

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

API 47 - 051 - 02372 County Marshall District Mead
Quad Glen Easton 7.5' Pad Name Keith Stern Field/Pool Name _____
Farm name TH Exploration, LLC Well Number Keith Stern N-1HM
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 4,402,817.48 Easting 526,365.94
Landing Point of Curve Northing 4,402,353.3 Easting 526,028.2
Bottom Hole Northing 4,403,994.3 Easting 525,090.4

Elevation (ft) 742.30' 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 4/13/2021 Date drilling commenced spud:2/11/2022 big rig: 4/13/2022 Date drilling ceased 4/28/2022
Date completion activities began 1/17/2023 Date completion activities ceased 1/27/2023
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

RECEIVED
Office of Oil and Gas
MAY 03 2023

Freshwater depth(s) ft 440' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 933' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 341-347', 434-440' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

APPROVED

Reviewed by:
[Signature]
10/27/2023

API 47- 051 - 02372 Farm name TH Exploration, LLC Well number Keith Stern N-1HM

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"	110'	NEW	94.5#	N/A	Y
Surface	17 1/2"	13 3/8"	553'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	553'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	2,249'	NEW	36#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	13,670'	NEW	20#	N/A	Y
Tubing		2 7/8"	6,835'	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	700	15.6	1.20	840	0	8
Coal	A	700	15.6	1.20	840	0	8
Intermediate 1	A	753	15.6	1.19	896	0	8
Intermediate 2							
Intermediate 3							
Production	A	3305	14.5	1.156	3820.58	0	8
Tubing							

Drillers TD (ft) 13,722' Loggers TD (ft) N/A
 Deepest formation penetrated MARCELLUS Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5,916'

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 _____

RECEIVED
Office of Oil and Gas

MAY 03 2023

WV Department of
Environmental Protection

10/27/2023

API 47- 051 - 02372 Farm name TH Exploration, LLC Well number Keith Stern N-1HM

PRODUCING FORMATION(S)	DEPTHS	
MARCELLUS	6,295'-6,261' TVD	7,437'-13,722' MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3516 psi Bottom Hole _____ psi DURATION OF TEST 4 hrs

OPEN FLOW Gas 1044 mcfpd Oil 72 bpd NGL 0 bpd Water 1680 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
*see attached					

Please insert additional pages as applicable.

Drilling Contractor Nabors Drilling USA
Address 505 West Greens Road, Suite 1000 City Houston State TX Zip 77067

Logging Company n/a
Address _____ City _____ State _____ Zip _____

Cementing Company Halliburton Energy Services, Inc.
Address 121 Champion Way, Suite 200 City Canonsburg State PA Zip 15317

Stimulating Company Producers Service Corp.
Address 109 S. Graham St. City Zanesville State OH Zip 43701

RECEIVED
Office of Oil and Gas

Please insert additional pages as applicable.

MAY 03 2023

Completed by Amy L. Morris Telephone 304-376-0111
Signature  Title Permitting Specialist - Appalachia Region Date 5/1/2023 WV Department of Environmental Protection

