

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

API 47 - 051 - 01935 County Marshall District Meade
Quad Glen Easton 7.5' Pad Name Heaven Hill 3 Field/Pool Name _____
Farm name Ricky L. Whitlatch Well Number Heaven Hill 3-1HM
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 4,406,558.99 Easting 526,250.98
Landing Point of Curve Northing 4,405,501.6 Easting 526,063.8
Bottom Hole Northing 4,402,595.6 Easting 527,724.7

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Elevation (ft) 1326' 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 8/23/2017 Date drilling commenced 2/15/2018 Date drilling ceased 8/18/2018
Date completion activities began 4/12/2019 Date completion activities ceased 10/28/2019
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 897' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,595' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 972-978', 1057-1063' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
Janie Anderson
7/27/2020

API 47-051 - 01935 Farm name Ricky L. Whitlatch Well number Heaven Hill 3-1HM

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"	1,176'	NEW	54.5#	N/A	Y
Coal	17 1/2"	13 3/8"	1,176'	NEW	54.5#	N/A	Y
Intermediate 1	12 1/4"	9 5/8"	2,830'	NEW	36#	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	19,535'	NEW	20#	N/A	Y
Tubing		2 3/8"		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	1.19		0	8
Surface	A	1196	15.6	1.19	1436	0	8
Coal	A	1196	15.6	1.19	1436	0	8
Intermediate 1	A	985	15.6	1.19	1173	0	8
Intermediate 2							
Intermediate 3							
Production	A	4843	14.5	1.17	5448	0	8
Tubing							

Drillers TD (ft) 19,500' Loggers TD (ft) _____
 Deepest formation penetrated Marcellus Plug back to (ft) n/a
 Plug back procedure n/a

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Kick off depth (ft) 7,266'

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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 . 01935 Farm name Ricky L. Whitlatch Well number Heaven Hill 3-1HM

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 (mms)
			attached					

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Please insert additional pages as applicable.

API 47- 051 - 01935 Farm name Ricky L. Whitlatch Well number Heaven Hill 3-1HM

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6870' - 6968'	TVD MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 1132 psi Bottom Hole _____ psi DURATION OF TEST 24 hrs

OPEN FLOW Gas 0 mcfpd Oil 0 bpd NGL 0 bpd Water 600 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)
see attached	0		0		

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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 C&J Well Services
Address 380 Southpointe Boulevard, Suite 210 City Canonsburg State PA Zip 15317

Stimulating Company Halliburton Energy Services, Inc.
Address 121 Champion Way, Suite 200 City Canonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Amy L. Miller Telephone 304-376-0111
Signature *Amy L. Miller* Title Permitting Specialist Date 4-22-2020

**Heaven Hill 3-1HM
PEFORATION RECORD**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD. Ft.	Number of Perforations	Formation(s)
Toe	4/29/2019	19385	19440	N/A	Marcellus
1	5/4/2019	19162	19315	48	Marcellus
2	5/4/2019	18987	19140	48	Marcellus
3	5/5/2019	18812	18965	48	Marcellus
4	5/5/2019	18637	18790	48	Marcellus
5	5/6/2019	18462	18615	48	Marcellus
6	5/6/2019	18287	18440	48	Marcellus
7	5/6/2019	18112	18265	48	Marcellus
8	5/7/2019	17937	18090	48	Marcellus
9	5/8/2019	17762	17915	48	Marcellus
10	5/8/2019	17587	17740	48	Marcellus
11	5/9/2019	17412	17565	48	Marcellus
12	5/9/2019	17237	17390	48	Marcellus
13	5/9/2019	17062	17215	48	Marcellus
14	5/10/2019	16887	17040	48	Marcellus
15	5/11/2019	16712	16865	48	Marcellus
16	5/11/2019	16537	16690	48	Marcellus
17	5/12/2019	16362	16515	48	Marcellus
18	5/12/2019	16187	16340	48	Marcellus
19	5/13/2019	16012	16165	48	Marcellus
20	7/2/2019	15837	15990	48	Marcellus
21	7/2/2019	15662	15815	48	Marcellus
22	7/3/2019	15487	15640	48	Marcellus
23	7/3/2019	15312	15465	48	Marcellus
24	7/3/2019	15137	15290	48	Marcellus
25	7/3/2019	14962	15115	48	Marcellus
26	7/3/2019	14787	14940	48	Marcellus
27	7/3/2019	14612	14765	48	Marcellus
28	7/4/2019	14437	14590	48	Marcellus
29	7/4/2019	14262	14415	48	Marcellus
30	7/4/2019	14087	14240	48	Marcellus
31	7/4/2019	13912	14065	48	Marcellus
32	7/4/2019	13737	13890	48	Marcellus
33	7/5/2019	13562	13715	48	Marcellus
34	7/5/2019	13387	13540	48	Marcellus
35	7/5/2019	13212	13365	48	Marcellus
36	7/5/2019	13037	13190	48	Marcellus
37	7/6/2019	12862	13015	48	Marcellus
38	7/6/2019	12687	12840	48	Marcellus
39	7/6/2019	12512	12665	48	Marcellus
40	7/6/2019	12337	12490	48	Marcellus

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41	7/6/2019	12162	12315	48	Marcellus
42	7/7/2019	11987	12140	48	Marcellus
43	7/7/2019	11812	11965	48	Marcellus
44	7/7/2019	11637	11790	48	Marcellus
45	7/7/2019	11462	11615	48	Marcellus
46	7/7/2019	11287	11440	48	Marcellus
47	7/7/2019	11112	11265	48	Marcellus
48	7/8/2019	10937	11090	48	Marcellus
49	7/8/2019	10762	10915	48	Marcellus
50	7/8/2019	10587	10740	48	Marcellus
51	7/8/2019	10412	10565	48	Marcellus
52	7/8/2019	10237	10390	48	Marcellus
53	7/9/2019	10062	10215	48	Marcellus
54	7/9/2019	9887	10040	48	Marcellus
55	7/9/2019	9712	9865	48	Marcellus
56	7/9/2019	9537	9690	48	Marcellus
57	7/9/2019	9362	9515	48	Marcellus
58	7/10/2019	9187	9340	48	Marcellus
59	7/10/2019	9012	9165	42	Marcellus
60	7/10/2019	8837	8990	48	Marcellus
61	7/10/2019	8662	8815	48	Marcellus
62	7/10/2019	8487	8640	48	Marcellus

