

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

API 47-051-01910 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 2-6HU
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 4,406,725.4 Easting 524,581.8
Landing Point of Curve Northing 4,406,859.1 Easting 524,906.1
Bottom Hole Northing 4,404,700.1 Easting 526,146.8

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
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other
Drilled with Cable Rotary

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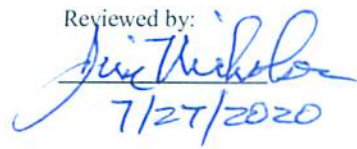
Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine

Mud Type(s) and Additive(s)
SOBM; Base oil, osmotic inhibitor, weighting agent, viscosifer, emulsifier, hardness buffer, fluid loss additive, LCM, shae inhibitor, de-foamer, soaping agent, coagulant, flocculant; Specific additives per WSSP and Permit.

Date permit issued 3/2/2017 Date drilling commenced 6/21/2017 Date drilling ceased 4/30/2018
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 70'; 1066' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 2,167' Void(s) encountered (Y/N) depths N
Coal depth(s) ft Sewickley Coal - 969'; Pittsburgh Coal - 1059' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) Y

Reviewed by: 
7/27/2020

API 47-051 - 01910 Farm name Charles R. Hagedorn, Jr., Et Ux Well number Heaven Hill 2-6HU

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"	1,159'	NEW	106.5#	N/A	Y
Coal	17 1/2"	13 3/8"	2,784'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	10,396'	NEW	47#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 1/2"	5 1/2"	20,317'	NEW	23#	N/A	Y
Tubing		2 7/8"	10,159'	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	2139	15.6	1.2	2555	0	8
Coal	A	2139	15.6	1.2	2555	0	8
Intermediate 1	A	2334	15.6	1.19	2918	0	8
Intermediate 2	A	3109	14.5	1.19	3700		
Intermediate 3							
Production	A	4477	16.5	1.11	5013	0	8
Tubing							

Drillers TD (ft) 20,402' Loggers TD (ft) _____
 Deepest formation penetrated Utica Plug back to (ft) n/a
 Plug back procedure n/a

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Kick off depth (ft) 10,786'

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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 _____

API 47- 051 - 01910 Farm name Charles R. Hagedorn, Jr., Et Ux Well number Heaven Hill 2-6HU

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)
			*see attached					

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Please insert additional pages as applicable.

**Heaven Hill 2W-6HU
PEFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
1	1/7/2019	20039	20147	12	Utica
2	1/8/2019	19839	19989	48	Utica
3	1/9/2019	19639	19789	48	Utica
4	1/9/2019	19439	19589	48	Utica
5	1/10/2019	19239	19389	48	Utica
6	1/13/2019	19039	19189	48	Utica
7	1/15/2019	18839	18989	48	Utica
8	1/15/2019	18639	18789	48	Utica
9	1/16/2019	18439	18589	48	Utica
10	1/16/2019	18239	18389	48	Utica
11	1/17/2019	18039	18189	48	Utica
12	1/17/2019	17839	17989	48	Utica
13	1/18/2019	17639	17789	48	Utica
14	1/18/2019	17439	17589	48	Utica
15	1/19/2019	17239	17389	48	Utica
16	1/19/2019	17039	17189	48	Utica
17	1/19/2019	16839	16989	48	Utica
18	1/20/2019	16639	16789	48	Utica
19	1/21/2019	16439	16589	48	Utica
20	1/22/2019	16239	16389	48	Utica
21	1/23/2019	16039	16189	48	Utica
22	1/23/2019	15839	15989	48	Utica
23	1/24/2019	15639	15789	48	Utica
24	1/25/2019	15439	15589	48	Utica
25	1/25/2019	15239	15389	48	Utica
26	1/26/2019	15039	15189	48	Utica
27	1/27/2019	14839	14989	48	Utica
28	1/28/2019	14639	14789	48	Utica
29	1/29/2019	14439	14589	48	Utica
30	1/30/2019	14239	14389	48	Utica
31	1/30/2019	14039	14189	48	Utica
32	2/1/2019	13839	13989	48	Utica
33	2/2/2019	13639	13789	48	Utica
34	2/3/2019	13439	13589	48	Utica
35	2/3/2019	13239	13389	48	Utica
36	2/3/2019	13039	13189	48	Utica
37	2/4/2019	12839	12989	48	Utica
38	2/4/2019	12639	12789	48	Utica
39	2/5/2019	12439	12589	48	Utica
40	2/5/2019	12239	12389	48	Utica
41	2/6/2019	12039	12189	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	7616	513285	10106	0
26	82.2	10677	8247	7897	510410	9988	0
27	81	10601	9243	7849	511330	10110	0
28	80.5	10709	9788	8080	510115	9859	0
29	83.3	11051	8702	7585	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:	1/7/2019
Job End Date:	2/6/2019
State:	West Virginia
County:	Marshall
API Number:	47-051-01910-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Heaven Hill Unit 2W 6HU
Latitude:	39.81014890
Longitude:	-80.71281450
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	11,758
Total Base Water Volume (gal):	18,618,246
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	Operator	Base Fluid					
			Water	7732-18-5	100.00000	87.73675	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.45490	

