



Well: Goudy 1S-04HM (K)  
 Site: Goudy  
 Project: Marshall County, West Virginia.  
 Design: rev5  
 Rig: Nabors B28

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	527.00	0.00	0.00	527.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 1°/100' build
3	827.00	3.00	95.00	826.86	-0.68	7.82	1.00	95.00	4.58	Begin 3.00° tangent
4	2729.74	3.00	95.00	2727.00	-9.36	107.03	0.00	0.00	62.61	Begin 3°/100' build
5	2929.74	9.00	95.00	2925.81	-11.18	127.84	3.00	0.00	74.79	Begin 3°/100' build/turn
6	3831.02	31.26	150.16	3771.90	-224.12	317.95	3.00	69.52	354.89	Begin 31.26° tangent
7	6596.52	31.26	150.16	6136.01	-1468.80	1031.89	0.00	0.00	1789.65	Begin 8°/100' build/turn
8	6830.82	50.00	150.08	6313.04	-1600.49	1107.57	8.00	-0.20	1941.52	Begin 10°/100' build/turn
9	7220.87	89.00	149.98	6447.00	-1910.90	1286.60	10.00	-0.15	2299.83	Begin 89.00° lateral
10	19247.99	89.00	149.98	6656.00	-12323.45	7302.16	0.00	0.00	4324.41	PBHL/TD 19247.99 MD 6656.00 TVD

ANNOTATIONS SURVEYS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VFace	Annotation
177.00	0.26	108.71	177.00	-0.13	0.38	0.30	MWD surveys
19173.00	88.09	150.29	6578.56	-12270.70	7259.95	14257.52	Survey @ 19173.00 MD 6578.56 TVD
19231.00	88.09	150.29	6580.49	-12321.05	7288.68	14315.48	Survey Proj. to 19231.00 MD 6580.49 TVD

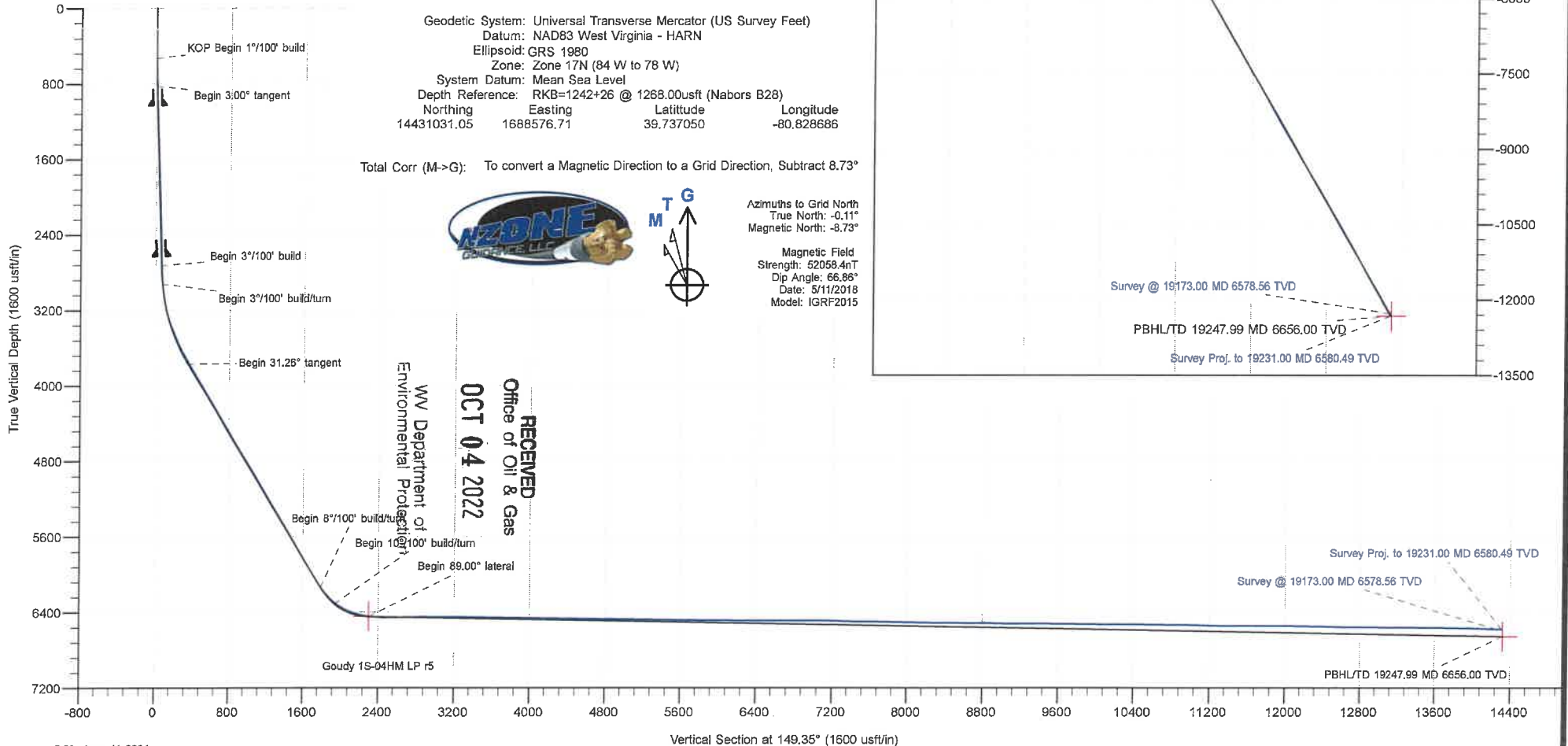
Geodetic System: Universal Transverse Mercator (US Survey Feet)  
 Datum: NAD83 West Virginia - HARN  
 Ellipsoid: GRS 1980  
 Zone: Zone 17N (84 W to 78 W)  
 System Datum: Mean Sea Level  
 Depth Reference: RKB=1242+26 @ 1268.00usft (Nabors B28)  
 Northing: 14431031.05 Easting: 1688576.71 Latitude: 39.737050 Longitude: -80.828686

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.73°



Azimuths to Grid North  
 True North: -0.11°  
 Magnetic North: -8.73°

Magnetic Field  
 Strength: 52058.4nT  
 Dip Angle: 66.88°  
 Date: 5/11/2018  
 Model: IGRF2015



<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Goudy 1S-04HM (K)
<b>Project:</b>	Marshall County, West Virginia.	<b>TVD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Site:</b>	Goudy	<b>MD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Well:</b>	Goudy 1S-04HM (K)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Dec2220_v16

<b>Project</b>	Marshall County, West Virginia.		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD83 West Virginia - HARN		
<b>Map Zone:</b>	Zone 17N (84 W to 78 W)		

<b>Site</b>	Goudy				
<b>Site Position:</b>	<b>Northing:</b>	14,430,942.40 usft	<b>Latitude:</b>	39.736807	
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,688,559.77 usft	<b>Longitude:</b>	-80.828748
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "		

<b>Well</b>	Goudy 1S-04HM (K)					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	14,431,031.05 usft	<b>Latitude:</b>	39.737050
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,688,576.71 usft	<b>Longitude:</b>	-80.828687
<b>Position Uncertainty</b>	0.00 usft		<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	1,242.00 usft
<b>Grid Convergence:</b>	0.11 °					

<b>Wellbore</b>	Original Hole				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	5/11/2018	-8.62	66.86	52,058.42689591

<b>Design</b>	Surveys Original Hole				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	149.35	

<b>Survey Program</b>	<b>Date</b>	6/11/2021			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
177.00	952.00	MWD surf (Original Hole)	MWD	MWD - Standard	<b>RECEIVED</b> <b>Office of Oil &amp; Gas</b> <b>OCT 04 2022</b> WV Department of Environmental Protection
1,066.00	2,568.00	MWD int (Original Hole)	MWD	MWD - Standard	
2,671.00	19,173.00	MWD (Original Hole)	MWD	MWD - Standard	
19,231.00	19,231.00	Projection (Original Hole)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
177.00	0.26	108.71	177.00	-0.13	0.38	0.30	0.15	0.15	0.00	
<b>MWD surveys</b>										
208.00	0.13	102.30	208.00	-0.16	0.48	0.38	0.42	-0.42	-20.68	
238.00	0.18	94.56	238.00	-0.17	0.56	0.43	0.18	0.17	-25.80	
268.00	0.26	145.98	268.00	-0.23	0.65	0.53	0.68	0.27	171.40	
298.00	0.26	115.13	298.00	-0.32	0.75	0.65	0.46	0.00	-102.83	

<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Goudy 1S-04HM (K)
<b>Project:</b>	Marshall County, West Virginia.	<b>TVD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Site:</b>	Goudy	<b>MD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Well:</b>	Goudy 1S-04HM (K)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Dec2220_v16

