

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

API 47 - 051 - 02376 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-5HM
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 4,402,814.66 Easting 526,371.68
Landing Point of Curve Northing 4,402,803.6 Easting 526,822.3
Bottom Hole Northing 4,404,319.9 Easting 525,955.1

Elevation (ft) 745.30' 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:2/13/2022 big rig: 6/7/2022 Date drilling ceased 6/23/2022
Date completion activities began 2/14/2023 Date completion activities ceased 3/26/2023
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

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

WV Department of Environmental Protection
APPROVED
Reviewed by: [Signature]
10/27/2023

API 47- 051 - 02376 Farm name TH Exploration, LLC Well number Keith Stern N-5HM

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"	113'	NEW	94.5#	N/A	Y
Surface	17 1/2"	13 3/8"	558'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	558'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	2,261'	NEW	36#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	12,922'	NEW	20#	N/A	Y
Tubing		2 7/8"	6,461'	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	800	15.6	1.2	960	0	8
Coal	A	800	15.6	1.2	960	0	8
Intermediate 1	A	760	15	1.38	1048.8	0	8
Intermediate 2							
Intermediate 3							
Production	A	2925	14.5	1.23	3597.75	0	8
Tubing							

Drillers TD (ft) 12,989' Loggers TD (ft) n/a
 Deepest formation penetrated Marcellus Plug back to (ft) n/a
 Plug back procedure n/a

Kick off depth (ft) 5,691'

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 _____ RECEIVED
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WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____ MAY 03 2023

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____
 WV Department of Environmental Protection

10/27/2023

API 47- 051 - 02376 Farm name TH Exploration, LLC Well number Keith Stern N-5HM

PRODUCING FORMATION(S)	DEPTHS	
MARCELLUS	6,301'-6,268' TVD	7,132'-12,955' MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3549 psi Bottom Hole _____ psi DURATION OF TEST 4 hrs

OPEN FLOW Gas 1,115.85 mcfpd Oil 48 bpd NGL 0 bpd Water 648 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 Street City Zanesville State OH Zip 43701

Please insert additional pages as applicable.

Completed by Amy L. Morris Telephone 304-376-0111
Signature *Amy L. Morris* Title Permitting Specialist - Appalachia Region Date 5-2-2023

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**KEITH STERN N-5HM
PEFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	2/14/2023	12,741	12,787	36	MARCELLUS
2	2/14/2023	12,541	12,686	48	MARCELLUS
3	2/15/2023	12,366	12,512	48	MARCELLUS
4	2/16/2023	12,191	12,337	48	MARCELLUS
5	2/17/2023	12,016	12,162	48	MARCELLUS
6	2/18/2023	11,841	11,987	48	MARCELLUS
7	2/19/2023	11,666	11,812	48	MARCELLUS
8	2/20/2023	11,491	11,637	48	MARCELLUS
9	2/21/2023	11,316	11,462	48	MARCELLUS
10	2/22/2023	11,141	11,287	48	MARCELLUS
11	2/24/2023	10,966	11,112	48	MARCELLUS
12	2/25/2023	10,791	10,937	48	MARCELLUS
13	2/27/2023	10,616	10,762	48	MARCELLUS
14	2/27/2023	10,441	10,587	48	MARCELLUS
15	2/28/2023	10,270	10,415	48	MARCELLUS
16	3/4/2023	10,095	10,242	48	MARCELLUS
17	3/5/2023	9,920	10,067	48	MARCELLUS
18	3/7/2023	9,746	9,892	48	MARCELLUS
19	3/8/2023	9,571	9,718	48	MARCELLUS
20	3/10/2023	9,396	9,543	48	MARCELLUS
21	3/11/2023	9,222	9,368	48	MARCELLUS
22	3/13/2023	9,047	9,193	48	MARCELLUS
23	3/14/2023	8,872	9,019	48	MARCELLUS
24	3/16/2023	8,697	8,844	48	MARCELLUS
25	3/17/2023	8,523	8,669	48	MARCELLUS
26	3/19/2023	8,348	8,495	48	MARCELLUS
27	3/20/2023	8,173	8,320	48	MARCELLUS
28	3/22/2023	7,999	8,145	48	MARCELLUS
29	3/23/2023	7,824	7,971	48	MARCELLUS
30	3/24/2023	7,649	7,796	48	MARCELLUS
31	3/25/2023	7,475	7,621	48	MARCELLUS
32	3/25/2023	7,300	7,446	48	MARCELLUS
33	3/26/2023	7,125	7,272	48	MARCELLUS