FDP-S1296-17	Halliburton	Corrosion Inhibitor					
				Listed Below			
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant					
				Listed Below			
SAND-PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
				Listed Below			
CALCIUM CHLORIDE - FLAKE	Halliburton	Additive					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
HYDROCHLORIC ACID	Halliburton	Solvent					
				Listed Below			
LD-2850	Halliburton	Friction Reducer					
				Listed Below			
SAND-CRC PREMIUM-20/40, 100 LB SACK	Halliburton	Proppant					

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				Listed Below			
SP BREAKER	Halliburton	Breaker					
				Listed Below			
OILPERM A	Halliburton	Non-ionic Surfactant					
				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	11.71536	
			Phenol / formaldehyde resin	9003-35-4	5.00000	0.05592	
			Hydrochloric acid	7647-01-0	7.50000	0.03410	
			Hexamethylenetetramine	100-97-0	2.00000	0.02237	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02139	
			Ammonium chloride	12125-02-9	30.00000	0.02139	
			Guar gum	9000-30-0	100.00000	0.01954	
			Sodium chloride	7647-14-5	5.00000	0.00358	
			9-Octadecenamamide, n, n-bis-2(hydroxy-ethyl)-,(Z)	93-83-4	5.00000	0.00357	
			Alcohols, C12-16, ethoxylated	68551-12-2	5.00000	0.00357	
			Calcium chloride	10043-52-4	100.00000	0.00091	
			Sodium persulfate	7775-27-1	100.00000	0.00083	
			Methanol	67-56-1	100.00000	0.00033	
			Ethanol	64-17-5	60.00000	0.00021	
			Oxyalkylated phenolic resin	Proprietary	30.00000	0.00014	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.00010	
			Modified thiourea polymer	Proprietary	30.00000	0.00010	
			Potassium chloride	7447-40-7	5.00000	0.00005	

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			Strontium chloride	10476-85-4	5.00000	0.00005	
			Naphthalene	91-20-3	5.00000	0.00002	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)- omega-hydroxy-, branched	127087-87-0	5.00000	0.00002	
			Ethoxylated alcohols	Proprietary	5.00000	0.00002	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Propargyl alcohol	107-19-7	5.00000	0.00002	
			1,2,4 Trimethylbenzene	95-63-6	1.00000	0.00000	
			Sodium sulfate	7757-82-6	0.10000	0.00000	

* 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 2-6HU

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	2069	Sandstone
Big Lime	2068	2200	2069	2201	Limestone
Big Injun	2200	2494	2201	2495	Sandstone
Weir	2494	2692	2495	2693	Sandstone
Berea	2692	2954	2693	2956	Sandstone
Gordon	2954	3039	2956	3041	Sandstone
Fifty Foot	3039	3621	3041	3627	Sandstone
Speechley	3621	5131	3627	5166	Sandstone
Benson	5131	5454	5166	5493	Sandstone
Alexander	5454	6076	5493	6121	Siltstone
Rhinestreet	6076	6591	6121	6640	Black shale
Middlesex	6591	6677	6640	6727	Black shale
Geneseo/Burkett	6677	6688	6727	6738	Black shale
Tully	6688	6722	6738	6773	Limestone
Hamilton	6722	6800	6773	6852	Grey shale
Marcellus	6800	6858	6852	6911	Black shale
Onondaga	6858	7082	6911	7139	Limestone
Oriskany	7082	7186	7139	7245	Sandstone
Helderberg	7186	7556	7245	7620	Limestone
Salina	7556	8550	7620	8627	Salt/Anhydrite/LS
Lockport	8550	8924	8627	9006	Dolomite
Rose Hill	8924	9194	9006	9280	Shale
Packer Shell	9194	9401	9280	9490	Limestone
Clinton/Tuscarora	9401	9513	9490	9603	Sandstone
Juniata/Queenston	9513	10367	9603	10468	Red Shale
Reedsville	10367	11323	10468	11498	Grey Shale
Utica	11323	11580	11498	11897	Black Shale
Point Pleasant	11580	-	11897	-	Shale/Limestone