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
329.00	0.39	20.91	329.00	-0.25	0.85	0.64	1.56	0.42	-303.94
359.00	0.52	167.60	359.00	-0.28	0.91	0.71	2.91	0.43	488.97
389.00	0.61	279.22	389.00	-0.39	0.78	0.74	3.12	0.30	372.07
419.00	0.43	139.30	419.00	-0.45	0.70	0.75	3.26	-0.60	-466.40
467.00	0.92	42.62	466.99	-0.30	1.08	0.81	2.21	1.02	-201.42
510.00	1.01	93.38	509.99	-0.07	1.69	0.92	1.93	0.21	118.05
557.00	0.79	124.36	556.98	-0.28	2.37	1.45	1.12	-0.47	65.91
600.00	0.75	124.89	599.98	-0.61	2.85	1.98	0.09	-0.09	1.23
647.00	0.92	122.43	646.97	-0.99	3.42	2.59	0.37	0.36	-5.23
692.00	1.36	121.11	691.97	-1.46	4.18	3.38	0.98	0.98	-2.93
739.00	1.67	117.15	738.95	-2.06	5.27	4.45	0.70	0.66	-8.43
782.00	1.93	116.09	781.93	-2.66	6.48	5.59	0.61	0.60	-2.47
829.00	1.98	119.53	828.90	-3.41	7.89	6.96	0.27	0.11	7.32
877.00	2.15	110.03	876.87	-4.13	9.46	8.37	0.79	0.35	-19.79
952.00	2.29	113.28	951.81	-5.20	12.16	10.67	0.25	0.19	4.33
1,066.00	2.90	105.98	1,065.70	-6.89	17.02	14.61	0.61	0.54	-6.40
1,160.00	3.64	99.83	1,159.54	-8.06	22.25	18.28	0.87	0.79	-6.54
1,252.00	4.35	98.07	1,251.32	-9.05	28.58	22.35	0.78	0.77	-1.91
1,346.00	4.04	94.03	1,345.07	-9.78	35.41	26.47	0.46	-0.33	-4.30
1,440.00	3.55	92.54	1,438.86	-10.14	41.62	29.95	0.53	-0.52	-1.59
1,535.00	4.08	86.03	1,533.65	-10.04	47.93	33.07	0.72	0.56	-6.85
1,629.00	4.04	89.64	1,627.41	-9.79	54.58	36.24	0.28	-0.04	3.84
1,722.00	3.21	92.19	1,720.23	-9.87	60.46	39.31	0.91	-0.89	2.74
1,816.00	3.47	87.18	1,814.07	-9.83	65.93	42.06	0.42	0.28	-5.33
1,910.00	3.56	91.31	1,907.89	-9.75	71.69	44.94	0.54	0.10	4.39
2,004.00	3.13	96.05	2,001.73	-10.09	77.16	48.02	0.54	-0.46	5.04
2,098.00	2.81	99.92	2,095.60	-10.76	81.98	51.05	0.37	0.34	4.12
2,193.00	2.46	98.95	2,190.50	-11.48	86.29	53.86	0.37	-0.37	-1.02
2,288.00	3.73	93.42	2,285.36	-11.98	91.39	56.89	0.37	1.34	-5.82
2,382.00	3.77	86.65	2,379.16	-11.98	97.52	60.02	0.47	0.04	-7.20
2,475.00	2.68	83.48	2,472.01	-11.55	102.74	62.31	1.19	-1.17	-3.41
2,568.00	1.62	81.20	2,564.95	-11.11	106.20	63.69	1.14	-1.14	-2.45
2,671.00	2.42	86.13	2,667.88	-10.74	109.81	65.21	0.79	0.78	4.79
2,703.00	3.25	86.65	2,699.84	-10.64	111.38	65.93	2.59	2.59	1.63
2,734.00	4.00	86.04	2,730.78	-10.51	113.34	66.82	2.42	2.42	-1.97
2,766.00	5.58	85.25	2,762.67	-10.31	116.00	68.00	4.94	4.94	-2.47
2,797.00	7.12	85.34	2,793.48	-10.02	119.42	69.50	4.97	4.97	0.29
2,829.00	7.47	85.07	2,825.22	-9.68	123.47	71.28	1.10	1.09	-0.84
2,860.00	7.99	92.45	2,855.94	-9.60	127.63	73.33	3.61	1.68	23.81
2,892.00	8.34	97.37	2,887.61	-10.00	132.15	75.97	2.44	1.09	15.36
2,924.00	8.70	102.12	2,919.26	-10.80	136.82	79.04	2.47	1.13	14.84
2,959.00	8.61	101.85	2,953.86	-11.90	141.97	82.61	0.28	-0.26	-0.77
2,990.00	8.56	99.83	2,984.51	-12.77	146.52	85.68	0.99	-0.16	-6.52
3,021.00	9.79	96.67	3,015.12	-13.47	151.41	88.77	4.29	3.97	-10.19

RECEIVED  
 Office of Oil & Gas  
 06/10/2022  
 WV Department of  
 Environmental Protection

<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Goudy 1S-04HM (K)
<b>Project:</b>	Marshall County, West Virginia.	<b>TVD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Site:</b>	Goudy	<b>MD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Well:</b>	Goudy 1S-04HM (K)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Dec2220_v16

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,053.00	10.85	108.62	3,046.60	-14.74	156.97	92.70	7.45	3.31	37.34
3,084.00	13.00	107.04	3,076.93	-16.70	163.07	97.49	7.01	6.94	-5.10
3,116.00	14.01	111.43	3,108.05	-19.17	170.11	103.21	4.50	3.16	13.72
3,147.00	12.84	115.56	3,138.20	-22.02	176.71	109.04	4.88	-3.77	13.32
3,179.00	12.34	122.68	3,169.43	-25.41	182.80	115.05	5.09	-1.56	22.25
3,211.00	13.18	130.51	3,200.65	-29.62	188.45	121.56	6.00	2.63	24.47
3,242.00	14.54	136.31	3,230.74	-34.73	193.83	128.69	6.27	4.39	18.71
3,274.00	16.04	140.53	3,261.61	-41.05	199.41	136.97	5.83	4.69	13.19
3,305.00	17.45	143.26	3,291.30	-48.08	204.92	145.83	5.21	4.55	8.81
3,337.00	18.98	145.10	3,321.69	-56.19	210.77	155.79	5.11	4.78	5.75
3,368.00	20.21	146.51	3,350.90	-64.80	216.60	166.17	4.25	3.97	4.55
3,400.00	21.27	146.16	3,380.82	-74.23	222.89	177.48	3.34	3.31	-1.09
3,431.00	21.09	144.84	3,409.73	-83.46	229.23	188.66	1.64	-0.58	-4.26
3,463.00	21.62	144.75	3,439.53	-92.98	235.95	200.27	1.66	1.66	-0.28
3,494.00	22.41	146.16	3,468.27	-102.55	242.53	211.87	3.07	2.55	4.55
3,526.00	23.73	147.56	3,497.71	-113.05	249.39	224.39	4.47	4.13	4.38
3,557.00	25.00	148.70	3,525.95	-123.91	256.14	237.18	4.37	4.10	3.68
3,589.00	25.22	148.44	3,554.93	-135.50	263.22	250.76	0.77	0.69	-0.81
3,620.00	25.97	148.79	3,582.88	-146.93	270.19	264.15	2.47	2.42	1.13
3,652.00	27.07	149.67	3,611.52	-159.21	277.50	278.43	3.65	3.44	2.75
3,683.00	27.81	149.58	3,639.03	-171.53	284.72	292.72	2.39	2.39	-0.29
3,715.00	27.77	149.14	3,667.34	-184.37	292.32	307.64	0.65	-0.13	-1.38
3,746.00	28.60	149.23	3,694.66	-196.95	299.83	322.28	2.68	2.68	0.29
3,778.00	28.52	148.52	3,722.77	-210.04	307.73	337.58	1.09	-0.25	-2.22
3,809.00	29.26	149.93	3,749.91	-222.91	315.39	352.55	3.24	2.39	4.55
3,904.00	31.06	150.11	3,832.05	-264.25	339.24	400.28	1.90	1.89	0.19
3,999.00	31.81	148.44	3,913.10	-306.84	364.56	449.82	1.21	0.79	-1.76
4,094.00	32.12	143.43	3,993.71	-348.46	392.72	499.98	2.81	0.33	-5.27
4,188.00	30.67	145.01	4,073.95	-388.17	421.35	548.75	1.77	-1.54	1.68
4,282.00	30.41	151.17	4,154.93	-428.67	446.58	596.44	3.34	-0.28	6.55
4,377.00	30.32	150.46	4,236.90	-470.59	470.00	644.45	0.39	0.09	-0.75
4,472.00	30.41	151.25	4,318.87	-512.54	493.39	692.46	0.43	0.09	0.83
4,566.00	31.77	152.57	4,399.36	-555.36	516.23	740.94	1.62	1.45	1.40
4,661.00	32.43	150.81	4,479.84	-599.80	540.17	791.38	1.20	0.69	-1.85
4,755.00	29.92	152.48	4,560.26	-642.60	563.30	839.99	2.82	2.66	1.78
4,849.00	31.11	153.71	4,641.24	-685.16	584.89	887.62	1.43	1.27	1.31
4,943.00	31.55	149.67	4,721.54	-728.17	608.07	936.43	2.28	0.47	-4.30
5,038.00	31.99	147.65	4,802.31	-770.88	634.09	986.44	1.21	0.46	-2.13
5,133.00	31.68	152.13	4,883.03	-814.20	659.22	1,036.51	2.51	-0.33	4.72
5,227.00	31.86	152.30	4,962.95	-857.98	682.29	1,085.94	0.21	0.19	0.18
5,321.00	30.94	148.53	5,043.19	-900.56	706.44	1,134.89	2.31	-0.98	-4.01
5,414.00	31.07	147.03	5,122.90	-941.09	731.98	1,182.77	0.84	0.14	-1.61
5,509.00	30.59	149.06	5,204.48	-982.39	757.75	1,231.44	1.21	-0.51	2.14

RECEIVED  
Office of Oil & Gas  
OCT 04 2022  
WV Department of  
Environmental Protection

<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Goudy 1S-04HM (K)
<b>Project:</b>	Marshall County, West Virginia.	<b>TVD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Site:</b>	Goudy	<b>MD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Well:</b>	Goudy 1S-04HM (K)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Dec2220_v16

