

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

API 47-051-02104 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 S-12HM
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 4,402,801.53 Easting 526,365.24
Landing Point of Curve Northing 4,402,619.0 Easting 526,956.6
Bottom Hole Northing 4,400,772.6 Easting 528,004.8

Elevation (ft) 742.90' 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 spud: 10/5/2020 big rig: 7/23/2022 Date drilling ceased 8/3/2022
Date completion activities began 1/1/2023 Date completion activities ceased 1/14/2023
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 N
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 [Signature]
~~12/08/2023~~

API 47- 051 - 02104 Farm name TH Exploration, LLC Well number Keith Stern S-12HM

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"	521'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	521'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	2,264'	NEW	36#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	13,984'	NEW	20#	N/A	Y
Tubing		2 7/8"	6,992'	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						
Surface	A						
Coal	A						
Intermediate 1	A						
Intermediate 2							
Intermediate 3							
Production	A						
Tubing							

Drillers TD (ft) 14,013' Loggers TD (ft) n/a
 Deepest formation penetrated Marcellus Plug back to (ft) n/a
 Plug back procedure n/a

Kick off depth (ft) 6,193'

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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API 47- 051 - 02104 Farm name TH Exploration, LLC Well number Keith Stern S-12HM

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	
MARCELLUS	6,313'-6,464' TVD	6,943'-14,013' MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3682 psi Bottom Hole _____ psi DURATION OF TEST 4 hrs

OPEN FLOW Gas 1331.83 mcfpd Oil 48 bpd NGL 0 bpd Water 576 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

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 S-12HM
PEFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	1/1/2023	13,792	13,841	30	MARCELLUS
2	1/2/2023	13,592	13,737	30	MARCELLUS
3	1/2/2023	13,417	13,563	30	MARCELLUS
4	1/2/2023	13,242	13,388	30	MARCELLUS
5	1/2/2023	13,067	13,213	30	MARCELLUS
6	1/4/2023	12,892	13,038	30	MARCELLUS
7	1/4/2023	12,717	12,863	30	MARCELLUS
8	1/5/2023	12,542	12,688	30	MARCELLUS
9	1/5/2023	12,367	12,513	30	MARCELLUS
10	1/5/2023	12,192	12,338	30	MARCELLUS
11	1/6/2023	12,017	12,163	30	MARCELLUS
12	1/6/2023	11,842	11,988	30	MARCELLUS
13	1/6/2023	11,667	11,813	30	MARCELLUS
14	1/7/2023	11,492	11,638	30	MARCELLUS
15	1/7/2023	11,317	11,463	30	MARCELLUS
16	1/7/2023	11,142	11,288	30	MARCELLUS
17	1/7/2023	10,967	11,113	30	MARCELLUS
18	1/8/2023	10,792	10,938	30	MARCELLUS
19	1/8/2023	10,617	10,763	30	MARCELLUS
20	1/8/2023	10,442	10,588	30	MARCELLUS
21	1/9/2023	10,267	10,413	30	MARCELLUS
22	1/9/2023	10,092	10,238	30	MARCELLUS
23	1/9/2023	9,917	10,063	30	MARCELLUS
24	1/9/2023	9,742	9,888	30	MARCELLUS
25	1/10/2023	9,567	9,713	30	MARCELLUS
26	1/10/2023	9,392	9,538	30	MARCELLUS
27	1/10/2023	9,217	9,363	30	MARCELLUS
28	1/10/2023	9,042	9,188	30	MARCELLUS
29	1/11/2023	8,867	9,013	30	MARCELLUS
30	1/11/2023	8,692	8,838	30	MARCELLUS
31	1/11/2023	8,517	8,663	30	MARCELLUS
32	1/12/2023	8,342	8,488	30	MARCELLUS
33	1/12/2023	8,167	8,313	30	MARCELLUS
34	1/12/2023	7,992	8,138	30	MARCELLUS
35	1/12/2023	7,817	7,963	30	MARCELLUS
36	1/13/2023	7,642	7,788	30	MARCELLUS
37	1/13/2023	7,467	7,613	30	MARCELLUS
38	1/14/2023	7,292	7,438	30	MARCELLUS
39	1/14/2023	7,117	7,263	30	MARCELLUS
40	1/14/2023	6,942	7,088	30	MARCELLUS

