



Well: **McMasters N-13 HU (slot A)**
 Site: **McMasters Shields**
 Project: **Marshall County, West Virginia NAD83 UTM 17N**
 Design: **rev4**
 Rig: **Nabors B28**



Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD83 West Virginia - HARN
 Ellipsoid: GRS 1980
 Zone: Zone 17N (84 W to 78 W)

Magnetic Field
 Strength: 51729.5nT
 Dip Angle: 66.52°
 Date: 8/1/2021
 Model: IGRF202C

System Datum: Mean Sea Level
 Depth Reference: RKB=1208+26 @ 1232.00ft (Nabors B28)

Northing: 14439412.465 Easting: 1700117.999 Latitude: 39.76000240 Longitude: -80.787561700

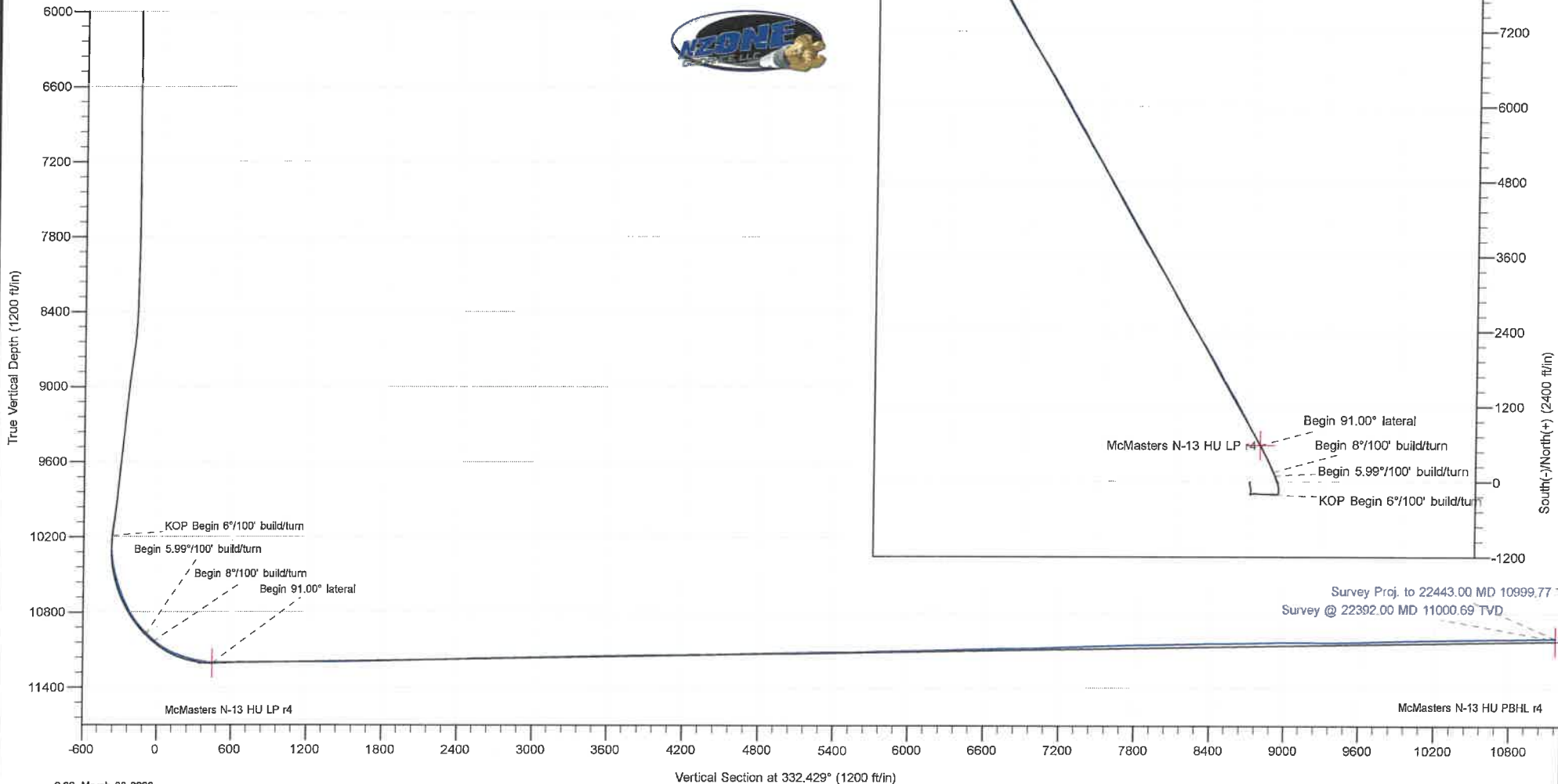
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	10059.00	13.54	94.670	10010.43	-196.56	371.74	0.00	0.00	-346.29	Survey @ 10059.00 MD 10010.43 TVD
2	10243.00	13.54	94.670	10189.32	-200.07	414.67	0.00	0.00	-369.28	KOP Begin 6°/100' build/turn
3	11118.51	45.04	336.531	10980.35	96.78	391.84	6.00	-128.14	-95.57	
4	11203.56	50.00	338.087	11037.78	154.64	367.68	5.99	13.56	-33.10	Begin 8°/100' build/turn
5	11723.80	91.00	330.251	11208.00	584.38	154.82	8.00	-11.84	446.36	Begin 91.00° lateral
6	22452.77	91.00	330.251	11021.00	9897.96	-5168.06	0.00	0.00	1165.95	PBHL/TD 22452.80 MD 11021.00 TVD

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.74°

ANNOTATIONS SURVEYS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Annotation
202.00	0.35	225.080	202.00	-0.44	-0.44	-0.18	MWD surveys
22392.00	91.03	328.900	11000.69	9849.74	-5154.82	11117.08	Survey @ 22392.00 MD 11000.69 TVD
22443.00	91.03	328.900	10999.77	9893.41	-5181.16	11167.98	Survey Proj. to 22443.00 MD 10999.77 TVD



Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well McMasters N-13 HU (slot A)
Project:	Marshall County, West Virginia NAD83 UTM 17N	TVD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Site:	McMasters Shields	MD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Well:	McMasters N-13 HU (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Feb2822

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

Site	McMasters Shields				
Site Position:		Northing:	14,439,441.755 usft	Latitude:	39.760080500
From:	Lat/Long	Easting:	1,700,145.187 usft	Longitude:	-80.787464710
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.14 °

