

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

API 47 - 051 - 02053 County Marshall District Franklin  
Quad Powhatan Point 7.5' Pad Name Blake Field/Pool Name \_\_\_\_\_  
Farm name Wilbert H. Bungard, et ux Well Number Blake N-4HM  
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 4,401,610.57 Easting 516,707.26  
Landing Point of Curve Northing 4,401,686.83 Easting 517,029.82  
Bottom Hole Northing 4,404,289.05 Easting 514,469.34

Elevation (ft) 1315.6' 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 8/2/2018 Date drilling commenced 12/18/2018 Date drilling ceased 1/11/2019  
Date completion activities began 2/18/2019 Date completion activities ceased 6/9/2019  
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 70' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1595' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 969-975', 1054-1059' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:  
*Juan Velasco*  
7/28/2020

API 47-051 - 02053 Farm name Wilbert H. Bungard, et ux Well number Blake N-4HM

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"	1172'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	1172'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	2866'	NEW	36#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	19,275'	NEW	20#	N/A	Y
Tubing		2 3/8"	9638'	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	1149	15.6	1.19	1436	0	8
Coal	A	1149	15.6	1.19	1436	0	8
Intermediate 1	A	845	15.6	1.19	1165	0	8
Intermediate 2							
Intermediate 3							
Production	A	4505	14.5	1.17	3372	0	8
Tubing							

Drillers TD (ft) 19,338' 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) 5,870'

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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 \_\_\_\_\_





**Blake N-4HM  
PEFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	3/24/2019	19,133	19,181	16	Marcellus
2	3/25/2019	18,901	19,048	48	Marcellus
3	3/26/2019	18,725	18,872	48	Marcellus
4	3/26/2019	18,549	18,696	48	Marcellus
5	3/26/2019	18,373	18,520	48	Marcellus
6	3/26/2019	18,197	18,344	48	Marcellus
7	3/27/2019	18,021	18,168	48	Marcellus
8	3/27/2019	17,845	17,992	48	Marcellus
9	3/28/2019	17,669	17,816	48	Marcellus
10	3/28/2019	17,493	17,640	48	Marcellus
11	3/28/2019	17,317	17,464	48	Marcellus
12	3/28/2019	17,141	17,288	48	Marcellus
13	3/29/2019	16,965	17,112	48	Marcellus
14	3/29/2019	16,789	16,936	48	Marcellus
15	3/29/2019	16,613	16,760	48	Marcellus
16	3/30/2019	16,437	16,584	48	Marcellus
17	3/30/2019	16,261	16,408	48	Marcellus
18	3/31/2019	16,085	16,232	48	Marcellus
19	3/31/2019	15,909	16,056	48	Marcellus
20	3/31/2019	15,733	15,880	48	Marcellus
21	3/31/2019	15,557	15,704	48	Marcellus
22	4/1/2019	15,381	15,528	48	Marcellus
23	4/1/2019	15,205	15,352	48	Marcellus
24	4/2/2019	15,029	15,176	48	Marcellus
25	4/2/2019	14,853	15,000	48	Marcellus
26	4/2/2019	14,677	14,824	48	Marcellus
27	4/2/2019	14,501	14,648	48	Marcellus
28	4/3/2019	14,325	14,472	48	Marcellus
29	4/4/2019	14,149	14,296	48	Marcellus
30	4/4/2019	13,973	14,120	48	Marcellus
31	4/4/2019	13,797	13,944	48	Marcellus
32	4/5/2019	13,621	13,768	48	Marcellus
33	4/5/2019	13,445	13,592	48	Marcellus
34	4/6/2019	13,269	13,416	48	Marcellus
35	4/6/2019	13,093	13,240	48	Marcellus
36	4/10/2019	12,917	13,064	48	Marcellus
37	4/11/2019	12,741	12,888	48	Marcellus
38	4/11/2019	12,565	12,712	48	Marcellus
39	4/11/2019	12,389	12,536	48	Marcellus
40	4/12/2019	12,213	12,360	48	Marcellus
41	4/12/2019	12,037	12,184	48	Marcellus