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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	8251	3.00		5062	0	1,438	0
2	7086	86.00	6225	5024	444200	8,058	0
3	7075	89.00	5348	5278	441960	8,178	0
4	7152	88.00	5602	5000	444480	7,816	0
5	7245	86.00	5209	5001	440000	10,355	0
6	7124	89.00	5156	5097	439680	7,742	0
7	6729	87.00	5275	4856	441842	8,700	0
8	6923	88.00	5380	5150	441200	7,796	0
9	7042	89.00	5702	5234	446180	8,027	0
10	6827	89.00	5331	5134	446540	8,293	0
11	6889	87.00	5186	5070	441990	8,056	0
12	7053	90.00	5395	5187	441220	8,177	0
13	6674	89.00	5116	5146	442840	7,906	0
14	6806	90.00	5258	5189	446500	8,588	0
15	6951	89.00	5541	5403	446860	7,998	0
16	6821	90.00	5205	5067	443880	7,628	0
17	6629	88.00	5459	5367	442600	7,543	0
18	6708	88.00	5705	5487	444900	7,799	0
19	6800	90.00	6465	5620	448880	7,778	0
20	6682	89.00	5415	5263	440560	8,243	0
21	6798	88.00	5638	5567	442500	8,165	0
22	6727	89.00	5266	5296	443920	8,119	0
23	6874	90.00	5380	5446	445480	7,618	0
24	6994	88.00	5909	5458	440300	7,580	0
25	6908	89.00	5181	5292	442200	7,306	0
26	6720	89.00	5126	5342	444040	8,200	0
27	6699	88.00	5286	5314	444320	8,213	0
28	6554	89.00	5334	5132	445300	8,229	0
29	6472	88.30	5647	5371	441300	8,203	0
30	6530	89.00	5257	5199	445240	8,156	0
31	6508	89.00	5114	5233	445680	7,808	0
32	6521	90.00	5279	5040	444960	7,911	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)
33	6428	89.00	5204	5424	440840	8,107	0
34	6346	89.90	5424	5067	446380	8,107	0
35	6430	90.00	5255	5100	446980	7,849	0
36	6457	88.00	5461	4879	440070	7,599	0
37	6556	86.00	5409	4863	448520	8,089	0
38	6461	90.00	5533	4854	443220	7,769	0
39	6320	89.00	5155	5291	442510	8,550	0
40	6564	90.00	6082	5534	437900	8,014	0

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KEITH STERN S-12HM

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 FID
Maxton	1539	1713	1540	1715	Sandstone
Big Lime	1713	1779	1715	1782	Limestone
Big Injun	1779	1997	1782	2001	Sandstone
Weir	1997	2200	2001	2204	Sandstone
Berea	2200	2463	2204	2468	Sandstone
Gordon	2463	2543	2468	2548	Sandstone
Fifty Foot	2543	3125	2548	3133	Sandstone
Speechley	3125	4606	3133	4742	Sandstone
Benson	4606	4981	4742	5171	Sandstone
Alexander	4981	5609	5171	5882	Siltstone
Rhinestreet	5609	6064	5882	6414	Black Shale
Middlesex	6064	6142	6414	6521	Black Shale
Geneseo/Burkett	6142	6170	6521	6564	Black Shale
Tully	6170	6198	6564	6609	Limestone
Hamilton	6198	6285	6609	6805	Gray Shale
Marcellus	6285	-	6805	-	Black Shale

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/1/2023
Job End Date:	1/14/2023
State:	West Virginia
County:	Marshall
API Number:	47-051-02104-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Keith Stern S-12HM
Latitude:	39.77474900
Longitude:	-80.69214100
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,464
Total Base Water Volume (gal):	13,962,396
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	87.79593	None
			Silica Substrate	14808-60-7	100.00000	11.78860	None
Hydrochloric Acid (7.5%)	Producers Service Corp.	Acidizing	Water	7732-18-5	85.00000	0.27598	None
			Hydrochloric Acid (Hydrogen Chloride)	7647-01-0	37.00000	0.12013	None
			Alkanes, C16-20-iso-	90622-59-6	25.00000	0.02042	None
StimStream FR 9800	Chemstream	Friction Reducer	Butene, homopolymer	9003-29-6	25.00000	0.02042	None
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00245	None
			Methanol	67-56-1	60.00000	0.00508	None
LD-7750W	Multi-Chem	Scale Inhibitor	Phosphonic Acid Salt	Proprietary	5.00000	0.00042	None
			Acetic acid	64-19-7	90.00000	0.00057	None
4-N-	Producers Service Corp.	Corrosion Inhibitor					