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10/27/2023

KEITH STERN N-5HM
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	88.00	7960		4640	250000	6,733	0
2	90.00	7069	5222	4787	447410	8,633	0
3	89.00	6907	5216	4914	448480	8,416	0
4	90.00	6953	5152	4919	446980	8,399	0
5	89.00	6933	5282	5048	448620	8,524	0
6	90.00	6969	5492	5073	448060	8,069	0
7	90.00	6740	5035	5080	447100	8,388	0
8	90.00	7028	4831	5022	447860	8,284	0
9	90.00	6888	4889	5002	448540	8,465	0
10	90.00	6888	4859	4780	442720	8,313	0
11	91.00	6951	4995	4989	446500	8,300	0
12	90.00	6923	5010	5025	442900	8,294	0
13	89.00	6804	5025	4995	444880	8,310	0
14	90.00	6863	5149	5020	443180	8,210	0
15	90.00	6719	5143	4895	446860	8,471	0
16	90.00	6982	5459	4784	441080	9,037	0
17	90.00	6937	4945	4882	402650	7,925	0
18	89.00	6817	4870	4909	447570	8,671	0
19	89.00	6871	4941	5089	447590	8,092	0
20	90.00	6881	4765	5402	449290	8,062	0
21	90.00	6870	4826	5170	442870	8,194	0
22	90.00	6911	4846	5170	444610	8,304	0
23	89.00	6731	5230	5021	443570	8,221	0
24	89.00	6676	5068	5029	440260	8,109	0
25	89.00	6850	4843	5400	440880	8,162	0
26	89.00	6860	4920	4957	438760	8,388	0
27	89.00	7014	5146	5648	442500	8,031	0
28	90.00	6634	4874	4824	440380	7,986	0
29	90.00	6571	4883	4956	439040	8,209	0
30	89.00	6340	5009	5034	441660	8,086	0
31	90.00	6588	4743	5046	447200	8,230	0
32	90.00	6454	5061	4942	447480	8,059	0

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 Stimulation Information

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	89.00	6361	5256	5239	437720	7,936	0

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KEITH STERN N-5HM

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	1531	1705	1532	1707	Sandstone
Big Lime	1705	1771	1707	1774	Limestone
Big Injun	1771	1989	1774	1997	Sandstone
Weir	1989	2192	1997	2205	Sandstone
Berea	2192	2455	2205	2481	Sandstone
Gordon	2455	2535	2481	2570	Sandstone
Fifty Foot	2535	3117	2570	3226	Sandstone
Speechley	3117	4598	3226	4902	Sandstone
Benson	4598	4973	4902	5326	Sandstone
Alexander	4973	5601	5326	6021	Siltstone
Rhinestreet	5601	6072	6021	6547	Black Shale
Middlesex	6072	6145	6547	6655	Black Shale
Geneseo/Burkett	6145	6168	6655	6692	Black Shale
Tully	6168	6196	6692	6742	Limestone
Hamilton	6196	6276	6742	6971	Gray Shale
Marcellus	6276	-	6971	-	Black Shale

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/14/2023
Job End Date:	3/26/2023
State:	West Virginia
County:	Marshall
API Number:	47-051-02376-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Keith Stern N 5HM
Latitude:	39.77485957
Longitude:	-80.69206155
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,280
Total Base Water Volume (gal):	11,403,462
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	86.47372	None
Sand (40/70 White Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	8.62767	None
Sand (100 Mesh Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	3.29170	None
Sand (30/50 White Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	1.19791	None
Hydrochloric Acid (7.5%)	CNR	Acidizing	Water	7732-18-5	85.00000	0.24063	None
			Hydrochloric Acid (Hydrogen Chloride)	7647-01-0	37.00000	0.10474	None
StimStream FR 9800	Chemstream	Friction Reducer	Butene, homopolymer	9003-29-6	25.00000	0.01890	None
			Alkanes, C16-20-iso-	90622-59-6	25.00000	0.01890	None
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00227	None