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Heaven Hill 3-1HM
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)
Toe	32.9	7099	N/A	4756	0	828	0
1	85.3	7968	5400	4789	532730	10853	0
2	72.8	8328	5355	4737	447805	9413	0
3	72.1	8233	5279	4859	528910	10966	0
4	87.4	7962	5194	4403	529750	9673	0
5	84	7464	5375	4578	530510	10050	0
6	88.5	7851	5327	5187	521115	9184	0
7	87.9	7502	5203	5216	528525	9333	0
8	85.8	7830	5413	4523	528665	9421	0
9	87.3	7593	5244	4583	520200	9182	0
10	88	7922	5275	4728	528955	9330	0
11	88.9	7633	5106	4779	532475	9195	0
12	84.6	7907	5410	4654	530110	9861	0
13	89.2	7513	5301	4725	531550	9871	0
14	89.5	7807	5290	4900	528660	9211	0
15	88.2	7690	5363	4267	527320	9321	0
16	85.9	7874	5597	4689	454420	9655	0
17	88	8158	5420	4511	530620	9769	0
18	86.9	7994	5243	4386	531360	10594	0
19	87.9	7790	5121	4738	529460	9834	0
20	88.7	7768	5026	4567	482895	9857	0
21	88	7591	5445	4201	465935	9163	0
22	86	7548	5374	4369	536760	10060	0
23	84.8	7580	5669	4083	527880	10394	0
24	84.4	7615	5282	4075	531440	9527	0
25	84.7	7525	5315	4200	527920	9560	0
26	88.8	7654	5461	4814	530580	9518	0
27	85.1	7889	5950	3815	533100	10556	0
28	89.4	7553	5389	4506	532460	9679	0
29	89.1	7389	5452	4443	533140	9526	0
30	88.1	7444	5297	4597	488640	9043	0
31	88.9	7659	5517	4570	527420	10441	0
32	89.6	7711	5343	4370	531740	9629	0

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33	89	7619	5749	4371	530800	9630	0
34	89.5	7316	5615	4847	534390	9302	0
35	88.9	7315	5397	4599	530870	9383	0
36	89.3	7237	5507	4591	530350	9640	0
37	89.8	7307	5792	4722	531050	9636	0
38	89.6	7241	5423	4710	532835	9275	0
39	88.9	7234	5289	4461	530355	9466	0
40	88.9	7375	5230	4001	531635	9732	0
41	89.5	7399	5130	4487	532895	9529	0
42	89.5	7059	5276	4656	534445	9558	0
43	89.8	7090	5441	4839	527485	9394	0
44	89.7	7172	5575	4607	524325	9310	0
45	88.6	7311	5346	4447	529465	9349	0
46	89.2	7095	5201	4558	526005	10041	0
47	89.6	7101	5774	4659	523625	9432	0
48	89.7	7069	5345	4842	527925	9520	0
49	88.3	7199	5554	4485	529245	9716	0
50	89.5	6827	5770	4407	528470	9291	0
51	89.7	6886	5653	4715	528090	9494	0
52	89.8	6829	5710	4815	530750	9440	0
53	86.2	7200	5380	4947	354540	8627	0
54	89.5	6888	5576	4392	520470	9191	0
55	89.7	6834	5846	4586	528295	9255	0
56	89.6	6908	5644	4907	529375	9331	0
57	89.7	6699	5656	4761	529155	9267	0
58	89.2	6879	5613	4793	531815	10195	0
59	89.4	6869	6040	4919	531345	10026	0
60	89.6	6788	5880	4998	530505	9302	0
61	89.6	6705	5761	5149	531555	9318	0
62	89.7	6511	5590	5167	532305	9162	0

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HEAVEN HILL 3-1HM

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	1944	2130	1945	2131	Sandstone
Big Lime	2130	2257	2131	2259	Limestone
Big Injun	2257	2553	2259	2556	Sandstone
Weir	2553	2751	2556	2755	Sandstone
Berea	2751	3008	2755	3013	Sandstone
Gordon	3008	3101	3013	3108	Sandstone
Fifty Foot	3101	3678	3108	3725	Sandstone
Speechley	3678	5165	3725	5624	Sandstone
Benson	5165	5517	5624	6071	Sandstone
Alexander	5517	6134	6071	6866	Siltstone
Rhinestreet	6134	6637	6866	7525	Black shale
Middlesex	6637	6713	7525	7658	Black shale
Geneseo/Burkett	6713	6740	7658	7714	Black shale
Tully	6740	6766	7714	7780	Limestone
Hamilton	6766	6846	7780	8198	Grey shale
Marcellus	6846	-	8198	-	Black shale

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Well: Heaven Hill 3-1 HM (L)
 Site: Heaven Hill 3
 Project: Marshall County, West Virginia
 Design: rev8
 Rig: Nabors B-28