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Tug Hill Operating LLC
Well: Heaven Hill 2-06 HU (slot A)
Site: Heaven Hill 2
Project: Marshall County, West Virginia
Design: rev11

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Annotation
1	10358.00	8.00	36.52	10257.85	1040.54	487.88	0.00	0.00	-657.20	
2	10480.00	8.00	36.52	10378.66	1054.19	497.98	0.00	0.00	-663.96	Survey @ 10480.00 MD 10378.66 TVD
3	10802.98	8.00	36.52	10698.50	1090.31	524.73	0.00	0.00	-681.87	KOP Begin 6'/100' build/turn
4	11114.45	15.00	141.40	11005.88	1076.10	563.12	6.00	128.68	-650.37	Begin 6'/100' build
5	11581.14	43.00	141.40	11410.00	901.03	702.87	6.00	0.00	-428.88	Begin 8'/100' build
6	11881.14	67.00	141.40	11580.81	710.38	855.07	8.00	0.00	-187.67	Begin 8'/100' build/turn
7	12175.34	89.00	150.00	11641.70	473.84	1015.34	8.00	22.00	97.31	Begin 89.00° lateral
8	20401.66	89.00	150.00	11784.75	-6649.57	5127.40	0.00	0.00	8322.39	PBHLTD 20401.66 MD/11784.75 TVD

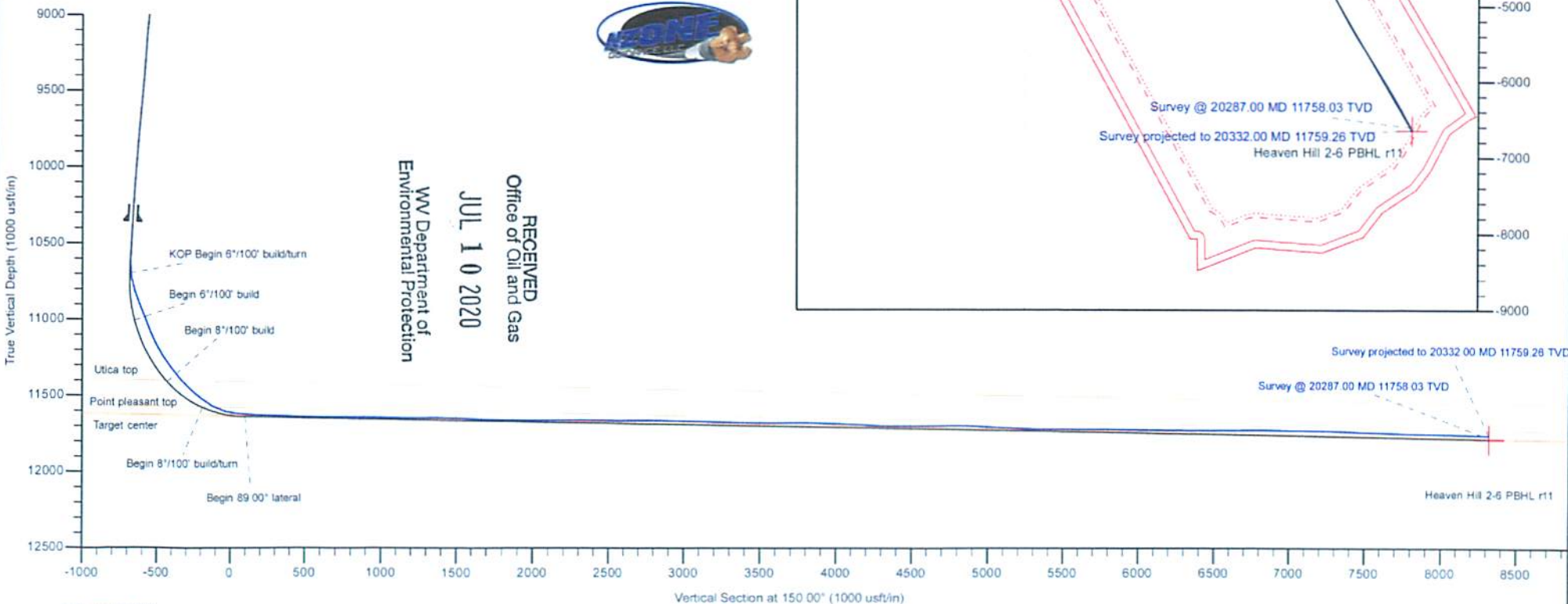
ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	V Sect	Annotation
100.00	0.55	42.48	100.00	0.35	0.32	-0.14	Gyro
903.00	1.31	154.57	902.93	-1.91	3.40	3.36	MWD surveys
20287.00	88.44	150.28	11758.03	-6605.64	5112.12	8276.72	Survey @ 20287.00 MD 11758.03 TVD
20332.00	88.44	150.28	11759.26	-6644.71	5134.42	8321.70	Survey projected to 20332.00 MD 11759.26 TVD