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Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
42	4/13/2019	11,861	12,008	48	Marcellus
43	4/13/2019	11,685	11,832	48	Marcellus
44	4/13/2019	11,509	11,656	48	Marcellus
45	4/14/2019	11,333	11,480	48	Marcellus
46	4/14/2019	11,157	11,304	48	Marcellus
47	4/14/2019	10,981	11,128	48	Marcellus
48	4/15/2019	10,805	10,952	48	Marcellus
49	4/15/2019	10,629	10,776	48	Marcellus
50	4/15/2019	10,453	10,600	48	Marcellus
51	4/16/2019	10,277	10,424	48	Marcellus
52	4/16/2019	10,101	10,248	48	Marcellus
53	4/17/2019	9,925	10,072	48	Marcellus
54	4/17/2019	9,749	9,896	48	Marcellus
55	4/17/2019	9,573	9,720	48	Marcellus
56	4/18/2019	9,397	9,544	48	Marcellus
57	4/18/2019	9,221	9,368	48	Marcellus
58	4/18/2019	9,045	9,192	48	Marcellus
59	4/18/2019	8,869	9,016	48	Marcellus
60	4/18/2019	8,693	8,840	48	Marcellus
61	4/19/2019	8,517	8,664	48	Marcellus
62	4/19/2019	8,341	8,488	48	Marcellus
63	4/19/2019	8,165	8,312	48	Marcellus
64	4/19/2019	7,989	8,136	48	Marcellus
65	4/19/2019	7,813	7,960	48	Marcellus
66	4/20/2019	7,637	7,784	48	Marcellus
67	4/20/2019	7,461	7,608	48	Marcellus
68	4/20/2019	7,285	7,432	48	Marcellus

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**Blake N-4HM**  
**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	83.7	7973	4190	10147	301730	7038	0
2	82.2	7720	4744	3181	522555	10489	0
3	82.8	8133	4782	3214	525615	9886	0
4	79.6	7946	5035	3810	348800	8689	0
5	81.9	7750	4903	3771	515500	9749	0
6	81.8	8083	5001	3523	455070	8891	0
7	79.2	7876	4858	3736	396465	8591	0
8	83.6	7848	4891	3596	520475	10491	0
9	84.2	7916	5000	3695	520800	10687	0
10	84.9	8006	4948	3589	530740	10512	0
11	83.9	7830	4849	4471	496950	9899	0
12	85.5	8077	4704	3969	521485	13365	0
13	84.3	7989	5024	4437	523615	11638	0
14	80.5	7920	4849	5077	516740	10246	0
15	83.3	7874	4934	4109	528050	10579	0
16	84.6	7572	4757	3811	532290	10685	0
17	78.3	6957	5146	3988	521555	10946	0
18	84.9	7540	4948	3922	532690	10662	0
19	84.3	7805	4920	3444	532040	11766	0
20	87.4	8051	4925	3635	524265	10415	0
21	84.1	7681	4819	3792	533565	10754	0
22	84.7	7557	4720	3745	443300	8862	0
23	86.4	7875	4908	3308	446080	8999	0
24	84.7	7459	4839	4018	444300	10411	0
25	89.4	7862	4739	3474	440885	9140	0
26	89.5	7896	4837	3768	438700	8948	0
27	89.3	7885	4798	3969	441150	9103	0
28	89.5	7840	4788	3549	443970	8782	0
29	88.5	8012	5039	3743	437260	9111	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)
30	89	7351	4949	3595	439060	8586	0
31	84.2	7580	5278	3767	442570	9010	0
32	70	8082	5056	8929	449315	11283	0
33	88.8	6754	4913	4473	447900	9082	0
34	89.1	6986	4779	3677	443310	8850	0
35	89.6	7158	4898	4372	438020	8856	0
36	88.1	6755	4908	4393	442640	9351	0
37	88.9	6697	5567	4381	438150	8827	0
38	87.8	6809	5353	5095	440690	8434	0
39	89.2	6855	5400	4577	440060	8652	0
40	88	6860	5382	4401	442640	8138	0
41	89.6	6563	5145	4545	441095	8222	0
42	89	6596	5030	4511	439250	8306	0
43	89.2	6764	5272	4875	439450	8094	0
44	89.5	6575	5164	4646	437860	8169	0
45	89.8	6461	5413	4562	440320	8256	0
46	89.5	6523	5389	4807	439940	8396	0
47	89.5	6484	5035	4758	437760	8296	0
48	89.5	6450	5300	4873	437020	8363	0
49	87.1	6718	5086	3599	363900	7378	0
50	89.4	6462	4912	4559	355165	7048	0
51	89.8	6445	4796	4813	360900	6881	0
52	89.6	6393	4896	4781	355920	6751	0
53	89.5	6237	5223	4891	358380	6985	0
54	86	6233	5118	4775	358840	6766	0
55	89.7	6339	5475	4830	355140	7207	0
56	89.3	6427	5237	4883	356800	7194	0
57	89.4	6490	5200	4962	357880	7177	0
58	88.7	6443	5168	4989	354460	6728	0
59	88.9	6437	5161	5069	361620	6847	0
60	89.3	6327	5193	5058	358820	6804	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)
61	89.4	6265	5158	5025	359640	6730	0
62	88.7	6557	5066	4862	359840	6667	0
63	87.6	6627	5204	5106	362660	6961	0
64	87.8	6776	5122	4851	351558	6447	0
65	88.3	6441	5225	5181	359900	7191	0
66	89.6	6561	4972	4663	359140	7266	0
67	88.5	6200	4885	4211	358480	6780	0
68	88.1	6285	4663	3549	356320	9328	0