Well	McMasters N-13 HU (slot A)					
Well Position	+N/-S	0.00 ft	Northing:	14,439,412.466 usft	Latitude:	39.760000240
	+E/-W	0.00 ft	Easting:	1,700,117.999 usft	Longitude:	-80.787561700
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	1,206.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	8/1/2021	-8.60	66.52	51,729.51737389

Design	Surveys Original Hole				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	332.430	

Survey Program	Date	3/8/2022			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
202.00	881.00	MWD surf (Original Hole)	MWD	MWD - Standard	
945.00	2,572.00	MWD int (Original Hole)	MWD	MWD - Standard	
2,674.00	6,250.00	MWD int2 (Original Hole)	MWD	MWD - Standard	
6,533.00	22,392.00	MWD (Original Hole)	MWD	MWD - Standard	
22,443.00	22,443.00	Projection (Original Hole)	MWD	MWD - Standard	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.000	0.00	0.00	0.00	14,439,412.466	1,700,117.999	39.760000240	-80.787561700	
202.00	0.35	225.080	202.00	-0.44	-0.44	14,439,412.030	1,700,117.562	39.759999047	-80.787563258	
MWD surveys										
233.00	0.44	192.750	233.00	-0.62	-0.53	14,439,411.847	1,700,117.469	39.759998545	-80.787563592	
263.00	0.31	321.690	263.00	-0.67	-0.61	14,439,411.798	1,700,117.393	39.759998412	-80.787563862	
294.00	0.48	309.830	294.00	-0.52	-0.76	14,439,411.947	1,700,117.241	39.759998822	-80.787564400	
325.00	0.35	286.710	325.00	-0.41	-0.95	14,439,412.058	1,700,117.051	39.759999126	-80.787565077	

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well McMasters N-13 HU (slot A)
Project:	Marshall County, West Virginia NAD83 UTM 17N	TVD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Site:	McMasters Shields	MD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Well:	McMasters N-13 HU (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Feb2822

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
355.00	0.66	291.110	354.99	-0.32	-1.20	14,439,412.146	1,700,116.802	39.759999371	-80.787565962
386.00	0.35	269.750	385.99	-0.26	-1.46	14,439,412.210	1,700,116.541	39.759999548	-80.787566891
417.00	0.35	306.400	416.99	-0.20	-1.63	14,439,412.266	1,700,116.370	39.759999703	-80.787567498
447.00	0.48	292.250	446.99	-0.10	-1.82	14,439,412.368	1,700,116.180	39.759999984	-80.787568174
478.00	0.26	283.540	477.99	-0.03	-2.01	14,439,412.433	1,700,115.991	39.760000165	-80.787568844
509.00	0.53	273.790	508.99	-0.01	-2.22	14,439,412.459	1,700,115.780	39.760000238	-80.787569596
540.00	0.22	270.010	539.99	0.00	-2.42	14,439,412.469	1,700,115.577	39.760000265	-80.787570317
570.00	0.53	272.470	569.99	0.01	-2.62	14,439,412.475	1,700,115.381	39.760000283	-80.787571015
601.00	0.48	278.890	600.99	0.04	-2.89	14,439,412.501	1,700,115.110	39.760000357	-80.787571981
632.00	0.44	294.890	631.99	0.11	-3.13	14,439,412.571	1,700,114.873	39.760000551	-80.787572821
662.00	0.57	282.580	661.99	0.19	-3.38	14,439,412.652	1,700,114.623	39.760000775	-80.787573711
693.00	0.35	301.830	692.99	0.27	-3.61	14,439,412.736	1,700,114.392	39.760001006	-80.787574532
724.00	0.44	271.160	723.98	0.32	-3.81	14,439,412.788	1,700,114.193	39.760001151	-80.787575241
755.00	0.31	317.210	754.98	0.39	-3.98	14,439,412.852	1,700,114.017	39.760001328	-80.787575867
787.00	0.31	262.540	786.98	0.44	-4.13	14,439,412.904	1,700,113.872	39.760001473	-80.787576381
881.00	0.35	312.730	880.98	0.60	-4.59	14,439,413.066	1,700,113.409	39.760001920	-80.787578027
945.00	0.30	286.800	944.98	0.78	-4.89	14,439,413.247	1,700,113.105	39.760002419	-80.787579107
976.00	0.44	254.460	975.98	0.77	-5.09	14,439,413.239	1,700,112.913	39.760002397	-80.787579792