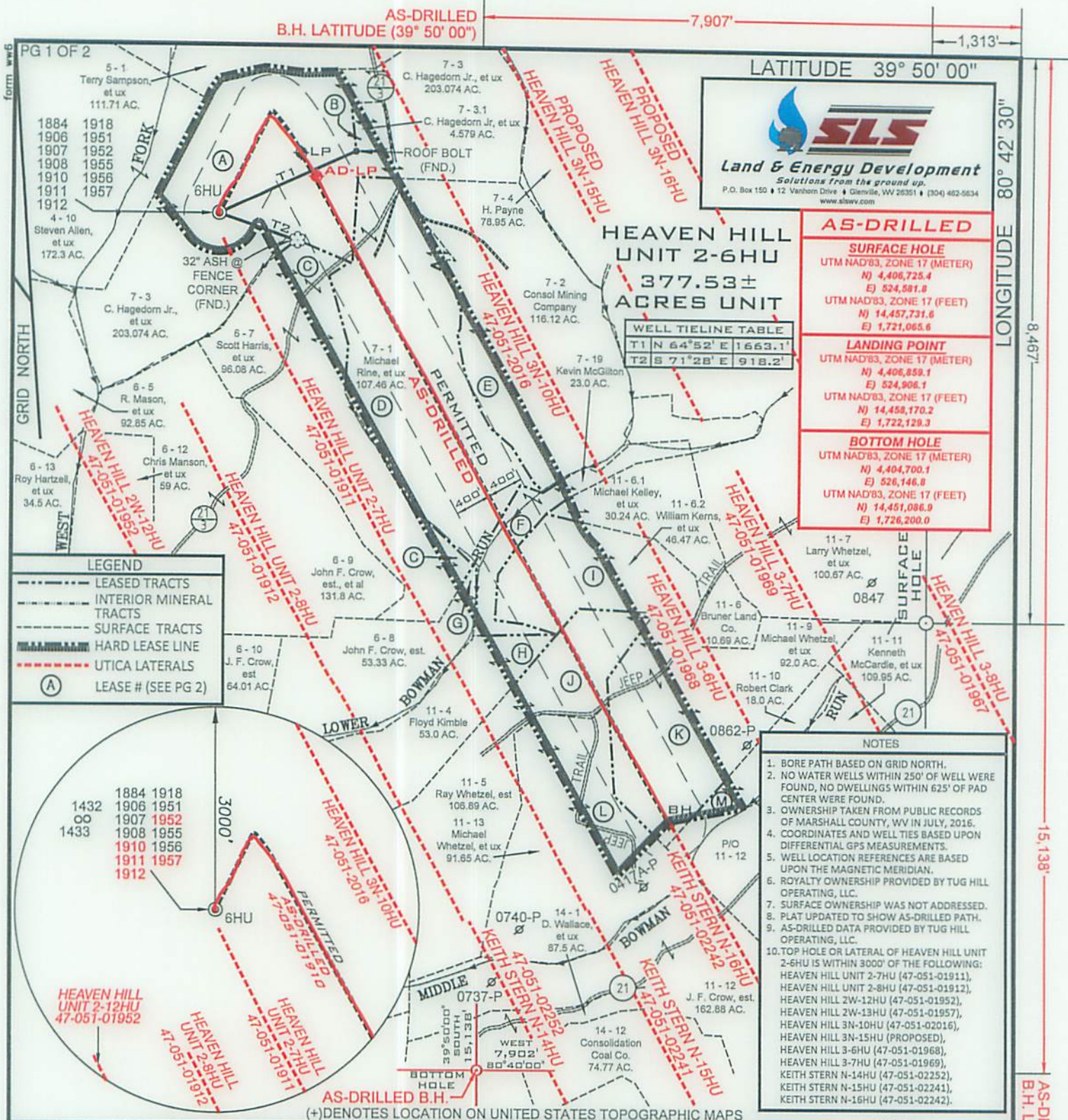


Azimuths to Grid North
 True North: -0.18°
 Magnetic North: -8.90°
 Magnetic Field
 Strength: 52092.45nT
 Dip Angle: 66.91°
 Date: 4/7/2018
 Model: IGRF2015

Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD83 West Virginia - HARN
 Ellipsoid: GRS 1980
 Zone: Zone 17N (84 W to 78 W)
 System Datum: Mean Sea Level
 Depth Reference: RKB=1331+33 @ 1364.00usft (Nabors X08)
 Northing: 14457731.56 Easting: 1721065.59 Latitude: 39.81014890 Longitude: -80.71281450



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AS-DRILLED	
SURFACE HOLE	
UTM NAD'83, ZONE 17 (METER)	N) 4,406,725.4
	E) 524,581.8
UTM NAD'83, ZONE 17 (FEET)	N) 14,457,731.6
	E) 1,721,065.6
LANDING POINT	
UTM NAD'83, ZONE 17 (METER)	N) 4,406,859.1
	E) 524,906.1
UTM NAD'83, ZONE 17 (FEET)	N) 14,458,170.2
	E) 1,722,129.3
BOTTOM HOLE	
UTM NAD'83, ZONE 17 (METER)	N) 4,404,700.1
	E) 526,146.8
UTM NAD'83, ZONE 17 (FEET)	N) 14,451,086.9
	E) 1,726,200.0

WELL TIELINE TABLE	
T1	N 64°52' E 1663.1'
T2	S 71°28' E 918.2'

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