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,603.00	30.45	148.35	5,285.46	-1,023.18	782.54	1,279.17	0.41	-0.15	-0.76
5,697.00	30.37	150.46	5,366.53	-1,064.13	806.76	1,326.75	1.14	-0.09	2.24
5,791.00	30.62	150.98	5,447.53	-1,105.74	830.09	1,374.44	0.39	0.27	0.55
5,886.00	31.37	149.31	5,528.96	-1,148.16	854.44	1,423.35	1.20	0.79	-1.76
5,980.00	31.20	148.00	5,609.29	-1,189.85	879.83	1,472.16	0.75	-0.18	-1.39
6,074.00	31.11	151.17	5,689.74	-1,231.77	904.45	1,520.77	1.75	-0.10	3.37
6,169.00	30.89	150.99	5,771.17	-1,274.60	928.11	1,569.68	0.25	-0.23	-0.19
6,263.00	30.67	150.20	5,851.93	-1,316.51	951.73	1,617.77	0.49	-0.23	-0.84
6,358.00	30.63	150.29	5,933.66	-1,358.55	975.76	1,666.19	0.06	-0.04	0.09
6,387.00	30.68	149.50	5,958.61	-1,371.34	983.18	1,680.98	1.40	0.17	-2.72
6,434.00	31.03	149.14	5,998.96	-1,392.07	995.48	1,705.08	0.84	0.74	-0.77
6,481.00	32.66	150.37	6,038.88	-1,413.50	1,007.96	1,729.88	3.73	3.47	2.62
6,576.00	31.87	149.06	6,119.21	-1,457.29	1,033.53	1,780.59	1.11	-0.83	-1.38
6,623.00	35.43	147.91	6,158.33	-1,479.48	1,047.15	1,806.62	7.69	7.57	-2.45
6,670.00	39.43	148.00	6,195.65	-1,503.69	1,062.30	1,835.18	8.51	8.51	0.19
6,717.00	42.59	147.83	6,231.11	-1,529.82	1,078.69	1,866.00	6.73	6.72	-0.36
6,765.00	47.65	148.62	6,264.97	-1,558.73	1,096.58	1,900.00	10.61	10.54	1.65
6,812.00	51.87	150.29	6,295.32	-1,589.62	1,114.79	1,935.86	9.38	8.98	3.55
6,859.00	54.81	151.52	6,323.38	-1,622.57	1,133.12	1,973.55	6.60	6.26	2.62
6,906.00	58.77	151.69	6,349.12	-1,657.16	1,151.81	2,012.83	8.43	8.43	0.36
6,954.00	62.86	151.43	6,372.52	-1,694.00	1,171.77	2,054.70	8.53	8.52	-0.54
7,001.00	66.64	150.64	6,392.57	-1,731.18	1,192.36	2,097.18	8.18	8.04	-1.68
7,048.00	71.12	150.46	6,409.50	-1,769.35	1,213.91	2,141.00	9.54	9.53	-0.38
7,095.00	74.90	151.25	6,423.23	-1,808.60	1,235.79	2,185.93	8.20	8.04	1.68
7,142.00	78.37	151.69	6,434.09	-1,848.77	1,257.63	2,231.62	7.44	7.38	0.94
7,192.00	80.97	152.31	6,443.06	-1,892.19	1,280.72	2,280.75	5.34	5.20	1.24
7,234.00	86.46	151.87	6,447.65	-1,929.07	1,300.25	2,322.43	13.11	13.07	-1.05
7,328.00	86.51	149.93	6,453.42	-2,011.05	1,345.88	2,416.22	2.06	0.05	-2.06
7,423.00	90.07	151.34	6,456.25	-2,093.79	1,392.43	2,511.13	4.03	3.75	1.48
7,517.00	90.99	153.10	6,455.38	-2,176.95	1,436.24	2,605.01	2.11	0.98	1.87
7,611.00	91.03	149.93	6,453.72	-2,259.55	1,481.06	2,698.91	3.37	0.78	-3.37
7,704.00	91.56	149.76	6,451.62	-2,339.94	1,527.76	2,791.89	1.49	0.60	-0.18
7,798.00	90.20	149.41	6,450.18	-2,420.99	1,575.35	2,885.87	0.12	0.12	-0.37
7,892.00	89.49	149.32	6,450.43	-2,501.87	1,623.25	2,979.87	0.12	-0.76	-0.10
7,986.00	90.20	149.14	6,450.69	-2,582.64	1,671.33	3,073.87	0.78	0.78	-0.19
8,081.00	89.23	149.23	6,451.16	-2,664.22	1,720.00	3,168.87	1.00	1.00	0.09
8,175.00	90.37	149.58	6,451.49	-2,745.14	1,767.84	3,262.86	1.21	1.21	0.37
8,270.00	88.66	149.58	6,452.29	-2,827.05	1,815.94	3,357.86	1.80	-1.80	0.00
8,364.00	89.14	149.76	6,454.10	-2,908.17	1,863.40	3,451.84	0.55	0.51	0.19
8,457.00	88.09	150.11	6,456.34	-2,988.63	1,909.97	3,544.80	1.19	-1.13	0.38
8,550.00	88.79	150.64	6,458.88	-3,069.45	1,955.93	3,637.75	0.94	0.75	0.57
8,644.00	89.41	150.99	6,460.35	-3,151.50	2,001.76	3,731.71	0.76	0.66	0.37
8,739.00	90.07	151.52	6,460.78	-3,234.79	2,047.45	3,826.66	0.89	0.69	0.56

RECEIVED  
 Office of Oil & Gas  
 OCT 04 2022  
 WV Department of  
 Environmental Protection

<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Goudy 1S-04HM (K)
<b>Project:</b>	Marshall County, West Virginia.	<b>TVD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Site:</b>	Goudy	<b>MD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Well:</b>	Goudy 1S-04HM (K)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Dec2220_v16

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,834.00	89.36	150.02	6,461.26	-3,317.69	2,093.83	3,921.62	1.75	-0.75	-1.58
8,928.00	89.93	150.29	6,461.84	-3,399.22	2,140.61	4,015.61	0.67	0.61	0.29
9,023.00	88.88	149.23	6,462.82	-3,481.29	2,188.45	4,110.60	1.57	-1.11	-1.12
9,118.00	89.80	149.58	6,463.92	-3,563.06	2,236.80	4,205.59	1.04	0.97	0.37
9,212.00	88.31	147.83	6,465.47	-3,643.37	2,285.62	4,299.57	2.44	-1.59	-1.86
9,306.00	88.75	148.00	6,467.88	-3,722.98	2,335.53	4,393.51	0.50	0.47	0.18
9,401.00	89.27	148.18	6,469.52	-3,803.61	2,385.74	4,488.47	0.58	0.55	0.19
9,495.00	89.80	148.09	6,470.29	-3,883.44	2,435.36	4,582.45	0.57	0.56	-0.10
9,589.00	88.84	148.79	6,471.40	-3,963.53	2,484.56	4,676.43	1.26	-1.02	0.74
9,684.00	89.32	149.67	6,472.93	-4,045.15	2,533.15	4,771.41	1.06	0.51	0.93
9,777.00	89.10	149.14	6,474.21	-4,125.19	2,580.48	4,864.40	0.62	-0.24	-0.57
9,872.00	88.97	149.41	6,475.81	-4,206.85	2,629.01	4,959.39	0.32	-0.14	0.28
9,965.00	88.88	151.43	6,477.55	-4,287.71	2,674.91	5,052.35	2.17	-0.10	2.17
10,059.00	89.32	151.69	6,479.03	-4,370.35	2,719.67	5,146.27	0.54	0.47	0.28
10,154.00	90.15	152.40	6,479.47	-4,454.27	2,764.20	5,241.16	1.15	0.87	0.75
10,249.00	88.70	150.90	6,480.42	-4,537.86	2,809.31	5,336.08	2.20	-1.53	-1.58
10,343.00	89.19	150.81	6,482.15	-4,619.95	2,855.08	5,430.03	0.53	0.52	-0.10
10,437.00	90.07	151.17	6,482.76	-4,702.15	2,900.67	5,523.99	1.01	0.94	0.38
10,531.00	88.57	149.76	6,483.88	-4,783.93	2,947.00	5,617.96	2.19	-1.60	-1.50
10,625.00	89.36	149.93	6,485.57	-4,865.19	2,994.21	5,711.94	0.86	0.84	0.18
10,719.00	89.14	149.23	6,486.80	-4,946.24	3,041.80	5,805.93	0.78	-0.23	-0.74
10,814.00	89.71	149.50	6,487.76	-5,027.98	3,090.21	5,900.92	0.66	0.60	0.28
10,908.00	89.54	149.58	6,488.37	-5,109.00	3,137.86	5,994.92	0.20	-0.18	0.09
11,003.00	91.16	149.76	6,487.79	-5,191.00	3,185.83	6,089.91	1.72	1.71	0.19
11,098.00	89.10	150.11	6,487.58	-5,273.21	3,233.42	6,184.90	2.20	-2.17	0.37
11,193.00	89.49	150.02	6,488.75	-5,355.53	3,280.82	6,279.89	0.42	0.41	-0.09
11,287.00	90.02	150.02	6,489.15	-5,436.95	3,327.79	6,373.88	0.56	0.56	0.00
11,382.00	90.42	150.11	6,488.78	-5,519.28	3,375.20	6,468.87	0.43	0.42	0.09
11,476.00	88.66	149.85	6,489.54	-5,600.66	3,422.22	6,562.86	1.89	-1.87	-0.28
11,571.00	89.32	150.02	6,491.21	-5,682.87	3,469.81	6,657.84	0.72	0.69	0.18
11,665.00	89.93	150.55	6,491.83	-5,764.50	3,516.40	6,751.82	0.86	0.65	0.56
11,759.00	90.42	150.55	6,491.54	-5,846.36	3,562.62	6,845.80	0.52	0.52	0.00
11,854.00	91.12	150.90	6,490.26	-5,929.22	3,609.07	6,940.77	0.82	0.74	0.37
11,947.00	89.23	150.37	6,489.98	-6,010.26	3,654.67	7,033.74	2.20	-2.17	-0.57
12,042.00	89.63	149.50	6,490.92	-6,092.48	3,702.26	7,128.73	1.01	0.42	-0.92
12,136.00	88.09	148.44	6,492.80	-6,173.00	3,750.71	7,222.70	0.99	0.64	-1.13
12,231.00	88.92	149.06	6,495.27	-6,254.19	3,799.97	7,317.66	1.09	0.87	0.65
12,325.00	89.76	149.67	6,496.36	-6,335.07	3,847.87	7,411.66	0.95	0.95	0.65
12,420.00	89.27	149.41	6,497.16	-6,416.95	3,896.02	7,506.65	0.95	-0.52	-0.27
12,515.00	88.09	149.76	6,499.35	-6,498.85	3,944.11	7,601.62	1.30	-1.24	0.37
12,609.00	88.84	150.02	6,501.87	-6,580.14	3,991.24	7,695.58	0.84	0.80	0.28
12,703.00	89.41	150.11	6,503.30	-6,661.59	4,038.15	7,789.57	0.61	0.61	0.10
12,797.00	88.44	150.29	6,505.07	-6,743.15	4,084.85	7,883.54	1.05	-1.03	0.19
12,892.00	88.88	150.37	6,507.29	-6,825.67	4,131.87	7,978.50	0.47	0.46	0.08

