

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

API 47 - 051 - 01912 County Marshall District Meade
Quad Glen Easton 7.5' Pad Name Heaven Hill 2 Field/Pool Name _____
Farm name Charles R. Hagedorn, Jr., Et Ux Well Number Heaven Hill 2-8HU
Operator (as registered with the OOG) Tug Hill Operating, LLC
Address 1320 S. University Drive, Suite 215 City Ft. Worth State TX Zip 76107

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,406,704.10 Easting 524,565.80
Landing Point of Curve Northing 4,406,079.00 Easting 524,471.40
Bottom Hole Northing 4,404,354.90 Easting 525,457.10

Elevation (ft) 1331' 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 RECEIVED
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other Office of Oil and Gas
Drilled with Cable Rotary JUL 10 2020

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 5/9/2017 Date drilling commenced 6/20/2017 Date drilling ceased 3/10/2018
Date completion activities began 9/24/2018 Date completion activities ceased 2/9/2019
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 1073' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1595' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 974' - 980' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
Jim Healy
7/27/2020

API 47-051 - 01912

Farm name Charles R. Hagedorn, Jr., Et Ux Well number Heaven Hill 2-8HU

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	26"	20"	1,156'	NEW	106.5#	N/A	Y
Coal	17 1/2"	13 3/8"	2,912'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	10,457'	NEW	47#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 1/2"	5 1/2"	18,912'	NEW	23#	N/A	Y
Tubing		2 7/8"		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		15.6	1.2		0	8
Surface	A	2020	15.6	1.2	2424	0	8
Coal	A	2020	15.6	1.2	2424	0	8
Intermediate 1	A	2397	15.6	1.19	2853	0	8
Intermediate 2	A	3789	14.5	1.19	4509	0	8
Intermediate 3							
Production	A	4723	16.5	1.17	5006	0	8
Tubing							

Drillers TD (ft) 18,948'

Loggers TD (ft) _____

Deepest formation penetrated Utica

Plug back to (ft) n/a

Plug back procedure _____

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Kick off depth (ft) 10,505'

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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 _____

**Heaven Hill 2W-8HU
PEFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	12/22/2018	18769	18816	12	Utica
2	12/23/2018	18491	18641	48	Utica
3	12/23/2018	18291	18441	48	Utica
4	12/23/2018	18091	18241	48	Utica
5	12/24/2018	17891	18041	48	Utica
6	12/24/2018	17691	17841	48	Utica
7	12/25/2018	17491	17641	48	Utica
8	12/25/2018	17291	17441	48	Utica
9	12/26/2018	17091	17241	48	Utica
10	12/26/2018	16891	17041	48	Utica
11	12/27/2018	16691	16841	48	Utica
12	12/27/2018	16491	16641	48	Utica
13	12/28/2018	16291	16441	48	Utica
14	12/28/2018	16091	16241	48	Utica
15	12/29/2018	15891	16041	48	Utica
16	12/29/2018	15691	15841	48	Utica
17	1/8/2019	15491	15641	48	Utica
18	1/9/2019	15291	15441	48	Utica
19	1/10/2019	15091	15241	48	Utica
20	1/10/2019	14891	15041	48	Utica
21	1/15/2019	14691	14841	48	Utica
22	1/16/2019	14491	14641	48	Utica
23	1/17/2019	14291	14441	48	Utica
24	1/18/2019	14091	14241	48	Utica
25	1/18/2019	13891	14041	48	Utica
26	1/19/2019	13691	13841	48	Utica
27	1/21/2019	13491	13641	48	Utica
28	1/23/2019	13291	13441	48	Utica
29	1/24/2019	13091	13241	48	Utica
30	1/25/2019	12891	13041	48	Utica
31	1/26/2019	12691	12841	48	Utica
32	1/27/2019	12491	12641	48	Utica
33	1/28/2019	12291	12441	48	Utica

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Heaven Hill 2W-6HU
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	82.3	11624	12244	7167	402720	9545	0
2	78.1	11474	10777	7460	422340	10868	0
3	81.6	11690	9649	7583	513500	11203	0
4	80.8	11292	9279	7824	504680	11395	0
5	79.7	11454	9616	8037	503480	11042	0
6	82.6	11066	9159	8001	511450	11469	0
7	78.9	11455	10454	8226	508805	10755	0
8	74.3	11741	8524	7273	511665	11773	0
9	84.1	11029	8178	7941	499280	13091	0
10	86.3	11397	8290	8046	510750	11212	0
11	84.4	11173	8640	8138	492500	11423	0
12	83.2	10958	8077	8184	511695	11404	0
13	81.9	10921	8227	8183	509365	11858	0
14	77.3	10918	8305	8010	508475	10377	0
15	76.5	11248	8390	7911	507780	10431	0
16	77.5	10878	8136	7658	507140	10043	0
17	77.9	11329	8109	7790	508150	10025	0
18	81.3	11226	8068	7888	507285	9870	0
19	79.9	10640	8078	7807	508595	10410	0
20	83.2	10651	7885	7957	508705	11506	0
21	84	11203	8504	7791	507430	10322	0
22	83	11041	8149	7972	515625	10064	0
23	84.8	11083	9002	7902	510395	10049	0
24	83.8	11098	8426	7802	510965	9951	0
25	83.4	10950	8261	8616	513285	10106	0
26	82.2	10677	8247	8807	510410	9988	0
27	81	10601	9243	8849	511330	10110	0
28	80.5	10709	9788	8880	510115	9859	0
29	83.3	11051	8702	8585	523545	10580	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	83.3	10727	8614	7795	511695	10267	0
31	78.1	10361	8392	7717	505430	11505	0
32	79.6	10934	8961	7933	511355	12130	0
33	76.1	10421	9120	7591	512665	12961	0
34	82.3	10433	8529	7721	515765	9920	0
35	78.4	10384	8282	7620	512170	10007	0
36	80.6	10181	8470	7771	509540	11026	0
37	80.7	10499	8812	7779	513315	9889	0
38	79.7	10456	9320	8133	516335	8954	0
39	79.8	10293	9444	7414	515410	9198	0
40	78.6	10429	8600	7509	506990	8901	0
41	76.7	10497	8951	7729	506750	8751	0