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Dleg	TFace	Vsect	Annotation
1	7125.00	38.87	202.79	6333.77	-2306.77	-858.25	0.00	0.00	1865.10	Survey @ 7125.00 MD 6333.77 TVD
2	7388.36	38.87	202.79	6238.61	-2492.07	-822.27	0.00	0.00	1985.56	KOP Begin 8'100' build/turn
3	7788.36	61.05	171.89	6798.11	-2756.80	-846.93	8.00	-58.00	2255.07	Begin 10'100' build/turn
4	8135.77	89.00	150.25	6888.00	-3089.85	-835.78	10.00	-40.31	2585.13	Begin 89.00" lateral section
5	19578.74	89.00	150.25	7088.00	-13003.21	-4841.03	0.00	0.00	3875.12	PBHLTD 19578.75 MD 7088.00 TVD

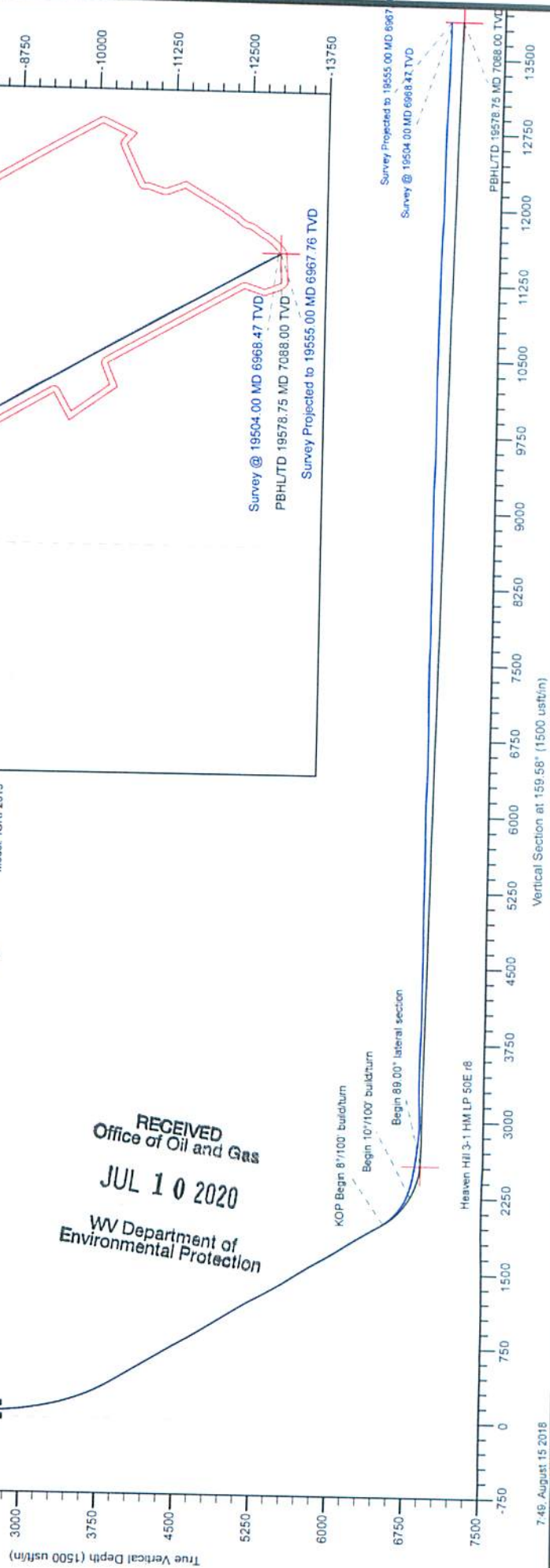
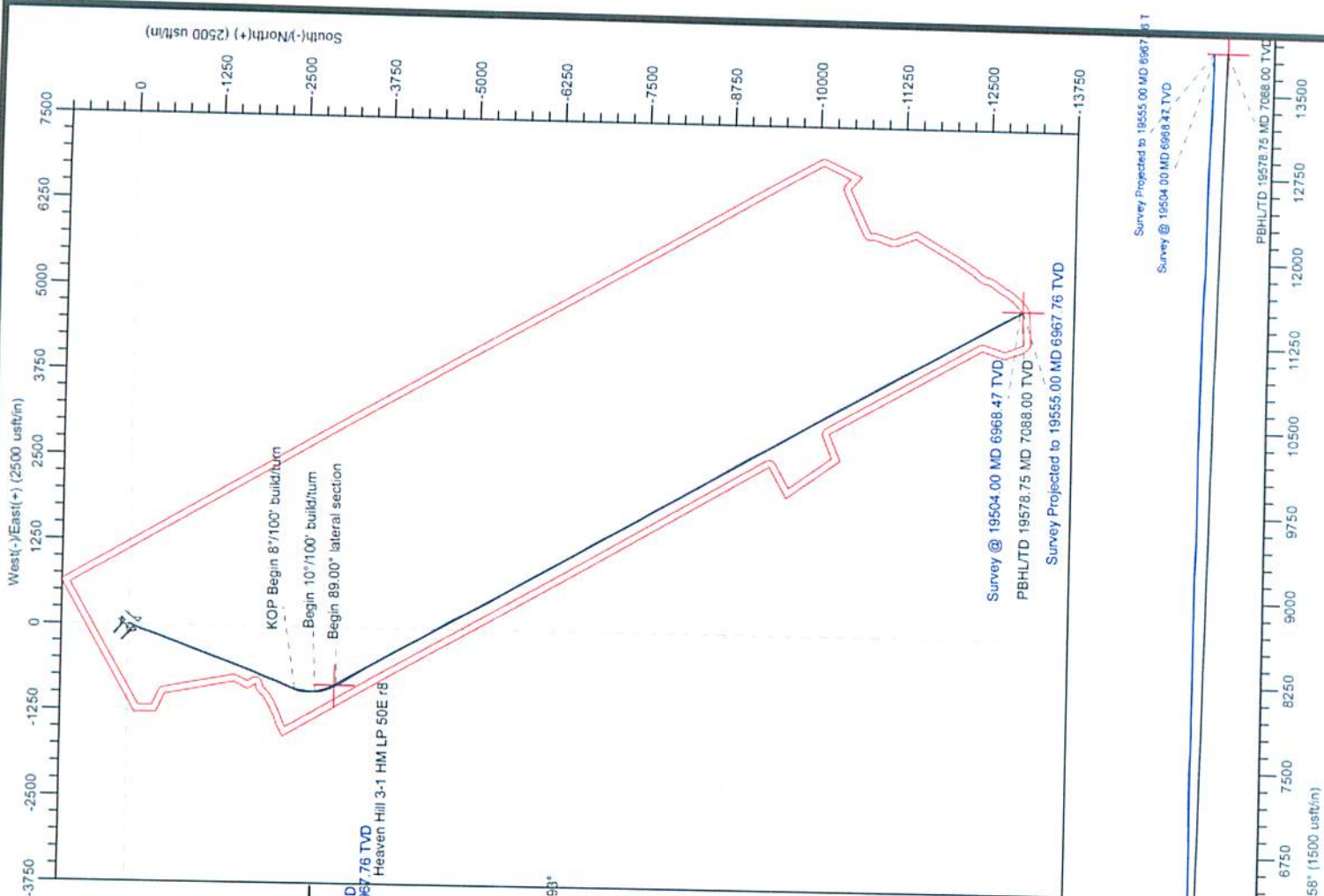
ANNOTATIONS