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Well: Blake 04 HM (slot D)  
 Site: Blake Pad  
 Project: Marshall County, West Virginia  
 Design: rev5  
 Rig: Precision 528

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
3000.00	1.97	50.57	2998.53	-10.93	51.09	0.00	0.00	-41.13	S/T Begin 3"/100' build/turn
3956.66	29.50	115.00	3912.07	-101.94	282.11	3.00	67.67	-259.06	Begin 29.50' tangent
5206.64	29.50	115.00	5000.00	-362.07	839.96	0.00	0.00	-816.28	Begin 3"/100' build/turn
5450.09	30.61	100.56	5210.99	-398.80	955.38	3.00	-87.58	-918.45	Begin 30.61' tangent
5975.54	30.61	100.56	5663.23	-447.82	1218.40	0.00	0.00	-1124.65	Begin 8"/100' build/turn
6847.45	50.00	338.48	6413.72	-138.64	1328.01	8.00	-136.22	-957.57	Begin 10"/100' build/turn
7307.92	91.00	315.52	6566.00	208.57	1089.00	10.00	-32.81	-537.87	Begin 91.00' lateral
19338.19	91.00	315.52	6357.00	8790.22	-7339.45	0.00	0.00	1451.44	PBHL/TD 19338.19 MD/6357.00 TVD

ANNOTATIONS SURVEYS ORIGINAL HOLE

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Annotation
30.00	0.43	264.17	30.00	-0.01	-0.11	0.06	Gyro
3350.00	11.13	41.21	3345.23	26.16	74.49	-27.66	Survey @ 3350.00 MD 3345.23 TVD

ANNOTATIONS SURVEYS SIDETRACK 01

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Annotation
2880.00	2.20	68.77	2878.60	-13.20	47.48	-40.57	Tie into original hole @ 2880 MD
19233.00	90.02	315.35	6436.98	8746.37	-7301.46	11393.43	Survey @ 19233.00 MD 6436.98 TVD
19291.00	90.02	315.35	6436.96	8787.63	-7342.22	11451.23	Survey projected to 19291.00 MD 6436.96 TVD

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

Azimuths to Grid North  
 True North -0.12'  
 Magnetic North -8.79'

Magnetic Field  
 Strength 51996 Gauss  
 Dip Angle 66.82'  
 Date 12/27/2018  
 Model: IGRF2015

System Datum: Mean Sea Level  
 Depth Reference: RKB=1326+18 @ 1344.00ft (Precision 528)

Northing 14440951.21 Easting 1695230.46 Latitude 39.76425661 Longitude -80.80494126

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.79'