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/22/2018
Job End Date:	1/28/2019
State:	West Virginia
County:	Marshall
API Number:	47-051-01912-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Heaven Hill 2W 8HU
Latitude:	39.80995000
Longitude:	-80.71300000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	11,741
Total Base Water Volume (gal):	14,849,142
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	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	87.58810	Density = 8.34
Produced Water	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	0.55820	Density = 8.50

Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.10933	
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					
				Listed Below			
HYDROCHLORIC ACID, 22 BAUME	Halliburton	Solvent					
				Listed Below			
Sand-Premium White-40/70	Halliburton	Proppant					
				Listed Below			
OilPerm A	Halliburton	Non-ionic Surfactant					
				Listed Below			
SP BREAKER	Halliburton	Breaker					
				Listed Below			
MC LD-2850	MultiChem	Friction Reducer					
				Listed Below			
FDP-S1296-17	Halliburton	Acid Corrosion Inhibitor					

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				Listed Below			
MC MX 2-2822	MultiChem	Scale Inhibitor					
				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	11.64958	
			Hydrochloric acid	7647-01-0	30.00000	0.02664	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02167	
			Ethanaminium, N,N,N-trimethyl-2-[(1-oxo-2-propen-1-yl)oxy]-, chloride (1:1), polymer with 2-propenamide	69418-26-4	30.00000	0.02167	
			Guar gum	9000-30-0	100.00000	0.01917	
			Sodium chloride	7647-14-5	10.00000	0.00840	
			Methanol	67-56-1	100.00000	0.00747	
			Castor oil, ethoxylated	61791-12-6	10.00000	0.00722	
			Ammonium chloride	12125-02-9	10.00000	0.00722	
			Amines, polyethylenepoly-, ethoxylated, phosphonomethylated, sodium salts	70900-16-2	30.00000	0.00704	
			Sorbitan monooleate polyoxyethylene derivative	9005-65-6	5.00000	0.00361	
			9-Octadecenamide, n,n-bis-2(hydroxy-ethyl)-,(Z)	93-83-4	5.00000	0.00361	
			Alcohols, C12-16, ethoxylated	68551-12-2	5.00000	0.00361	
			Sodium persulfate	7775-27-1	100.00000	0.00054	
			Ethanol	64-17-5	60.00000	0.00021	
			Oxyalkylated nonyl phenolic resin	Proprietary	30.00000	0.00011	

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			Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.00011	
			Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00010	
			Modified thiourea polymer	Proprietary	30.00000	0.00010	
			Formaldehyde	50-00-0	0.10000	0.00010	
			Diethanolamine	111-42-2	0.10000	0.00007	
			Sodium glycolate	2836-32-0	0.10000	0.00007	
			1,4-Dioxane	123-91-1	0.10000	0.00007	
			Nitrotriacetic acid, trisodium salt monohydrate	5064-31-3	0.10000	0.00007	
			Ethylenediaminetetraacetic acid, tetrasodium salt	64-02-8	0.10000	0.00007	
			Hydroquinone monomethyl ether	150-76-5	0.10000	0.00007	
			Oxyalkylated phenolic resin	Proprietary	10.00000	0.00004	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00002	
			Naphthalene	91-20-3	5.00000	0.00002	
			Hexadecene	629-73-2	5.00000	0.00002	
			Propargyl alcohol	107-19-7	5.00000	0.00002	
			Ethoxylated alcohols	Proprietary	5.00000	0.00002	
			1,2,4 Trimethylbenzene	95-63-6	1.00000	0.00000	
			Sodium sulfate	7757-82-6	0.10000	0.00000	

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- * 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)