MD	Inc	Azi	TVD	+N/S	+E/W	Vsect	Annotation
19504.00	0.78	128.65	157.00	0.83	0.92	0.92	Survey @ 19504.00 MD 6968.47 TVD
19555.00	0.80	152.40	6968.47	12957.97	-8111.50	13822.42	Survey @ 19504.00 MD 6968.47 TVD
	0.80	152.40	6967.76	13003.16	-8335.13	13873.02	Survey Projected to 19555.00 MD 6967.76 TVD

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=1326+25 @ 1352.00ust (Nabors B-28)
 Northing 14457185.62 Easting 39.80859972 Longitude -80.69332114
 Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.93*



Azimuths to Grid North
 True North: 0.00
 Magnetic North: -8.93
 Magnetic Field
 Strength: 52051.3aT
 Dip-Angle: 68.88
 Data: 8/6/2018
 Model: IGRF2015



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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/29/2019
Job End Date:	7/10/2019
State:	West Virginia
County:	Marshall
API Number:	47-051-01935-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Heaven Hill 3 1HM
Latitude:	39.80850000
Longitude:	-80.69330000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,965
Total Base Water Volume (gal):	25,939,027
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	86.71736	Density = 8.34
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.18643	

FDP-S1296-17	Halliburton	Acid Corrosion Inhibitor	RECEIVED Office of Oil and Gas JUL 10 2020 WV Department of Environmental Protection				
				Listed Below			
LD-2950	MultiChem	Friction Reducer					
				Listed Below			
Sand-100 Mesh	Halliburton	Proppant					
				Listed Below			
HYDROCHLORIC ACID	Halliburton	Solvent					
				Listed Below			
MC MX 8-4743	MultiChem	Additive					
				Listed Below			
Sand-Premium White-30/50	Halliburton	Proppant					
				Listed Below			
SAND-40/70	Halliburton	Proppant					
				Listed Below			
OilPerm A	Halliburton	Non-ionic Surfactant					
				Listed Below			
MC LD-2850	MultiChem	Friction Reducer					

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				Listed Below			
LEGEND(TM) LD-7750W	MultiChem	Scale Control					
				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	12.97060	
			Hydrochloric acid	7647-01-0	15.00000	0.02685	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02673	
			Sodium nitrate	7631-99-4	60.00000	0.02233	
			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	0.00603	
			Methanol	67-56-1	100.00000	0.00423	
			Sodium chloride	7647-14-5	10.00000	0.00231	
			Castor oil, ethoxylated	61791-12-6	10.00000	0.00201	
			Ammonium chloride	12125-02-9	10.00000	0.00201	
			Alcohols, C12-16, ethoxylated	68551-12-2	5.00000	0.00100	
			Sorbitan monooleate polyoxyethylene derivative	9005-65-6	5.00000	0.00100	
			9-Octadecenamide, n,n-bis-2(hydroxy-ethyl)-,(Z)	93-83-4	5.00000	0.00100	
			Poly(oxy-1,2-ethanediyl), alpha-tridecyl-omega-hydroxy-, branched	69011-36-5	1.00000	0.00069	
			Ethoxylated alcohols	Proprietary	1.00000	0.00069	
			Ethanol	64-17-5	60.00000	0.00040	
			Phosphoric Acid Salt	Proprietary	5.00000	0.00030	
			Oxyalkylated nonyl phenolic resin	Proprietary	30.00000	0.00020	

		RECEIVED Office of Oil and Gas JUL 10 2020 WV Department of Environmental Protection	Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.00020	
			Modified thiourea polymer	Proprietary	30.00000	0.00019	
			Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00019	
			Oxyalkylated phenolic resin	Proprietary	10.00000	0.00007	
			Naphthalene	91-20-3	5.00000	0.00003	
			Poly(oxy-1,2-ethanediy), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00003	
			Hexadecene	629-73-2	5.00000	0.00003	
			Ethoxylated alcohols	Proprietary	5.00000	0.00003	
			Propargyl alcohol	107-19-7	5.00000	0.00003	
			Formaldehyde	50-00-0	0.10000	0.00003	
			Hydroquinone monomethyl ether	150-76-5	0.10000	0.00002	
			Sodium glycollate	2836-32-0	0.10000	0.00002	
			Diethanolamine	111-42-2	0.10000	0.00002	
			Nitrotriacetic acid, trisodium salt monohydrate	5064-31-3	0.10000	0.00002	
			Ethylenediaminetetraacetic acid, tetrasodium salt	64-02-8	0.10000	0.00002	
		1,4-Dioxane	123-91-1	0.10000	0.00002		
		1,2,4 Trimethylbenzene	95-63-6	1.00000	0.00001		