Tie into original hole @ 2880 MD

S/T Begin 3"/100' build/turn

Survey @ 3350.00 MD 3345.23 TVD

Begin 29.50' tangent

Begin 3"/100' build/turn

Begin 30.61' tangent

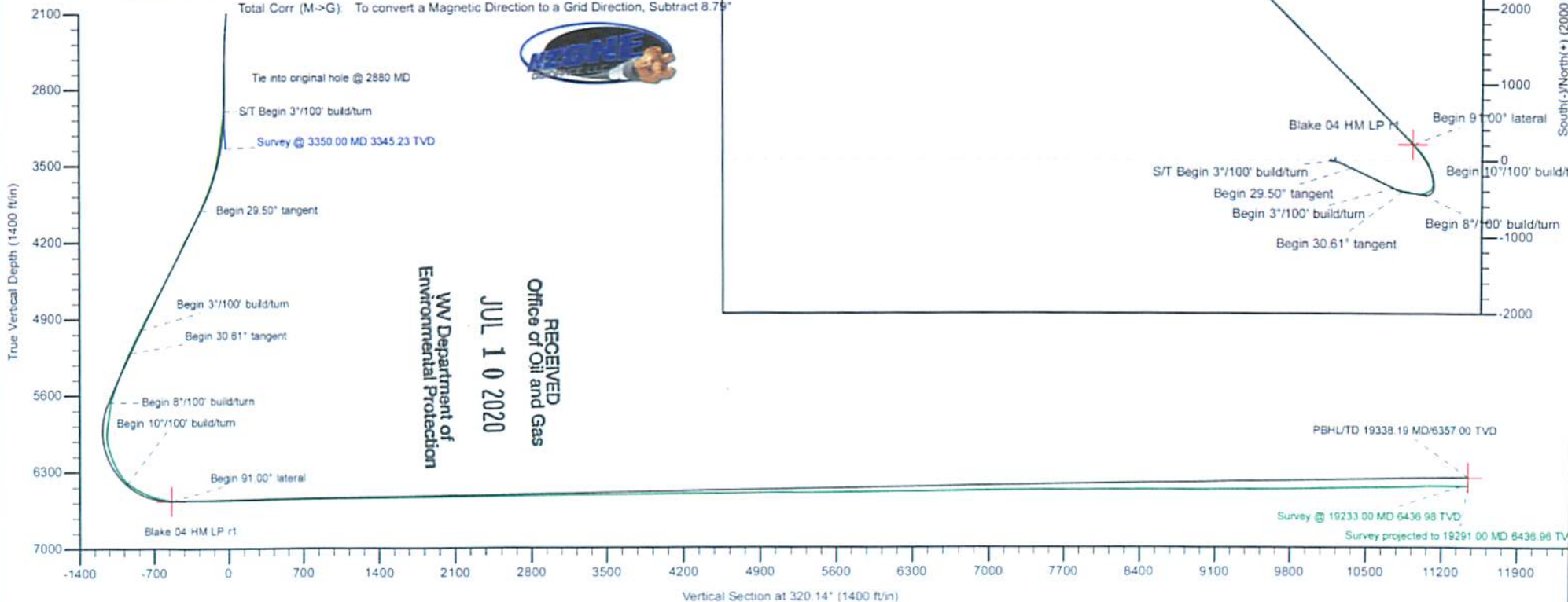
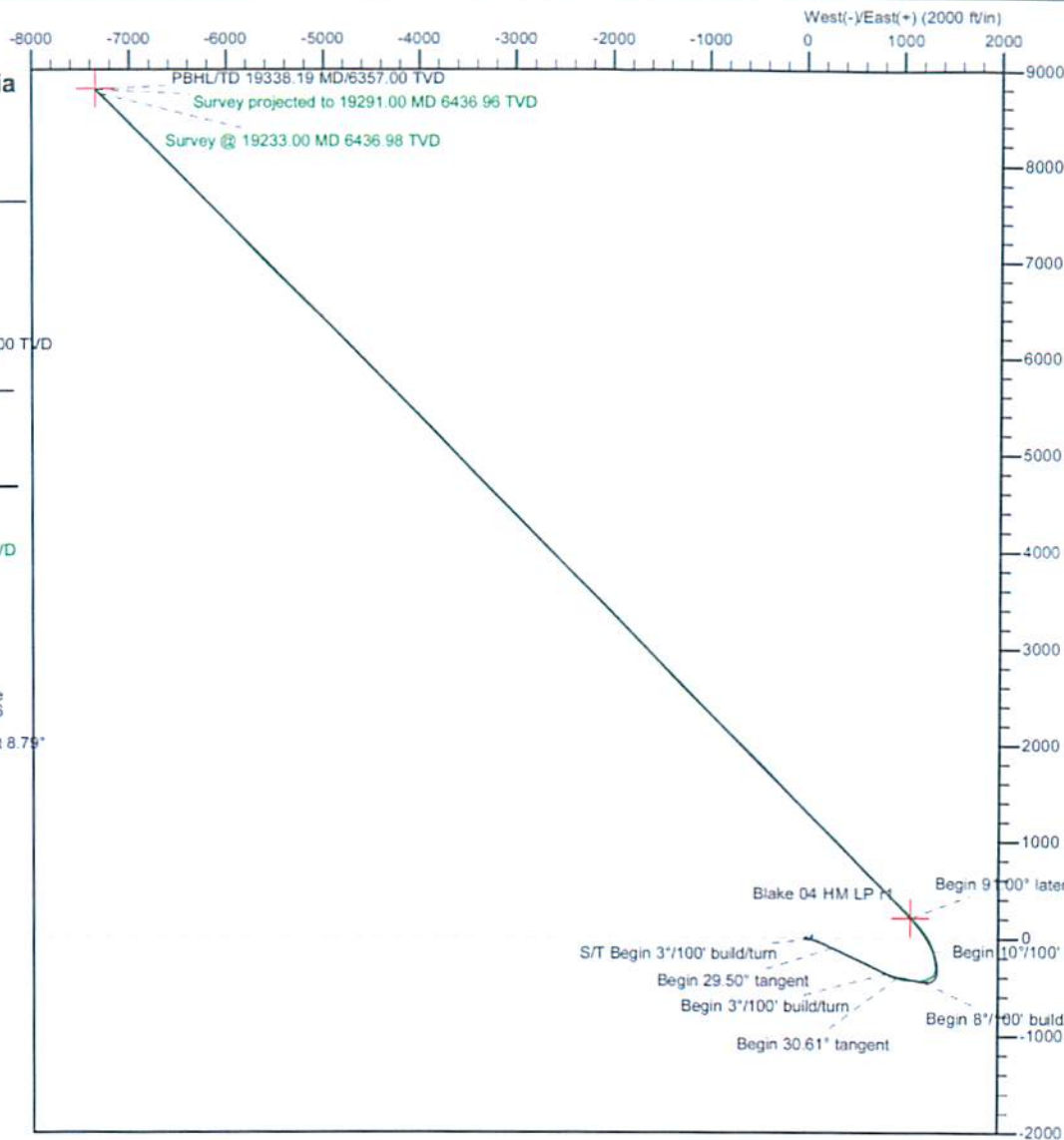
Begin 8"/100' build/turn