MC MX 5-3886	Multi-Chem	Biocide					
			Calcium nitrate	13477-34-4	60.00000	0.02367	None
LD-7750W	Multi-Chem	Scale Inhibitor					
			Methanol	67-56-1	60.00000	0.00536	None
			Phosphonic Acid Salt	Proprietary	5.00000	0.00045	None
ProHib 100	CNR	Acid Inhibitor					
			2-Butoxyethanol	111-76-2	60.00000	0.00052	None
			Proprietary material	Proprietary	30.00000	0.00026	None
			Proprietary non-ionic surfactant	Proprietary	20.00000	0.00017	None
			Proprietary ethoxylated alcohol	Proprietary	10.00000	0.00009	None
			Proprietary corrosion inhibitor	Proprietary	10.00000	0.00009	None
ProFE 105	CNR	Iron Control					
			Citric Acid	77-92-9	20.00000	0.00021	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	0.24063	
			Butene, homopolymer	9003-29-6	25.00000	0.01890	
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00227	
			Phosphonic Acid Salt	Proprietary	5.00000	0.00045	
			Proprietary material	Proprietary	30.00000	0.00026	
			Proprietary non-ionic surfactant	Proprietary	20.00000	0.00017	
			Proprietary corrosion inhibitor	Proprietary	10.00000	0.00009	
			Proprietary ethoxylated alcohol	Proprietary	10.00000	0.00009	
			Acetic Acid	64-19-7	5.00000	0.00005	

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

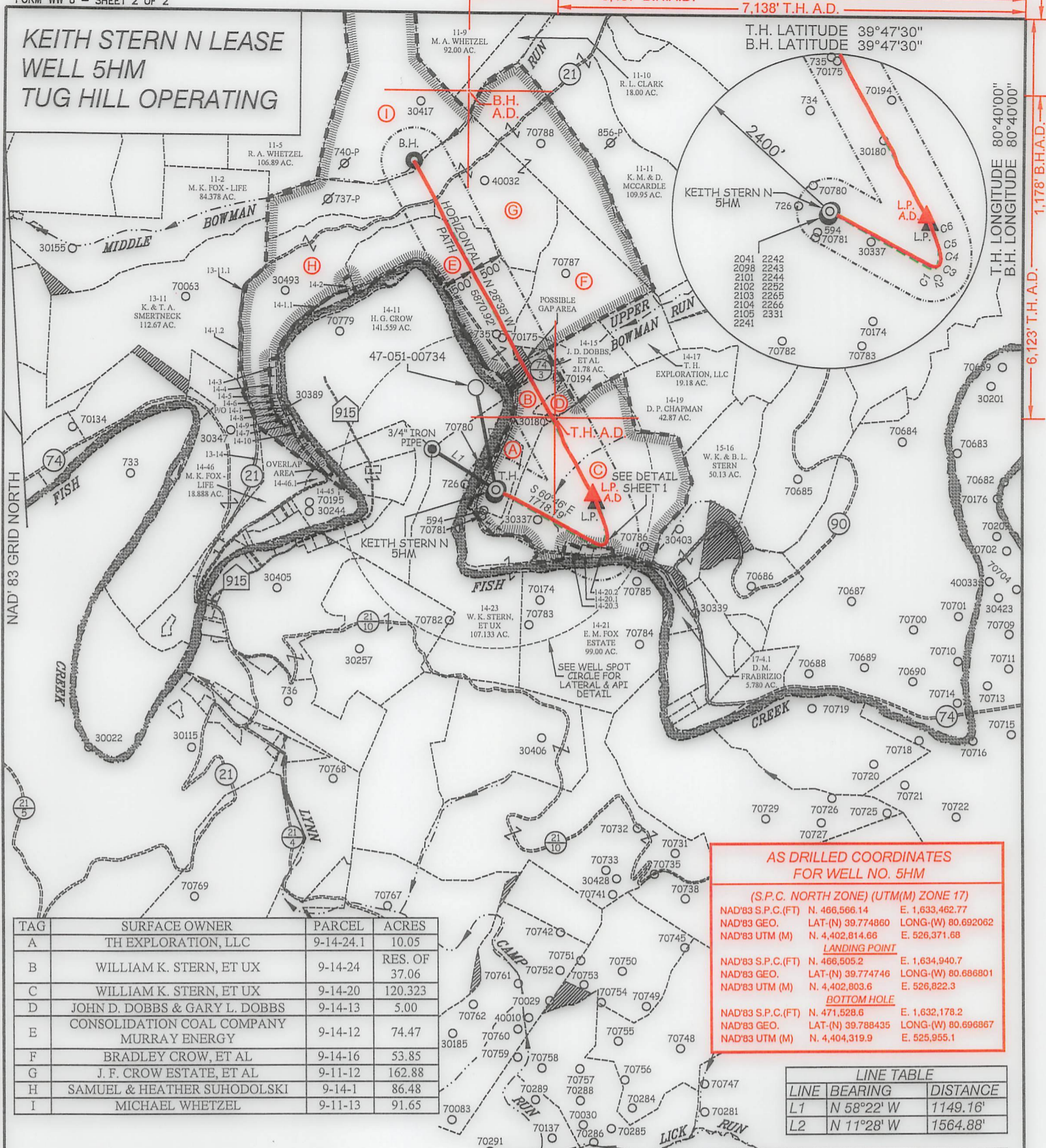
** Information is based on the maximum potential for concentration and thus the total may be over 100%