RECEIVED-203  
Office of Oil & Gas  
OCT 04 2022  
West Virginia Department of Environmental Protection



<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Goudy 1S-04HM (K)
<b>Project:</b>	Marshall County, West Virginia.	<b>TVD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Site:</b>	Goudy	<b>MD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Well:</b>	Goudy 1S-04HM (K)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Dec2220_v16

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,987.00	89.36	150.37	6,508.75	-6,908.23	4,178.83	8,073.47	0.51	0.51	0.00
13,081.00	88.26	150.29	6,510.70	-6,989.89	4,225.35	8,167.44	1.17	-1.17	-0.09
13,175.00	89.10	150.64	6,512.86	-7,071.65	4,271.67	8,261.39	0.97	0.89	0.37
13,270.00	89.71	150.73	6,513.85	-7,154.48	4,318.18	8,356.36	0.65	0.64	0.09
13,364.00	90.46	150.64	6,513.71	-7,236.45	4,364.21	8,450.33	0.80	0.80	-0.10
13,458.00	89.58	150.29	6,513.68	-7,318.23	4,410.54	8,544.32	1.01	-0.94	-0.37
13,553.00	90.42	150.90	6,513.68	-7,400.99	4,457.19	8,639.29	1.09	0.88	0.64
13,647.00	89.23	150.46	6,513.97	-7,482.95	4,503.21	8,733.26	1.35	-1.27	-0.47
13,742.00	89.71	149.32	6,514.84	-7,565.12	4,550.87	8,828.25	1.30	0.51	-1.20
13,836.00	88.44	149.23	6,516.36	-7,645.92	4,598.89	8,922.24	1.35	-1.35	-0.10
13,931.00	88.84	149.32	6,518.62	-7,727.56	4,647.41	9,017.21	0.43	0.42	0.09
14,026.00	89.32	149.85	6,520.14	-7,809.47	4,695.50	9,112.20	0.75	0.51	0.56
14,121.00	90.37	150.99	6,520.40	-7,892.09	4,742.39	9,207.18	1.63	1.11	1.20
14,215.00	89.01	150.73	6,520.91	-7,974.19	4,788.17	9,301.14	1.47	-1.45	-0.28
14,310.00	89.58	151.08	6,522.08	-8,057.19	4,834.36	9,396.10	0.70	0.60	0.37
14,404.00	90.46	151.43	6,522.04	-8,139.61	4,879.56	9,490.05	1.01	0.94	0.37
14,499.00	89.76	150.55	6,521.86	-8,222.69	4,925.63	9,585.01	1.18	-0.74	-0.93
14,594.00	88.62	150.64	6,523.20	-8,305.44	4,972.27	9,679.97	1.20	-1.20	0.09
14,689.00	89.71	151.69	6,524.59	-8,388.65	5,018.08	9,774.91	1.59	1.15	1.11
14,783.00	88.79	149.50	6,525.82	-8,470.53	5,064.23	9,868.88	2.53	-0.98	-2.33
14,879.00	89.41	149.93	6,527.33	-8,553.41	5,112.63	9,964.86	0.79	0.65	0.45
14,973.00	89.14	149.76	6,528.52	-8,634.69	5,159.85	10,058.85	0.34	-0.29	-0.18
15,067.00	88.53	149.67	6,530.43	-8,715.84	5,207.24	10,152.83	0.66	-0.65	-0.10
15,162.00	89.19	149.67	6,532.32	-8,797.82	5,255.21	10,247.81	0.69	0.69	0.00
15,257.00	90.29	150.99	6,532.75	-8,880.36	5,302.23	10,342.79	1.81	1.16	1.39
15,353.00	90.55	150.20	6,532.04	-8,963.99	5,349.36	10,438.76	0.87	0.27	-0.82
15,448.00	89.45	148.53	6,532.04	-9,045.73	5,397.77	10,533.76	2.10	-1.16	-1.76
15,542.00	89.80	148.18	6,532.66	-9,125.75	5,447.08	10,627.74	0.53	0.37	-0.37
15,637.00	89.54	148.88	6,533.21	-9,206.77	5,496.68	10,722.73	0.79	-0.27	0.74
15,731.00	89.98	149.06	6,533.60	-9,287.32	5,545.13	10,816.73	0.51	0.47	0.19
15,827.00	89.27	149.58	6,534.23	-9,369.88	5,594.12	10,912.72	0.92	-0.74	0.54
15,921.00	87.87	149.14	6,536.58	-9,450.73	5,642.01	11,006.69	1.56	-1.49	-0.47
16,016.00	88.26	148.62	6,539.78	-9,532.01	5,691.08	11,101.63	0.68	0.11	-0.55
16,110.00	88.75	149.32	6,542.24	-9,612.53	5,739.51	11,195.60	0.91	0.52	0.74
16,204.00	89.23	149.14	6,543.89	-9,693.29	5,787.60	11,289.58	0.55	0.51	-0.19
16,299.00	89.58	150.02	6,544.88	-9,775.20	5,835.70	11,384.58	1.00	0.37	0.93
16,394.00	89.98	150.37	6,545.24	-9,857.64	5,882.91	11,479.57	0.56	-0.56	0.37
16,488.00	90.59	150.46	6,544.78	-9,939.38	5,929.32	11,573.55	0.66	0.65	0.10
16,582.00	89.80	150.20	6,544.46	-10,021.06	5,975.85	11,667.53	0.88	-0.84	-0.28
16,676.00	90.37	150.46	6,544.32	-10,102.73	6,022.38	11,761.52	0.67	0.61	0.28
16,769.00	89.41	149.67	6,544.50	-10,183.32	6,068.79	11,854.51	1.34	-1.03	-0.85
16,863.00	90.20	150.11	6,544.82	-10,264.64	6,115.95	11,948.50	0.96	0.84	0.47
16,957.00	89.27	149.85	6,545.25	-10,346.02	6,162.97	12,042.50	1.03	-0.99	-0.28

RECEIVED  
Office of Oil & Gas  
OCT 04 2022  
WV Department of Environmental Protection

<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Goudy 1S-04HM (K)
<b>Project:</b>	Marshall County, West Virginia.	<b>TVD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Site:</b>	Goudy	<b>MD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Well:</b>	Goudy 1S-04HM (K)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Dec2220_v16

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,052.00	89.71	148.97	6,546.10	-10,427.80	6,211.32	12,137.49	1.04	0.46	-0.93
17,146.00	88.26	148.79	6,547.76	-10,508.26	6,259.89	12,231.47	1.55	-1.54	-0.19
17,241.00	88.84	148.62	6,550.16	-10,589.41	6,309.22	12,326.43	0.64	0.61	-0.18
17,335.00	89.14	148.70	6,551.82	-10,669.68	6,358.10	12,420.41	0.33	0.32	0.09
17,430.00	88.35	150.02	6,553.90	-10,751.40	6,406.51	12,515.39	1.62	-0.83	1.39
17,524.00	88.84	150.99	6,556.21	-10,833.19	6,452.77	12,609.34	1.16	0.52	1.03
17,619.00	89.19	150.90	6,557.84	-10,916.22	6,498.90	12,704.29	0.38	0.37	-0.09
17,714.00	89.67	151.08	6,558.79	-10,999.30	6,544.97	12,799.24	0.54	0.51	0.19
17,808.00	90.51	151.34	6,558.64	-11,081.68	6,590.24	12,893.19	0.94	0.89	0.28
17,902.00	89.27	151.08	6,558.82	-11,164.05	6,635.51	12,987.14	1.35	-1.32	-0.28
17,997.00	90.11	151.52	6,559.33	-11,247.38	6,681.13	13,082.08	1.00	0.88	0.46
18,091.00	89.01	151.34	6,560.05	-11,329.93	6,726.08	13,176.02	1.19	-1.17	-0.19
18,185.00	89.54	151.96	6,561.24	-11,412.65	6,770.71	13,269.93	0.87	0.56	0.66
18,280.00	89.63	150.11	6,561.93	-11,495.76	6,816.72	13,364.88	1.95	0.09	-1.95
18,374.00	90.15	150.37	6,562.11	-11,577.36	6,863.38	13,458.87	0.62	0.55	0.28
18,469.00	89.80	150.55	6,562.15	-11,660.01	6,910.21	13,553.85	0.41	-0.37	0.19
18,563.00	88.88	149.50	6,563.24	-11,741.43	6,957.17	13,647.84	1.49	-0.98	-1.12
18,658.00	89.76	150.55	6,564.36	-11,823.72	7,004.63	13,742.82	1.44	0.93	1.11
18,753.00	88.70	149.93	6,565.64	-11,906.18	7,051.78	13,837.80	1.29	-1.12	-0.65
18,847.00	89.54	150.11	6,567.08	-11,987.59	7,098.75	13,931.78	0.91	0.89	0.19
18,941.00	87.43	150.29	6,569.57	-12,069.13	7,145.45	14,025.74	2.25	-2.24	0.19
19,036.00	87.82	150.37	6,573.51	-12,151.60	7,192.43	14,120.64	0.42	0.41	0.08
19,131.00	87.87	150.55	6,577.08	-12,234.20	7,239.24	14,215.55	0.20	0.05	0.19
19,173.00	88.09	150.29	6,578.56	-12,270.70	7,259.95	14,257.52	0.81	0.52	-0.62
<b>Survey @ 19173.00 MD 6578.56 TVD</b>									
19,231.00	88.09	150.29	6,580.49	-12,321.05	7,288.68	14,315.48	0.00	0.00	0.00
<b>Survey Proj. to 19231.00 MD 6580.49 TVD</b>									