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

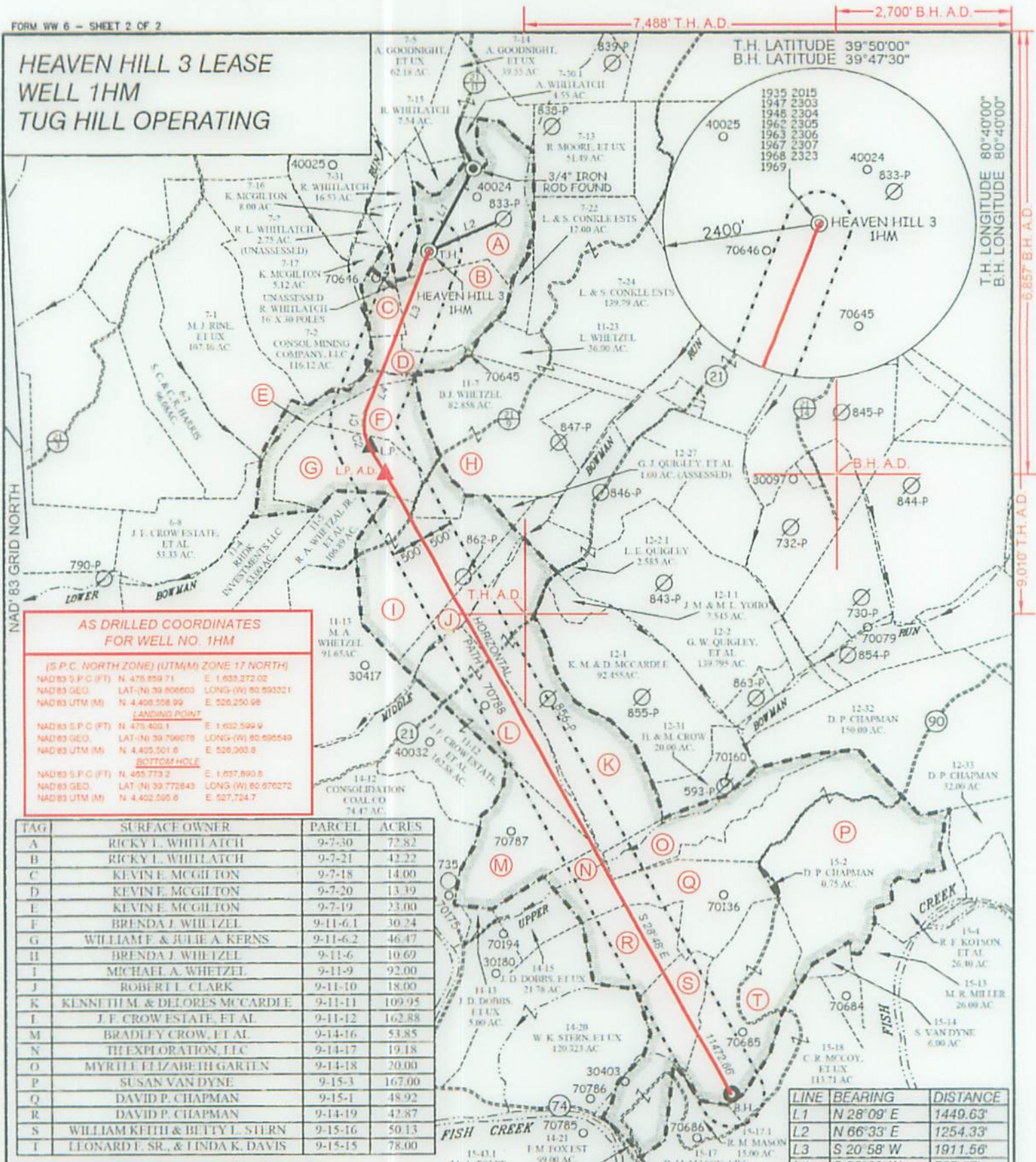
** Information is based on the maximum potential for concentration and thus the total may be over 100%

*** 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 3 LEASE
WELL 1HM
TUG HILL OPERATING**



**AS DRILLED COORDINATES
FOR WELL NO. 1HM**

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

NAD83 S.P.C. (FT)	N. 478,859.71	E. 1,633,272.02
NAD83 GEO.	LAT. (N) 39.808603	LONG. (W) 80.893321
NAD83 UTM (M)	N. 4,406,558.99	E. 526,250.98
LANDING POINT		
NAD83 S.P.C. (FT)	N. 475,400.1	E. 1,632,599.9
NAD83 GEO.	LAT. (N) 39.799707	LONG. (W) 80.895549
NAD83 UTM (M)	N. 4,405,501.6	E. 526,003.0
BOTTOM HOLE		
NAD83 S.P.C. (FT)	N. 465,773.2	E. 1,637,890.6
NAD83 GEO.	LAT. (N) 39.772843	LONG. (W) 80.870272
NAD83 UTM (M)	N. 4,402,595.6	E. 527,724.7