1,023.00	0.44	242.240	1,022.98	0.64	-5.42	14,439,413.106	1,700,112.579	39.760002036	-80.787580980
1,070.00	0.26	147.930	1,069.98	0.47	-5.52	14,439,412.932	1,700,112.476	39.760001557	-80.787581348
1,117.00	0.44	244.960	1,116.98	0.30	-5.63	14,439,412.765	1,700,112.369	39.760001100	-80.787581730
1,163.00	0.44	248.830	1,162.98	0.16	-5.95	14,439,412.627	1,700,112.045	39.760000722	-80.787582887
1,210.00	0.83	213.060	1,209.97	-0.19	-6.31	14,439,412.276	1,700,111.691	39.759999762	-80.787584149
1,257.00	0.88	228.880	1,256.97	-0.71	-6.77	14,439,411.754	1,700,111.233	39.759998329	-80.787585782
1,304.00	0.53	240.220	1,303.97	-1.06	-7.23	14,439,411.408	1,700,110.772	39.759997384	-80.787587424
1,350.00	0.97	205.410	1,349.96	-1.51	-7.58	14,439,410.951	1,700,110.421	39.759996130	-80.787588679
1,444.00	1.14	210.160	1,443.95	-3.04	-8.39	14,439,409.424	1,700,109.609	39.759991941	-80.787591579
1,538.00	1.36	214.550	1,537.92	-4.77	-9.49	14,439,407.696	1,700,108.507	39.759987205	-80.787595516
1,585.00	2.07	208.230	1,584.90	-5.98	-10.21	14,439,406.489	1,700,107.789	39.759983894	-80.787598081
1,632.00	1.85	207.350	1,631.87	-7.40	-10.96	14,439,405.067	1,700,107.039	39.759979995	-80.787600761
1,667.00	2.64	195.570	1,666.85	-8.68	-11.44	14,439,403.789	1,700,106.563	39.759976487	-80.787602466
1,697.00	3.03	196.010	1,696.81	-10.10	-11.84	14,439,402.361	1,700,106.159	39.759972569	-80.787603916
1,725.00	3.47	180.010	1,724.77	-11.66	-12.04	14,439,400.803	1,700,105.955	39.759968290	-80.787604656
1,756.00	4.13	172.720	1,755.70	-13.71	-11.90	14,439,398.757	1,700,106.096	39.759962671	-80.787604170
1,788.00	5.23	179.400	1,787.59	-16.31	-11.74	14,439,396.156	1,700,106.257	39.759955526	-80.787603618
1,819.00	5.58	174.130	1,818.45	-19.22	-11.57	14,439,393.244	1,700,106.426	39.759947527	-80.787603042
1,866.00	6.37	173.420	1,865.20	-24.09	-11.04	14,439,388.380	1,700,106.959	39.759934168	-80.787601188
1,912.00	6.63	166.480	1,910.90	-29.20	-10.13	14,439,383.263	1,700,107.872	39.759920109	-80.787597982
1,959.00	6.59	167.000	1,957.59	-34.47	-8.89	14,439,377.998	1,700,109.113	39.759905639	-80.787593610
2,006.00	6.90	162.700	2,004.26	-39.79	-7.44	14,439,372.674	1,700,110.559	39.759891010	-80.787588509
2,053.00	6.99	163.310	2,050.92	-45.23	-5.78	14,439,367.239	1,700,112.220	39.759876074	-80.787582645
2,101.00	6.15	163.310	2,098.60	-50.49	-4.20	14,439,361.979	1,700,113.797	39.759861616	-80.787577077
2,148.00	6.20	165.250	2,145.33	-55.35	-2.83	14,439,357.113	1,700,115.167	39.759848244	-80.787572246
2,195.00	6.33	164.550	2,192.05	-60.30	-1.50	14,439,352.161	1,700,116.503	39.759834637	-80.787567532
2,242.00	6.37	167.180	2,238.76	-65.34	-0.23	14,439,347.122	1,700,117.772	39.759820788	-80.787563060
2,290.00	6.42	162.700	2,286.46	-70.50	1.16	14,439,341.963	1,700,119.161	39.759806612	-80.787558161
2,337.00	6.62	162.700	2,333.16	-75.60	2.75	14,439,336.868	1,700,120.748	39.759792609	-80.787552557
2,384.00	6.64	166.390	2,379.85	-80.83	4.19	14,439,331.640	1,700,122.193	39.759778243	-80.787547459
2,478.00	6.86	168.150	2,473.19	-91.60	6.63	14,439,320.864	1,700,124.624	39.759748632	-80.787538898
2,572.00	6.02	167.350	2,566.60	-101.91	8.86	14,439,310.560	1,700,126.857	39.759720320	-80.787531041
2,676.00	5.49	168.240	2,670.08	-112.10	11.07	14,439,300.368	1,700,129.065	39.759692316	-80.787523270
2,770.00	5.23	174.740	2,763.67	-120.77	12.38	14,439,291.700	1,700,130.374	39.759668502	-80.787518684
2,865.00	6.42	195.750	2,858.18	-130.19	11.33	14,439,282.275	1,700,129.329	39.759642625	-80.787522482
2,959.00	6.11	193.020	2,951.62	-140.12	8.78	14,439,272.343	1,700,126.776	39.759615366	-80.787531652