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
177.00	177.00	-0.13	0.38	MWD surveys
19,173.00	6,578.56	-12,270.70	7,259.95	Survey @ 19173.00 MD 6578.56 TVD

RECEIVED  
Office of Oil & Gas  
**OCT 04 2022**  
WV Department of  
Environmental Protection



<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Goudy 1S-04HM (K)
<b>Project:</b>	Marshall County, West Virginia.	<b>TVD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Site:</b>	Goudy	<b>MD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Well:</b>	Goudy 1S-04HM (K)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Dec2220_v16

<b>Project</b>	Marshall County, West Virginia.		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD83 West Virginia - HARN		
<b>Map Zone:</b>	Zone 17N (84 W to 78 W)		

<b>Site</b>	Goudy				
<b>Site Position:</b>	<b>Northing:</b>	14,430,942.40 usft	<b>Latitude:</b>	39.736807	
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,688,559.77 usft	<b>Longitude:</b>	-80.828748
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.11 °

<b>Well</b>	Goudy 1S-04HM (K)					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	14,431,031.05 usft	<b>Latitude:</b>	39.737050
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,688,576.71 usft	<b>Longitude:</b>	-80.828687
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	1,242.00 usft	

<b>Wellbore</b>	Original Hole				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	5/11/2018	-8.62	66.86	52,058.42689591

<b>Design</b>	Surveys Original Hole				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	149.35	

<b>Survey Program</b>	<b>Date</b>	6/11/2021			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
177.00	952.00	MWD surf (Original Hole)	MWD	MWD - Standard	RECEIVED Office of Oil & Gas <b>OCT 04 2022</b>
1,066.00	2,568.00	MWD int (Original Hole)	MWD	MWD - Standard	
2,671.00	19,173.00	MWD (Original Hole)	MWD	MWD - Standard	
19,231.00	19,231.00	Projection (Original Hole)	MWD	MWD - Standard	

<b>Survey</b>	WV Department of Environmental Protection									
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Map Northing (usft)</b>	<b>Map Easting (usft)</b>	<b>Latitude</b>	<b>Longitude</b>	
0.00	0.00	0.00	0.00	0.00	0.00	14,431,031.05	1,688,576.71	39.737050	-80.828687	
177.00	0.26	108.71	177.00	-0.13	0.38	14,431,030.92	1,688,577.09	39.737050	-80.828685	
<b>MWD surveys</b>										
208.00	0.13	102.30	208.00	-0.16	0.48	14,431,030.89	1,688,577.19	39.737050	-80.828685	
238.00	0.18	94.56	238.00	-0.17	0.56	14,431,030.88	1,688,577.27	39.737050	-80.828685	
268.00	0.26	145.98	268.00	-0.23	0.65	14,431,030.82	1,688,577.36	39.737050	-80.828684	
298.00	0.26	115.13	298.00	-0.32	0.75	14,431,030.73	1,688,577.46	39.737049	-80.828684	
329.00	0.39	20.91	329.00	-0.25	0.85	14,431,030.80	1,688,577.56	39.737050	-80.828684	
359.00	0.52	167.60	359.00	-0.28	0.91	14,431,030.76	1,688,577.62	39.737050	-80.828683	



<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Goudy 1S-04HM (K)
<b>Project:</b>	Marshall County, West Virginia.	<b>TVD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Site:</b>	Goudy	<b>MD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Well:</b>	Goudy 1S-04HM (K)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Dec2220_v16

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
389.00	0.61	279.22	389.00	-0.39	0.78	14,431,030.66	1,688,577.49	39.737049	-80.828684	
419.00	0.43	139.30	419.00	-0.45	0.70	14,431,030.60	1,688,577.41	39.737049	-80.828684	
467.00	0.92	42.62	466.99	-0.30	1.08	14,431,030.74	1,688,577.79	39.737049	-80.828683	
510.00	1.01	93.38	509.99	-0.07	1.69	14,431,030.98	1,688,578.40	39.737050	-80.828681	
557.00	0.79	124.36	556.98	-0.28	2.37	14,431,030.77	1,688,579.08	39.737050	-80.828678	
600.00	0.75	124.89	599.98	-0.61	2.85	14,431,030.44	1,688,579.56	39.737049	-80.828677	
647.00	0.92	122.43	646.97	-0.99	3.42	14,431,030.06	1,688,580.13	39.737048	-80.828675	
692.00	1.36	121.11	691.97	-1.46	4.18	14,431,029.59	1,688,580.89	39.737046	-80.828672	
739.00	1.67	117.15	738.95	-2.06	5.27	14,431,028.99	1,688,581.98	39.737045	-80.828668	
782.00	1.93	116.09	781.93	-2.66	6.48	14,431,028.39	1,688,583.18	39.737043	-80.828664	
829.00	1.98	119.53	828.90	-3.41	7.89	14,431,027.64	1,688,584.60	39.737041	-80.828659	
877.00	2.15	110.03	876.87	-4.13	9.46	14,431,026.92	1,688,586.17	39.737039	-80.828653	
952.00	2.29	113.28	951.81	-5.20	12.16	14,431,025.85	1,688,588.87	39.737036	-80.828643	
1,066.00	2.90	105.98	1,065.70	-6.89	17.02	14,431,024.15	1,688,593.73	39.737031	-80.828626	
1,160.00	3.64	99.83	1,159.54	-8.06	22.25	14,431,022.99	1,688,598.96	39.737028	-80.828608	
1,252.00	4.35	98.07	1,251.32	-9.05	28.58	14,431,022.00	1,688,605.29	39.737025	-80.828585	
1,346.00	4.04	94.03	1,345.07	-9.78	35.41	14,431,021.27	1,688,612.12	39.737023	-80.828561	
1,440.00	3.55	92.54	1,438.86	-10.14	41.62	14,431,020.91	1,688,618.33	39.737022	-80.828539	
1,535.00	4.08	86.03	1,533.65	-10.04	47.93	14,431,021.01	1,688,624.64	39.737023	-80.828516	
1,629.00	4.04	89.64	1,627.41	-9.79	54.58	14,431,021.26	1,688,631.29	39.737023	-80.828493	
1,722.00	3.21	92.19	1,720.23	-9.87	60.46	14,431,021.18	1,688,637.17	39.737023	-80.828472	
1,816.00	3.47	87.18	1,814.07	-9.83	65.93	14,431,021.22	1,688,642.64	39.737023	-80.828452	
1,910.00	3.56	91.31	1,907.89	-9.75	71.69	14,431,021.30	1,688,648.40	39.737023	-80.828432	
2,004.00	3.13	96.05	2,001.73	-10.09	77.16	14,431,020.96	1,688,653.87	39.737022	-80.828412	
2,098.00	2.81	99.92	2,095.60	-10.76	81.98	14,431,020.29	1,688,658.69	39.737020	-80.828395	
2,193.00	2.46	98.95	2,190.50	-11.48	86.29	14,431,019.57	1,688,663.00	39.737018	-80.828380	
2,288.00	3.73	93.42	2,285.36	-11.98	91.39	14,431,019.07	1,688,668.10	39.737017	-80.828362	
2,382.00	3.77	86.65	2,379.16	-11.98	97.52	14,431,019.07	1,688,674.23	39.737017	-80.828340	
2,475.00	2.68	83.48	2,472.01	-11.55	102.74	14,431,019.49	1,688,679.45	39.737018	-80.828321	
2,568.00	1.62	81.20	2,564.95	-11.11	106.20	14,431,019.94	1,688,682.91	39.737019	-80.828309	
2,671.00	2.42	86.13	2,667.88	-10.74	109.81	14,431,020.31	1,688,686.51	39.737020	-80.828296	
2,703.00	3.25	86.65	2,699.84	-10.64	111.38	14,431,020.41	1,688,688.09	39.737021	-80.828291	
2,734.00	4.00	86.04	2,730.78	-10.51	113.34	14,431,020.54	1,688,690.05	39.737021	-80.828284	
2,766.00	5.58	85.25	2,762.67	-10.31	116.00	14,431,020.74	1,688,692.71	39.737021	-80.828274	
2,797.00	7.12	85.34	2,793.48	-10.02	119.42	14,431,021.02	1,688,696.13	39.737022	-80.828262	
2,829.00	7.47	85.07	2,825.22	-9.68	123.47	14,431,021.36	1,688,700.18	39.737023	-80.828248	
2,860.00	7.99	92.45	2,855.94	-9.60	127.63	14,431,021.44	1,688,704.34	39.737023	-80.828233	
2,892.00	8.34	97.37	2,887.61	-10.00	132.15	14,431,021.05	1,688,708.86	39.737022	-80.828217	
2,924.00	8.70	102.12	2,919.26	-10.80	136.82	14,431,020.25	1,688,713.53	39.737020	-80.828200	
2,959.00	8.61	101.85	2,953.86	-11.90	141.97	14,431,019.15	1,688,718.68	39.737017	-80.828182	
2,990.00	8.56	99.83	2,984.51	-12.77	146.52	14,431,018.28	1,688,723.23	39.737015	-80.828166	
3,021.00	9.79	96.67	3,015.12	-13.47	151.41	14,431,017.58	1,688,728.12	39.737014	-80.828148	
3,053.00	10.85	108.62	3,046.60	-14.74	156.97	14,431,016.30	1,688,733.68	39.737004	-80.828128	
3,084.00	13.00	107.04	3,076.93	-16.70	163.07	14,431,014.35	1,688,739.78	39.736994	-80.828107	
3,116.00	14.01	111.43	3,108.05	-19.17	170.11	14,431,011.88	1,688,746.82	39.736984	-80.828082	
3,147.00	12.84	115.56	3,138.20	-22.02	176.71	14,431,009.02	1,688,753.42	39.736989	-80.828058	
3,179.00	12.34	122.68	3,169.43	-25.41	182.80	14,431,005.64	1,688,759.51	39.736980	-80.828037	
3,211.00	13.18	130.51	3,200.65	-29.62	188.45	14,431,001.43	1,688,765.16	39.736975	-80.828017	
3,242.00	14.54	136.31	3,230.74	-34.73	193.83	14,430,996.32	1,688,770.54	39.736954	-80.827997	
3,274.00	16.04	140.53	3,261.61	-41.05	199.41	14,430,990.00	1,688,776.12	39.736937	-80.827978	
3,305.00	17.45	143.26	3,291.30	-48.08	204.92	14,430,982.97	1,688,781.63	39.736917	-80.827958	
3,337.00	18.98	145.10	3,321.69	-56.19	210.77	14,430,974.85	1,688,787.47	39.736895	-80.827937	
3,368.00	20.21	146.51	3,350.90	-64.80	216.60	14,430,966.25	1,688,793.31	39.736871	-80.827917	
3,400.00	21.27	146.16	3,380.82	-74.23	222.89	14,430,956.82	1,688,799.60	39.736845	-80.827894	
3,431.00	21.09	144.84	3,409.73	-83.46	229.23	14,430,947.59	1,688,805.94	39.736820	-80.827872	