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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**KEITH STERN N LEASE
WELL 5HM
TUG HILL OPERATING**



AS DRILLED COORDINATES FOR WELL NO. 5HM

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

NAD'83 S.P.C.(FT)	N. 466,566.14	E. 1,633,462.77
NAD'83 GEO.	LAT-(N) 39.774860	LONG-(W) 80.692062
NAD'83 UTM (M)	N. 4,402,814.66	E. 526,371.68

LANDING POINT

NAD'83 S.P.C.(FT)	N. 466,505.2	E. 1,634,940.7
NAD'83 GEO.	LAT-(N) 39.774746	LONG-(W) 80.686801
NAD'83 UTM (M)	N. 4,402,803.6	E. 526,822.3

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 471,528.6	E. 1,632,178.2
NAD'83 GEO.	LAT-(N) 39.788435	LONG-(W) 80.696887
NAD'83 UTM (M)	N. 4,404,319.9	E. 525,955.1

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	9-14-20	120.323
D	JOHN D. DOBBS & GARY L. DOBBS	9-14-13	5.00
E	CONSOLIDATION COAL COMPANY MURRAY ENERGY	9-14-12	74.47
F	BRADLEY CROW, ET AL	9-14-16	53.85
G	J. F. CROW ESTATE, ET AL	9-11-12	162.88
H	SAMUEL & HEATHER SUHODOLSKI	9-14-1	86.48
I	MICHAEL WHETZEL	9-11-13	91.65

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 58°22' W	1149.16'
L2	N 11°28' W	1564.88'

CURVE TABLE

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	63.27'	222.02'	S 66°29' E	63.06'
C2	80.92'	76.90'	N 73°46' E	77.24'
C3	82.04'	170.03'	N 24°43' E	81.24'
C4	184.74'	614.02'	N 01°08' E	184.04'
C5	178.72'	888.12'	N 12°39' W	178.42'
C6	243.36'	1384.25'	N 23°28' W	243.05'



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
 slswv.com

LEGEND

AS DRILLED ———

PROPOSED - - - - -

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

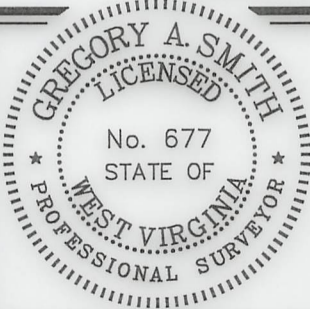
NAD'83 S.P.C.(FT)	N. 466,566.14	E. 1,633,462.77
NAD'83 GEO.	LAT-(N) 39.774860	LONG-(W) 80.692062
NAD'83 UTM (M)	N. 4,402,814.66	E. 526,371.68

LANDING POINT

NAD'83 S.P.C.(FT)	N. 466,378.1	E. 1,634,995.8
NAD'83 GEO.	LAT-(N) 39.774399	LONG-(W) 80.686599
NAD'83 UTM (M)	N. 4,402,765.2	E. 526,839.7

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 471,533.5	E. 1,632,186.9
NAD'83 GEO.	LAT-(N) 39.788449	LONG-(W) 80.696836
NAD'83 UTM (M)	N. 4,404,321.5	E. 525,957.7



(+) 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 00-00

LEASE # (SEE WW-6A1) A

SURFACE OWNER (SEE TABLE)

SCALE **1" = 2000'** FILE NO. **8811P5HMR -AD.dwg**
KEITH STERN N-5HM-REV1

DATE **FEBRUARY 15**, 20 **23**

REVISED _____, 20 _____

OPERATORS WELL NO. **KEITH STERN N-5HM**

API WELL NO. **47 — 051 — 02376**

NO. STATE COUNTY PERMIT

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

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

DESIGNATED AGENT **DARREN BROWN - CT CORPORATION** ADDRESS **5098 WASHINGTON ST. W, STE 407 CHARLESTON, WV 25313-1561**

COUNTY NAME PERMIT

**KEITH STERN N LEASE
WELL 5HM
TUG HILL OPERATING**

8,487' B.H. A.D. 7,138' T.H. A.D.