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			Methanol	67-56-1	10.00000	0.00006	None
			2-Ethylhexanol	104-76-7	10.00000	0.00006	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	0.12013	
			Alkanes, C16-20-iso-	90622-59-6	25.00000	0.02042	
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00245	
			Phosphonic Acid Salt	Proprietary	5.00000	0.00042	
			2-Ethylhexanol	104-76-7	10.00000	0.00006	
			Methanol	67-56-1	10.00000	0.00006	
			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.

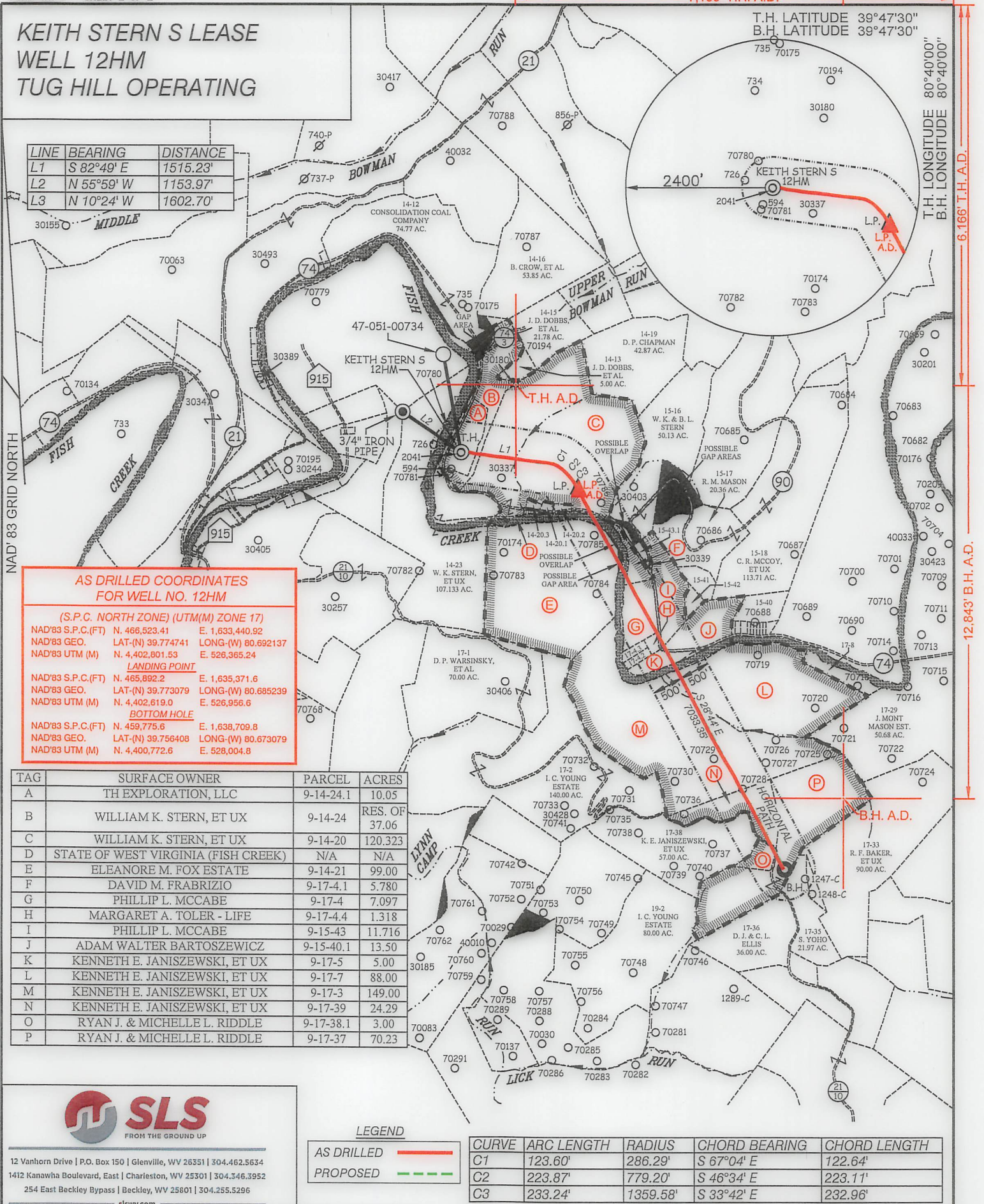
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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KEITH STERN S LEASE WELL 12HM TUG HILL OPERATING

