



TUG HILL
OPERATING

Well: McMasters N-14 HU (slot B)
Site: McMasters Shields
Project: Marshall County, West Virginia NAD83 UTM 17N
Design: rev4
Rig: Nabors B28

West(-)/East(+) (2000 ft/in)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Annotation
1	10198.00	11.25	75.980	10061.56	392.08	1437.19	0.00	0.00	-155.24	Survey @ 10198.00 MD 10061.56 TVD
2	10398.00	11.25	75.980	10257.71	401.51	1475.05	0.00	0.00	-160.15	KOP Begin 5.96°/100' build/turn
3	10418.18	11.59	81.807	10277.49	402.28	1478.97	5.96	76.34	-160.85	Begin 5.96°/100' build/turn
4	11312.80	50.00	339.650	11060.57	762.76	1446.39	5.96	-110.98	186.94	Begin 8°/100' build/turn
5	11836.41	91.00	330.251	11232.00	1197.61	1237.36	8.00	-14.16	667.98	Begin 91.00° lateral
6	22565.19	91.00	330.251	11045.00	10511.00	-4085.47	0.00	0.0011277.06		PBHL/TD 22565.19 MD 11045.00 TVD

ANNOTATIONS SURVEYS

MD	Inc	Azi	TVD	+N/-S	+E/-W	V Sect	Annotation
171.00	0.22	96.290	171.00	-0.04	0.33	-0.15	MWD surveys
22466.00	91.03	330.430	11023.91	10429.59	-4054.70	11190.04	Survey @ 22466.00 MD 11023.91 TVD
22560.00	91.03	330.430	11022.22	10511.34	-4101.08	11283.03	Survey Proj. to 22560.00 MD 11022.22 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=1206+26 @ 1232.00R (Nabors B28)

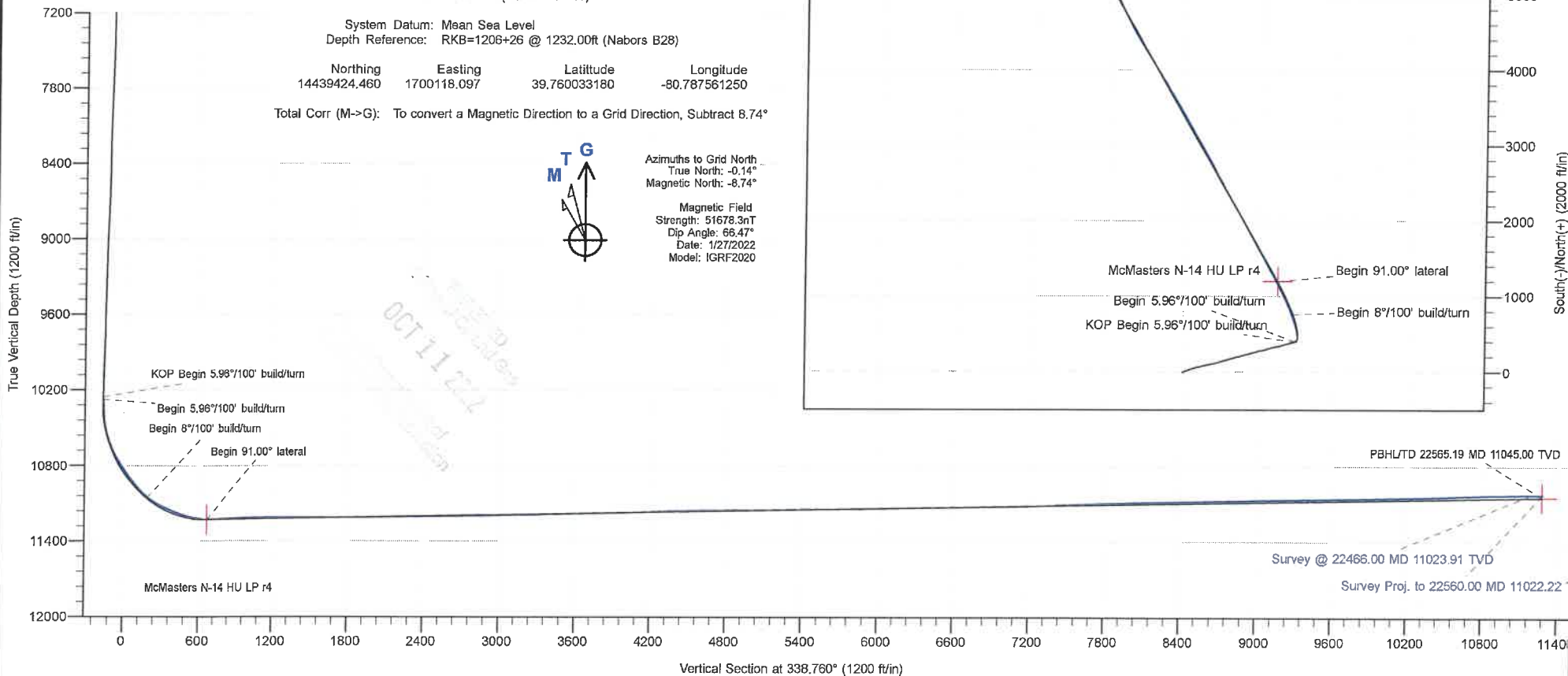
Northing 14439424.460 Easting 1700118.097 Latitude 39.760033180 Longitude -80.787561250

