.556
X	LOUIS D. VAN SCYOC	5-9-34.4	1.042
Y	JAMES EDWARD FRANCIS, JR. ET UX	5-8-8	28.3
Z	EDWIN C. MILLER	5-8-7	180.31
AA	RICHARD L. GATTS - LIFE	5-8-5	98.819
BB	JOHN F. ARRUDA ET UX	5-5-4.1	1.399
CC	GENEVA BASSETT SANCHEZ	5-5-4	133.601
DD	TAMMY L. MITCHELL	5-8-3	35.07

T.H. LONGITUDE 80°45'00"
B.H. LONGITUDE 80°45'00"
5,395' B.H. A.D.
4,814' T.H. A.D.

NAD'83 GRID NORTH



LEGEND
AS DRILLED ———
PROPOSED - - - - -

AS DRILLED COORDINATES FOR WELL NO. 19HU

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

NAD'83 S.P.C.(FT)	N. 468,146.92	E. 1,613,548.58
NAD'83 GEO.	LAT-(N) 39.778452	LONG-(W) 80.762986
NAD'83 UTM (M)	N. 4,403,194.88	E. 520,296.67

LANDING POINT

NAD'83 S.P.C.(FT)	N. 471,012.3	E. 1,613,592.3
NAD'83 GEO.	LAT-(N) 39.786319	LONG-(W) 80.762974
NAD'83 UTM (M)	N. 4,404,068.1	E. 520,295.4

BOTTOM HOLE

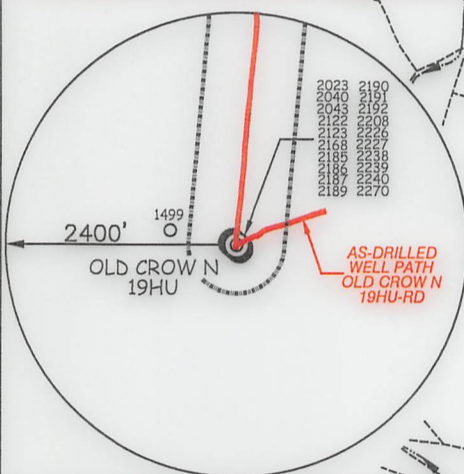
NAD'83 S.P.C.(FT)	N. 482,838.1	E. 1,606,944.4
NAD'83 GEO.	LAT-(N) 39.818523	LONG-(W) 80.787231
NAD'83 UTM (M)	N. 4,407,637.0	E. 518,209.9

CURVE TABLE

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	166.73'	628.24'	N 02°52' W	166.24'
C2	360.39'	1105.42'	N 20°32' W	358.79'

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 62°16' E	1146.74'
L2	S 52°57' E	1192.14'



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

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

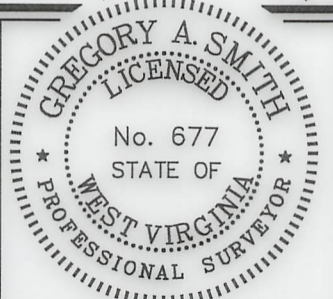
NAD'83 S.P.C.(FT)	N. 468,146.92	E. 1,613,548.58
NAD'83 GEO.	LAT-(N) 39.778452	LONG-(W) 80.762986
NAD'83 UTM (M)	N. 4,403,194.88	E. 520,296.67

LANDING POINT

NAD'83 S.P.C.(FT)	N. 470,948.2	E. 1,613,625.0
NAD'83 GEO.	LAT-(N) 39.786145	LONG-(W) 80.762854
NAD'83 UTM (M)	N. 4,404,048.7	E. 520,305.7

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 482,841.4	E. 1,606,945.8
NAD'83 GEO.	LAT-(N) 39.818532	LONG-(W) 80.787226
NAD'83 UTM (M)	N. 4,407,638.0	E. 518,210.3



(+) 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. 8796P19HUAD.dwg
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REVISED
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