Begin 10"/100' build/turn

Begin 91.00' lateral

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BLAKE N-4HM

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	1972	2060	1973	2061	Sandstone
Big Lime	2060	2102	2061	2103	Limestone
Big Injun	2102	2448	2103	2449	Sandstone
Weir	2448	2603	2449	2604	Sandstone
Berea	2603	2883	2604	2884	Sandstone
Gordon	2883	2930	2884	2931	Sandstone
Fifty Foot	2930	3546	2931	3557	Sandstone
Speechley	3546	4958	3557	5158	Sandstone
Benson	4958	5345	5158	5603	Sandstone
Alexander	5345	5924	5603	6244	Siltstone
Rhinestreet	5924	6360	6244	6751	Black shale
Middlesex	6360	6442	6751	6886	Black shale
Geneseo/Burkett	6442	6467	6886	6938	Black shale
Tully	6467	6492	6938	6994	Limestone
Hamilton	6492	6527	6994	7091	Grey shale
Marcellus	6527	-	7091	-	Black shale

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	3/24/2019
Job End Date:	4/20/2019
State:	West Virginia
County:	Marshall
API Number:	47-051-02053-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Blake N 4HM
Latitude:	39.76426000
Longitude:	-80.80494126
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,564
Total Base Water Volume (gal):	26,046,750
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
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	87.72314	Density = 8.340
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.22840	

SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant					
				Listed Below			
SAND- PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
				Listed Below			
OILPERM A	Halliburton	Non-ionic Surfactant					
				Listed Below			
HYDROCHLORI C ACID	Halliburton	Solvent					
				Listed Below			
Legend LD-2850	MultiChem	Friction Reducer					
				Listed Below			
Legend LD-2115	MultiChem	Friction Reducer					
				Listed Below			
FDP-S1296-17	Halliburton	Corrosion Inhibitor					
				Listed Below			
SAND- PREMIUM WHITE-30/50, BULK	Halliburton	Proppant					

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				Listed Below			
MX 5-2402	MultiChem	Biocide					
				Listed Below			
MX 2-2822	MultiChem	Scale Inhibitor					
				Listed Below			
MX 8-4543	MultiChem	Biocide					
				Listed Below			

Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.

			Crystalline silica, quartz	14808-60-7	100.00000	11.90446	
			Hydrochloric acid	7647-01-0	15.00000	0.03426	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02850	
			Sodium nitrate	7631-99-4	60.00000	0.02126	
			Inorganic salt	Proprietary	30.00000	0.01730	
			Sodium chloride	7647-14-5	30.00000	0.01167	
			Methanol	67-56-1	100.00000	0.00367	
			Amines, polyethylenepoly-, ethoxylated, phosphonomethylated, sodiumsalts	70900-16-2	30.00000	0.00280	
			Contains no hazardous substances in concentrations above cut-off values according to the competent authority	CAS Not Assigned	100.00000	0.00246	
			9-Octadecenamide, n, n-bis(2-hydroxy-ethyl)-, (Z)	93-83-4	5.00000	0.00187	

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			Alcohols, C 12-16, ethoxylated	93-83-4	5.00000	0.00187	
			Ammonium chloride	12125-02-9	5.00000	0.00187	
			Ethanol	64-17-5	60.00000	0.00055	
			Oxyalkylated phenolic resin	Proprietary	30.00000	0.00037	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.00027	
			Modified thiourea polymer	Proprietary	30.00000	0.00026	
			Naphthalene	91-20-3	5.00000	0.00005	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00005	
			Ethoxylted alcohols	Proprietary	5.00000	0.00004	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Propargyl alcohol	107-19-7	5.00000	0.00004	
			1,2,4 Trimethylbenzene	95-63-6	1.00000	0.00001	

\* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

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

\*\*\* If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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