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



Azimuths to Grid North
True North: -0.14°
Magnetic North: -8.74°

Magnetic Field
Strength: 51678.3nT
Dip Angle: 66.47°
Date: 1/27/2022
Model: IGRF2020





Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well McMasters N-14 HU (slot B)
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-14 HU (slot B)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

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-14 HU (slot B)					
Well Position	+N/-S	0.00 ft	Northing:	14,439,424.460 usft	Latitude:	39.760033180
	+E/-W	0.00 ft	Easting:	1,700,118.097 usft	Longitude:	-80.787561250
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	1/27/2022	-8.61	66.47	51,678.25037793

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	338.760	

Survey Program	Date 2/12/2022				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
171.00	881.00	MWD surf (Original Hole)	MWD	MWD - Standard	
917.00	2,484.00	MWD int (Original Hole)	MWD	MWD - Standard	
2,578.00	22,466.00	MWD (Original Hole)	MWD	MWD - Standard	
22,560.00	22,560.00	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	14,439,424.460	1,700,118.097	39.760033180	-80.787561250	
171.00	0.22	96.290	171.00	-0.04	0.33	14,439,424.424	1,700,118.423	39.760033080	-80.787560089	
MWD surveys										
202.00	0.13	89.080	202.00	-0.04	0.42	14,439,424.418	1,700,118.518	39.760033063	-80.787559753	
233.00	0.35	103.500	233.00	-0.06	0.55	14,439,424.397	1,700,118.645	39.760033003	-80.787559301	
264.00	0.22	82.750	264.00	-0.08	0.70	14,439,424.382	1,700,118.796	39.760032962	-80.787558763	
294.00	0.22	106.490	294.00	-0.09	0.81	14,439,424.373	1,700,118.908	39.760032936	-80.787558364	
325.00	0.35	120.810	325.00	-0.15	0.95	14,439,424.308	1,700,119.047	39.760032755	-80.787557872	