RECEIVED  
 Office of Oil & Gas  
 10/14/2022  
 WV Department of Environmental Protection



<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Goudy 1S-04HM (K)
<b>Project:</b>	Marshall County, West Virginia.	<b>TVD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Site:</b>	Goudy	<b>MD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Well:</b>	Goudy 1S-04HM (K)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Dec2220_v16

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
3,463.00	21.62	144.75	3,439.53	-92.98	235.95	14,430,938.07	1,688,812.66	39.736794	-80.827848
3,494.00	22.41	146.16	3,468.27	-102.55	242.53	14,430,928.50	1,688,819.24	39.736767	-80.827825
3,526.00	23.73	147.56	3,497.71	-113.05	249.39	14,430,918.00	1,688,826.09	39.736739	-80.827800
3,557.00	25.00	148.70	3,525.95	-123.91	256.14	14,430,907.14	1,688,832.84	39.736709	-80.827776
3,589.00	25.22	148.44	3,554.93	-135.50	263.22	14,430,895.55	1,688,839.92	39.736677	-80.827751
3,620.00	25.97	148.79	3,582.88	-146.93	270.19	14,430,884.12	1,688,846.90	39.736645	-80.827727
3,652.00	27.07	149.67	3,611.52	-159.21	277.50	14,430,871.84	1,688,854.21	39.736612	-80.827701
3,683.00	27.81	149.58	3,639.03	-171.53	284.72	14,430,859.51	1,688,861.43	39.736578	-80.827675
3,715.00	27.77	149.14	3,667.34	-184.37	292.32	14,430,846.68	1,688,869.03	39.736542	-80.827648
3,746.00	28.60	149.23	3,694.66	-196.95	299.83	14,430,834.10	1,688,876.53	39.736508	-80.827622
3,778.00	28.52	148.52	3,722.77	-210.04	307.73	14,430,821.01	1,688,884.44	39.736472	-80.827593
3,809.00	29.26	149.93	3,749.91	-222.91	315.39	14,430,808.14	1,688,892.10	39.736437	-80.827566
3,904.00	31.06	150.11	3,832.05	-264.25	339.24	14,430,766.80	1,688,915.95	39.736323	-80.827482
3,999.00	31.81	148.44	3,913.10	-306.84	364.56	14,430,724.21	1,688,941.27	39.736206	-80.827392
4,094.00	32.12	143.43	3,993.71	-348.46	392.72	14,430,682.59	1,688,969.42	39.736091	-80.827292
4,188.00	30.67	145.01	4,073.95	-388.17	421.35	14,430,642.87	1,688,998.06	39.735982	-80.827191
4,282.00	30.41	151.17	4,154.93	-428.67	446.58	14,430,602.38	1,689,023.29	39.735871	-80.827101
4,377.00	30.32	150.46	4,236.90	-470.59	470.00	14,430,560.45	1,689,046.71	39.735755	-80.827018
4,472.00	30.41	151.25	4,318.87	-512.54	493.39	14,430,518.51	1,689,070.09	39.735640	-80.826935
4,566.00	31.77	152.57	4,399.36	-555.36	516.23	14,430,475.69	1,689,092.94	39.735522	-80.826854
4,661.00	32.43	150.81	4,479.84	-599.80	540.17	14,430,431.25	1,689,116.88	39.735400	-80.826769
4,755.00	29.92	152.48	4,560.26	-642.60	563.30	14,430,388.45	1,689,140.01	39.735283	-80.826687
4,849.00	31.11	153.71	4,641.24	-685.16	584.89	14,430,345.88	1,689,161.60	39.735166	-80.826611
4,943.00	31.55	149.67	4,721.54	-728.17	608.07	14,430,302.88	1,689,184.78	39.735047	-80.826529
5,038.00	31.99	147.65	4,802.31	-770.88	634.09	14,430,260.17	1,689,210.79	39.734930	-80.826436
5,133.00	31.68	152.13	4,883.03	-814.20	659.22	14,430,216.85	1,689,235.92	39.734811	-80.826347
5,227.00	31.86	152.30	4,962.95	-857.98	682.29	14,430,173.07	1,689,259.00	39.734690	-80.826266
5,321.00	30.94	148.53	5,043.19	-900.56	706.44	14,430,130.48	1,689,283.15	39.734573	-80.826180
5,414.00	31.07	147.03	5,122.90	-941.09	731.98	14,430,089.96	1,689,308.69	39.734462	-80.826089
5,509.00	30.59	149.06	5,204.48	-982.39	757.75	14,430,048.66	1,689,334.46	39.734348	-80.825998
5,603.00	30.45	148.35	5,285.46	-1,023.18	782.54	14,430,007.87	1,689,359.25	39.734236	-80.825910
5,697.00	30.37	150.46	5,366.53	-1,064.13	806.76	14,429,966.92	1,689,383.47	39.734124	-80.825824
5,791.00	30.62	150.98	5,447.53	-1,105.74	830.09	14,429,925.31	1,689,406.80	39.734009	-80.825742
5,886.00	31.37	149.31	5,528.96	-1,148.16	854.44	14,429,882.89	1,689,431.15	39.733893	-80.825655
5,980.00	31.20	148.00	5,609.29	-1,189.85	879.83	14,429,841.20	1,689,456.54	39.733778	-80.825565
6,074.00	31.11	151.17	5,689.74	-1,231.77	904.45	14,429,799.28	1,689,481.16	39.733663	-80.825478
6,169.00	30.89	150.99	5,771.17	-1,274.60	928.11	14,429,756.45	1,689,504.82	39.733545	-80.825394
6,263.00	30.67	150.20	5,851.93	-1,316.51	951.73	14,429,714.54	1,689,528.43	39.733430	-80.825310
6,358.00	30.63	150.29	5,933.66	-1,358.55	975.76	14,429,672.50	1,689,552.47	39.733314	-80.825225
6,387.00	30.68	149.50	5,958.61	-1,371.34	983.18	14,429,659.71	1,689,559.89	39.733279	-80.825199
6,434.00	31.03	149.14	5,998.96	-1,392.07	995.48	14,429,638.98	1,689,572.19	39.733222	-80.825155
6,481.00	32.66	150.37	6,038.88	-1,413.50	1,007.96	14,429,617.55	1,689,584.67	39.733163	-80.825111
6,576.00	31.87	149.06	6,119.21	-1,457.29	1,033.53	14,429,573.76	1,689,610.24	39.733103	-80.825020
6,623.00	35.43	147.91	6,158.33	-1,479.48	1,047.15	14,429,551.57	1,689,623.86	39.732988	-80.824972
6,670.00	39.43	148.00	6,195.65	-1,503.69	1,062.30	14,429,527.36	1,689,639.01	39.732915	-80.824918
6,717.00	42.59	147.83	6,231.11	-1,529.82	1,078.69	14,429,501.23	1,689,655.39	39.732843	-80.824860
6,765.00	47.65	148.62	6,264.97	-1,558.73	1,096.58	14,429,472.32	1,689,673.29	39.732764	-80.824797
6,812.00	51.87	150.29	6,295.32	-1,589.62	1,114.79	14,429,441.42	1,689,691.50	39.732679	-80.824732
6,859.00	54.81	151.52	6,323.38	-1,622.57	1,133.12	14,429,408.48	1,689,709.83	39.732589	-80.824667
6,906.00	58.77	151.69	6,349.12	-1,657.16	1,151.81	14,429,373.89	1,689,728.52	39.732493	-80.824601
6,954.00	62.86	151.43	6,372.52	-1,694.00	1,171.77	14,429,337.05	1,689,748.48	39.732392	-80.824530
7,001.00	66.64	150.64	6,392.57	-1,731.18	1,192.36	14,429,299.87	1,689,769.06	39.732290	-80.824457
7,048.00	71.12	150.46	6,409.50	-1,769.35	1,213.91	14,429,261.70	1,689,790.62	39.732185	-80.824381
7,095.00	74.90	151.25	6,423.23	-1,808.60	1,235.79	14,429,222.45	1,689,812.50	39.732077	-80.824303
7,142.00	78.37	151.69	6,434.09	-1,848.77	1,257.63	14,429,182.28	1,689,834.34	39.731966	-80.824226

RECEIVED  
Office of Gas  
OCT 04 2022  
WV Department of  
Environmental Protection

<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Goudy 1S-04HM (K)
<b>Project:</b>	Marshall County, West Virginia.	<b>TVD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Site:</b>	Goudy	<b>MD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Well:</b>	Goudy 1S-04HM (K)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Dec2220_v16