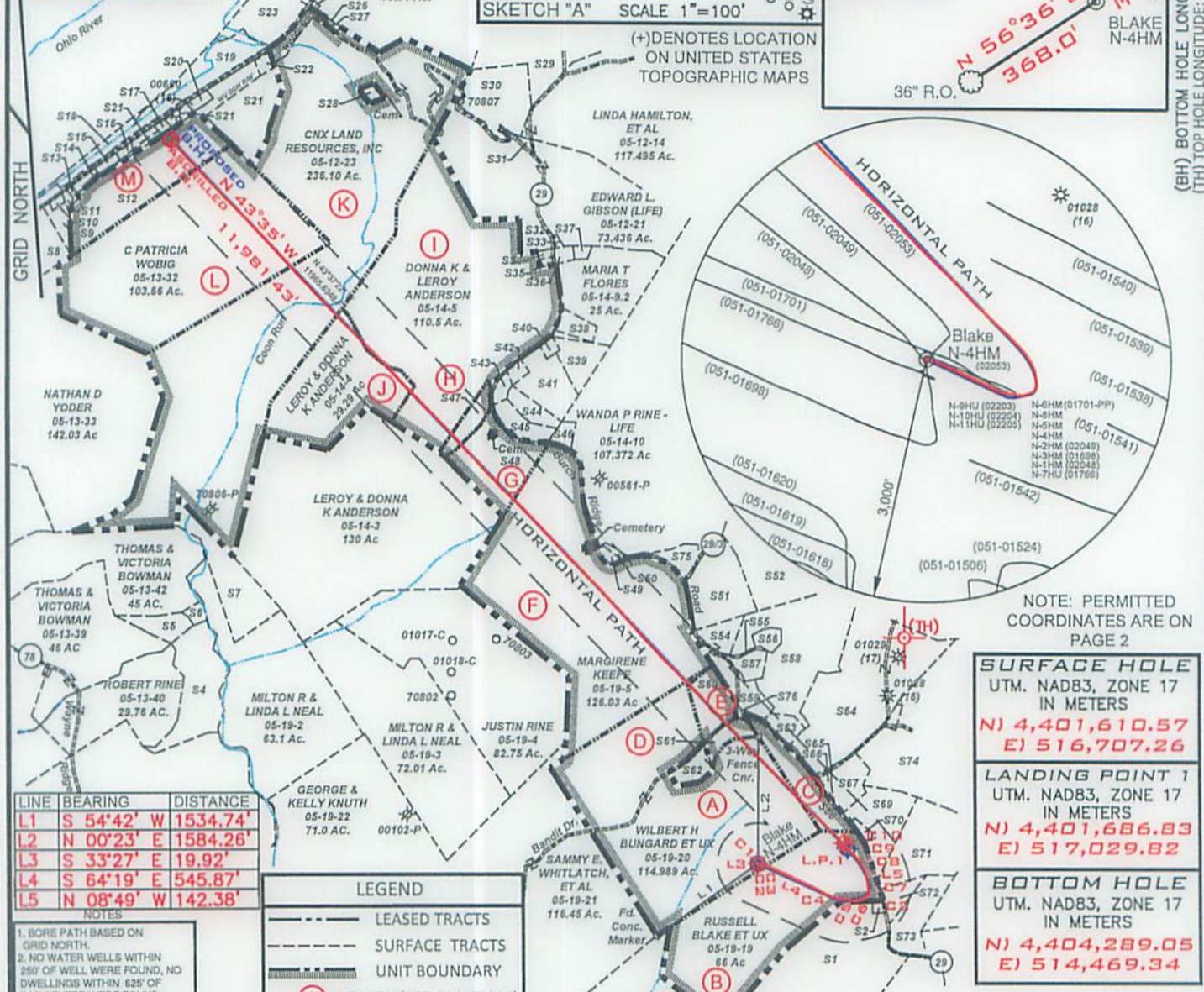
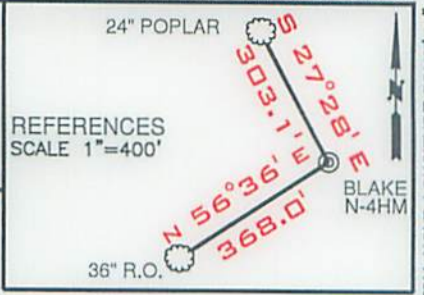
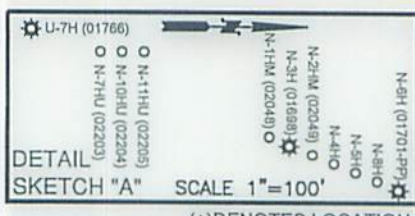
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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Office of Oil and Gas  
JUL 10 2020  
WV Department of  
Environmental Protection

# BLAKE LEASE WELL N-4HM 862.918± ACRES

TOP HOLE LATITUDE: 39°47'30"  
BOTTOM HOLE LATITUDE: 39°47'30"

AS DRILLED LEG  
PERMITTED LEG



LINE	BEARING	DISTANCE
L1	S 54°42' W	1534.74'
L2	N 00°23' E	1584.26'
L3	S 33°27' E	19.92'
L4	S 64°19' E	545.87'
L5	N 08°49' W	142.38'

**LEGEND**

- LEASED TRACTS
- SURFACE TRACTS
- UNIT BOUNDARY
- LEASE # (SEE 6A1 FORM)

- NOTES**
- BORE PATH BASED ON GRID NORTH.
  - NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
  - OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2017. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
  - WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.