- 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 2-6HU IS WITHIN 3000' OF THE FOLLOWING: HEAVEN HILL UNIT 2-7HU (47-051-01911), HEAVEN HILL UNIT 2-8HU (47-051-01912), HEAVEN HILL 2W-12HU (47-051-01952), HEAVEN HILL 2W-13HU (47-051-01957), HEAVEN HILL 3N-10HU (47-051-02016), HEAVEN HILL 3N-15HU (47-051-02016), HEAVEN HILL 3-6HU (47-051-01968), HEAVEN HILL 3-7HU (47-051-01969), KEITH STERN N-14HU (47-051-02252), KEITH STERN N-15HU (47-051-02241), KEITH STERN N-16HU (47-051-02242).

FILE NUMBER	163-697
DRAWING NUMBER	HHU2_WP_6HU
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

P.S. 849 *C. Victor Moyers*



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 2-6HU As-Drilled

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP X SHALLOW ___
API WELL NO. 47-051-01910
STATE COUNTY PERMIT

LOCATION ELEVATION 1331' WATERSHED (HUC 10) FISH CREEK
DISTRICT MEADE COUNTY MARSHALL
QUADRANGLE GLEN EASTON 7.5' LEASE NUMBER SEE ATTACHED PG 2 OF 2

SURFACE OWNER CHARLES R. HAGEDORN, JR., ET UX ACREAGE 203.074
OIL & GAS ROYALTY OWNER CHARLES R. HAGEDORN, JR., ET AL LEASE ACREAGE 391.77 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: 20,402'
WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER
CT CORPORATION SYSTEM
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500
FORT WORTH, TX 76107 ADDRESS 5400 D BIG TYLER ROAD
CHARLESTON, WV 25313

