

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

API 47-051-02101 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-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 4,402,821.23 Easting 526,374.90
Landing Point of Curve Northing 4,402,970.3 Easting 527,268.0
Bottom Hole Northing 4,404,689.0 Easting 526,269.7

Elevation (ft) 741.20' 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 10/22/2018 Date drilling commenced apud:10/10/2020 big rig: 7/5/2022 Date drilling ceased 7/22/2022
Date completion activities began 2/14/2023 Date completion activities ceased 3/28/2023
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

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

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APPROVED

Reviewed by:
SA 9/1/2023
09/22/2023

API 47- 051 - 02101 Farm name TH Exploration, LLC Well number Keith Stern 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"	540'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	540'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	2,307'	NEW	36#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	14,461'	NEW	20#	N/A	Y
Tubing		2 7/8"	7,231'	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	1.2	840	0	8
Coal	A	700	15.6	1.2	840	0	8
Intermediate 1	A	760	15	1.38	1048.8	0	8
Intermediate 2							
Intermediate 3							
Production	A	3270'	14.5	1.23	4022	0	8
Tubing							

Drillers TD (ft) 14,510' Loggers TD (ft) n/a
 Deepest formation penetrated Marcellus Plug back to (ft) n/a
 Plug back procedure n/a

Kick off depth (ft) 6,476'

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 Office of Oil and Gas

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

09/22/2023

API 47- 051 - 02101

Farm name TH Exploration, LLC

Well number Keith Stern N-7HM

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	*see attached				

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	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)
	attached							

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Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS	
<u>MARCELLUS</u>	<u>6,323'-6,295'</u> TVD	<u>7,992'-14,510'</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 2941 psi Bottom Hole _____ psi DURATION OF TEST 4 hrs

OPEN FLOW Gas 1133.85 mcfpd Oil 24 bpd NGL 0 bpd Water 696 bpd GAS MEASURED BY Estimated Orifice Pilot

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 (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	<u>0</u>		<u>0</u>		
<u>*see attached</u>					

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

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



**KEITH STERN N-7HM
PEFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	2/14/2023	14,278	14,325	36	MARCELLUS
2	2/15/2023	14,075	14,227	48	MARCELLUS
3	2/16/2023	13,901	14,053	48	MARCELLUS
4	2/17/2023	13,727	13,879	48	MARCELLUS
5	2/18/2023	13,552	13,705	48	MARCELLUS
6	2/19/2023	13,379	13,531	48	MARCELLUS
7	2/20/2023	13,205	13,357	48	MARCELLUS
8	2/21/2023	13,031	13,183	48	MARCELLUS
9	2/22/2023	12,857	13,009	48	MARCELLUS
10	2/23/2023	12,683	12,835	48	MARCELLUS
11	2/25/2023	12,509	12,661	48	MARCELLUS
12	2/26/2023	12,335	12,487	48	MARCELLUS
13	2/27/2023	12,161	12,313	48	MARCELLUS
14	2/28/2023	11,813	11,965	48	MARCELLUS
15	3/3/2023	11,813	11,966	48	MARCELLUS
16	3/5/2023	11,639	11,792	48	MARCELLUS
17	3/6/2023	11,465	11,618	48	MARCELLUS
18	3/8/2023	11,291	11,444	48	MARCELLUS
19	3/9/2023	11,117	11,270	48	MARCELLUS
20	2/25/2023	10,943	11,096	48	MARCELLUS
21	3/12/2023	10,769	10,922	48	MARCELLUS
22	3/14/2023	10,595	10,748	48	MARCELLUS
23	3/15/2023	10,421	10,574	48	MARCELLUS
24	3/17/2023	10,247	10,400	48	MARCELLUS
25	3/18/2023	10,073	10,226	48	MARCELLUS
26	3/20/2023	9,899	10,052	48	MARCELLUS
27	3/21/2023	9,725	9,878	48	MARCELLUS
28	3/23/2023	9,551	9,704	48	MARCELLUS
29	3/25/2023	9,377	9,530	48	MARCELLUS
30	3/25/2023	9,203	9,356	48	MARCELLUS
31	3/26/2023	9,029	9,182	48	MARCELLUS
32	3/26/2023	8,855	9,008	48	MARCELLUS
33	3/27/2023	8,681	8,834	48	MARCELLUS
34	3/27/2023	8,507	8,660	48	MARCELLUS
35	3/27/2023	8,333	8,486	48	MARCELLUS
36	3/27/2023	8,159	8,312	48	MARCELLUS
37	3/28/2023	7,985	8,138	48	MARCELLUS