HEAVEN HILL 2-8HU

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	1896	2068	1897	2070	Sandstone
Big Lime	2068	2200	2070	2002	Limestone
Big Injun	2200	2494	2002	2496	Sandstone
Weir	2494	2692	2496	2694	Sandstone
Berea	2692	2954	2694	2956	Sandstone
Gordon	2954	3039	2956	3042	Sandstone
Fifty Foot	3039	3621	3042	3624	Sandstone
Speechley	3621	5131	3624	5134	Sandstone
Benson	5131	5454	5134	5459	Sandstone
Alexander	5454	6076	5459	6096	Siltstone
Rhinestreet	6076	6591	6096	6627	Black shale
Middlesex	6591	6677	6627	6714	Black shale
Geneseo/Burkett	6677	6693	6714	6730	Black shale
Tully	6693	6724	6730	6762	Limestone
Hamilton	6724	6799	6762	6839	Grey shale
Marcellus	6799	6848	6839	6890	Black shale
Onondaga	6848	7072	6890	7120	Limestone
Oriskany	7072	7176	7120	7227	Sandstone
Helderberg	7176	7546	7227	7604	Limestone
Salina	7546	8540	7604	8622	Salt/Anhydrite/LS
Lockport	8540	8914	8622	9004	Dolomite
Rose Hill	8914	9184	9004	9283	Shale
Packer Shell	9184	9391	9283	9496	Limestone
Clinton/Tuscarora	9391	9503	9496	9611	Sandstone
Juniata/Queenston	9503	10357	9611	10482	Red Shale
Reedsville	9857	11310	10482	11528	Grey Shale
Utica	11310	11579	11528	12083	Black Shale
Point Pleasant	11579	-	12083	-	Shale/Limestone

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Tug Hill Operating LLC
Well: Heaven Hill 2-08 HU (slot H)
Site: Heaven Hill 2
Project: Marshall County, West Virginia
Design: rev18

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Diag	Face	Vsect	Annotation
1 11772.00	61.05	156.70	11455.92	-1497.84	-608.45	0.00	0.00	11772.00 MD 11455.92 TVD	
2 11832.00	64.02	154.40	11483.59	-1546.29	-566.41	6.00	-35.00	1235.40 Proj, Begin 3.95°/100' build/turn	
3 11827.41	89.00	150.00	11632.13	-2092.93	-296.81	3.95	-10.33	1849.38 Begin 89.00° lateral	
4 18948.21	89.00	150.00	11745.50	-7699.56	2939.83	0.00	0.00	8241.72 PBHL/TD 18948.21 MD/11745.50 TVD	

ANNOTATIONS SURVEYS ORIGINAL HOLE

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Annotation
60.00	0.36	359.68	60.00	0.19	-0.16	Gyro	
898.00	1.10	62.38	897.96	5.61	-2.82	MWD surveys	
10463.00	11.49	221.42	10338.00	-948.00	-663.58	489.21	Survey @ 10463.00 MD 10338.00 TVD
11885.00	0.09	247.84	11747.82	-1050.85	-761.64	529.25	Survey @ 11885.00 MD 11747.83 TVD OH
11958.00	0.09	247.84	11820.82	-1050.90	-761.75	529.23	Survey projected to 11958.00 MD 11820.83 TVD OH

ANNOTATIONS SURVEYS SIDETRACK 01

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Annotation
10750.00	11.30	223.80	10619.07	-990.19	-703.42	-990.19	Tie into original hole @ 10750 MD
11679.00	39.50	174.20	11482.13	-1268.18	-794.74	-1268.18	Survey @ 11679.00 MD 11482.14 TVD ST1

ANNOTATIONS SURVEYS SIDETRACK 02

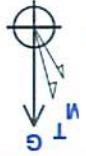
MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Annotation
10463.00	11.49	221.42	10338.00	-948.00	-663.58	650.87	Survey @ 10463.00 MD 10338.00 TVD
18676.00	89.27	151.69	11743.57	-7639.49	2887.55	8166.89	Survey @ 18676.00 MD 11743.57 TVD ST2
18953.00	89.27	151.69	11744.55	-7707.28	2924.08	8243.31	Survey projected to 18953.00 MD 11744.55 TVD ST2

Surface Location: RKB=131+33 @ 1364.00ust (Nabors X08)