Submission of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

10/27/2023

**KEITH STERN N-1HM
PEFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	1/17/2023	13,490	13,536	36	MARCELLUS
2	1/17/2023	13,288	13,439	44	MARCELLUS
3	1/17/2023	13,115	13,266	44	MARCELLUS
4	1/17/2023	12,942	13,093	44	MARCELLUS
5	1/18/2023	12,767	12,918	44	MARCELLUS
6	1/18/2023	12,592	12,743	44	MARCELLUS
7	1/18/2023	12,417	12,568	44	MARCELLUS
8	1/18/2023	12,242	12,393	44	MARCELLUS
9	1/19/2023	12,067	12,218	44	MARCELLUS
10	1/19/2023	11,892	12,043	44	MARCELLUS
11	1/19/2023	11,717	11,868	44	MARCELLUS
12	1/20/2023	11,542	11,693	44	MARCELLUS
13	1/20/2023	11,367	11,518	44	MARCELLUS
14	1/20/2023	11,192	11,343	44	MARCELLUS
15	1/21/2023	11,017	11,168	44	MARCELLUS
16	1/21/2023	10,842	10,993	44	MARCELLUS
17	1/21/2023	10,667	10,818	44	MARCELLUS
18	1/21/2023	10,492	10,643	44	MARCELLUS
19	1/22/2023	10,317	10,468	44	MARCELLUS
20	1/22/2023	10,142	10,293	44	MARCELLUS
21	1/22/2023	9,967	10,118	44	MARCELLUS
22	1/22/2023	9,792	9,943	44	MARCELLUS
23	1/23/2023	9,617	9,768	44	MARCELLUS
24	1/23/2023	9,442	9,593	44	MARCELLUS
25	1/24/2023	9,267	9,418	44	MARCELLUS
26	1/24/2023	9,092	9,243	44	MARCELLUS
27	1/24/2023	8,917	9,068	44	MARCELLUS
28	1/24/2023	8,742	8,893	44	MARCELLUS
29	1/25/2023	8,567	8,718	44	MARCELLUS
30	1/25/2023	8,392	8,543	44	MARCELLUS
31	1/25/2023	8,217	8,368	44	MARCELLUS
32	1/26/2023	8,042	8,193	44	MARCELLUS
33	1/26/2023	7,867	8,018	44	MARCELLUS
34	1/26/2023	7,692	7,843	44	MARCELLUS
35	1/26/2023	7,517	7,668	44	MARCELLUS
36	1/27/2023	7,342	7,493	44	MARCELLUS

RECEIVED
Office of Oil and Gas
MAY 03 2023
WV Department of
Environmental Protection
10/27/2023

KEITH STERN N-1HM
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	83.00	7508	N/A	3883	253180	5,936	0
2	88.00	6828	4991	4960	437480	8,936	0
3	86.00	6780	5006	4898	435120	8,505	0
4	90.00	6689	4942	4777	441360	8,573	0
5	90.00	6744	4778	5226	445640	8,668	0
6	89.00	6807	5031	5057	446100	8,506	0
7	89.00	6962	5120	4982	439500	8,463	0
8	89.00	6989	5028	5156	441100	8,389	0
9	88.00	6658	4949	5177	439400	8,992	0
10	90.00	6548	5201	4859	442400	8,073	0
11	89.00	6516	4784	4921	445500	9,247	0
12	89.00	6534	5036	5054	439200	8,274	0
13	90.00	6616	5200	5156	439100	8,415	0
14	90.00	6576	5113	4927	444080	8,338	0
15	90.00	6674	5423	5485	442880	8,034	0
16	89.00	6381	5319	5102	447100	8,240	0
17	90.00	6418	5161	5022	447200	8,189	0
18	90.00	6585	5079	5052	441740	8,278	0
19	89.00	6392	4843	5074	446900	8,381	0
20	89.00	6370	4792	4673	444100	8,487	0
21	90.00	6599	4959	4957	449400	9,259	0
22	90.00	6621	5041	5348	441820	8,239	0
23	88.00	6509	5410	5120	447900	8,252	0
24	90.00	6498	5041	5084	445100	8,177	0
25	89.00	6553	5039	4842	441900	8,010	0
26	89.00	6374	4966	4916	441800	8,209	0
27	89.00	6307	4980	5212	443000	8,206	0
28	89.00	6345	5267	5183	443180	8,143	0
29	89.00	6349	4987	5097	444740	8,100	0
30	90.00	6384	5254	4987	444800	7,977	0
31	89.00	6245	5368	5142	444440	8,676	0
32	88.00	6234	5221	5064	442160	8,473	0

WV Department of
 Environmental Protection

MAY 03 2023

Office of Oil and Gas

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	88.00	6339	4909	4837	444500	7,613	0
34	90.00	6364	4840	4893	441400	8,414	0
35	89.00	6316	5000	4902	439500	8,374	0
36	89.00	6203	5055	4833	439480	7,753	0