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well McMasters N-13 HU (slot A)
Project:	Marshall County, West Virginia NAD83 UTM 17N	TVD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Site:	McMasters Shields	MD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Well:	McMasters N-13 HU (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Feb2822

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
3,053.00	5.58	177.030	3,045.14	-149.56	7.89	14,439,262.904	1,700,125.885	39.759589450	-80.787534900	
3,146.00	5.14	179.130	3,137.73	-158.24	8.18	14,439,254.223	1,700,126.183	39.759565608	-80.787533914	
3,240.00	4.61	186.340	3,231.39	-166.21	7.83	14,439,246.259	1,700,125.830	39.759543737	-80.787535238	
3,334.00	4.09	187.750	3,325.12	-173.28	6.96	14,439,239.183	1,700,124.961	39.759524310	-80.787538391	
3,428.00	4.66	186.870	3,418.85	-180.40	6.05	14,439,232.070	1,700,124.052	39.759504782	-80.787541685	
3,524.00	4.83	184.320	3,514.52	-188.30	5.28	14,439,224.168	1,700,123.281	39.759483087	-80.787544495	
3,619.00	3.74	181.600	3,609.25	-195.38	4.89	14,439,217.083	1,700,122.893	39.759463631	-80.787545934	
3,712.00	1.58	180.800	3,702.15	-199.70	4.79	14,439,212.768	1,700,122.790	39.759451783	-80.787546336	
3,806.00	0.22	252.610	3,796.13	-201.05	4.60	14,439,211.418	1,700,122.600	39.759448077	-80.787547024	
3,900.00	0.79	337.950	3,890.13	-200.50	4.19	14,439,211.965	1,700,122.185	39.759449581	-80.787548498	
3,995.00	1.19	342.430	3,985.12	-198.95	3.64	14,439,213.513	1,700,121.641	39.759453834	-80.787550420	
4,089.00	1.36	347.090	4,079.09	-196.94	3.10	14,439,215.530	1,700,121.097	39.759459379	-80.787552338	
4,184.00	1.49	355.270	4,174.06	-194.61	2.74	14,439,217.860	1,700,120.743	39.759465780	-80.787553577	
4,278.00	1.10	357.290	4,268.04	-192.49	2.60	14,439,219.979	1,700,120.600	39.759471601	-80.787554069	
4,372.00	0.22	359.400	4,362.03	-191.40	2.56	14,439,221.061	1,700,120.555	39.759474572	-80.787554219	
4,466.00	0.26	224.130	4,456.03	-191.38	2.41	14,439,221.089	1,700,120.405	39.759474648	-80.787554754	
4,559.00	0.26	183.620	4,549.03	-191.74	2.25	14,439,220.726	1,700,120.245	39.759473655	-80.787555327	
4,653.00	0.48	136.860	4,643.03	-192.24	2.50	14,439,220.226	1,700,120.501	39.759472280	-80.787554421	
4,748.00	1.23	114.100	4,738.02	-192.95	3.70	14,439,219.520	1,700,121.703	39.759470331	-80.787550147	
4,841.00	2.02	110.930	4,830.98	-193.94	6.15	14,439,218.527	1,700,124.145	39.759467588	-80.787541466	
4,936.00	1.32	114.620	4,925.94	-194.99	8.71	14,439,217.473	1,700,126.704	39.759464677	-80.787532370	
5,030.00	0.57	44.220	5,019.93	-195.11	10.02	14,439,217.357	1,700,128.014	39.759464350	-80.787527708	
5,123.00	1.14	9.330	5,112.92	-193.86	10.49	14,439,218.601	1,700,128.487	39.759467764	-80.787526016	
5,217.00	1.54	334.090	5,206.89	-191.81	10.09	14,439,220.660	1,700,128.087	39.759473421	-80.787527423	
5,310.00	2.81	313.960	5,299.83	-189.10	7.90	14,439,223.367	1,700,125.900	39.759480868	-80.787535183	
5,404.00	1.80	308.950	5,393.75	-186.57	5.09	14,439,225.894	1,700,123.093	39.759487828	-80.787545149	
5,498.00	0.88	239.520	5,487.73	-186.01	3.32	14,439,226.456	1,700,121.323	39.759489383	-80.787551443	
5,592.00	1.36	213.760	5,581.71	-187.30	2.08	14,439,225.162	1,700,120.081	39.759485839	-80.787555874	
5,685.00	0.92	196.800	5,674.69	-188.94	1.25	14,439,223.530	1,700,119.251	39.759481361	-80.787558838	
5,779.00	1.10	160.240	5,768.68	-190.51	1.34	14,439,221.959	1,700,119.338	39.759477045	-80.787558542	
5,872.00	0.44	187.660	5,861.67	-191.70	1.59	14,439,220.765	1,700,119.593	39.759473764	-80.787557647	
5,966.00	0.22	222.820	5,955.67	-192.19	1.42	14,439,220.274	1,700,119.422	39.759472419	-80.787558259	
6,061.00	0.09	209.630	6,050.67	-192.39	1.26	14,439,220.076	1,700,119.261	39.759471875	-80.787558833	
6,155.00	0.13	211.920	6,144.67	-192.54	1.17	14,439,219.921	1,700,119.168	39.759471450	-80.787559165	
6,250.00	0.26	129.740	6,239.67	-192.77	1.28	14,439,219.692	1,700,119.277	39.759470820	-80.787558780	
6,533.00	0.22	354.690	6,522.67	-192.64	1.72	14,439,219.822	1,700,119.720	39.759471175	-80.787557201	
6,627.00	0.44	328.550	6,616.66	-192.16	1.52	14,439,220.310	1,700,119.515	39.759472516	-80.787557926	
6,722.00	0.48	323.620	6,711.66	-191.52	1.09	14,439,220.942	1,700,119.089	39.759474253	-80.787559438	
6,817.00	0.48	345.770	6,806.66	-190.82	0.76	14,439,221.648	1,700,118.755	39.759476194	-80.787560620	
6,911.00	0.53	331.010	6,900.65	-190.06	0.45	14,439,222.410	1,700,118.448	39.759478289	-80.787561708	
7,006.00	0.66	336.810	6,995.65	-189.17	0.02	14,439,223.297	1,700,118.019	39.759480728	-80.787563224	
7,100.00	0.66	354.650	7,089.64	-188.13	-0.24	14,439,224.333	1,700,117.756	39.759483577	-80.787564154	
7,193.00	0.35	311.850	7,182.64	-187.41	-0.51	14,439,225.056	1,700,117.494	39.759485564	-80.787565078	
7,287.00	0.22	229.580	7,276.64	-187.34	-0.86	14,439,225.131	1,700,117.143	39.759485771	-80.787566328	
7,381.00	0.44	227.390	7,370.64	-187.70	-1.26	14,439,224.769	1,700,116.740	39.759484781	-80.787567765	
7,474.00	0.75	244.790	7,463.63	-188.20	-2.07	14,439,224.268	1,700,115.926	39.759483410	-80.787570664	
7,568.00	0.18	234.680	7,557.63	-188.54	-2.75	14,439,223.921	1,700,115.249	39.759482461	-80.787573076	
7,662.00	0.53	161.020	7,651.63	-189.04	-2.73	14,439,223.425	1,700,115.270	39.759481097	-80.787573006	
7,757.00	0.79	153.470	7,746.62	-190.04	-2.29	14,439,222.423	1,700,115.705	39.759478344	-80.787571465	
7,851.00	0.97	167.010	7,840.61	-191.40	-1.83	14,439,221.068	1,700,116.174	39.759474620	-80.787569810	
7,945.00	1.10	177.640	7,934.59	-193.07	-1.61	14,439,219.391	1,700,116.390	39.759470013	-80.787569055	
8,039.00	0.79	120.160	8,028.58	-194.30	-1.01	14,439,218.164	1,700,116.987	39.759466639	-80.787566940	
8,133.00	2.42	85.090	8,122.54	-194.46	1.53	14,439,218.008	1,700,119.525	39.759466195	-80.787557911	
8,228.00	4.97	79.290	8,217.34	-193.52	7.57	14,439,218.945	1,700,125.568	39.759468728	-80.787536401	

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well McMasters N-13 HU (slot A)
Project:	Marshall County, West Virginia NAD83 UTM 17N	TVD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Site:	McMasters Shields	MD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Well:	McMasters N-13 HU (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Feb2822