LATITUDE 39° 50' 00"
 LONGITUDE 80° 24' 08"
 8,467'
 15,138'
 AS-DRILLED B.H. LONGITUDE (80° 40' 00")

ADDRESS 1330 SOUTH UNIVERSITY DRIVE, SUITE 200
 MEET OPERATOR THE HILL OPERATING, LLC
 TARGET FORMATION POINT BLEASANT

ADDRESS CHARLESTON, WV 25312
 2400 D BIG LAGER ROAD
 DESIGNATED AGENCY CI CORROBORATION SYSTEM
 DIAMIA STAMPER
 ESTIMATED DEPTH 11' 11' 384, LWD: 50' 405,
 BLUE & ABAWDON GREEN OUT & RESULT

BEFORE DATE NEW FORMATION OTHER PHYSICAL CHANGE (SPECIFY)
 PROPOSED WORK: DRILL COLLECT DRILL DEEPER REDRILL FRACTURE OR STIMULATE BLUE OFF OLD FORMATION
 OIL & GAS PROPERTY OWNER CHARLES B. HAGEDORN, JR., ET AL LEASE ACREAGE 38.77 ACRES
 SURFACE OWNER CHARLES B. HAGEDORN, JR., ET AL ACREAGE 303.70 ACRES

QUADRANGLE GEN EASTON 1'2, LEASE NUMBER SEE ATTACHED PG 3 OF 3
 DISTRICT MEADE COUNTY MARSHALL
 LOCATION ELEVATION 1331, WATERSHED (HUC 10) FISH CREEK
 (IF GAS) PRODUCTION STORAGE DEEP SHALLOW
 MEET TYPE: OIL GAS FLUID INJECTION WASTE DISPOSAL
 STATE COUNTY PERMIT
 WV MEET NO. 47-021-01810

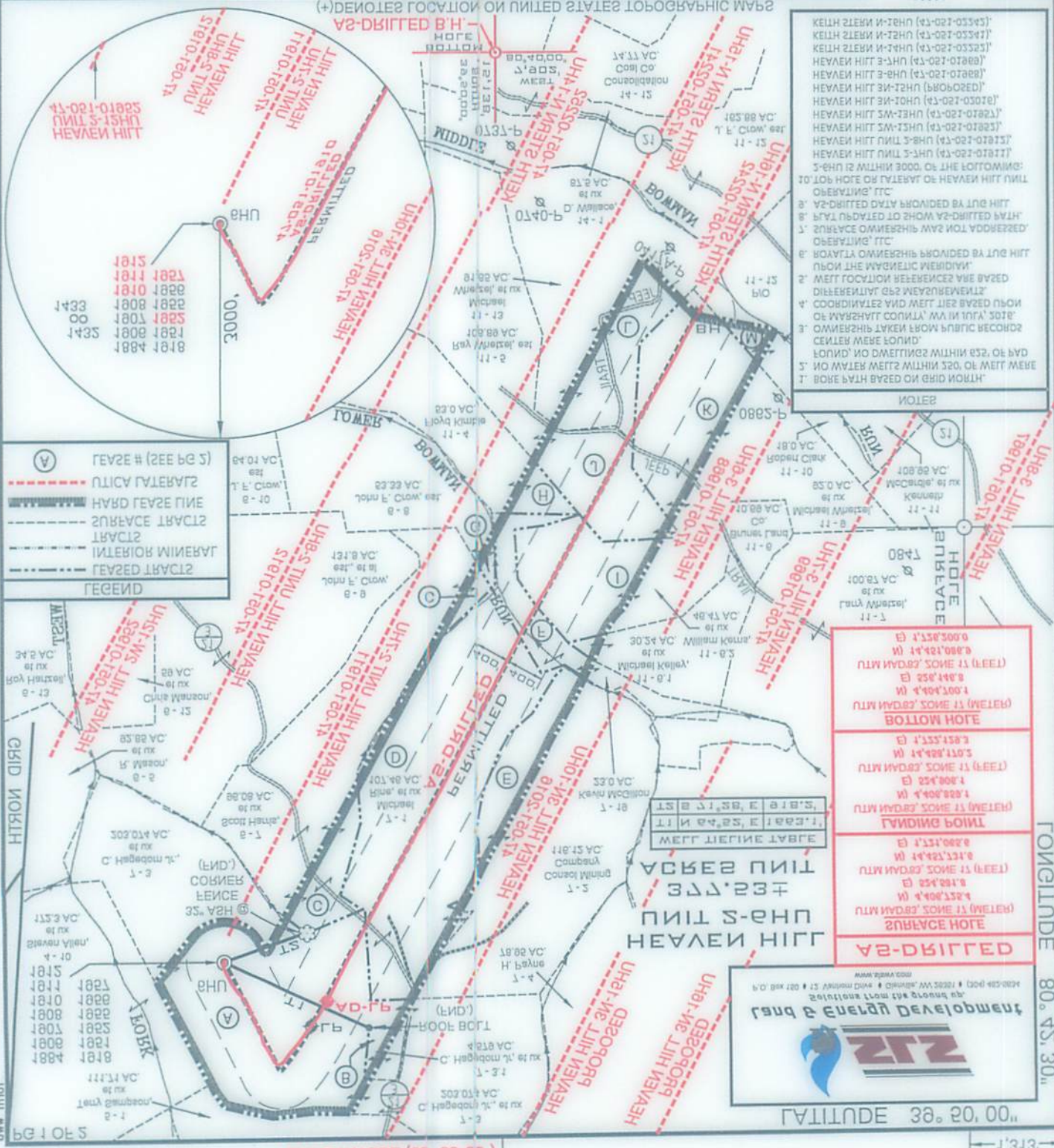
GRADE CBS
 OF ELEVATION SUBMETER MAPPING
 PROVEN SOURCE
 OF ACCURACY 1/3200
 MINIMUM DEGREE
 SCALE 1" = 1200'
 DRAWING NUMBER HNS2 WP 28U
 FILE NUMBER 102-001