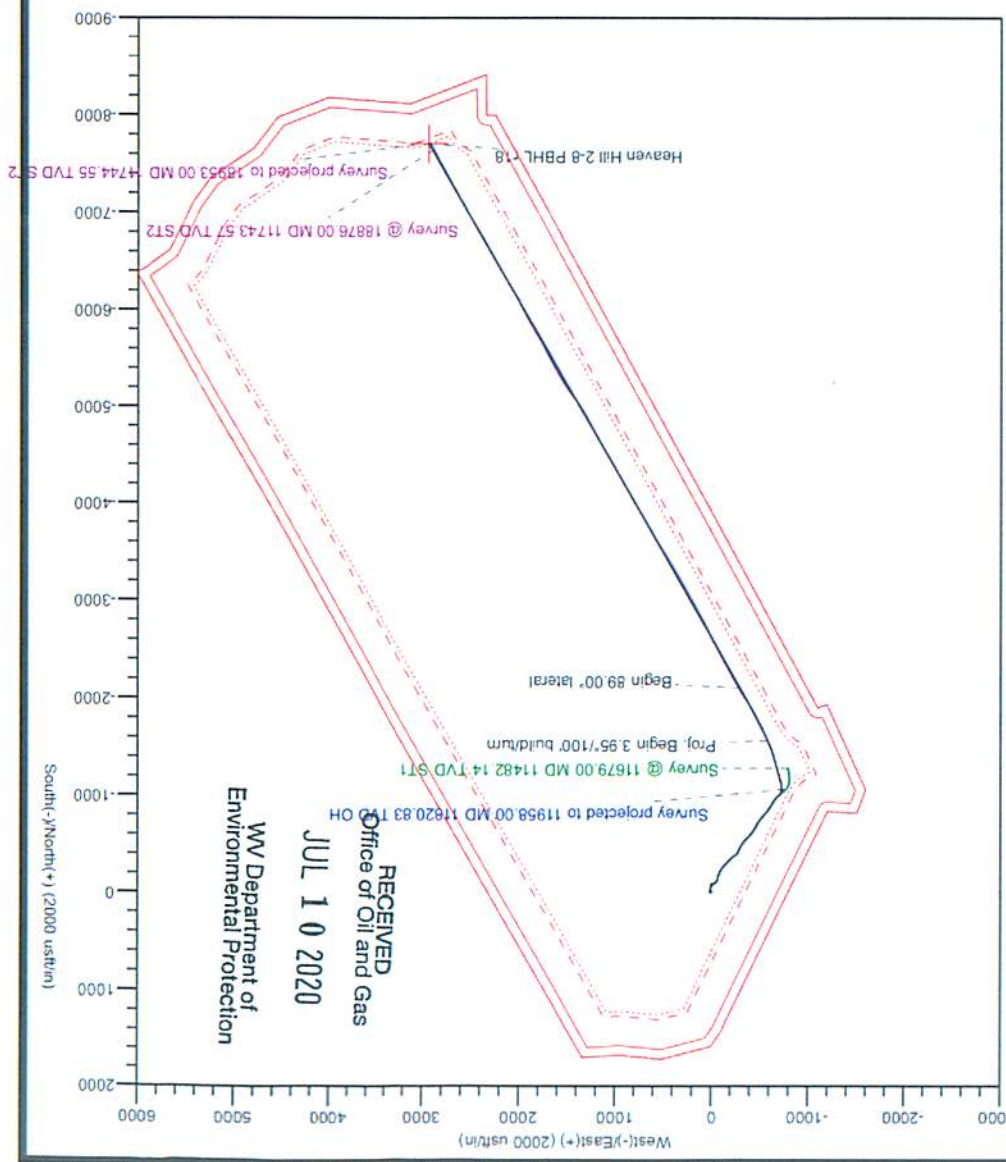
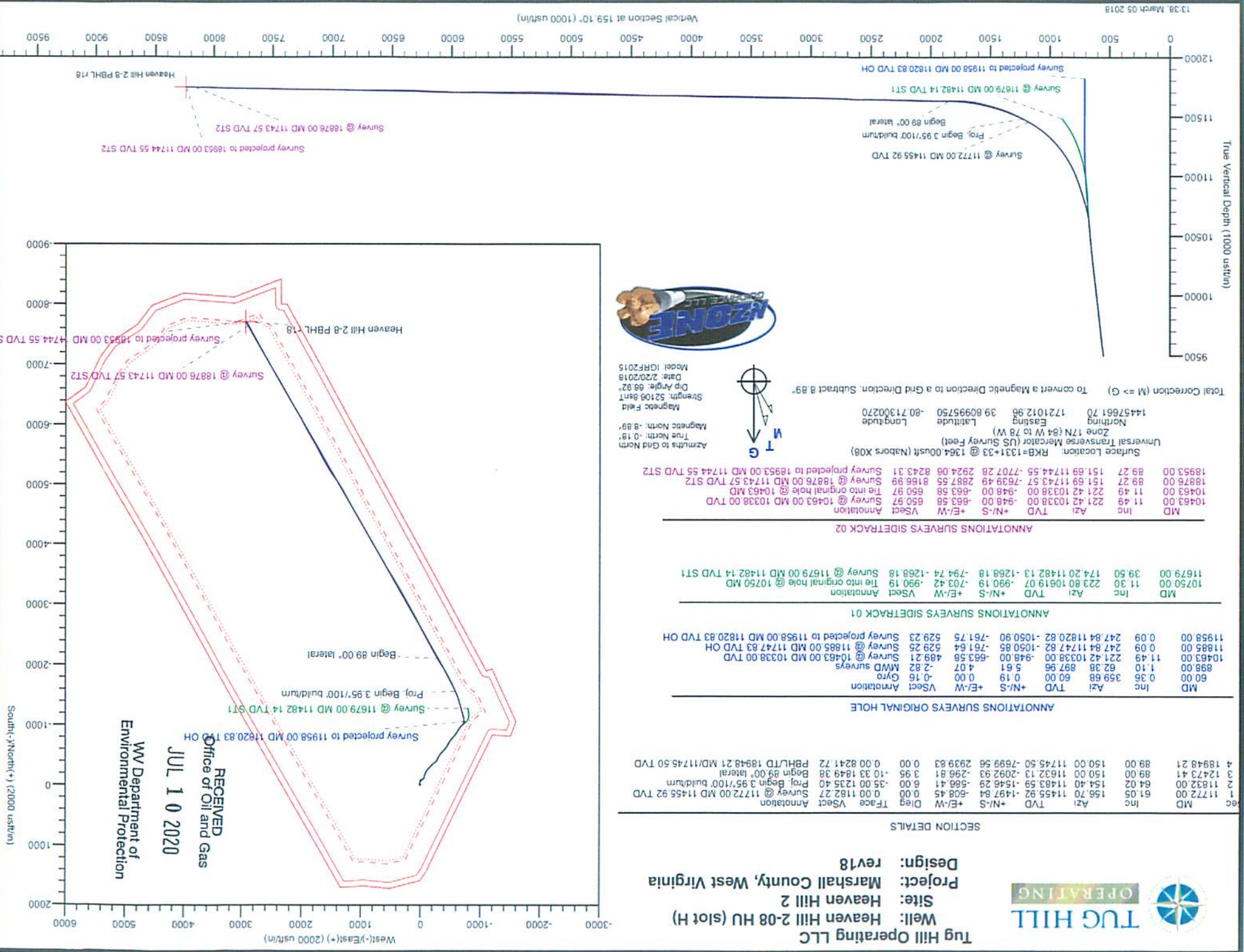
Universal Transverse Mercator (US Survey Feet)
 Zone 17N (84 W to 78 W)