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KEITH STERN N-7HM
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	66.00	8291	6188	3867	254900	6,532	0
2	89.00	7099	5190	9166	448500	8,558	0
3	90.00	7407	5185	5161	443640	9,115	0
4	90.00	7260	5275	5186	445440	8,539	0
5	90.00	7342	5375	5265	441725	8,137	0
6	90.00	7169	5226	5143	444080	8,381	0
7	90.00	7120	5222	5168	447660	8,503	0
8	90.00	7148	5183	4918	446040	8,554	0
9	90.00	7256	5226	5197	442760	8,409	0
10	90.00	7065	4981	4992	442700	8,564	0
11	90.00	7020	5002	5091	446090	8,391	0
12	90.00	7018	5074	4943	445380	8,479	0
13	91.00	7076	4884	4995	449500	8,387	0
14	90.00	7220	5115	5076	442420	8,259	0
15	89.00	7305	4988	5030	441190	9,573	0
16	90.00	7382	5099	4985	442420	8,666	0
17	90.00	7529	5074	5324	447650	8,401	0
18	90.00	7534	5091	4810	447310	8,441	0
19	87.00	7278	5088	4959	449100	8,428	0
20	90.00	7388	4839	5768	443580	8,446	0
21	90.00	7382	4940	5254	446620	8,010	0
22	88.00	7191	4870	4796	441900	8,039	0
23	89.00	7107	5068	5033	443480	8,304	0
24	88.00	7052	4803	5096	440060	8,569	0
25	90.00	7083	5053	4999	439760	8,029	0
26	88.00	7028	4959	5118	438760	8,113	0
27	90.00	7192	5166	4921	443840	8,613	0
28	90.00	7031	4932	5155	442100	8,247	0
29	90.00	7147	4907	4866	437840	8,329	0
30	90.00	7057	5196	5108	438180	8,208	0
31	90.00	6990	5118	5066	437080	8,031	0
32	90.00	7033	4916	5194	438570	7,895	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	90.00	6914	5095	4890	441510	7,992	0
34	89.00	6747	5258	5065	441280	8,183	0

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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	1543	1717	1545	1722	Sandstone
Big Lime	1717	1783	1722	1790	Limestone
Big Injun	1783	2001	1790	2014	Sandstone
Weir	2001	2204	2014	2227	Sandstone
Berea	2204	2467	2227	2517	Sandstone
Gordon	2467	2547	2517	2610	Sandstone
Fifty Foot	2547	3129	2610	3336	Sandstone
Speechley	3129	4582	3336	5254	Sandstone
Benson	4582	4986	5254	5788	Sandstone
Alexander	4986	5624	5788	6614	Siltstone
Rhinestreet	5624	6092	6614	7210	Black Shale
Middlesex	6092	6169	7210	7335	Black Shale
Geneseo/Burkett	6169	6194	7335	7381	Black Shale
Tully	6194	6221	7381	7437	Limestone
Hamilton	6221	6302	7437	7729	Gray Shale
Marcellus	6302	-	7729	-	Black Shale