TAG	SURFACE OWNER	PARCEL	ACRES
A	RICKY L. WHITLATCH	9-7-30	72.82
B	RICKY L. WHITLATCH	9-7-21	42.22
C	KEVIN E. MCGILTON	9-7-18	14.00
D	KEVIN E. MCGILTON	9-7-20	13.39
E	KEVIN E. MCGILTON	9-7-19	23.00
F	BRENDA J. WHEITZEL	9-11-6-1	30.24
G	WILLIAM F. & JULIE A. KERNS	9-11-6-2	46.47
H	BRENDA J. WHEITZEL	9-11-6	10.69
I	MICHAEL A. WHEITZEL	9-11-9	92.00
J	ROBERT L. CLARK	9-11-10	18.00
K	KENNETH M. & DELORES MCCARDIE	9-11-11	109.95
L	J.F. CROWESTATE, ET AL.	9-11-12	162.88
M	BRADLEY CROW, ET AL.	9-14-16	53.85
N	THE EXPLORATION, LLC	9-14-17	19.18
O	MYRIE ELIZABETH GARTEN	9-14-18	20.00
P	SUSAN VAN DYNE	9-15-3	167.00
Q	DAVID P. CHAPMAN	9-15-1	48.92
R	DAVID P. CHAPMAN	9-14-19	42.87
S	WILLIAM KEITH & BETTY L. STERN	9-15-16	50.13
T	LEONARD F. SR., & LINDA K. DAVIS	9-15-15	78.00

LINE	BEARING	DISTANCE
L1	N 28° 09' E	1449.63'
L2	N 66° 33' E	1254.33'
L3	S 20° 58' W	1911.56'
L4	S 23° 09' W	765.57'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	273.02'	489.36'	S 03° 35' W	269.49'
C2	293.63'	934.25'	S 19° 59' E	292.42'



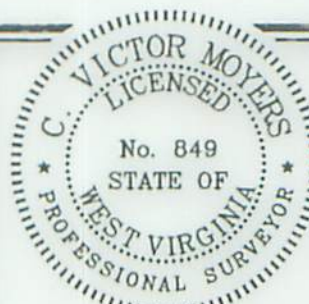
LEGEND

- AS DRILLED —
- PROPOSED - - -

P.S. 849 *C. Victor Moyers*

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

NAD83 S.P.C. (FT)	N. 478,859.71	E. 1,633,272.01
NAD83 GEO.	LAT. (N) 39.808600	LONG. (W) 80.893321
NAD83 UTM (M)	N. 4,406,558.99	E. 526,250.98
LANDING POINT		
NAD83 S.P.C. (FT)	N. 475,526.9	E. 1,632,370.3
NAD83 GEO.	LAT. (N) 39.800242	LONG. (W) 80.896387
NAD83 UTM (M)	N. 4,405,630.5	E. 525,991.7
BOTTOM HOLE		
NAD83 S.P.C. (FT)	N. 465,773.0	E. 1,637,896.7
NAD83 GEO.	LAT. (N) 39.772843	LONG. (W) 80.870251
NAD83 UTM (M)	N. 4,402,595.6	E. 527,726.5



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

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) A

SCALE 1" = 2000' FILE NO. 8654P1HMADR.dwg

DATE JANUARY 17, 20 19

REVISED JUNE 12, 20 20

OPERATORS WELL NO. HEAVEN HILL 3-1HM

API WELL NO. 47 — 051 — 01935

NO. STATE COUNTY PERMIT

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



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

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

COUNTY NAME
PERMIT

FORT MONROE TX 78103

CHARLESTON WV 25313

ADDRESS 1350 SOUTH UNIVERSITY DRIVE, SUITE 200
METT OPERATOR THE HILL OPERATING, LLC

ADDRESS 2400 D BIG LAGER ROAD
DESIGNATED AGENT C.I. CORPORATION SYSTEM
DIVINIA STAMPER

NO. STATE COUNTY PERMIT
METT 74 — 021 — 01032
OPERATORS METT NO. HEAVEN HILL 3-IHM
REALISED TIME IS 50 50
DATE JANUARY 11 2018
SCALE 1" = 5000' EISE NO. 88249-IHMADP8

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



SURFACE OWNER (SEE TABLE) (A)
FEEDS (SEE MW-821) (A)
TAX MAP-PARCEL 00-00
PERMITTED METT
EXISTING METT
PROPOSED METT
COUNTY ROUTE
ROAD
CREEK
DE LINE
OFFSET PINE
METT GATEWAY
SURFACE PINE
FEEDS PINE