RECEIVED
 Office of Oil and Gas
 MAY 03 2023
 WV Department of
 Environmental Protection

KEITH STERN N-1HM

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	1505	1679	1505	1679	Sandstone
Big Lime	1679	1745	1679	1746	Limestone
Big Injun	1745	1963	1746	1964	Sandstone
Weir	1963	2166	1964	2168	Sandstone
Berea	2166	2429	2168	2432	Sandstone
Gordon	2429	2509	2432	2512	Sandstone
Fifty Foot	2509	3091	2512	3097	Sandstone
Speechley	3091	4572	3097	4959	Sandstone
Benson	4572	4947	4959	5461	Sandstone
Alexander	4947	5575	5461	6271	Siltstone
Rhinestreet	5575	6063	6271	6854	Black Shale
Middlesex	6063	6138	6854	6967	Black Shale
Geneseo/Burkett	6138	6164	6967	7012	Black Shale
Tully	6164	6192	7012	7067	Limestone
Hamilton	6192	6272	7067	7310	Gray Shale
Marcellus	6272	-	7310	-	Black Shale

RECEIVED
 Office of Oil and Gas
 MAY 03 2023
 WV Department of
 Environmental Protection

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/17/2023
Job End Date:	1/27/2023
State:	West Virginia
County:	Marshall
API Number:	47-051-02372-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Keith Stern N-1HM
Latitude:	39.77489300
Longitude:	-80.69213200
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,261
Total Base Water Volume (gal):	13,205,682
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	88.20279	None
Sand (Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	11.44120	None
Hydrochloric Acid (7.5%)	Producers Service Corp.	Acidizing	Water	7732-18-5	85.00000	0.22972	None
			Hydrochloric Acid (Hydrogen Chloride)	7647-01-0	37.00000	0.09999	None
StimStream FR 9800	Chemstream	Friction Reducer	Butene, homopolymer	9003-29-6	25.00000	0.01898	None
			Alkanes, C16-20-iso-	90622-59-6	25.00000	0.01898	None
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00228	None
LD-7750W	MultiChem	Scale Inhibitor	Methanol	67-56-1	60.00000	0.00558	None
			Phosphonic Acid Salt	Proprietary	5.00000	0.00047	None
4-N-1	Producers Service Corp.	Corrosion Inhibitor	Acetic acid	64-19-7	90.00000	0.00048	None

WV Department of Environmental Protection
 MAY 03 2023
 OFFICE OF OIL AND GAS

			Methanol	67-56-1	10.00000	0.00005	None
			2-Ethylhexanol	104-76-7	10.00000	0.00005	None
			Cocamide Diethanolamine	68603-42-9	5.00000	0.00003	None
			Diethanolamine	111-42-2	1.00000	0.00001	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					
			Hydrochloric Acid (Hydrogen Chloride)	7647-01-0	37.00000	0.09999	
			Alkanes, C16-20-iso-	90622-59-6	25.00000	0.01898	
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00228	
			Phosphonic Acid Salt	Proprietary	5.00000	0.00047	
			2-Ethylhexanol	104-76-7	10.00000	0.00005	
			Methanol	67-56-1	10.00000	0.00005	
			Cocamide Diethanolamine	68603-42-9	5.00000	0.00003	
			Diethanolamine	111-42-2	1.00000	0.00001	

* 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.