Easting 14457661.70
 Latitude 1721012.96
 Longitude -80.71300270

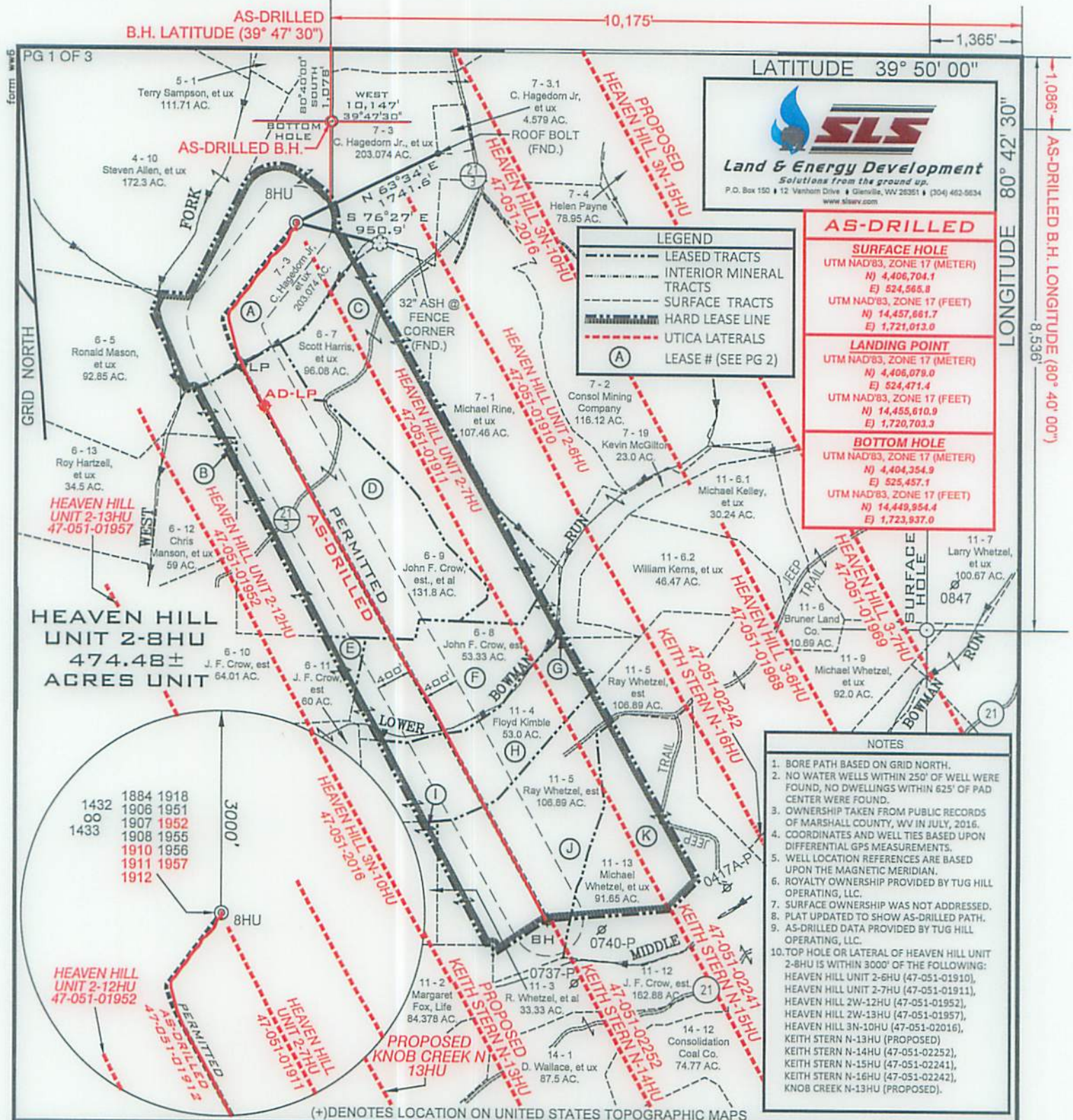
Total Correction (M => G) To convert a Magnetic Direction to a Grid Direction, Subtract 8.89°



Azimuths to Grid North
 True North: -0.18°
 Magnetic North: -8.89°
 Magnetic Field
 Strength: 52106 Gauss
 Dip Angle: 68.92°
 Date: 2/20/2018
 Model: IGRF2015



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LEGEND

- LEASED TRACTS
- INTERIOR MINERAL TRACTS
- SURFACE TRACTS
- HARD LEASE LINE
- UTICA LATERALS
- (A) LEASE # (SEE PG 2)