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Site:	McMasters Shields	MD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Well:	McMasters N-14 HU (slot B)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
356.00	0.44	109.390	356.00	-0.24	1.14	14,439,424.220	1,700,119.240	39.760032512	-80.787557184
386.00	0.40	121.250	386.00	-0.33	1.34	14,439,424.127	1,700,119.439	39.760032257	-80.787556479
417.00	0.44	104.290	417.00	-0.42	1.55	14,439,424.042	1,700,119.646	39.760032021	-80.787555740
448.00	0.40	113.080	447.99	-0.49	1.76	14,439,423.970	1,700,119.861	39.760031822	-80.787554976
478.00	0.35	109.210	477.99	-0.56	1.95	14,439,423.899	1,700,120.044	39.760031625	-80.787554326
509.00	0.48	102.350	508.99	-0.62	2.16	14,439,423.840	1,700,120.260	39.760031462	-80.787553557
540.00	0.26	112.020	539.99	-0.67	2.36	14,439,423.785	1,700,120.453	39.760031312	-80.787552874
570.00	0.22	97.260	569.99	-0.71	2.48	14,439,423.753	1,700,120.573	39.760031221	-80.787552447
601.00	0.13	112.110	600.99	-0.73	2.57	14,439,423.732	1,700,120.664	39.760031164	-80.787552121
632.00	0.22	120.900	631.99	-0.77	2.65	14,439,423.688	1,700,120.748	39.760031043	-80.787551823
663.00	0.13	103.670	662.99	-0.81	2.74	14,439,423.649	1,700,120.833	39.760030936	-80.787551520
693.00	0.44	106.840	692.99	-0.85	2.88	14,439,423.608	1,700,120.977	39.760030821	-80.787551011
724.00	0.13	107.890	723.99	-0.90	3.03	14,439,423.563	1,700,121.124	39.760030696	-80.787550487
756.00	0.09	142.170	755.99	-0.93	3.08	14,439,423.532	1,700,121.174	39.760030610	-80.787550309
787.00	0.31	112.840	786.99	-0.98	3.17	14,439,423.480	1,700,121.266	39.760030467	-80.787549981
818.00	0.09	107.360	817.99	-1.02	3.27	14,439,423.440	1,700,121.367	39.760030357	-80.787549624
850.00	0.18	225.230	849.99	-1.06	3.26	14,439,423.397	1,700,121.355	39.760030240	-80.787549666
881.00	0.04	93.740	880.99	-1.10	3.23	14,439,423.362	1,700,121.331	39.760030144	-80.787549751
917.00	0.04	249.480	916.99	-1.10	3.23	14,439,423.357	1,700,121.332	39.760030129	-80.787549748
949.00	0.40	151.750	948.99	-1.21	3.28	14,439,423.255	1,700,121.374	39.760029848	-80.787549598
980.00	0.62	202.810	979.99	-1.46	3.26	14,439,423.005	1,700,121.361	39.760029162	-80.787549649
1,011.00	0.70	180.490	1,010.99	-1.80	3.20	14,439,422.661	1,700,121.294	39.760028218	-80.787549890
1,043.00	0.53	192.530	1,042.99	-2.14	3.16	14,439,422.321	1,700,121.260	39.760027284	-80.787550013
1,075.00	0.40	171.880	1,074.98	-2.39	3.15	14,439,422.066	1,700,121.244	39.760026584	-80.787550073
1,106.00	0.22	211.070	1,105.98	-2.55	3.13	14,439,421.908	1,700,121.228	39.760026150	-80.787550129
1,137.00	0.44	225.230	1,136.98	-2.69	3.02	14,439,421.773	1,700,121.113	39.760025780	-80.787550540
1,168.00	0.57	212.040	1,167.98	-2.90	2.85	14,439,421.558	1,700,120.947	39.760025192	-80.787551134
1,200.00	0.48	225.050	1,199.98	-3.13	2.67	14,439,421.329	1,700,120.768	39.760024563	-80.787551774
1,231.00	0.04	201.060	1,230.98	-3.23	2.57	14,439,421.227	1,700,120.672	39.760024284	-80.787552115
1,263.00	0.70	337.060	1,262.98	-3.06	2.49	14,439,421.396	1,700,120.592	39.760024750	-80.787552399
1,294.00	0.13	326.120	1,293.98	-2.86	2.40	14,439,421.600	1,700,120.498	39.760025310	-80.787552730
1,325.00	0.44	301.950	1,324.98	-2.77	2.28	14,439,421.692	1,700,120.378	39.760025564	-80.787553158
1,356.00	0.57	301.950	1,355.98	-2.62	2.05	14,439,421.837	1,700,120.146	39.760025962	-80.787553982
1,388.00	0.48	245.880	1,387.98	-2.59	1.79	14,439,421.866	1,700,119.888	39.760026045	-80.787554898
1,419.00	0.22	272.250	1,418.98	-2.64	1.61	14,439,421.815	1,700,119.710	39.760025907	-80.787555532
1,450.00	0.40	212.920	1,449.98	-2.73	1.49	14,439,421.727	1,700,119.592	39.760025664	-80.787555953
1,482.00	0.13	266.620	1,481.97	-2.83	1.40	14,439,421.631	1,700,119.495	39.760025402	-80.787556299
1,513.00	0.35	93.130	1,512.97	-2.84	1.46	14,439,421.624	1,700,119.555	39.760025381	-80.787556088
1,544.00	1.14	90.840	1,543.97	-2.85	1.86	14,439,421.614	1,700,119.957	39.760025352	-80.787554654
1,576.00	1.23	71.330	1,575.97	-2.74	2.50	14,439,421.719	1,700,120.601	39.760025637	-80.787552363
1,607.00	1.98	72.910	1,606.95	-2.48	3.33	14,439,421.983	1,700,121.428	39.760026356	-80.787549417
1,638.00	2.33	70.010	1,637.93	-2.10	4.44	14,439,422.356	1,700,122.532	39.760027373	-80.787545486
1,669.00	3.25	70.360	1,668.89	-1.59	5.86	14,439,422.867	1,700,123.952	39.760028767	-80.787540429
1,701.00	3.96	69.220	1,700.83	-0.90	7.74	14,439,423.564	1,700,125.840	39.760030668	-80.787533707
1,732.00	4.61	65.620	1,731.74	0.00	9.88	14,439,424.458	1,700,127.975	39.760033109	-80.787526101
1,779.00	5.80	66.410	1,778.55	1.73	13.77	14,439,426.188	1,700,131.872	39.760037835	-80.787512220
1,827.00	6.15	64.210	1,826.29	3.82	18.31	14,439,428.277	1,700,136.410	39.760043544	-80.787496055
1,874.00	6.11	62.890	1,873.02	6.05	22.81	14,439,430.512	1,700,140.903	39.760049653	-80.787480048
1,921.00	6.24	62.280	1,919.75	8.38	27.29	14,439,432.840	1,700,145.391	39.760056017	-80.787464060
1,968.00	6.37	63.330	1,966.46	10.74	31.88	14,439,435.199	1,700,149.982	39.760062464	-80.787447704
2,015.00	6.20	63.240	2,013.18	13.05	36.48	14,439,437.512	1,700,154.578	39.760068786	-80.787431330
2,062.00	5.93	66.140	2,059.92	15.18	40.97	14,439,439.636	1,700,159.064	39.760074592	-80.787415347
2,109.00	5.76	67.900	2,106.67	17.05	45.37	14,439,441.506	1,700,163.470	39.760079697	-80.787399655
2,156.00	5.67	70.540	2,153.44	18.71	49.75	14,439,443.167	1,700,167.844	39.760084230	-80.787384075