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,322.00	6.59	76.130	8,310.86	-191.47	16.81	14,439,220.995	1,700,134.806	39.759474297	-80.787503512
8,416.00	8.96	78.060	8,403.99	-188.66	29.21	14,439,223.803	1,700,147.206	39.759481927	-80.787459365
8,511.00	10.46	79.640	8,497.62	-185.58	44.93	14,439,226.884	1,700,162.928	39.759490288	-80.787403397
8,604.00	11.51	88.260	8,588.93	-183.78	62.51	14,439,228.684	1,700,180.508	39.759495117	-80.787340825
8,697.00	11.95	95.460	8,679.99	-184.42	81.37	14,439,228.050	1,700,199.368	39.759493251	-80.787273721
8,791.00	12.57	100.470	8,771.85	-187.20	101.12	14,439,225.265	1,700,219.115	39.759485474	-80.787203480
8,886.00	12.83	98.280	8,864.52	-190.60	121.72	14,439,221.867	1,700,239.718	39.759476009	-80.787130196
8,979.00	12.96	91.860	8,955.18	-192.42	142.36	14,439,220.042	1,700,260.360	39.759470861	-80.787056760
9,073.00	12.35	90.450	9,046.90	-192.85	162.95	14,439,219.621	1,700,280.948	39.759469570	-80.786983507
9,168.00	12.35	89.570	9,139.70	-192.85	183.27	14,439,219.617	1,700,301.266	39.759469428	-80.786911208
9,261.00	13.75	89.220	9,230.30	-192.62	204.26	14,439,219.842	1,700,322.264	39.759469909	-80.786836490
9,355.00	12.96	88.610	9,321.75	-192.22	225.97	14,439,220.250	1,700,343.972	39.759470887	-80.786759243
9,448.00	11.34	91.240	9,412.67	-192.16	245.54	14,439,220.305	1,700,363.540	39.759470910	-80.786686913
9,542.00	11.43	93.440	9,504.82	-192.92	264.08	14,439,219.546	1,700,382.077	39.759468705	-80.786623660
9,636.00	12.70	93.440	9,596.74	-194.10	283.69	14,439,218.367	1,700,401.689	39.759465339	-80.786553884
9,729.00	12.48	90.100	9,687.51	-194.73	303.94	14,439,217.736	1,700,421.942	39.759463474	-80.786481822
9,823.00	11.21	89.570	9,779.50	-194.68	323.24	14,439,217.787	1,700,441.236	39.759463487	-80.786413168
9,917.00	11.21	92.120	9,871.71	-194.95	341.51	14,439,217.518	1,700,459.504	39.759462627	-80.786348168
10,010.00	12.61	93.000	9,962.71	-195.81	360.68	14,439,216.652	1,700,478.676	39.759460124	-80.786279955
10,059.00	13.54	94.670	10,010.43	-196.56	371.74	14,439,215.905	1,700,489.735	39.759458000	-80.786240611
10,100.00	14.59	95.990	10,050.20	-197.49	381.66	14,439,214.975	1,700,499.654	39.759455382	-80.786205322
10,133.00	14.99	96.870	10,082.11	-198.43	390.03	14,439,214.031	1,700,508.025	39.759452734	-80.786175544
10,170.00	14.20	95.640	10,117.92	-199.45	399.29	14,439,213.013	1,700,517.292	39.759449877	-80.786142578
10,227.00	13.41	93.970	10,173.27	-200.60	412.85	14,439,211.868	1,700,530.844	39.759446644	-80.786094367
10,274.00	12.18	80.520	10,219.11	-200.16	423.18	14,439,212.308	1,700,541.174	39.759447783	-80.786057606
10,321.00	11.43	66.280	10,265.13	-197.47	432.33	14,439,214.998	1,700,550.330	39.759455112	-80.786025003
10,368.00	11.87	49.940	10,311.17	-192.48	440.30	14,439,219.984	1,700,558.295	39.759468752	-80.785996617
10,415.00	13.14	34.030	10,357.07	-184.94	446.99	14,439,227.525	1,700,564.987	39.759489418	-80.785972743
10,462.00	14.64	23.220	10,402.70	-175.05	452.32	14,439,237.413	1,700,570.320	39.759516538	-80.785953684
10,510.00	15.52	14.950	10,449.05	-163.27	456.37	14,439,249.193	1,700,574.368	39.759548864	-80.785939177
10,557.00	16.31	4.140	10,494.26	-150.61	458.47	14,439,261.854	1,700,576.467	39.759583620	-80.785931600
10,604.00	18.20	358.430	10,539.15	-136.69	458.74	14,439,275.776	1,700,576.743	39.759621851	-80.785930502
10,651.00	20.57	356.060	10,583.48	-121.11	457.98	14,439,291.352	1,700,575.974	39.759664635	-80.785933104
10,699.00	22.33	354.390	10,628.16	-103.62	456.51	14,439,308.841	1,700,574.503	39.759712674	-80.785938189
10,746.00	24.00	352.890	10,671.37	-85.25	454.45	14,439,327.213	1,700,572.447	39.759763142	-80.785945349
10,794.00	25.93	351.580	10,714.88	-65.18	451.70	14,439,347.283	1,700,569.702	39.759818279	-80.785954947
10,841.00	27.96	350.610	10,756.77	-44.14	448.40	14,439,368.321	1,700,566.399	39.759876076	-80.785966520
10,886.00	30.07	345.510	10,797.88	-21.87	443.66	14,439,390.598	1,700,561.654	39.759937286	-80.785983215
10,935.00	32.86	339.800	10,838.02	1.44	436.33	14,439,413.909	1,700,554.326	39.760001353	-80.786009093
10,983.00	36.75	337.070	10,877.47	26.84	426.26	14,439,439.302	1,700,544.254	39.760071154	-80.786044716
11,030.00	41.36	334.610	10,913.96	53.83	414.11	14,439,466.296	1,700,532.111	39.760145368	-80.786087697
11,077.00	44.09	333.380	10,948.49	82.48	400.12	14,439,494.948	1,700,518.123	39.760224147	-80.786137226
11,124.00	46.02	333.730	10,981.69	112.27	385.31	14,439,524.732	1,700,503.311	39.760306040	-80.786189681
11,171.00	48.57	335.230	11,013.56	143.44	370.44	14,439,555.901	1,700,488.441	39.760391733	-80.786242327
11,218.00	52.22	335.670	11,043.52	176.37	355.40	14,439,588.834	1,700,473.402	39.760482277	-80.786295563
11,266.00	56.70	335.930	11,071.41	211.99	339.40	14,439,624.452	1,700,457.398	39.760580198	-80.786352210
11,313.00	61.14	335.840	11,095.67	248.72	322.96	14,439,661.182	1,700,440.955	39.760681178	-80.786410407
11,360.00	64.62	335.230	11,117.09	286.79	305.63	14,439,699.251	1,700,423.630	39.760785840	-80.786471732
11,407.00	68.18	334.700	11,135.91	325.80	287.41	14,439,738.266	1,700,405.405	39.760893106	-80.786536252
11,454.00	71.12	334.700	11,152.25	365.64	268.58	14,439,778.102	1,700,386.575	39.761002628	-80.786602919
11,501.00	73.32	334.440	11,166.60	406.05	249.36	14,439,818.517	1,700,367.357	39.761113748	-80.786670960
11,549.00	75.47	334.170	11,179.51	447.71	229.31	14,439,860.174	1,700,347.314	39.761228279	-80.786741931
11,596.00	78.55	333.030	11,190.07	488.72	208.95	14,439,901.188	1,700,326.951	39.761341049	-80.786814043
11,643.00	81.14	332.420	11,198.36	529.84	187.75	14,439,942.304	1,700,305.751	39.761454103	-80.786889132