LINE	BEARING	DISTANCE
L1	S 82°49' E	1515.23'
L2	N 55°59' W	1153.97'
L3	N 10°24' W	1602.70'

NAD '83 GRID NORTH



**AS DRILLED COORDINATES
FOR WELL NO. 12HM**

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

NAD'83 S.P.C.(FT)	N. 466,523.41	E. 1,633,440.92
NAD'83 GEO.	LAT-(N) 39.774741	LONG-(W) 80.692137
NAD'83 UTM (M)	N. 4,402,801.53	E. 526,365.24

LANDING POINT

NAD'83 S.P.C.(FT)	N. 465,892.2	E. 1,635,371.6
NAD'83 GEO.	LAT-(N) 39.773079	LONG-(W) 80.685239
NAD'83 UTM (M)	N. 4,402,619.0	E. 526,956.6

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 459,775.6	E. 1,638,709.8
NAD'83 GEO.	LAT-(N) 39.756408	LONG-(W) 80.673079
NAD'83 UTM (M)	N. 4,400,772.6	E. 528,004.8

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	STATE OF WEST VIRGINIA (FISH CREEK)	N/A	N/A
E	ELEANORE M. FOX ESTATE	9-14-21	99.00
F	DAVID M. FRABRIZIO	9-17-4.1	5.780
G	PHILLIP L. MCCABE	9-17-4	7.097
H	MARGARET A. TOLER - LIFE	9-17-4.4	1.318
I	PHILLIP L. MCCABE	9-15-43	11.716
J	ADAM WALTER BARTOSZEWICZ	9-15-40.1	13.50
K	KENNETH E. JANISZEWSKI, ET UX	9-17-5	5.00
L	KENNETH E. JANISZEWSKI, ET UX	9-17-7	88.00
M	KENNETH E. JANISZEWSKI, ET UX	9-17-3	149.00
N	KENNETH E. JANISZEWSKI, ET UX	9-17-39	24.29
O	RYAN J. & MICHELLE L. RIDDLE	9-17-38.1	3.00
P	RYAN J. & MICHELLE L. RIDDLE	9-17-37	70.23



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	

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	123.60'	286.29'	S 67°04' E	122.64'
C2	223.87'	779.20'	S 46°34' E	223.11'
C3	233.24'	1359.58'	S 33°42' E	232.96'

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

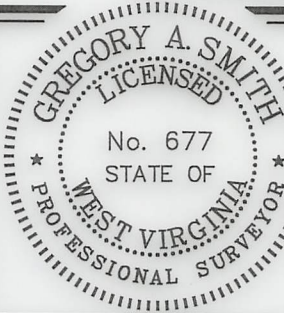
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NAD'83 GEO.	LAT-(N) 39.774741	LONG-(W) 80.692137
NAD'83 UTM (M)	N. 4,402,801.53	E. 526,365.24

LANDING POINT

NAD'83 S.P.C.(FT)	N. 465,938.9	E. 1,635,348.5
NAD'83 GEO.	LAT-(N) 39.773206	LONG-(W) 80.685324
NAD'83 UTM (M)	N. 4,402,633.2	E. 526,949.4

BOTTOM HOLE

NAD'83 S.P.C.(FT)	N. 459,771.2	E. 1,638,728.9
NAD'83 GEO.	LAT-(N) 39.756397	LONG-(W) 80.673011
NAD'83 UTM (M)	N. 4,400,771.4	E. 528,010.6