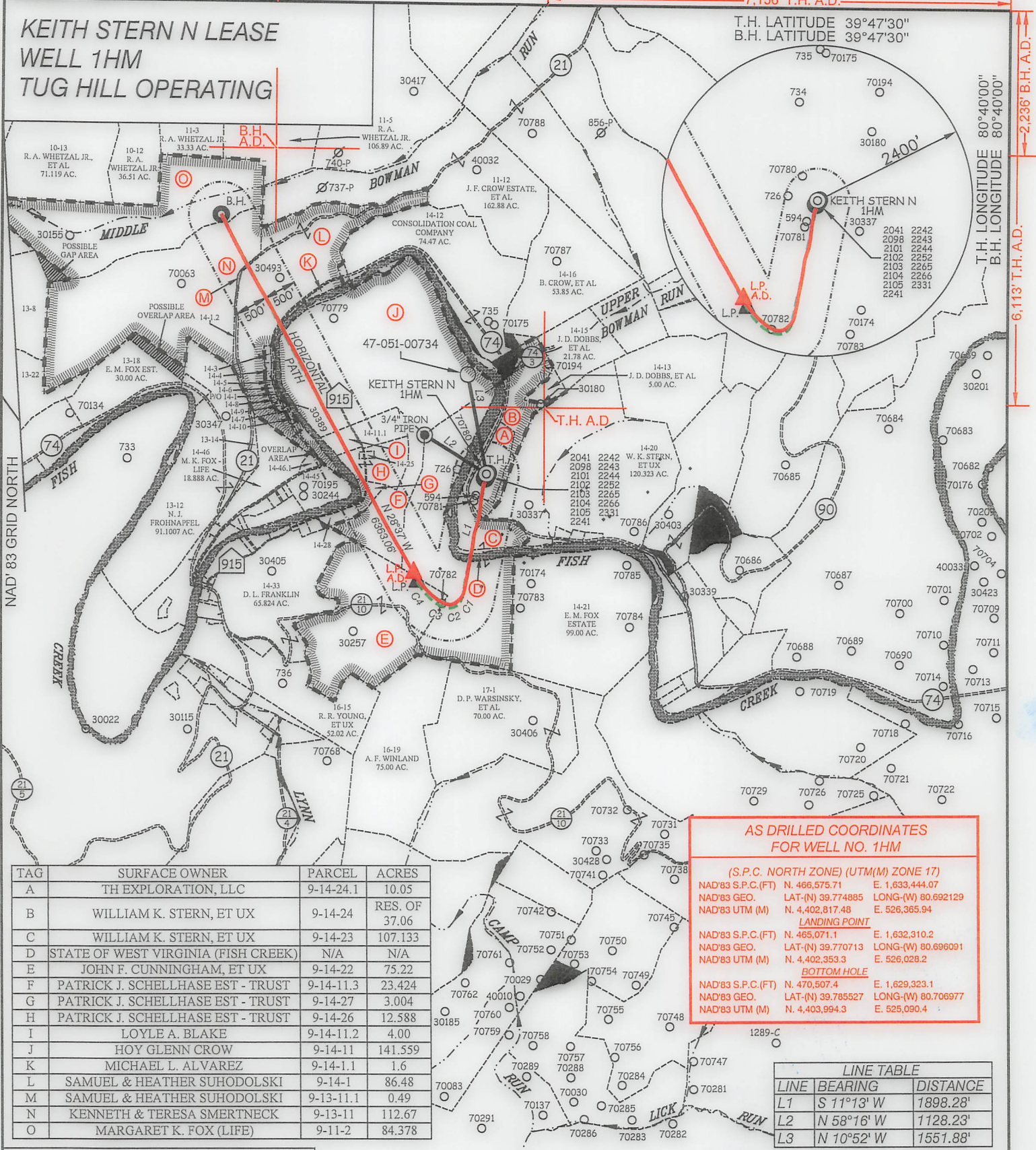
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

11,328' B.H. A.D.

7,156' T.H. A.D.

**KEITH STERN N LEASE
WELL 1HM
TUG HILL OPERATING**

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



AS DRILLED COORDINATES FOR WELL NO. 1HM

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

NAD'83 S.P.C.(FT)	N. 466,575.71	E. 1,633,444.07
NAD'83 GEO.	LAT-(N) 39.774885	LONG-(W) 80.692129
NAD'83 UTM (M)	N. 4,402,817.48	E. 526,365.94

LANDING POINT

NAD'83 S.P.C.(FT)	N. 465,071.1	E. 1,632,310.2
NAD'83 GEO.	LAT-(N) 39.770713	LONG-(W) 80.696091
NAD'83 UTM (M)	N. 4,402,353.3	E. 526,028.2