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well McMasters N-13 HU (slot A)
Project:	Marshall County, West Virginia NAD83 UTM 17N	TVD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Site:	McMasters Shields	MD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Well:	McMasters N-13 HU (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Feb2822

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
11,690.00	86.02	329.870	11,203.61	570.73	165.22	14,439,983.192	1,700,283.216	39.761566541	-80.786968976
11,737.00	89.19	329.080	11,205.58	611.17	141.37	14,440,023.637	1,700,259.367	39.761677770	-80.787053495
11,831.00	91.69	329.520	11,204.86	691.99	93.38	14,440,104.454	1,700,211.382	39.761900030	-80.787223565
11,925.00	92.00	330.660	11,201.83	773.43	46.54	14,440,185.890	1,700,164.535	39.762123983	-80.787389578
12,019.00	90.37	330.310	11,199.89	855.21	0.24	14,440,267.671	1,700,118.237	39.762348878	-80.787553636
12,114.00	90.46	329.780	11,199.20	937.51	-47.20	14,440,349.978	1,700,070.803	39.762575225	-80.787721732
12,208.00	90.33	332.680	11,198.55	1,019.90	-92.43	14,440,432.363	1,700,025.568	39.762801774	-80.787882008
12,302.00	90.81	333.910	11,197.61	1,103.87	-134.67	14,440,516.330	1,699,983.327	39.763032646	-80.788031611
12,397.00	89.98	331.710	11,196.96	1,188.36	-178.08	14,440,600.824	1,699,939.922	39.763264973	-80.788185358
12,492.00	90.29	330.130	11,196.74	1,271.38	-224.25	14,440,683.846	1,699,893.751	39.763493273	-80.788348960
12,587.00	90.51	330.570	11,196.07	1,353.94	-271.24	14,440,766.404	1,699,846.756	39.763720308	-80.788515499
12,612.00	90.46	328.720	11,195.86	1,375.51	-283.88	14,440,787.975	1,699,834.123	39.763779630	-80.788560272
12,707.00	90.37	328.280	11,195.17	1,456.51	-333.51	14,440,868.974	1,699,784.487	39.764002396	-80.788736223
12,801.00	90.95	330.040	11,194.09	1,537.21	-381.70	14,440,949.673	1,699,736.304	39.764224332	-80.788907007
12,896.00	91.52	331.190	11,192.04	1,619.97	-428.30	14,441,032.430	1,699,689.702	39.764451906	-80.789072150
12,989.00	90.77	331.450	11,190.18	1,701.54	-472.92	14,441,114.003	1,699,645.079	39.764676218	-80.789230260
13,083.00	91.30	330.570	11,188.49	1,783.75	-518.47	14,441,196.210	1,699,599.529	39.764902278	-80.789391664
13,176.00	92.22	329.870	11,185.63	1,864.43	-564.64	14,441,276.889	1,699,553.361	39.765124143	-80.789555281
13,270.00	90.77	329.340	11,183.18	1,945.48	-612.18	14,441,357.939	1,699,505.819	39.765347036	-80.789723788
13,364.00	90.64	329.430	11,182.02	2,026.37	-660.05	14,441,438.830	1,699,457.952	39.765569494	-80.789893454
13,458.00	92.35	328.460	11,179.57	2,106.86	-708.52	14,441,519.326	1,699,409.480	39.765790871	-80.790065274
13,552.00	91.56	328.280	11,176.36	2,186.85	-757.79	14,441,599.315	1,699,360.213	39.766010861	-80.790239932
13,647.00	91.82	328.990	11,173.56	2,267.94	-807.21	14,441,680.396	1,699,310.788	39.766233852	-80.790415140
13,741.00	91.16	328.900	11,171.12	2,348.44	-855.69	14,441,760.896	1,699,262.314	39.766455237	-80.790586973
13,835.00	91.47	329.520	11,168.96	2,429.16	-903.79	14,441,841.624	1,699,214.209	39.766677250	-80.790757491
13,929.00	90.90	329.780	11,167.01	2,510.26	-951.28	14,441,922.724	1,699,166.723	39.766900278	-80.790925804
14,022.00	91.38	330.310	11,165.16	2,590.82	-997.71	14,442,003.285	1,699,120.296	39.767121817	-80.791090355
14,117.00	91.21	330.830	11,163.02	2,673.54	-1,044.37	14,442,086.004	1,699,073.629	39.767349286	-80.791255743
14,211.00	90.99	330.570	11,161.21	2,755.50	-1,090.37	14,442,167.963	1,699,027.636	39.767574664	-80.791418740
14,305.00	91.16	330.310	11,159.45	2,837.25	-1,136.73	14,442,249.713	1,698,981.271	39.767799470	-80.791583064
14,398.00	90.55	331.270	11,158.06	2,918.42	-1,182.11	14,442,330.877	1,698,935.891	39.768022657	-80.791743885
14,493.00	90.64	331.710	11,157.07	3,001.89	-1,227.45	14,442,414.351	1,698,890.549	39.768252193	-80.791904555
14,587.00	90.73	332.060	11,155.95	3,084.79	-1,271.75	14,442,497.253	1,698,846.256	39.768480148	-80.792061500
14,681.00	91.52	329.950	11,154.11	3,166.99	-1,317.30	14,442,579.450	1,698,800.703	39.768706175	-80.792222933
14,775.00	90.55	329.780	11,152.41	3,248.27	-1,364.48	14,442,660.731	1,698,753.520	39.768929696	-80.792390178
14,868.00	91.87	329.250	11,150.44	3,328.40	-1,411.65	14,442,740.855	1,698,706.351	39.769150039	-80.792557379
14,963.00	91.25	329.430	11,147.86	3,410.09	-1,460.08	14,442,822.544	1,698,657.925	39.769374688	-80.792729045
15,057.00	90.51	329.780	11,146.41	3,491.16	-1,507.63	14,442,903.614	1,698,610.371	39.769597631	-80.792897614
15,151.00	91.38	328.900	11,144.86	3,572.00	-1,555.56	14,442,984.461	1,698,562.444	39.769819964	-80.793067513
15,245.00	91.12	328.900	11,142.81	3,652.47	-1,604.10	14,443,064.931	1,698,513.902	39.770041265	-80.793239606
15,340.00	90.55	329.340	11,141.43	3,734.00	-1,652.85	14,443,146.455	1,698,465.150	39.770265462	-80.793412439
15,433.00	90.68	329.160	11,140.43	3,813.92	-1,700.40	14,443,226.375	1,698,417.602	39.770485246	-80.793580998
15,527.00	91.03	329.780	11,139.03	3,894.88	-1,748.15	14,443,307.333	1,698,369.857	39.770707883	-80.793750254
15,622.00	89.89	329.340	11,138.26	3,976.78	-1,796.27	14,443,389.234	1,698,321.729	39.770933110	-80.793920864
15,716.00	90.81	330.570	11,137.69	4,058.14	-1,843.34	14,443,470.599	1,698,274.667	39.771156860	-80.794087686
15,810.00	92.40	330.830	11,135.06	4,140.08	-1,889.32	14,443,552.539	1,698,228.685	39.771382179	-80.794250663
15,904.00	91.60	330.480	11,131.78	4,221.97	-1,935.36	14,443,634.426	1,698,182.647	39.771607355	-80.794413838
15,998.00	90.68	330.480	11,129.91	4,303.75	-1,981.66	14,443,716.206	1,698,136.341	39.771832238	-80.794577973
16,093.00	91.69	330.660	11,127.94	4,386.47	-2,028.33	14,443,798.928	1,698,089.672	39.772059710	-80.794743388
16,186.00	91.12	330.660	11,125.66	4,467.52	-2,073.89	14,443,879.974	1,698,044.117	39.772282571	-80.794904856
16,280.00	92.18	331.010	11,122.96	4,549.56	-2,119.68	14,443,962.021	1,697,998.328	39.772508184	-80.795067149
16,374.00	91.03	329.780	11,120.32	4,631.26	-2,166.09	14,444,043.714	1,697,951.910	39.772732828	-80.795231685
16,468.00	90.02	329.430	11,119.46	4,712.33	-2,213.65	14,444,124.790	1,697,904.353	39.772955783	-80.795400282
16,562.00	91.34	331.450	11,118.35	4,794.09	-2,260.02	14,444,206.543	1,697,857.986	39.773180591	-80.795564637