LEGEND

STATES TOPOGRAPHIC MAPS
(+) DENOTES LOCATION OF METT ON UNITED

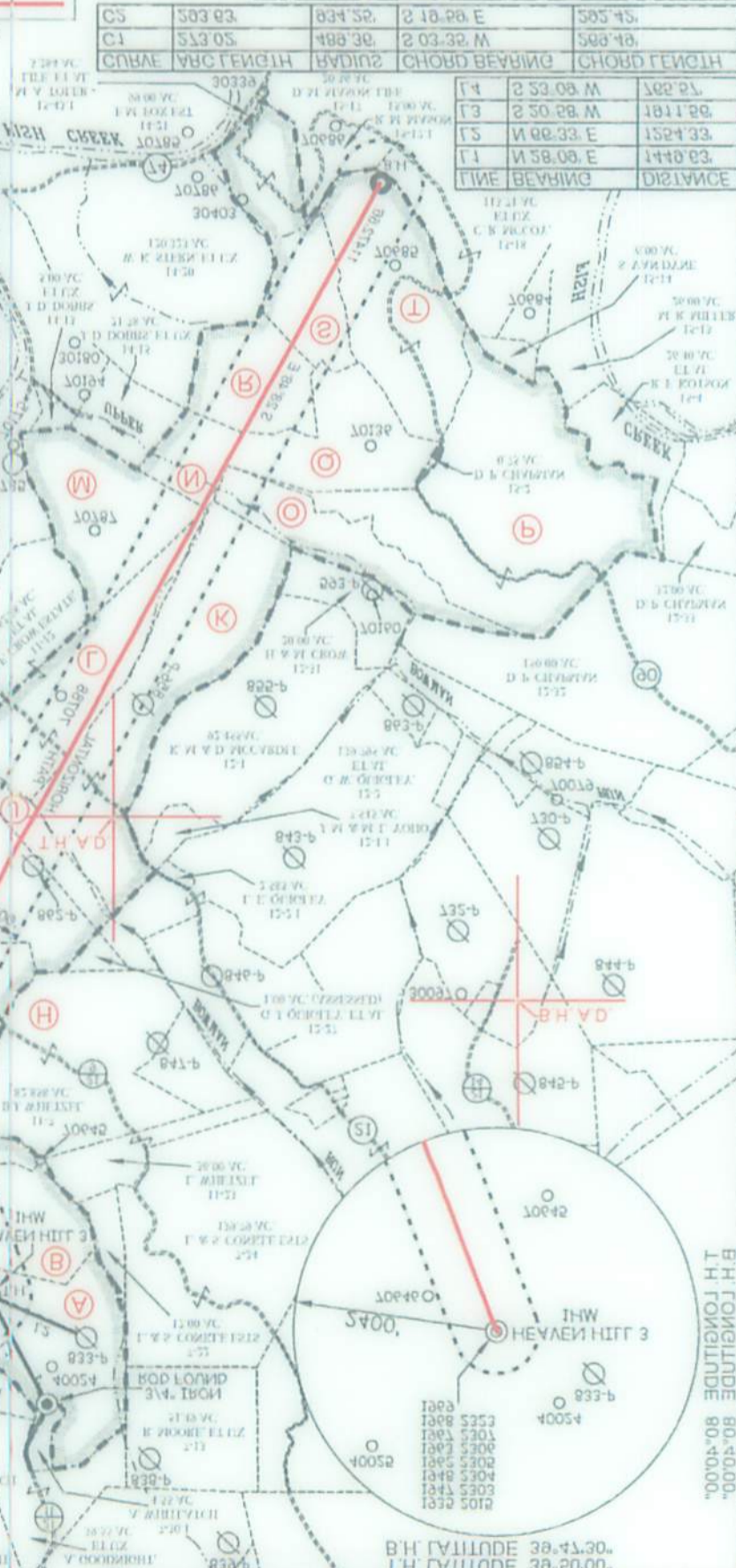
MVD.83 PUM (M) N 4'402'8302 E 252'3302
MVD.83 CEO (M) N 4'402'8302 E 252'3302
MVD.83 PUM (M) N 4'402'8302 E 252'3302
MVD.83 CEO (M) N 4'402'8302 E 252'3302
MVD.83 PUM (M) N 4'402'8302 E 252'3302
MVD.83 CEO (M) N 4'402'8302 E 252'3302
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MVD.83 CEO (M) N 4'402'8302 E 252'3302
MVD.83 PUM (M) N 4'402'8302 E 252'3302
MVD.83 CEO (M) N 4'402'8302 E 252'3302

224 East Market Street, Charleston, WV 25301
254 Market Street, Charleston, WV 25301
255 Market Street, Charleston, WV 25301
256 Market Street, Charleston, WV 25301

PROPOSED (dashed green line)
AS DRILLED (solid red line)
LEGEND

810 8'2' *G. J. ...*

LINE	BEARING	DISTANCE
1	112° 12' 12"	38' 00"
2	112° 12' 12"	20' 12"
3	112° 12' 12"	45' 82"
4	112° 12' 12"	48' 05"
5	112° 12' 12"	102' 00"
6	112° 12' 12"	50' 00"
7	112° 12' 12"	10' 12"
8	112° 12' 12"	23' 82"
9	112° 12' 12"	102' 88"
10	112° 12' 12"	103' 02"
11	112° 12' 12"	18' 00"
12	112° 12' 12"	65' 00"
13	112° 12' 12"	10' 03"
14	112° 12' 12"	46' 43"
15	112° 12' 12"	30' 54"
16	112° 12' 12"	57' 00"
17	112° 12' 12"	13' 40"
18	112° 12' 12"	14' 00"
19	112° 12' 12"	45' 55"
20	112° 12' 12"	55' 85"
21	112° 12' 12"	55' 85"
22	112° 12' 12"	55' 85"



MVD.83 PUM (M)	N	E
4'402'8302	252'3302	1'442'1342
4'402'8302	252'3302	1'442'1342
4'402'8302	252'3302	1'442'1342
4'402'8302	252'3302	1'442'1342
4'402'8302	252'3302	1'442'1342
4'402'8302	252'3302	1'442'1342
4'402'8302	252'3302	1'442'1342
4'402'8302	252'3302	1'442'1342
4'402'8302	252'3302	1'442'1342
4'402'8302	252'3302	1'442'1342

FOR METT NO. IHM
AS DRILLED COORDINATES

THE HILL OPERATING
METT IHM
HEAVEN HILL 3 FEEDS

TEMPERATURE
ELEVATION

80° 40' 00"
80° 40' 00"
80° 40' 00"

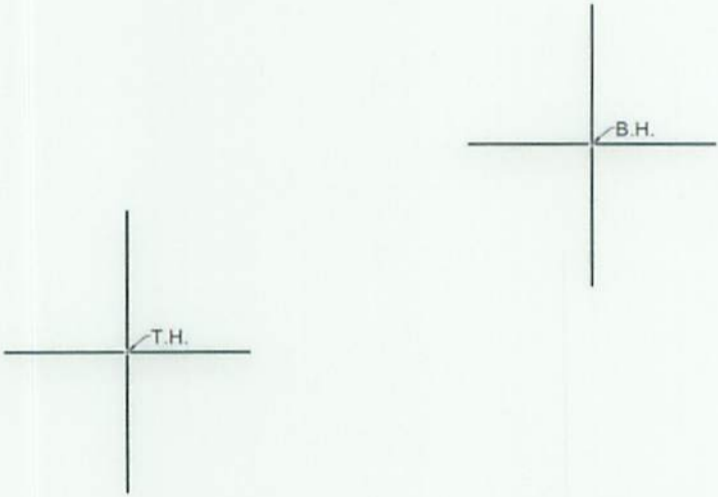
38° 41' 30"
38° 20' 00"