CURVE	CHORD BEARING	CHORD LENGTH	RADIUS	ARC LENGTH
C1	N 88°09' E	21.51'	17.94'	23.07'
C2	S 78°00' E	8.72'	5.86'	9.84'
C3	N 79°59' E	16.69'	13.24'	18.05'
C4	S 69°21' E	147.93'	460.14'	148.57'
C5	S 68°08' E	371.40'	832.85'	374.54'

CURVE	CHORD BEARING	CHORD LENGTH	RADIUS	ARC LENGTH
C6	S 84°37' E	165.01'	1332.98'	165.11'
C7	N 66°21' E	134.04'	272.06'	135.44'
C8	N 16°32' E	105.17'	128.30'	108.36'
C9	N 28°53' W	289.89'	648.56'	292.36'
C10	N 41°44' W	187.69'	2118.88'	187.75'

**SURFACE HOLE**  
UTM. NAD83, ZONE 17  
IN METERS  
N) 4,401,610.57  
E) 516,707.26

**LANDING POINT 1**  
UTM. NAD83, ZONE 17  
IN METERS  
N) 4,401,686.83  
E) 517,029.82

**BOTTOM HOLE**  
UTM. NAD83, ZONE 17  
IN METERS  
N) 4,404,289.05  
E) 514,469.34

FILE NUMBER \_\_\_\_\_

DRAWING NUMBER BLAKE\_WP\_N-4HM

SCALE 1" = 2000'

MINIMUM DEGREE OF ACCURACY 1/200

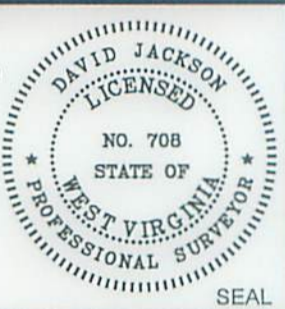
PROVEN SOURCE OF ELEVATION SUBMETER MAPPING GRADE GPS

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 RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

P.S. 708

*David L Jackson*

JACKSON SURVEYING INC.  
P.O. Box 1460  
Clarksburg, WV 26302  
304-623-5851



WVDEP  
OFFICE OF OIL & GAS  
601 57TH STREET, SE  
CHARLESTON, WV 25304

DATE: July 08, 2020

OPERATORS WELL NO. BLAKE N-4HM

API WELL NO. 47-051-02053

STATE WV COUNTY MARSHALL PERMIT 02053

LOCATION ELEVATION 1315.6' WATERSHED (HUC 10) French Creek - Ohio River

DISTRICT Franklin COUNTY Marshall

QUADRANGLE Powhatan Point 7.5' LEASE NUMBER SEE WW-6A1 Form

SURFACE OWNER WILBERT H. BUNGARD, ET UX ACREAGE 114.989

OIL & GAS ROYALTY OWNER RUSSELL BLAKE, ET AL LEASE ACREAGE 114.989

PROPOSED WORK: DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE (SPECIFY) AS-DRILLED

TARGET FORMATION Marcellus ESTIMATED DEPTH TVD: 6,565' TMD: 19,338'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM

ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107 ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