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 470,507.4	E. 1,629,323.1
NAD'83 GEO.	LAT-(N) 39.785527	LONG-(W) 80.706977
NAD'83 UTM (M)	N. 4,403,994.3	E. 525,090.4

TAG	SURFACE OWNER	PARCEL	ACRES
A	TH EXPLORATION, LLC	9-14-24.1	10.05
B	WILLIAM K. STERN, ET UX	9-14-24	RES. OF 37.06
C	WILLIAM K. STERN, ET UX	9-14-23	107.133
D	STATE OF WEST VIRGINIA (FISH CREEK)	N/A	N/A
E	JOHN F. CUNNINGHAM, ET UX	9-14-22	75.22
F	PATRICK J. SCHELLHASE EST - TRUST	9-14-11.3	23.424
G	PATRICK J. SCHELLHASE EST - TRUST	9-14-27	3.004
H	PATRICK J. SCHELLHASE EST - TRUST	9-14-26	12.588
I	LOYLE A. BLAKE	9-14-11.2	4.00
J	HOY GLENN CROW	9-14-11	141.559
K	MICHAEL L. ALVAREZ	9-14-1.1	1.6
L	SAMUEL & HEATHER SUHODOLSKI	9-14-1	86.48
M	SAMUEL & HEATHER SUHODOLSKI	9-13-11.1	0.49
N	KENNETH & TERESA SMERTNECK	9-13-11	112.67
O	MARGARET K. FOX (LIFE)	9-11-2	84.378

LINE TABLE

LINE	BEARING	DISTANCE
L1	S 11°13' W	1898.28'
L2	N 58°16' W	1128.23'
L3	N 10°52' W	1551.88'

CURVE TABLE

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	177.86'	270.86'	S 27°56' W	174.68'
C2	155.30'	192.28'	S 74°00' W	151.11'
C3	239.43'	463.23'	N 66°53' W	236.77'
C4	406.56'	988.32'	N 39°44' W	403.70'

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

LEGEND

AS DRILLED —

PROPOSED - - -

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

NAD'83 S.P.C.(FT)	N. 466,575.71	E. 1,633,444.07
NAD'83 GEO.	LAT-(N) 39.774885	LONG-(W) 80.692129
NAD'83 UTM (M)	N. 4,402,817.48	E. 526,365.94

LANDING POINT

NAD'83 S.P.C.(FT)	N. 464,921.1	E. 1,632,372.0
NAD'83 GEO.	LAT-(N) 39.770304	LONG-(W) 80.695864
NAD'83 UTM (M)	N. 4,402,307.9	E. 526,047.7

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 470,506.7	E. 1,629,324.0
NAD'83 GEO.	LAT-(N) 39.785525	LONG-(W) 80.706974
NAD'83 UTM (M)	N. 4,403,994.1	E. 525,090.7

GREGORY A. SMITH
LICENSED
No. 677
STATE OF WEST VIRGINIA
PROFESSIONAL SURVEYOR

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

P.S. 677 *Gregory A. Smith*

SCALE 1" = 2000' FILE NO. 8811P1HMAD.dwg
KEITH STERN N-1HM-REV1

DATE FEBRUARY 15, 2023
REVISED _____, 20____

OPERATORS WELL NO. KEITH STERN N-1HM
API WELL 47 — 051 — 02372
NO. STATE COUNTY PERMIT

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

LEGEND

LEASE LINE

SURFACE LINE

WELL LATERAL

OFFSET LINE

TIE LINE

CREEK

ROAD

COUNTY ROUTE

PROPOSED WELL

EXISTING WELL

PERMITTED WELL

TAX MAP-PARCEL 00-00

LEASE # (SEE WW-6A1)

SURFACE OWNER (SEE TABLE)

10/27/2023

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

11,328' B.H. A.D.

7,156' T.H. A.D.

**KEITH STERN N LEASE
WELL 1HM
TUG HILL OPERATING**

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

B.H. A.D.