HEAVEN HILL 3 LEASE
WELL 1HM
TUG HILL OPERATING

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

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)		
NAD'83 S.P.C.(FT)	N. 478,859.71	E. 1,633,272.01
NAD'83 GEO.	LAT-(N) 39.808600	LONG-(W) 80.693321
NAD'83 UTM (M)	N. 4,406,558.99	E. 526,250.98
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 475,826.9	E. 1,632,370.3
NAD'83 GEO.	LAT-(N) 39.800242	LONG-(W) 80.696387
NAD'83 UTM (M)	N. 4,405,630.5	E. 525,991.7
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 465,773.0	E. 1,637,896.7
NAD'83 GEO.	LAT-(N) 39.772843	LONG-(W) 80.676251
NAD'83 UTM (M)	N. 4,402,595.6	E. 527,726.5

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°40'00"
6,857' B.H.
9,010' T.H.

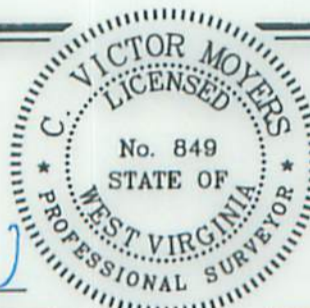


NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'
- AS-DRILLED DATA PROVIDED BY TUG HILL OPERATING, LLC.
- PLAT UPDATED TO SHOW AS-DRILLED PATH.



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. 849 *C. Victor Moyers*

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE JANUARY 17, 20 19
REVISED _____
OPERATORS WELL NO. HEAVEN HILL 3-1HM
API WELL NO. 47 - 051 - 01935
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8654P1HMAD.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 X LIQUID INJECTION ___ WASTE DISPOSAL ___ "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION: ELEVATION GROUND = 1,339.40' PROPOSED = 1,326.35' WATERSHED LOWER BOWMAN RUN OF FISH CREEK (HUC 10)
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER RICKY L. WHITLATCH ACREAGE 72.82±
ROYALTY OWNER RICKY L. WHITLATCH, ET AL - SEE WW-6A1 ACREAGE 72.82±

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: 6,876' / TMD: 19,500'

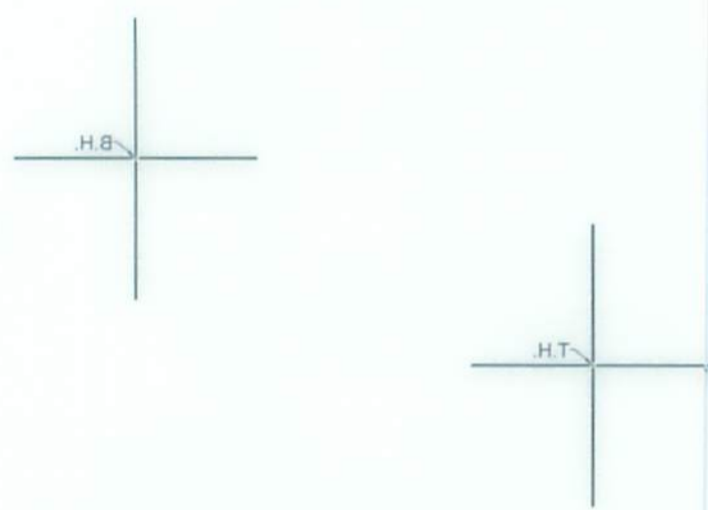
WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD
FORT WORTH, TX 76107 CHARLESTON, WV 25313

COUNTY NAME PERMIT

HEAVEN HILL 3 LEASE WELL 1HM TUG HILL OPERATING

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

BOTTOM HOLE	
NAD83 UTM (M)	N 4405,595.8 E 527,758.5
NAD83 GEO.	LAT-(N) 39.772843 LONG-(W) 80.825251
NAD83 S.P.C. (FT)	N 482,773.0 E 1,837,898.7
LANDING POINT	
NAD83 UTM (M)	N 4405,598.99 E 528,250.98
NAD83 GEO.	LAT-(N) 39.808800 LONG-(W) 80.893321
NAD83 S.P.C. (FT)	N 478,859.71 E 1,833,275.01
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)	



NOTES ON SURVEY

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS > 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
2. WELL SPOT, CIRCLE & TOPO MARK SCALE IS 1"=2000'
3. AS-DRILLED DATA PROVIDED BY TUG HILL OPERATING, LLC.
4. PLAN UPDATED TO SHOW AS-DRILLED PATH.



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN 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. 848
C. Victor Moyers



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE JANUARY 17, 2018
REVISED _____
OPERATORS WELL NO. HEAVEN HILL 3-1HM
API NO. 47
WELL NO. 021
COUNTY PERMIT 01935

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

CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORN NETWORK)
SCALE 1" = 2000'
FILE NO. 8854P1HMAD.dwg
MINIMUM DEGREE OF ACCURACY 1/2500

WELL TYPE: OIL GAS LIQUID WASTE DISPOSAL GAS PRODUCTION STORAGE DEEP SHALLOW

LOCATION: ELEVATION PROPOSED = 1,328.35' WATERSHED LOWER BOWMAN RUN OF FISH CREEK (HUC 10)
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5

SURFACE OWNER RICKY L. WHITLATCH
ROYALTY OWNER RICKY L. WHITLATCH, ET AL - SEE WW-6A1
LEASE NO. SEE WW-6A1

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: 6876' TMD: 19,500'

WELL OPERATOR TUG HILL OPERATING, LLC
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107
DESIGNATED AGENT DIANNA STAMPER
ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

H.B. 788.3
H.T. 010.8
H.B. 788.3
H.T. 010.8
H.B. 788.3
H.T. 010.8