(+) 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)	
SURFACE OWNER (SEE TABLE)	

COUNTY NAME
PERMIT

SCALE 1" = 2000' FILE NO. 8811P12HMv2-AD.dwg

DATE FEBRUARY 15, 20 23

REVISED _____, 20 _____

OPERATORS WELL NO. KEITH STERN S-12HM

API WELL NO. 47 — 051 — 02104
 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

**KEITH STERN S LEASE
WELL 12HM
TUG HILL OPERATING**

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

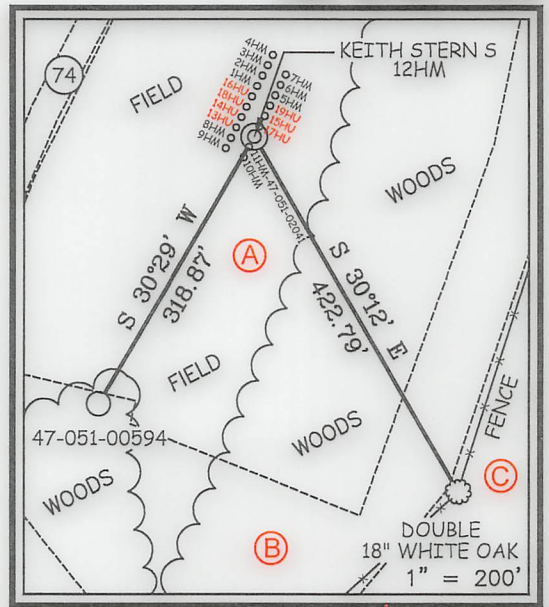
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17)

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NAD'83 GEO.	LAT-(N) 39.773206	LONG-(W) 80.685324
NAD'83 UTM (M)	N. 4,402,633.2	E. 526,949.4
<u>BOTTOM HOLE</u>		
NAD'83 S.P.C.(FT)	N. 459,771.2	E. 1,638,728.9
NAD'83 GEO.	LAT-(N) 39.756397	LONG-(W) 80.673011
NAD'83 UTM (M)	N. 4,400,771.4	E. 528,010.6

TAX MAP/PCL	ADJOINING SURFACE OWNER	ACRES
14-20.1	WILLIAM K. STERN, ET UX	1.321
14-20.2	WILLIAM K. STERN, ET UX	1.525
14-20.3	WILLIAM K. STERN, ET UX	0.831
15-40	ROBERT WILLIAM BERISFORD	13.50
15-41	CHARLES RICHARD MCCOY, ET UX	4.50
15-42	ROBERT MATHEW MASON	2.63
15-43.1	MARGARET A. TOLER - LIFE, ET AL	3.284
17-4.2	RICKY E. DAVIS	1.301
17-4.3	SYLVIA JEAN NEEHOUSE	1.329
17-8	KEN & SUSAN JANISZEWSKI	6.00

7,159' T.H. A.D. 1,803' B.H.A.D. 80°40'00" T.H. LONGITUDE 80°40'00" B.H. LONGITUDE 6.166' T.H. A.D. 12.843' B.H. A.D.

REFERENCES



NOTES ON SURVEY

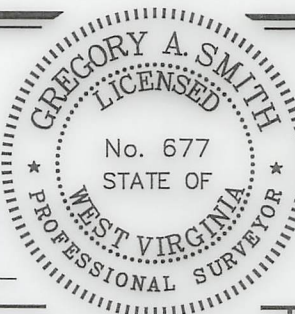
- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS OR DWELLINGS > 2500 SQ. FT. WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'.
- PLAT UPDATED TO SHOW AS-DRILLED PATH.
- AS DRILLED DATA PROVIDED BY TUG HILL 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
slsw.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 S-12HM
API WELL NO. 47 - 051 - 02104
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8811P12HMv2-AD.dwg
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 INJECTION _____ WASTE DISPOSAL _____ IF "GAS" PRODUCTION STORAGE _____ DEEP _____ SHALLOW

LOCATION: GROUND = 742.90' 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 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: 6,412' / TMD: 14,022'

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