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/14/2023
Job End Date:	3/28/2023
State:	West Virginia
County:	Marshall
API Number:	47-051-02101-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Keith Stern N 7HM
Latitude:	39.77491863
Longitude:	-80.69202368
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,302
Total Base Water Volume (gal):	12,928,272
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	86.59720	None
Sand (40/70 White Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	8.55282	None
Sand (100 Mesh Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	3.22003	None
Sand (30/50 White Proppant)	Tug Hill Operating	Proppant	Silica Substrate	14808-60-7	100.00000	1.22583	None
Hydrochloric Acid (7.5%)	CNR	Acidizing	Water	7732-18-5	85.00000	0.23617	None
			Hydrochloric Acid (Hydrogen Chloride)	7647-01-0	37.00000	0.10280	None
StimStream FR 9800	Chemstream	Friction Reducer	Alkanes, C16-20-iso-	90622-59-6	25.00000	0.01914	None
			Butene, homopolymer	9003-29-6	25.00000	0.01914	None
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00230	None

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MC MX 5-3886	Multi-Chem	Biocide					
			Calcium nitrate	13477-34-4	60.00000	0.02347	None
LD-7750W	Multi-Chem	Scale Inhibitor					
			Methanol	67-56-1	60.00000	0.00524	None
			Phosphonic Acid Salt	Proprietary	5.00000	0.00044	None
ProHib 100	CNR	Acid Inhibitor					
			2-Butoxyethanol	111-76-2	60.00000	0.00051	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	0.23617	
			Butene, homopolymer	9003-29-6	25.00000	0.01914	
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00230	
			Phosphonic Acid Salt	Proprietary	5.00000	0.00044	
			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.

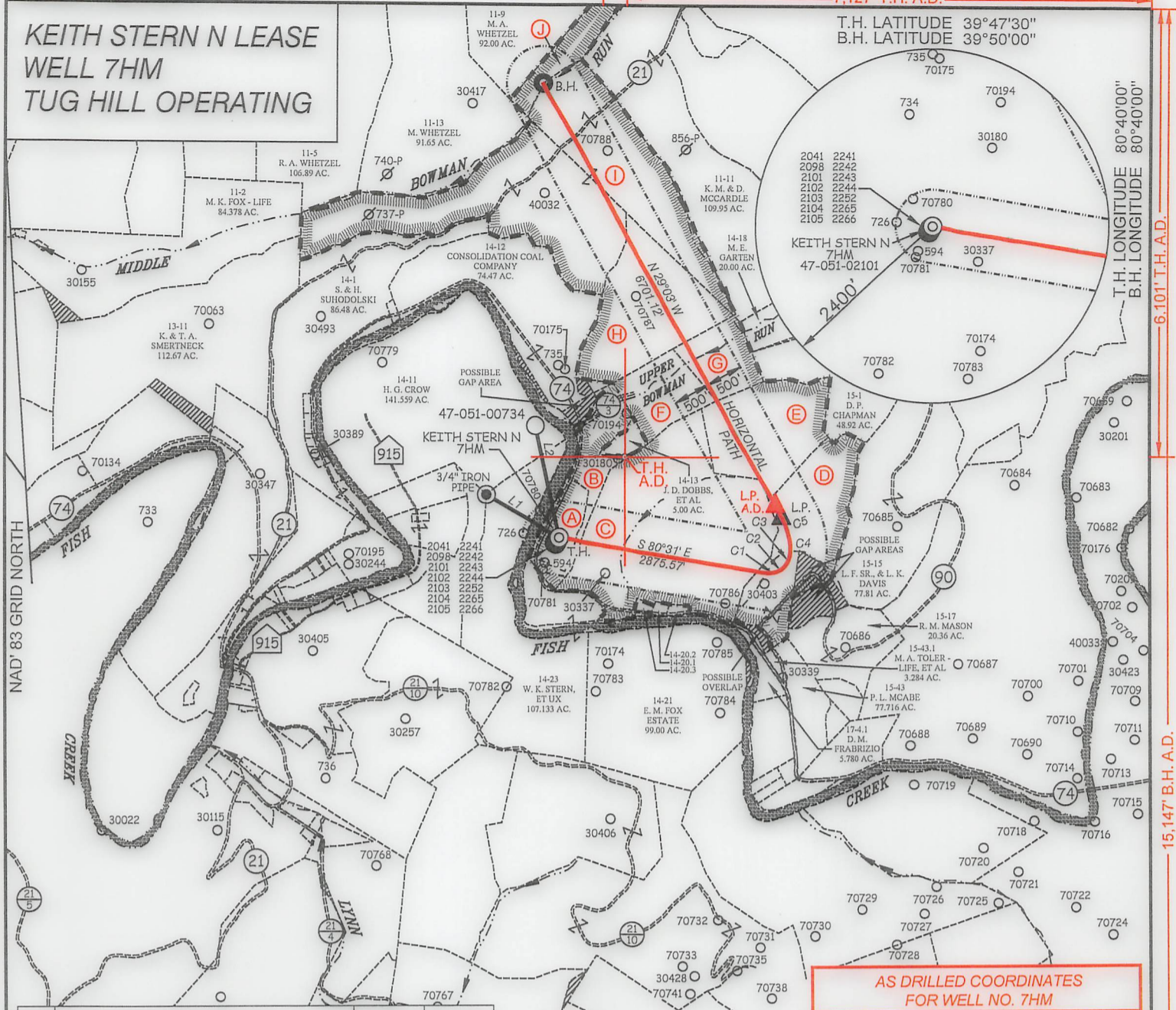
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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**KEITH STERN N LEASE
WELL 7HM
TUG HILL OPERATING**