**Survey**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
7,192.00	80.97	152.31	6,443.06	-1,892.19	1,280.72	14,429,138.85	1,689,857.43	39.731847	-80.824144
7,234.00	86.46	151.87	6,447.65	-1,929.07	1,300.25	14,429,101.98	1,689,876.96	39.731746	-80.824075
7,328.00	86.51	149.93	6,453.42	-2,011.05	1,345.88	14,429,020.00	1,689,922.59	39.731520	-80.823913
7,423.00	90.07	151.34	6,456.25	-2,093.79	1,392.43	14,428,937.26	1,689,969.14	39.731293	-80.823748
7,517.00	90.99	153.10	6,455.38	-2,176.95	1,436.24	14,428,854.10	1,690,012.95	39.731064	-80.823593
7,611.00	91.03	149.93	6,453.72	-2,259.55	1,481.06	14,428,771.50	1,690,057.77	39.730837	-80.823434
7,704.00	91.56	149.76	6,451.62	-2,339.94	1,527.76	14,428,691.11	1,690,104.47	39.730616	-80.823269
7,798.00	90.20	149.41	6,450.18	-2,420.99	1,575.35	14,428,610.06	1,690,152.06	39.730393	-80.823100
7,892.00	89.49	149.32	6,450.43	-2,501.87	1,623.25	14,428,529.18	1,690,199.95	39.730171	-80.822930
7,986.00	90.20	149.14	6,450.69	-2,582.64	1,671.33	14,428,448.41	1,690,248.04	39.729949	-80.822760
8,081.00	89.23	149.23	6,451.16	-2,664.22	1,720.00	14,428,366.82	1,690,296.71	39.729724	-80.822587
8,175.00	90.37	149.58	6,451.49	-2,745.14	1,767.84	14,428,285.91	1,690,344.55	39.729502	-80.822418
8,270.00	88.66	149.58	6,452.29	-2,827.05	1,815.94	14,428,204.00	1,690,392.65	39.729277	-80.822247
8,364.00	89.14	149.76	6,454.10	-2,908.17	1,863.40	14,428,122.88	1,690,440.11	39.729054	-80.822079
8,457.00	88.09	150.11	6,456.34	-2,988.63	1,909.97	14,428,042.41	1,690,486.68	39.728832	-80.821914
8,550.00	88.79	150.64	6,458.88	-3,069.45	1,955.93	14,427,961.60	1,690,532.64	39.728610	-80.821751
8,644.00	89.41	150.99	6,460.35	-3,151.50	2,001.76	14,427,879.55	1,690,578.47	39.728385	-80.821588
8,739.00	90.07	151.52	6,460.78	-3,234.79	2,047.45	14,427,796.25	1,690,624.16	39.728166	-80.821427
8,834.00	89.36	150.02	6,461.26	-3,317.69	2,093.83	14,427,713.36	1,690,670.54	39.727928	-80.821262
8,928.00	89.93	150.29	6,461.84	-3,399.22	2,140.61	14,427,631.82	1,690,717.32	39.727704	-80.821096
9,023.00	88.88	149.23	6,462.82	-3,481.29	2,188.45	14,427,549.76	1,690,765.16	39.727478	-80.820927
9,118.00	89.80	149.58	6,463.92	-3,563.06	2,236.80	14,427,467.99	1,690,813.51	39.727253	-80.820755
9,212.00	88.31	147.83	6,465.47	-3,643.37	2,285.62	14,427,387.68	1,690,862.33	39.727032	-80.820582
9,306.00	88.75	148.00	6,467.88	-3,722.98	2,335.53	14,427,308.07	1,690,912.24	39.726813	-80.820405
9,401.00	89.27	148.18	6,469.52	-3,803.61	2,385.74	14,427,227.44	1,690,962.45	39.726592	-80.820227
9,495.00	89.80	148.09	6,470.29	-3,883.44	2,435.36	14,427,147.60	1,691,012.07	39.726372	-80.820051
9,589.00	88.84	148.79	6,471.40	-3,963.53	2,484.56	14,427,067.51	1,691,061.27	39.726152	-80.819877
9,684.00	89.32	149.67	6,472.93	-4,045.15	2,533.15	14,426,985.90	1,691,109.86	39.725927	-80.819705
9,777.00	89.10	149.14	6,474.21	-4,125.19	2,580.48	14,426,905.85	1,691,157.19	39.725707	-80.819537
9,872.00	88.97	149.41	6,475.81	-4,206.85	2,629.01	14,426,824.20	1,691,205.72	39.725483	-80.819365
9,965.00	88.88	151.43	6,477.55	-4,287.71	2,674.91	14,426,743.34	1,691,251.62	39.725261	-80.819202
10,059.00	89.32	151.69	6,479.03	-4,370.35	2,719.67	14,426,660.70	1,691,296.38	39.725033	-80.819044
10,154.00	90.15	152.40	6,479.47	-4,454.27	2,764.20	14,426,576.78	1,691,340.91	39.724803	-80.818886
10,249.00	88.70	150.90	6,480.42	-4,537.86	2,809.31	14,426,493.19	1,691,386.02	39.724573	-80.818726
10,343.00	89.19	150.81	6,482.15	-4,619.95	2,855.08	14,426,411.10	1,691,431.79	39.724347	-80.818564
10,437.00	90.07	151.17	6,482.76	-4,702.15	2,900.67	14,426,328.90	1,691,477.38	39.724121	-80.818402
10,531.00	88.57	149.76	6,483.88	-4,783.93	2,947.00	14,426,247.12	1,691,523.71	39.723896	-80.818238
10,625.00	89.36	149.93	6,485.57	-4,865.19	2,994.21	14,426,165.86	1,691,570.92	39.723673	-80.818071
10,719.00	89.14	149.23	6,486.80	-4,946.24	3,041.80	14,426,084.81	1,691,618.51	39.723450	-80.817902
10,814.00	89.71	149.50	6,487.76	-5,027.98	3,090.21	14,426,003.07	1,691,666.92	39.723225	-80.817731
10,908.00	89.54	149.58	6,488.37	-5,109.00	3,137.86	14,425,922.04	1,691,714.57	39.723002	-80.817562
11,003.00	91.16	149.76	6,487.79	-5,191.00	3,185.83	14,425,840.05	1,691,762.54	39.722777	-80.817392
11,098.00	89.10	150.11	6,487.58	-5,273.21	3,233.42	14,425,757.84	1,691,810.13	39.722551	-80.817223
11,193.00	89.49	150.02	6,488.75	-5,355.53	3,280.82	14,425,675.52	1,691,857.56	39.722325	-80.817055
11,287.00	90.02	150.02	6,489.15	-5,436.95	3,327.79	14,425,594.10	1,691,904.50	39.722101	-80.816889
11,382.00	90.42	150.11	6,488.78	-5,519.28	3,375.20	14,425,511.77	1,691,951.91	39.721874	-80.816721
11,476.00	88.66	149.85	6,489.54	-5,600.66	3,422.22	14,425,430.39	1,691,998.93	39.721651	-80.816554
11,571.00	89.32	150.02	6,491.21	-5,682.87	3,469.81	14,425,348.18	1,692,046.32	39.721425	-80.816385
11,665.00	89.93	150.55	6,491.83	-5,764.50	3,516.40	14,425,266.54	1,692,093.11	39.721200	-80.816220
11,759.00	90.42	150.55	6,491.54	-5,846.36	3,562.62	14,425,184.69	1,692,139.33	39.720975	-80.816057
11,854.00	91.12	150.90	6,490.26	-5,929.22	3,609.07	14,425,101.83	1,692,185.78	39.720747	-80.815892
11,947.00	89.23	150.37	6,489.98	-6,010.26	3,654.67	14,425,020.79	1,692,231.38	39.720524	-80.815730
12,042.00	89.63	149.50	6,490.92	-6,092.48	3,702.26	14,424,938.57	1,692,278.97	39.720298	-80.815562
12,136.00	88.09	148.44	6,492.80	-6,173.00	3,750.71	14,424,858.04	1,692,327.42	39.720077	-80.815390
12,231.00	88.92	149.06	6,495.27	-6,254.19	3,799.97	14,424,776.86	1,692,376.68	39.719854	-80.815215

RECEIVED  
 Office of Oil & Gas  
 OCT 04 2022  
 WV Department of Environmental Protection

<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Goudy 1S-04HM (K)
<b>Project:</b>	Marshall County, West Virginia.	<b>TVD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Site:</b>	Goudy	<b>MD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Well:</b>	Goudy 1S-04HM (K)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Dec2220_v16