AS-DRILLED

SURFACE HOLE
UTM NAD'83, ZONE 17 (METER)
N) 4,406,704.1
E) 524,565.8
UTM NAD'83, ZONE 17 (FEET)
N) 14,457,661.7
E) 1,721,013.0
LANDING POINT
UTM NAD'83, ZONE 17 (METER)
N) 4,406,079.0
E) 524,471.4
UTM NAD'83, ZONE 17 (FEET)
N) 14,455,610.9
E) 1,720,703.3
BOTTOM HOLE
UTM NAD'83, ZONE 17 (METER)
N) 4,404,354.9
E) 525,457.1
UTM NAD'83, ZONE 17 (FEET)
N) 14,449,954.4
E) 1,723,937.0

- 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 JULY, 2016.
 - COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
 - WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
 - ROYALTY OWNERSHIP PROVIDED BY TUG HILL OPERATING, LLC.
 - SURFACE OWNERSHIP WAS NOT ADDRESSED.
 - PLAT UPDATED TO SHOW AS-DRILLED PATH.
 - AS-DRILLED DATA PROVIDED BY TUG HILL OPERATING, LLC.
 - TOP HOLE OR LATERAL OF HEAVEN HILL UNIT 2-8HU IS WITHIN 3000' OF THE FOLLOWING: HEAVEN HILL UNIT 2-6HU (47-051-01910), HEAVEN HILL UNIT 2-7HU (47-051-01911), HEAVEN HILL 2W-12HU (47-051-01952), HEAVEN HILL 2W-13HU (47-051-01957), HEAVEN HILL 3N-10HU (47-051-02016), KEITH STERN N-13HU (PROPOSED), KEITH STERN N-14HU (47-051-02252), KEITH STERN N-15HU (47-051-02241), KEITH STERN N-16HU (47-051-02242), KNOB CREEK N-13HU (PROPOSED).

FILE NUMBER 163-697

DRAWING NUMBER HHU2_WP_8HU

SCALE 1" = 1500'

MINIMUM DEGREE OF ACCURACY 1/2500

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



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

DATE: OCTOBER 17, 2018 REVISED: SEPTEMBER 6, 2019
OPERATORS WELL NO. Heaven Hill Unit 2-8HU As-Drilled

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP X SHALLOW ___

API WELL NO. 47-051-01912

STATE WV COUNTY MARSHALL PERMIT

LOCATION ELEVATION 1331' WATERSHED (HUC 10) FISH CREEK

DISTRICT MEADE COUNTY MARSHALL

QUADRANGLE GLEN EASTON 7.5' LEASE NUMBER SEE ATTACHED PG 2 AND 3

SURFACE OWNER CHARLES R. HAGEDORN, JR., ET UX ACREAGE 203.074

OIL & GAS ROYALTY OWNER CHARLES R. HAGEDORN, JR., ET AL LEASE ACREAGE 501.42 UNIT

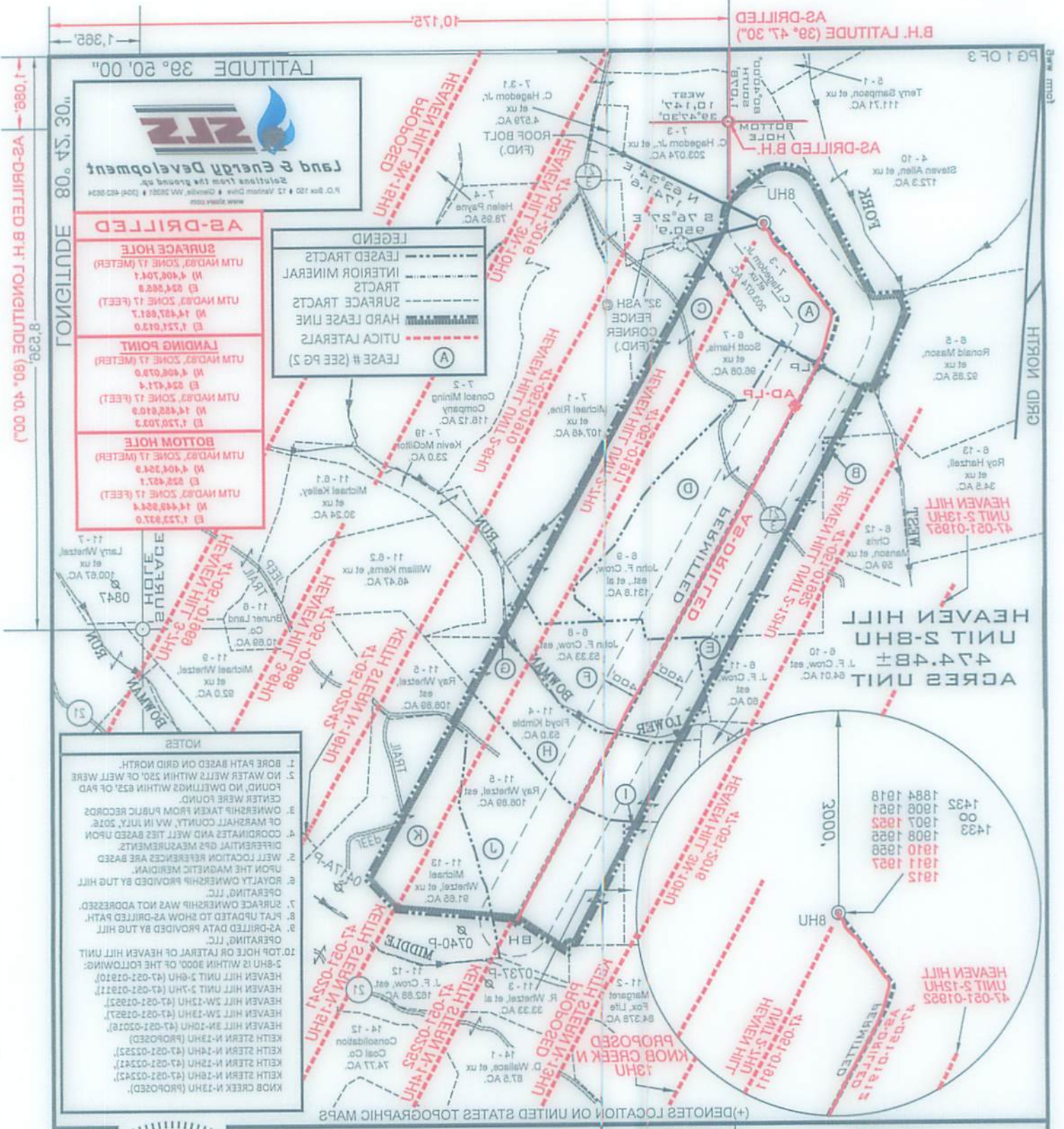
PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___
PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) ___

TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD 11,784' TMD 18,948'

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

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

COUNTY NAME
PERMIT



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.

FILE NUMBER	163-697
DRAWING NUMBER	HHU2_WP_8HU
SCALE	1" = 150'
MINIMUM DEGREE OF ACCURACY	1/2500
PROVEN SOURCE OF ELEVATION	SUBMETER MAPPING
	GRADE GPS

DATE: OCTOBER 17, 2018 REVISED: SEPTEMBER 6, 2019
 OPERATORS WELL NO. Heaven Hill Unit 2-8HU A2-Drilled

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF GAS) PRODUCTION STORAGE DEEP SHALLOW

LOCATION ELEVATION 1331' WATERSHED (HUC 10) FISH CREEK

DISTRICT MEADE COUNTY MARSHALL

QUADRANGLE GLEN EASTON 7.5' LEASE NUMBER SEE ATTACHED PG 2 AND 3

SURFACE OWNER CHARLES R. HAGEDORN, JR., ET UX ACREAGE 203.074

OIL & GAS ROYALTY OWNER CHARLES R. HAGEDORN, JR., ET AL LEASE ACREAGE 501.42 UNIT

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION

PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE (SPECIFY) _____

TARGET FORMATION POINT PLEASANT

WELL OPERATOR TUG HILL OPERATING, LLC
 ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 200
 FORT WORTH, TX 76107

DESIGNATED AGENT CT CORPORATION SYSTEM
 DIANNA STAMPER
 ESTIMATED DEPTH TVD 11,784', TMD 18,948'
 PLUG & ABANDON CLEAN OUT & REPLUG

PERMIT 47-051-01912 STATE COUNTY PERMIT

NOTES:
 1. BORE PATH BASED ON GRID NORTH.
 2. NO WATER WELLS WITHIN 250' OF WELL WERE FOUND. NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
 3. OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN JULY, 2016.
 4. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
 5. WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
 6. ROYALTY OWNERSHIP PROVIDED BY TUG HILL OPERATING, LLC.
 7. SURFACE OWNERSHIP WAS NOT ADDRESSED.
 8. PLAT UPDATED TO SHOW A2-DRILLED PATH.
 9. A2-DRILLED DATA PROVIDED BY TUG HILL OPERATING, LLC.
 10. TOP HOLE OR LATERAL OF HEAVEN HILL UNIT 2-8HU IS WITHIN 3000' OF THE FOLLOWING:
 HEAVEN HILL UNIT 2-8HU (47-051-01910)
 HEAVEN HILL UNIT 2-7HU (47-051-01911)
 HEAVEN HILL UNIT 2-13HU (47-051-01912)
 HEAVEN HILL 2W-13HU (47-051-01927)
 HEAVEN HILL 3N-10HU (47-051-02016)
 HEAVEN HILL 3N-13HU (PROPOSED)
 KEITH STERN N-13HU (47-051-02252)
 KEITH STERN N-12HU (47-051-02241)
 KEITH STERN N-11HU (47-051-02242)
 KNOW CREEK N-13HU (PROPOSED)