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

B.H. A.D.

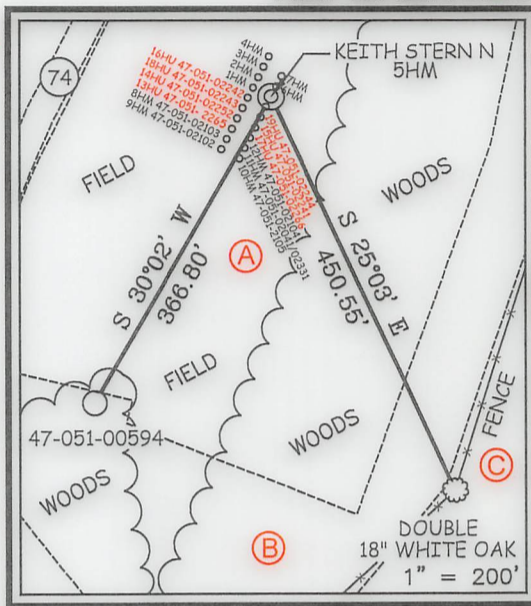
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17)		
NAD'83 S.P.C.(FT)	N. 466,566.14	E. 1,633,462.77
NAD'83 GEO.	LAT-(N) 39.774860	LONG-(W) 80.692062
NAD'83 UTM (M)	N. 4,402,814.66	E. 526,371.68
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 466,378.1	E. 1,634,995.8
NAD'83 GEO.	LAT-(N) 39.774399	LONG-(W) 80.686599
NAD'83 UTM (M)	N. 4,402,765.2	E. 526,839.7
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 471,533.5	E. 1,632,186.9
NAD'83 GEO.	LAT-(N) 39.788449	LONG-(W) 80.696836
NAD'83 UTM (M)	N. 4,404,321.5	E. 525,957.7

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°40'00"
1,178' B.H.A.D.
6,123' T.H. A.D.

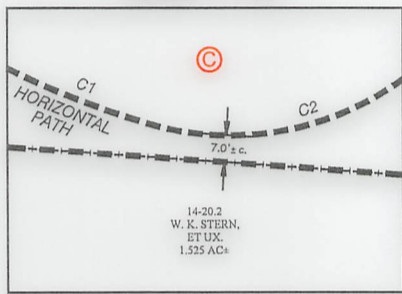
MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
9-13-11.1	SAMUEL & HEATHER SUHODOLSKI	0.49
9-13-14	MARGARET K. FOX - LIFE	3.00
9-14-1.1	MICHAEL L. ALVAREZ	1.6
9-14-1.2	KENNETH N. & TERESA A. SMERTNECK	1.02
9-14-2	MICHAEL L. ALVAREZ	0.75
9-14-3	MICHAEL L. ALVAREZ	NORTH P/O 3 PCLS
9-14-4	MICHAEL L. ALVAREZ	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.
9-14-20.1	WILLIAM K. STERN, ET UX	1.321
9-14-20.2	WILLIAM K. STERN, ET UX	1.525
9-14-20.3	WILLIAM K. STERN, ET UX	0.831
9-14-45	GEORGE R. TAYLOR, ET UX	10.98
9-14-46.1	MARHA JANE FAZZARO	1.512

T.H. A.D.

REFERENCES



DETAIL SCALE: 1" = 50'



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-5HM
API WELL NO. 47 - 051 - 02376
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8811P5HMR -AD.dwg
KEITH STERN N-5HM-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 INJECTION _____ WASTE DISPOSAL _____ IF "GAS" PRODUCTION X STORAGE _____ DEEP _____ SHALLOW X
LOCATION: GROUND = 745.30' 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: 6,410' / TMD: 12,919'

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

COUNTY NAME PERMIT