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
12,325.00	89.76	149.67	6,496.36	-6,335.07	3,847.87	14,424,695.98	1,692,424.58	39.719631	-80.815046
12,420.00	89.27	149.41	6,497.16	-6,416.95	3,896.02	14,424,614.10	1,692,472.73	39.719406	-80.814875
12,515.00	88.09	149.76	6,499.35	-6,498.85	3,944.11	14,424,532.19	1,692,520.81	39.719181	-80.814705
12,609.00	88.84	150.02	6,501.87	-6,580.14	3,991.24	14,424,450.91	1,692,567.95	39.718957	-80.814538
12,703.00	89.41	150.11	6,503.30	-6,661.59	4,038.15	14,424,369.46	1,692,614.86	39.718733	-80.814371
12,797.00	88.44	150.29	6,505.07	-6,743.15	4,084.85	14,424,287.90	1,692,661.56	39.718509	-80.814206
12,892.00	88.88	150.37	6,507.29	-6,825.67	4,131.87	14,424,205.38	1,692,708.57	39.718282	-80.814039
12,987.00	89.36	150.37	6,508.75	-6,908.23	4,178.83	14,424,122.81	1,692,755.54	39.718055	-80.813873
13,081.00	88.26	150.29	6,510.70	-6,989.89	4,225.35	14,424,041.16	1,692,802.06	39.717831	-80.813708
13,175.00	89.10	150.64	6,512.86	-7,071.65	4,271.67	14,423,959.39	1,692,848.38	39.717606	-80.813544
13,270.00	89.71	150.73	6,513.85	-7,154.48	4,318.18	14,423,876.56	1,692,894.89	39.717378	-80.813379
13,364.00	90.46	150.64	6,513.71	-7,236.45	4,364.21	14,423,794.60	1,692,940.91	39.717153	-80.813216
13,458.00	89.58	150.29	6,513.68	-7,318.23	4,410.54	14,423,712.82	1,692,987.25	39.716928	-80.813052
13,553.00	90.42	150.90	6,513.68	-7,400.99	4,457.19	14,423,630.06	1,693,033.89	39.716700	-80.812887
13,647.00	89.23	150.46	6,513.97	-7,482.95	4,503.21	14,423,548.10	1,693,079.92	39.716475	-80.812724
13,742.00	89.71	149.32	6,514.84	-7,565.12	4,550.87	14,423,465.93	1,693,127.58	39.716249	-80.812555
13,836.00	88.44	149.23	6,516.36	-7,645.92	4,598.89	14,423,385.13	1,693,175.60	39.716027	-80.812385
13,931.00	88.84	149.32	6,518.62	-7,727.56	4,647.41	14,423,303.49	1,693,224.12	39.715803	-80.812213
14,026.00	89.32	149.85	6,520.14	-7,809.47	4,695.50	14,423,221.58	1,693,272.21	39.715577	-80.812042
14,121.00	90.37	150.99	6,520.40	-7,892.09	4,742.39	14,423,138.96	1,693,319.10	39.715350	-80.811876
14,215.00	89.01	150.73	6,520.91	-7,974.19	4,788.17	14,423,056.86	1,693,366.87	39.715124	-80.811714
14,310.00	89.58	151.08	6,522.08	-8,057.19	4,834.36	14,422,973.86	1,693,411.07	39.714896	-80.811550
14,404.00	90.46	151.43	6,522.04	-8,139.61	4,879.56	14,422,891.44	1,693,456.27	39.714670	-80.811390
14,499.00	89.76	150.55	6,521.86	-8,222.69	4,925.63	14,422,808.36	1,693,502.34	39.714441	-80.811227
14,594.00	88.62	150.64	6,523.20	-8,305.44	4,972.27	14,422,725.61	1,693,548.98	39.714214	-80.811062
14,689.00	89.71	151.69	6,524.59	-8,388.65	5,018.08	14,422,642.40	1,693,594.79	39.713985	-80.810900
14,783.00	88.79	149.50	6,525.82	-8,470.53	5,064.23	14,422,560.52	1,693,640.93	39.713760	-80.810736
14,879.00	89.41	149.93	6,527.33	-8,553.41	5,112.63	14,422,477.63	1,693,689.34	39.713532	-80.810565
14,973.00	89.14	149.76	6,528.52	-8,634.69	5,159.85	14,422,396.36	1,693,736.56	39.713308	-80.810397
15,067.00	88.53	149.67	6,530.43	-8,715.84	5,207.24	14,422,315.21	1,693,783.95	39.713085	-80.810229
15,162.00	89.19	149.67	6,532.32	-8,797.82	5,255.21	14,422,233.23	1,693,831.91	39.712860	-80.810059
15,257.00	90.29	150.99	6,532.75	-8,880.36	5,302.23	14,422,150.69	1,693,878.94	39.712633	-80.809893
15,353.00	90.55	150.20	6,532.04	-8,963.99	5,349.36	14,422,067.06	1,693,926.07	39.712403	-80.809726
15,448.00	89.45	148.53	6,532.04	-9,045.73	5,397.77	14,421,985.32	1,693,974.48	39.712178	-80.809554
15,542.00	89.80	148.18	6,532.66	-9,125.75	5,447.08	14,421,905.30	1,694,023.79	39.711958	-80.809380
15,637.00	89.54	148.88	6,533.21	-9,206.77	5,496.68	14,421,824.27	1,694,073.39	39.711735	-80.809204
15,731.00	89.98	149.06	6,533.60	-9,287.32	5,545.13	14,421,743.73	1,694,121.84	39.711514	-80.809032
15,827.00	89.27	149.58	6,534.23	-9,369.88	5,594.12	14,421,661.17	1,694,170.82	39.711287	-80.808859
15,921.00	87.87	149.14	6,536.58	-9,450.73	5,642.01	14,421,580.32	1,694,218.71	39.711064	-80.808689
16,016.00	88.26	148.62	6,539.78	-9,532.01	5,691.08	14,421,499.03	1,694,267.78	39.710841	-80.808515
16,110.00	88.75	149.32	6,542.24	-9,612.53	5,739.51	14,421,418.51	1,694,316.22	39.710619	-80.808343
16,204.00	89.23	149.14	6,543.89	-9,693.29	5,787.60	14,421,337.76	1,694,364.61	39.710397	-80.808173
16,299.00	89.58	150.02	6,544.88	-9,775.20	5,835.70	14,421,255.84	1,694,412.40	39.710172	-80.808003
16,394.00	89.98	150.37	6,545.24	-9,857.64	5,882.91	14,421,173.41	1,694,459.62	39.709945	-80.807835
16,488.00	90.59	150.46	6,544.78	-9,939.38	5,929.32	14,421,091.67	1,694,506.03	39.709721	-80.807671
16,582.00	89.80	150.20	6,544.46	-10,021.06	5,975.85	14,421,009.99	1,694,552.56	39.709496	-80.807506
16,676.00	90.37	150.46	6,544.32	-10,102.73	6,022.38	14,420,928.32	1,694,599.19	39.709272	-80.807341
16,769.00	89.41	149.67	6,544.50	-10,183.32	6,068.79	14,420,847.73	1,694,645.50	39.709050	-80.807177
16,863.00	90.20	150.11	6,544.82	-10,264.64	6,115.95	14,420,766.41	1,694,692.65	39.708826	-80.807010
16,957.00	89.27	149.85	6,545.25	-10,346.02	6,162.97	14,420,685.02	1,694,739.68	39.708603	-80.806843
17,052.00	89.71	148.97	6,546.10	-10,427.80	6,211.32	14,420,603.25	1,694,788.02	39.708378	-80.806672
17,146.00	88.26	148.79	6,547.76	-10,508.26	6,259.89	14,420,522.79	1,694,836.60	39.708156	-80.806500
17,241.00	88.84	148.62	6,550.16	-10,589.41	6,309.22	14,420,441.64	1,694,885.93	39.707933	-80.806325
17,335.00	89.14	148.70	6,551.82	-10,669.68	6,358.10	14,420,361.37	1,694,934.81	39.707713	-80.806152
17,430.00	88.35	150.02	6,553.90	-10,751.40	6,406.51	14,420,279.65	1,694,983.21	39.707488	-80.805981

RECEIVED  
Office of Oil & Gas  
OCT 04 2022  
WV Department of Environmental Protection

<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Goudy 1S-04HM (K)
<b>Project:</b>	Marshall County, West Virginia.	<b>TVD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Site:</b>	Goudy	<b>MD Reference:</b>	RKB=1242+26 @ 1268.00usft (Nabors B28)
<b>Well:</b>	Goudy 1S-04HM (K)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Dec2220_v16

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
17,524.00	88.84	150.99	6,556.21	-10,833.19	6,452.77	14,420,197.86	1,695,029.48	39.707263	-80.805817
17,619.00	89.19	150.90	6,557.84	-10,916.22	6,498.90	14,420,114.83	1,695,075.61	39.707035	-80.805653
17,714.00	89.67	151.08	6,558.79	-10,999.30	6,544.97	14,420,031.75	1,695,121.68	39.706806	-80.805490
17,808.00	90.51	151.34	6,558.64	-11,081.68	6,590.24	14,419,949.37	1,695,166.95	39.706580	-80.805330
17,902.00	89.27	151.08	6,558.82	-11,164.05	6,635.51	14,419,866.99	1,695,212.22	39.706353	-80.805169
17,997.00	90.11	151.52	6,559.33	-11,247.38	6,681.13	14,419,783.67	1,695,257.84	39.706124	-80.805008
18,091.00	89.01	151.34	6,560.05	-11,329.93	6,726.08	14,419,701.12	1,695,302.79	39.705897	-80.804849
18,185.00	89.54	151.96	6,561.24	-11,412.65	6,770.71	14,419,618.40	1,695,347.42	39.705670	-80.804691
18,280.00	89.63	150.11	6,561.93	-11,495.76	6,816.72	14,419,535.29	1,695,393.43	39.705441	-80.804528
18,374.00	90.15	150.37	6,562.11	-11,577.36	6,863.38	14,419,453.69	1,695,440.08	39.705217	-80.804362
18,469.00	89.80	150.55	6,562.15	-11,660.01	6,910.21	14,419,371.03	1,695,486.92	39.704989	-80.804197
18,563.00	88.88	149.50	6,563.24	-11,741.43	6,957.17	14,419,289.61	1,695,533.88	39.704766	-80.804030
18,658.00	89.76	150.55	6,564.36	-11,823.72	7,004.63	14,419,207.33	1,695,581.34	39.704539	-80.803862
18,753.00	88.70	149.93	6,565.64	-11,906.18	7,051.78	14,419,124.87	1,695,628.49	39.704313	-80.803695
18,847.00	89.54	150.11	6,567.08	-11,987.59	7,098.75	14,419,043.46	1,695,675.46	39.704089	-80.803529
18,941.00	87.43	150.29	6,569.57	-12,069.13	7,145.45	14,418,961.92	1,695,722.15	39.703864	-80.803363
19,036.00	87.82	150.37	6,573.51	-12,151.60	7,192.43	14,418,879.44	1,695,769.14	39.703638	-80.803197
19,131.00	87.87	150.55	6,577.08	-12,234.20	7,239.24	14,418,796.85	1,695,815.94	39.703411	-80.803031
19,173.00	88.09	150.29	6,578.56	-12,270.70	7,259.95	14,418,760.35	1,695,836.66	39.703310	-80.802958
<b>Survey @ 19173.00 MD 6578.56 TVD</b>									
19,231.00	88.09	150.29	6,580.49	-12,321.05	7,288.68	14,418,710.00	1,695,865.39	39.703172	-80.802856
<b>Survey Proj. to 19231.00 MD 6580.49 TVD</b>									

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
177.00	177.00	-0.13	0.38	MWD surveys
19,173.00	6,578.56	-12,270.70	7,259.95	Survey @ 19173.00 MD 6578.56 TVD
19,231.00	6,580.49	-12,321.05	7,288.68	Survey Proj. to 19231.00 MD 6580.49 TVD

RECEIVED  
Office of Oil & Gas  
OCT 04 2022  
WV Department of  
Environmental Protection