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well McMasters N-13 HU (slot A)
Project:	Marshall County, West Virginia NAD83 UTM 17N	TVD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Site:	McMasters Shields	MD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Well:	McMasters N-13 HU (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Feb2822

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
16,656.00	90.90	331.980	11,116.51	4,876.85	-2,304.55	14,444,289.303	1,697,813.452	39.773408152	-80.795722461
16,751.00	89.89	331.270	11,115.85	4,960.43	-2,349.70	14,444,372.885	1,697,768.306	39.773637977	-80.795882458
16,846.00	91.21	330.570	11,114.94	5,043.45	-2,395.87	14,444,455.903	1,697,722.137	39.773866257	-80.796046103
16,940.00	91.56	331.540	11,112.67	5,125.68	-2,441.35	14,444,538.136	1,697,676.658	39.774092375	-80.796207300
17,034.00	90.90	329.340	11,110.65	5,207.42	-2,487.71	14,444,619.876	1,697,630.298	39.774317147	-80.796371635
17,129.00	91.34	327.320	11,108.79	5,288.26	-2,537.57	14,444,700.710	1,697,580.433	39.774539449	-80.796548455
17,223.00	91.21	331.100	11,106.70	5,368.97	-2,585.67	14,444,781.425	1,697,532.336	39.774761418	-80.796718984
17,317.00	91.38	337.430	11,104.58	5,453.58	-2,626.45	14,444,866.037	1,697,491.551	39.774994039	-80.796863457
17,411.00	91.08	333.120	11,102.56	5,538.93	-2,665.75	14,444,951.379	1,697,452.253	39.775228658	-80.797002636
17,505.00	90.90	328.640	11,100.93	5,621.01	-2,711.48	14,445,033.464	1,697,406.527	39.775454371	-80.797164717
17,598.00	92.66	331.450	11,098.04	5,701.54	-2,757.89	14,445,113.990	1,697,360.119	39.775675807	-80.797329243
17,693.00	92.44	331.540	11,093.82	5,784.94	-2,803.18	14,445,197.391	1,697,314.826	39.775905131	-80.797489773
17,786.00	91.52	329.520	11,090.60	5,865.85	-2,848.90	14,445,278.304	1,697,269.103	39.776127625	-80.797651858
17,880.00	91.38	329.600	11,088.22	5,946.87	-2,896.51	14,445,359.321	1,697,221.495	39.776350416	-80.797820653
17,975.00	91.56	330.390	11,085.79	6,029.11	-2,944.00	14,445,441.562	1,697,174.004	39.776576565	-80.797989021
18,069.00	91.03	330.660	11,083.66	6,110.92	-2,990.24	14,445,523.374	1,697,127.764	39.776801531	-80.798152942
18,164.00	90.73	330.570	11,082.20	6,193.69	-3,036.85	14,445,606.141	1,697,081.155	39.777029122	-80.798318167
18,266.00	90.37	330.130	11,081.22	6,282.33	-3,087.31	14,445,694.781	1,697,030.698	39.777272864	-80.798497044
18,360.00	91.87	329.870	11,079.39	6,363.72	-3,134.30	14,445,776.170	1,696,983.709	39.777496670	-80.798663638
18,454.00	91.91	329.430	11,076.29	6,444.79	-3,181.77	14,445,857.243	1,696,936.238	39.777719613	-80.798831948
18,549.00	92.48	329.600	11,072.65	6,526.60	-3,229.93	14,445,939.050	1,696,888.079	39.777944574	-80.799002704
18,644.00	92.57	329.600	11,068.46	6,608.46	-3,277.95	14,446,020.909	1,696,840.053	39.778169678	-80.799172989
18,738.00	92.62	329.080	11,064.21	6,689.23	-3,325.84	14,446,101.685	1,696,792.168	39.778391808	-80.799342781
18,833.00	90.95	328.460	11,061.25	6,770.42	-3,375.07	14,446,182.876	1,696,742.938	39.778615083	-80.799517355
18,927.00	91.30	328.280	11,059.40	6,850.45	-3,424.35	14,446,262.897	1,696,693.652	39.778835146	-80.799692144
19,020.00	91.12	327.410	11,057.44	6,929.16	-3,473.84	14,446,341.613	1,696,644.168	39.779051627	-80.799867647
19,114.00	90.46	328.200	11,056.14	7,008.70	-3,523.92	14,446,421.151	1,696,594.090	39.779270367	-80.800045257
19,208.00	91.38	328.990	11,054.63	7,088.92	-3,572.89	14,446,501.368	1,696,545.115	39.779490967	-80.800218937
19,301.00	91.30	328.110	11,052.46	7,168.23	-3,621.40	14,446,580.683	1,696,496.606	39.779709086	-80.800390968
19,395.00	90.86	329.250	11,050.69	7,248.52	-3,670.25	14,446,660.969	1,696,447.753	39.779929874	-80.800564217
19,489.00	91.52	329.780	11,048.73	7,329.51	-3,717.93	14,446,741.957	1,696,400.076	39.780152579	-80.800733274
19,584.00	92.04	331.100	11,045.78	7,412.10	-3,764.77	14,446,824.549	1,696,353.233	39.780379687	-80.800899351
19,678.00	90.68	330.390	11,043.55	7,494.08	-3,810.70	14,446,906.534	1,696,307.310	39.780605121	-80.801062162