OPERATORS MEET NO. Heaven Hill Unit 3-28U As-Drilled
 DATE: OCTOBER 11, 2018 REVISED: SEPTEMBER 6, 2018



PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION
 INFORMATION RECEIVED BY GUY AND THE RULES ISSUED AND
 TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS SHOWS ALL THE
 THE UNDERGROUND HEREBY CERTIFY THAT THIS PLAN IS CORRECT



KEITH STEIN I-28U (43-027-03345)
 KEITH STEIN I-28U (43-027-03347)
 KEITH STEIN I-28U (43-027-03325)
 HEAVEN HILL 3-28U (43-027-07888)
 HEAVEN HILL 3-28U (43-027-07889)
 HEAVEN HILL 3I-28U (43-027-07890)
 HEAVEN HILL 3I-28U (43-027-03078)
 HEAVEN HILL 3M-28U (43-027-07823)
 HEAVEN HILL 3M-28U (43-027-07823)
 HEAVEN HILL UNIT 3-28U (43-027-07875)
 HEAVEN HILL UNIT 3-28U (43-027-07877)
 3-28U IS WITHIN 3000' OF THE LOT/COMMO:
 TO TOP HOPE OR GATEWAY OF HEAVEN HILL UNIT
 OPERATING, LLC
 1. AS-DRILLED DATA PROVIDED BY THE HILL
 2. THAT PROVIDED TO SHOW AS-DRILLED PATH
 3. SURFACE OWNERSHIP WAS NOT ADDRESSED
 OPERATING, LLC
 4. PROPERTY OWNERSHIP PROVIDED BY THE HILL
 5. MEET LOCATION REFERENCES ARE BASED
 6. COORDINATES AND MEET LEG BASED FROM
 7. OWNERSHIP TAKEN FROM PUBLIC RECORDS
 8. CENTER WERE FOUND
 9. FOUND IN DWELLINGS WITHIN 500' OF HAD
 10. NO WATER METTS WITHIN 500' OF MEET WERE
 11. BORE PATH BASED ON GRID NORTH

AS-DRILLED
 SURFACE HOLE
 251.44' 11 (FEET)
 14,498.11' 11 (FEET)
 1,000.10' 11 (FEET)
 251.44' 11 (FEET)
 14,498.11' 11 (FEET)
 1,000.10' 11 (FEET)
 251.44' 11 (FEET)
 14,498.11' 11 (FEET)
 1,000.10' 11 (FEET)
 251.44' 11 (FEET)
 14,498.11' 11 (FEET)
 1,000.10' 11 (FEET)