**HEAVEN HILL UNIT 2-BHU
WELL PLAT LEASE INFORMATION**

Lease No.	Tag	Parcel	Oil & Gas Royalty Owner	Deed Book	Deed Page
10*15505	A	9-7-3	RALPH E. WELLMAN	686	412
10*15521	A	9-7-3	VENANGO 21ST CENTURY ENERGY INC	722	281
10*15608	A	9-7-3	CHARLES R HAGEDORN JR	816	423
10*47051.073.1	A	9-7-3	VENANGO 21ST CENTURY ENERGY INC	888	618
10*47051.073.2	A	9-7-3	PATRIOT RESTORATIONS LLC	908	541
10*47051.073.3	A	9-7-3	TRIENERGY HOLDINGS, LLC	878	330
10*15505	A	9-7-3	RALPH E. WELLMAN	686	412
10*15521	A	9-7-3	VENANGO 21ST CENTURY ENERGY INC	722	281
10*15608	A	9-7-3	CHARLES R HAGEDORN JR	816	423
10*47051.073.1	A	9-7-3	VENANGO 21ST CENTURY ENERGY INC	888	618
10*47051.073.2	A	9-7-3	PATRIOT RESTORATIONS LLC	908	541
10*47051.073.3	A	9-7-3	TRIENERGY HOLDINGS, LLC	878	330
10*15525	B	9-6-12	RONALD KEITH MASON ET UX	772	445
10*15541	B	9-6-12	MARY RUTH FROHNAPFEL	781	312
10*15542	B	9-6-12	KENNETH D SIBURT	781	218
10*15543	B	9-6-12	SANDRA FROWEN	781	307
10*15544	B	9-6-12	VICKI J CHERRY A/K/A VICKIE L CHERRY	793	318
10*15545	B	9-6-12	JAMES B SIBURT ET UX	793	332
10*15546	B	9-6-12	ALAN K SIBURT ET UX	793	325
10*15547	B	9-6-12	RODNEY L SIBURT	793	346
10*47051.255.0	C	9-6-7	SCOTT C & CAROLYN R HARRIS	879	296
10*15510	D	9-6-9	ELAINE PHELPS ET VIR	718	326
10*15511	D	9-6-9	DAVID E CROW	718	376
10*15512	D	9-6-9	FRANCES COFFEY	718	378
10*15513	D	9-6-9	KAY KEYES	718	330
10*15514	D	9-6-9	L PAUL CROW	718	336
10*15515	D	9-6-9	DESIRE L CROW	718	334
10*15516	D	9-6-9	ROSE MARIE KIELGCZEWSKI	718	354
10*15517	D	9-6-9	DIANNE GELLNER & GARY GELLNER	718	345
10*15518	D	9-6-9	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	718	347
10*15519	D	9-6-9	JOHN CROW	726	580
10*15520	D	9-6-9	TIMOTHY CROW	726	582
10*47051.123.1	D	9-6-9	LLOYD G BAKER	865	389
10*47051.123.2	D	9-6-9	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	873	143
10*15510	E	9-6-10	ELAINE PHELPS ET VIR	718	326
10*15511	E	9-6-10	DAVID E CROW	718	376
10*15512	E	9-6-10	FRANCES COFFEY	718	378
10*15513	E	9-6-10	KAY KEYES	718	330
10*15514	E	9-6-10	L PAUL CROW	718	336
10*15515	E	9-6-10	DESIRE L CROW	718	334
10*15516	E	9-6-10	ROSE MARIE KIELGCZEWSKI	718	354
10*15517	E	9-6-10	DIANNE GELLNER & GARY GELLNER	718	345
10*15518	E	9-6-10	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	718	347
10*15519	E	9-6-10	JOHN CROW	726	580
10*15520	E	9-6-10	TIMOTHY CROW	726	582
10*47051.123.1	E	9-6-10	LLOYD G BAKER	865	389
10*47051.123.2	E	9-6-10	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	873	143
10*15510	F	9-6-8	ELAINE PHELPS ET VIR	718	326
10*15511	F	9-6-8	DAVID E CROW	718	376
10*15512	F	9-6-8	FRANCES COFFEY	718	378
10*15513	F	9-6-8	KAY KEYES	718	330
10*15514	F	9-6-8	L PAUL CROW	718	336
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Lease No.	Tag	Parcel	Oil & Gas Royalty Owner	Deed Book	Deed Page
10*15667	G	9-7-19	KEVIN E MCGILTON ET UX	850	351
10*16517	H	9-11-4	RHDK INVESTMENTS	907	550
10*15561	I	9-11-3	VICKIE MASON	680	413
10*15562	I	9-11-3	MARY A SOUTH	682	231
10*15563	I	9-11-3	MARK L WHETZAL	682	544
10*15564	I	9-11-3	RAY A WHETZAL JR	682	548
10*15565	I	9-11-3	ROBERT L WHETZAL	682	552
10*15566	I	9-11-3	SHARON L WHETZAL	682	556
10*47051.108.1	I	9-11-3	MICHAEL A WHETZEL	885	51
10*47051.108.5	I	9-11-3	BRENDA J WHETZEL	885	55
10*47051.108.6	I	9-11-3	TERRI MCCARDLE	985	23
10*47051.108.7	I	9-11-3	GARY FRANCIS WHETZAL	895	26
10*15584	J	9-11-5	VICKIE MASON	686	239
10*15585	J	9-11-5	SHARON L WHETZAL	687	147
10*15586	J	9-11-5	MARY A SOUTH	690	615
10*15587	J	9-11-5	ROBERT L WHETZAL	690	559
10*15588	J	9-11-5	RAY A WHETZAL JR	693	571
10*15589	J	9-11-5	MARK L WHETZAL	693	576
10*47051.108.1	J	9-11-5	MICHAEL A WHETZEL	885	51
10*47051.108.5	J	9-11-5	BRENDA J WHETZEL	885	55
10*16258	K	9-11-13	CHESTNUT HOLDINGS INC	848	220

RECEIVED
Office of Oil and Gas

JUL 10 2020

WV Department of
Environmental Protection

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FORT WORTH, TX 76107

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