19,772.00	91.03	330.830	11,042.15	7,575.98	-3,856.82	14,446,988.427	1,696,261.184	39.780830302	-80.801225693
19,866.00	90.59	332.150	11,040.82	7,658.57	-3,901.68	14,447,071.017	1,696,216.323	39.781057393	-80.801384721
19,960.00	91.52	334.090	11,039.09	7,742.39	-3,944.17	14,447,154.842	1,696,173.833	39.781287857	-80.801535299
20,055.00	90.99	332.860	11,037.01	7,827.37	-3,986.59	14,447,239.819	1,696,131.418	39.781521487	-80.801685602
20,149.00	91.52	334.610	11,034.95	7,911.64	-4,028.17	14,447,324.090	1,696,089.833	39.781753172	-80.801832959
20,245.00	91.34	335.320	11,032.55	7,998.59	-4,068.79	14,447,411.043	1,696,049.221	39.781992216	-80.801976829
20,340.00	89.45	332.420	11,031.90	8,083.87	-4,110.62	14,447,496.319	1,696,007.389	39.782226660	-80.802125057
20,434.00	89.63	328.990	11,032.65	8,165.83	-4,156.60	14,447,578.282	1,695,961.403	39.782452034	-80.802288100
20,527.00	89.63	328.990	11,033.25	8,245.54	-4,204.52	14,447,657.988	1,695,913.492	39.782671220	-80.802458014
20,621.00	89.93	328.990	11,033.62	8,326.10	-4,252.94	14,447,738.553	1,695,865.065	39.782892766	-80.802629758
20,716.00	90.77	328.640	11,033.03	8,407.37	-4,302.13	14,447,819.823	1,695,815.875	39.783116254	-80.802804212
20,809.00	90.99	328.900	11,031.61	8,486.89	-4,350.35	14,447,899.337	1,695,767.662	39.783334913	-80.802975202
20,903.00	91.43	328.990	11,029.62	8,567.40	-4,398.83	14,447,979.846	1,695,719.183	39.783556306	-80.803147138
20,997.00	91.78	328.990	11,026.99	8,647.93	-4,447.23	14,448,060.379	1,695,670.774	39.783777765	-80.803318821
21,091.00	91.65	328.720	11,024.18	8,728.35	-4,495.83	14,448,140.794	1,695,622.179	39.783998899	-80.803491170
21,184.00	91.87	328.460	11,021.32	8,807.68	-4,544.27	14,448,220.128	1,695,573.734	39.784217065	-80.803662993
21,278.00	91.21	329.340	11,018.79	8,888.14	-4,592.81	14,448,300.586	1,695,525.198	39.784438319	-80.803835132
21,372.00	91.52	329.340	11,016.55	8,968.98	-4,640.73	14,448,381.423	1,695,477.278	39.784660607	-80.804005081
21,466.00	90.33	330.130	11,015.04	9,050.15	-4,688.10	14,448,462.598	1,695,429.909	39.784883821	-80.804173062
21,559.00	90.33	330.220	11,014.50	9,130.83	-4,734.35	14,448,543.279	1,695,383.656	39.785105670	-80.804337077
21,653.00	90.33	329.950	11,013.96	9,212.31	-4,781.23	14,448,624.753	1,695,336.778	39.785329703	-80.804503313

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well McMasters N-13 HU (slot A)
Project:	Marshall County, West Virginia NAD83 UTM 17N	TVD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Site:	McMasters Shields	MD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Well:	McMasters N-13 HU (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Feb2822

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
21,746.00	91.16	330.390	11,012.75	9,292.98	-4,827.49	14,448,705.423	1,695,290.522	39.785551523	-80.804667342
21,840.00	91.08	330.040	11,010.91	9,374.54	-4,874.17	14,448,786.990	1,695,243.837	39.785775806	-80.804832892
21,933.00	91.08	329.430	11,009.16	9,454.85	-4,921.04	14,448,867.299	1,695,196.973	39.785996639	-80.804999087
22,028.00	91.12	330.310	11,007.34	9,537.00	-4,968.71	14,448,949.447	1,695,149.296	39.786222527	-80.805168165
22,123.00	91.16	329.600	11,005.45	9,619.22	-5,016.27	14,449,031.666	1,695,101.741	39.786448605	-80.805336809
22,217.00	90.99	328.900	11,003.68	9,699.99	-5,064.32	14,449,112.435	1,695,053.688	39.786670706	-80.805507237
22,311.00	90.95	328.810	11,002.09	9,780.43	-5,112.93	14,449,192.874	1,695,005.078	39.786891905	-80.805679654
22,392.00	91.03	328.900	11,000.69	9,849.74	-5,154.82	14,449,262.188	1,694,963.191	39.787082511	-80.805828226
Survey @ 22392.00 MD 11000.69 TVD									
22,443.00	91.03	328.900	10,999.77	9,893.41	-5,181.16	14,449,305.851	1,694,936.852	39.787202577	-80.805921648
Survey Proj. to 22443.00 MD 10999.77 TVD									

Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
202.00	202.00	-0.44	-0.44	MWD surveys
22,392.00	11,000.69	9,849.74	-5,154.82	Survey @ 22392.00 MD 11000.69 TVD
22,443.00	10,999.77	9,893.41	-5,181.16	Survey Proj. to 22443.00 MD 10999.77 TVD