7,449' B.H. A.D.
7,127' T.H. A.D.

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



NAD'83 GRID NORTH

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°40'00"
6,101' T.H. A.D.
15,147' B.H. A.D.

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	WILLIAM K. & BETTY L. STERN	9-15-16	50.13
E	DAVID P. CHAPMAN	9-14-19	42.87
F	JOHN D. DOBBS & GARY L. DOBBS	9-14-15	21.78
G	TH EXPLORATION, LLC	9-14-17	19.18
H	BRADLEY CROW, ET AL	9-14-16	53.85
I	J. F. CROW ESTATE, ET AL	9-11-12	162.88
J	ROBERT L. CLARK	9-11-10	18.00

MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
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

AS DRILLED COORDINATES FOR WELL NO. 7HM

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

NAD'83 S.P.C.(FT) N. 466,587.52 E. 1,633,473.69
 NAD'83 GEO. LAT-(N) 39.774919 LONG-(W) 80.692024
 NAD'83 UTM (M) N. 4,402,821.23 E. 526,374.90

LANDING POINT

NAD'83 S.P.C.(FT) N. 467,027.7 E. 1,636,412.5
 NAD'83 GEO. LAT-(N) 39.776234 LONG-(W) 80.681599
 NAD'83 UTM (M) N. 4,402,970.3 E. 527,268.0

BOTTOM HOLE

NAD'83 S.P.C.(FT) N. 472,722.5 E. 1,633,230.9
 NAD'83 GEO. LAT-(N) 39.791751 LONG-(W) 80.693178
 NAD'83 UTM (M) N. 4,404,689.0 E. 526,269.7

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 59°33' W	1147.50'
L2	N 12°02' W	1546.18'

CURVE TABLE

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	118.72'	271.59'	N 84°56' E	117.78'
C2	112.58'	228.17'	N 57°10' E	111.44'
C3	230.76'	372.08'	N 22°22' E	227.08'
C4	259.24'	656.21'	N 05°49' W	257.55'
C5	225.66'	1031.27'	N 22°37' W	225.21'



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 ——— (Red line)

PROPOSED - - - - - (Green dashed line)

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

NAD'83 S.P.C.(FT) N. 466,587.52 E. 1,633,473.69
 NAD'83 GEO. LAT-(N) 39.774919 LONG-(W) 80.692024
 NAD'83 UTM (M) N. 4,402,821.23 E. 526,374.90

LANDING POINT

NAD'83 S.P.C.(FT) N. 466,858.9 E. 1,636,494.7
 NAD'83 GEO. LAT-(N) 39.775773 LONG-(W) 80.681289
 NAD'83 UTM (M) N. 4,402,919.3 E. 527,293.9

BOTTOM HOLE

NAD'83 S.P.C.(FT) N. 472,717.3 E. 1,633,241.3
 NAD'83 GEO. LAT-(N) 39.791737 LONG-(W) 80.693140
 NAD'83 UTM (M) N. 4,404,687.5 E. 526,272.9