COUNTY NAME  
PERMIT



**BLAKE LEASE  
WELL N-4HM  
862.918± ACRES**

Number	TAX MAP -PARCEL	ADJOINER OWNER	ACRES
S1	05-19-28	DAVID D. & MARK E. YOHO	56.899
S2	05-19-32	JASPER N. BURCH ET AL - TRUSTEES	0.397
S3	05-22-04	CNX GAS COMPANY, LLC	159.05
S4	05-13-41A	RODNEY & RHONDA JACKSON	17.05
S5	05-13-41B	LARRY & JUDY DARRAH	4.15
S6	05-13-41C	BENTON DARRAH, LILLIE MAY DUGAN, ALMA BITMER, ALBERTA PALMER & AUDREY HOWARD	1.0
S7	05-14-02	JOHN B. WILLIAMS, ET AL	20.17
S8	05-13-28	AARON PAUL HOLDREN, ET UX	17.0
S9	05-13-30	CINDY ALIFF	3.0
S10	05-13-28.1	CINDY ALIFF	1.80
S11	05-13-29	W.V. DEPT. OF HIGHWAYS	1.0
S12	05-13-31	CNX LAND RESOURCES, INC.	31.723
S13	05-13-31.1	W.V. DEPT. OF HIGHWAYS	0.277
S14	05-13-31.2	CNX LAND RESOURCES, INC.	0.938
S15	05-12-27	CNX LAND RESOURCES, INC.	0.67
S16	05-12-28	W.V. DEPT. OF HIGHWAYS	1.1
S17	05-12-24.2	W.V. DEPT. OF HIGHWAYS	0.539
S18	05-12-26	CSX	4.00
S19	05-12-25	CSX	12.8
S20	05-12-24	W.V. DEPT. OF HIGHWAYS	0.964
S21	05-12-24.3	CNX LAND RESOURCES, INC.	18.523
S22	05-12-24.1	W.V. DEPT. OF HIGHWAYS	0.99
S23	05-12-23.2	CNX LAND RESOURCES, INC.	12.50
S24	05-12-6.2	CONSOLIDATION COAL COMPANY MURRAY ENERGY	25.50
S25	05-12-6.1	W.V. DEPT. OF HIGHWAYS	0.31
S26	05-12-23.3	W.V. DEPT. OF HIGHWAYS	0.111
S27	05-12-23.1	JAMES N. DAUGHERTY	0.28
S28	05-12-22	CNX LAND RESOURCES, INC.	0.944
S29	05-12-07	ROBERT WM. RIGGENBACH, ET UX	104.231
S30	05-12-21.1	ROBERT W. JR. & WENDY L. RIGGENBACH	14.222
S31	05-12-15	WOODLAND HILL CHURCH OF GOD, TRS	0.375
S32	05-12-16	GARY E. GIBSON, ET AL	0.104
S33	05-12-16.1	GARY E. GIBSON, ET AL	0.146
S34	05-12-20	JONI LYN LEON	0.457
S35	05-12-19	JONI LYN LEON	0.457
S36	05-12-18	HILDA DELORIS BAXTER	1.018
S37	05-12-17	HILDA DELORIS BAXTER	0.752
S38	05-14-9.1	MARIA T. FLOREZ	2.882
S39	05-14-9.5	MARIA T. FLOREZ	6.024
S40	05-14-19	BRIAN A. & CHARLOTTE MULL	0.92
S41	05-14-09	WALTER W. STREIGHT JR., ET UX	9.311
S42	05-14-17	JUSTIN & JODY RINE	1.1044
S43	05-14-16	GEORGE A. KNUTH	1.6386
S44	05-14-9.4	VERNIE A. RINE, ET UX	3.404
S45	05-14-9.3	VERNIE A. RINE, ET UX	4.118
S46	05-14-10.3	VERNIE A. & JODY K. RINE	1.54
S47	05-14-07	DONNA K. & LEROY ANDERSON	4.60
S48	05-14-08	LAWRENCE EUGENE ANDERSON	18.29
S49	05-14-10.1	IDA RUTAN (LIFE), RALPH R. HOYT	0.50
S50	05-14-10.2	IDA RUTAN (LIFE), RALPH R. HOYT	0.495
S51	05-14-11	DALE R. GALLAHER, ET AL	12.0
S52	05-14-12	DALE R. GALLAHER, ET AL	135.100
S53	05-19-18.2	PAUL V. & CAROL NEELY	32.672
S54	05-19-06	MARTHA M. RUTAN	5.1099
S55	05-19-7.3	OLAN V. RUTAN, ET UX	0.341
S56	05-19-7.4	OLAN V. RUTAN, ET UX	1.787
S57	05-19-7.2	OLAN RUTAN	2.783
S58	05-19-7	OLAN V. RUTAN, ET UX	32.4801
S59	05-19-7.1	ROBERT L. SHIELD, ET AL	3.399
S60	05-19-20.2	CASANDRA L. HARMON	7.448
S61	05-19-20.1	JOHN J. EBERT, EST.	3.848
S62	05-19-20.3	SIDNEY HARMON	3.715
S63	05-19-7.5	ADAM T. & JESSE L. ROBINSON	2.640
S64	05-19-8	CNX GAS COMPANY, LLC	40.0
S65	05-19-11	ERNIE L. ANDERSON, ET UX	0.08
S66	05-19-10	ERNIE L. ANDERSON, ET UX	0.8125
S67	05-19-12	ERNIE L. ANDERSON, ET UX	5.33
S68	05-19-09	PENNY ELAINE MENENDEZ	10.0
S69	05-19-29	ERNIE L. & TAMMY L. ANDERSON	10.961
S70	05-19-15	B.J. HERRAN REVOCABLE TRUST	0.177
S71	05-19-30	ERNIE & TAMMY ANDERSON	19.037
S72	05-19-30.1	ERIC R.W. & ASHLEY A. HUGGINS	2.911
S73	05-19-31	CHARLES F. & DIANA L. HAYNES	8.779
S74	05-19-13	RONA LEE RICE & CHARLES FRANKLIN MCCARDLE	94.925
S75	05-14-10.4	ADAM & JESSE ROBINSON	3.343
S76	05-19-20	WILBERT H. BUNGARD ET UX	114.989

**SURFACE HOLE**  
UTM. NAD83, ZONE 17  
IN METERS  
N) 4,401,610.73  
E) 516,707.28

**LANDING POINT 1**  
UTM. NAD83, ZONE 17  
IN METERS  
N) 4,401,674.25  
E) 517,039.18

**BOTTOM HOLE**  
UTM. NAD83, ZONE 17  
IN METERS  
N) 4,404,289.99  
E) 514,470.22



P.S.  
708

*David L Jackson*

RECEIVED  
Office of Oil and Gas

JUL 10 2020

WV Department of  
Environmental Protection



**TUG HILL  
OPERATING**

OPERATOR'S  
WELL #: Blake N-4HM  
API #: 47-051-02053  
DISTRICT: Franklin  
COUNTY: Marshall  
STATE: WV

WELL PLAT  
PAGE 2 OF 2  
DATE: 07/08/2020