Energy Development
 272
 Latitude 38.20.00"
 Longitude 80.45.30"

B-H LONGITUDE (80.45.30") AS-DRILLED 12' 138"

B-H LATITUDE (38.20.00") AS-DRILLED 100.5'

HEAVEN HILL UNIT 2-6HU
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*15505	B	9-7-3.1	RALPH E. WELLMAN	686	412
10*47051.073.2	B	9-7-3.1	PATRIOT RESTORATIONS LLC	908	541
10*47051.073.3	B	9-7-3.1	TRIENERGY HOLDINGS, LLC	878	330
10*15608	B	9-7-3.1	CHARLES R HAGEDORN JR	816	423
10*47051.073.1	B	9-7-3.1	VENANGO 21ST CENTURY ENERGY INC	888	618
10*47051.255.0	C	9-6-7	SCOTT C & CAROLYN R HARRIS	879	296
10*15665	D	9-7-1	MICHAEL J RINE ET UX	668	147
10*16471	E	9-7-2	CNX GAS COMPANY	905	155
10*15667	F	9-7-19	KEVIN E MCGILTON ET UX	850	351
10*15667	F	9-7-19	KEVIN E MCGILTON ET UX	850	351
10*15510	G	9-6-8	ELAINE PHELPS ET VIR	718	326
10*15511	G	9-6-8	DAVID E CROW	718	376
10*15512	G	9-6-8	FRANCES COFFEY	718	378
10*15513	G	9-6-8	KAY KEYES	718	330
10*15514	G	9-6-8	L PAUL CROW	718	336
10*15515	G	9-6-8	DESIRE L CROW	718	334
10*15516	G	9-6-8	ROSE MARIE KIELGCZEWSKI	718	354
10*15517	G	9-6-8	DIANNE GELLNER & GARY GELLNER	718	345
10*15518	G	9-6-8	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	718	347
10*15519	G	9-6-8	JOHN CROW	726	580
10*15520	G	9-6-8	TIMOTHY CROW	726	582
10*47051.123.1	G	9-6-8	LLOYD G BAKER	865	389
10*47051.123.2	G	9-6-8	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	873	143
10*16517	H	9-11-4	RHDK INVESTMENTS	907	550
10*16517	H	9-11-4	RHDK INVESTMENTS	907	550
10*16517	H	9-11-4	RHDK INVESTMENTS	907	550
10*16517	H	9-11-4	RHDK INVESTMENTS	907	550
10*16517	H	9-11-4	RHDK INVESTMENTS	907	550
10*16517	H	9-11-4	RHDK INVESTMENTS	907	550
10*16517	H	9-11-4	RHDK INVESTMENTS	907	550
10*15560	I	9-11-6.2	WILLIAM F KERNS ET UX	677	561
10*15669	I	9-11-6.2	EMMA ANDERSON	861	586
10*15670	I	9-11-6.2	GARY M BONAR	861	577
10*15671	I	9-11-6.2	JUDALENE K COLLUMS	861	571
10*15672	I	9-11-6.2	NAOMI HUPP	861	604
10*47051.256.2	I	9-11-6.2	CAROL JEAN ANDERSON	879	299
10*47051.256.3	I	9-11-6.2	BRENDA S DYKHOUSE	881	148
10*47051.256.4	I	9-11-6.2	GLEN A BONAR	881	151
10*47051.256.5	I	9-11-6.2	JERRY W ZIEN AND KATHLEEN E ZIEN	882	530
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*47051.108.1	K	9-11-9	MICHAEL A WHETZEL	885	51
10*16258	L	9-11-13	CHESTNUT HOLDINGS INC	848	220
10*15582	M	9-11-10	ROBERT L CLARK	685	239

RECEIVED
Office of Oil and Gas
JUL 10 2020

WV Department of
Environmental Protection

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

DESIGNATED AGENT DIANNA STAMPER
CT CORPORATION SYSTEM
ADDRESS 5400 D BIG TYLER ROAD
CHARLESTON, WV 25313