(+) 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)

COUNTY NAME _____

PERMIT _____

SCALE 1" = 2000' FILE NO. 8811P7HMR2-AD.dwg
 KEITH STERN N-7HM-REV2

DATE FEBRUARY 15, 20 23

REVISED _____

OPERATORS WELL NO. KEITH STERN N-7HM

API WELL NO. 47 — 051 — 02101

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 400 FORT WORTH, TX 76107

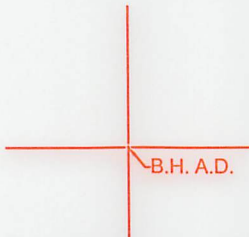
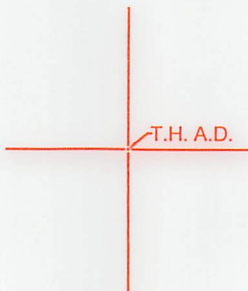
DESIGNATED AGENT DARREN BROWN - CT CORPORATION
 ADDRESS 5098 WASHINGTON ST. W, STE 407 CHARLESTON, WV 25313-1561

**KEITH STERN 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. 466,587.52	E. 1,633,473.69
NAD'83 GEO.	LAT-(N) 39.774919	LONG-(W) 80.692024
NAD'83 UTM (M)	N. 4,402,821.23	E. 526,374.90
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 466,858.9	E. 1,636,494.7
NAD'83 GEO.	LAT-(N) 39.775773	LONG-(W) 80.681289
NAD'83 UTM (M)	N. 4,402,919.3	E. 527,293.9
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 472,717.3	E. 1,633,241.3
NAD'83 GEO.	LAT-(N) 39.791737	LONG-(W) 80.693140
NAD'83 UTM (M)	N. 4,404,687.5	E. 526,272.9

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



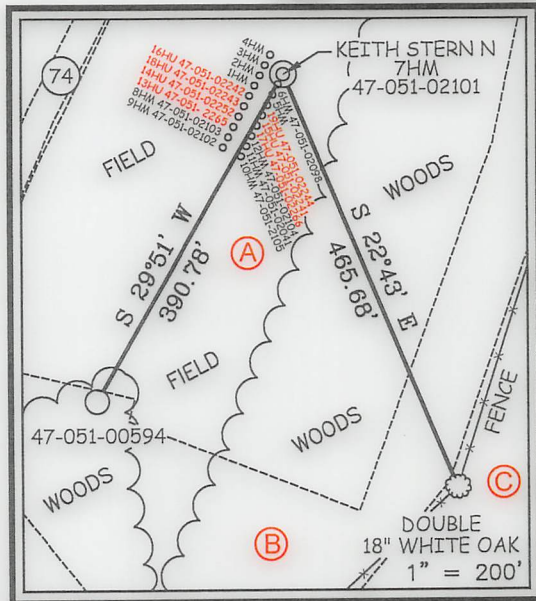
NOTES ON SURVEY

1. 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.
2. WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'.
3. PLAT UPDATED TO SHOW AS-DRILLED PATH.
4. AS DRILLED DATA PROVIDED BY TUG HILL OPERATING.



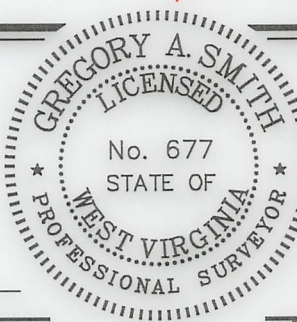
12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
slswv.com

REFERENCES



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 _____
OPERATORS WELL NO. KEITH STERN N-7HM
API WELL NO. **47 - 051 - 02101**
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8811P7HMR2-AD.dwg
KEITH STERN N-7HM-REV2
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: ELEVATION GROUND = 741.20' 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: 6,417' / TMD: 14,479'

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

15,147' B.H. A.D.

6,101' T.H. A.D.

COUNTY NAME PERMIT

09/22/2023