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17)			
NAD'83 S.P.C.(FT)	N. 466,575.71	E. 1,633,444.07	
NAD'83 GEO.	LAT-(N) 39.774885	LONG-(W) 80.692129	
NAD'83 UTM (M)	N. 4,402,817.48	E. 526,365.94	
LANDING POINT			
NAD'83 S.P.C.(FT)	N. 464,921.1	E. 1,632,372.0	
NAD'83 GEO.	LAT-(N) 39.770304	LONG-(W) 80.695864	
NAD'83 UTM (M)	N. 4,402,307.9	E. 526,047.7	
BOTTOM HOLE			
NAD'83 S.P.C.(FT)	N. 470,506.7	E. 1,629,324.0	
NAD'83 GEO.	LAT-(N) 39.785525	LONG-(W) 80.706974	
NAD'83 UTM (M)	N. 4,403,994.1	E. 525,090.7	

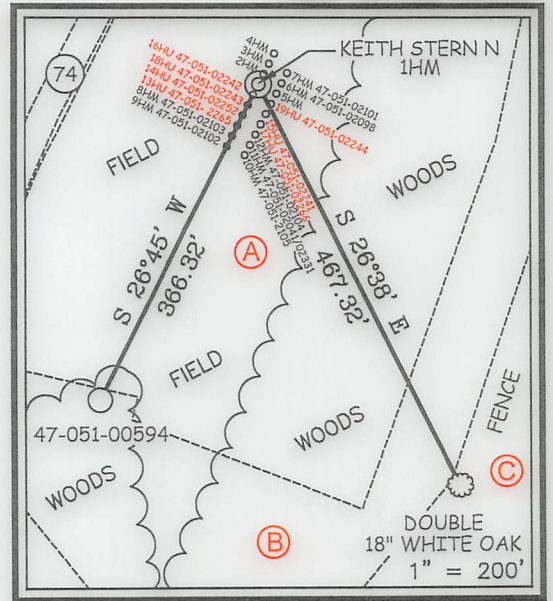
T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°40'00"

6,113' T.H. A.D.

MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
9-13-8	SHUTLER FAMILY TRUST	56.04
9-13-14	MARGARET K. FOX - LIFE	3.00
9-13-22	TRICYCLE LLC	42.27
9-14-1.2	KENNETH N. & TERESA A. SMERTNECK	1.02
9-14-3	MICHAEL L. ALVAREZ	NORTH P/O 3 PCLS
9-14-4	MICHAEL L. ALVAREZ	3 PCLS & 1/8 AC.
9-14-5	MICHAEL L. ALVAREZ	200 X 60 PCL
9-14-6	MICHAEL L. ALVAREZ	120 X 200 PCL
9-14-7	JOHN T. ERAZMUS, III	0.25
9-14-8	JOHNNY C. HOLCOMB & JOHNNY C. HOLCOMB, II	2/5 AC.
9-14-9	JOHN E. DUFFY, ET UX	2/5 AC.
9-14-10	ROBERT I. DUFFY - LIFE	25/100 AC.
9-14-11.1	PATRICK J. SCHELLHASE EST - TRUST	7.617
9-14-25	PATRICIA A. DUGAS	0.559
9-14-28	CHARLES R. SCHELLHASE, ET UX	3.029
9-14-45	GEORGE R. TAYLOR, ET UX	10.98
9-14-46.1	MARHA JANE FAZZARO	1.512

T.H. A.D.

REFERENCES



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.
- 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 FEBRUARY 15, 20 23
REVISED _____, 20 ____
OPERATORS WELL NO. KEITH STERN N-1HM
API WELL NO. 47 - 051 - 02372
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500
FILE NO. 8811P1HMAD.dwg
KEITH STERN N-1HM-REV1
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: GROUND = 742.30' ELEVATION PROPOSED = 744.65' WATERSHED FISH CREEK (HUC 10)
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'
SURFACE OWNER TH EXPLORATION, LLC ACREAGE 10.05±
ROYALTY OWNER ISAAC CROW, ET AL - SEE WW-6A1 ACREAGE 10.05±
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: 6,398' / TMD: 13,796'

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

10/27/2023