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Site:	McMasters Shields	MD Reference:	RKB=1206+26 @ 1232.00ft (Nabors B28)
Well:	McMasters N-14 HU (slot B)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,202.00	5.80	69.220	2,199.21	20.29	54.06	14,439,444.748	1,700,172.160	39.760088545	-80.787368706
2,249.00	5.63	70.630	2,245.98	21.90	58.46	14,439,446.356	1,700,176.555	39.760092931	-80.787353052
2,297.00	5.76	76.160	2,293.74	23.25	63.02	14,439,447.713	1,700,181.115	39.760096628	-80.787336815
2,344.00	5.76	76.250	2,340.50	24.38	67.60	14,439,448.837	1,700,185.696	39.760099687	-80.787320505
2,391.00	6.11	72.380	2,387.25	25.70	72.27	14,439,450.155	1,700,190.371	39.760103275	-80.787303859
2,438.00	5.89	71.500	2,433.99	27.22	76.94	14,439,451.677	1,700,195.042	39.760107426	-80.787287225
2,484.00	5.67	73.350	2,479.76	28.62	81.36	14,439,453.077	1,700,199.457	39.760111242	-80.787271502
2,578.00	5.19	66.320	2,573.34	31.66	89.70	14,439,456.116	1,700,207.800	39.760119531	-80.787241791
2,620.00	4.88	66.850	2,615.17	33.12	93.09	14,439,457.581	1,700,211.182	39.760123533	-80.787229743
2,673.00	4.88	62.100	2,667.98	35.06	97.15	14,439,459.522	1,700,215.247	39.760128837	-80.787215262
2,767.00	4.88	63.590	2,761.64	38.71	104.26	14,439,463.171	1,700,222.362	39.760138813	-80.787189915
2,861.00	5.01	74.580	2,855.29	41.58	111.80	14,439,466.041	1,700,229.899	39.760146645	-80.787163069
2,955.00	6.46	76.950	2,948.82	43.87	120.91	14,439,468.327	1,700,239.008	39.760152862	-80.787130638
3,048.00	8.04	71.770	3,041.08	47.08	132.19	14,439,471.543	1,700,250.283	39.760161621	-80.787090492
3,143.00	9.27	70.710	3,134.99	51.69	145.72	14,439,476.149	1,700,263.815	39.760174182	-80.787042299
3,237.00	10.42	75.020	3,227.61	56.39	161.08	14,439,480.847	1,700,279.174	39.760186986	-80.786987609
3,331.00	10.55	73.170	3,320.04	61.08	177.53	14,439,485.536	1,700,295.622	39.760199755	-80.786929040
3,425.00	9.62	74.580	3,412.59	65.66	193.33	14,439,490.116	1,700,311.431	39.760212230	-80.786872748
3,520.00	9.49	80.470	3,506.27	69.06	208.71	14,439,493.524	1,700,326.807	39.760221487	-80.786818007
3,613.00	10.59	80.290	3,597.84	71.77	224.69	14,439,496.234	1,700,342.792	39.760228827	-80.786761105
3,710.00	11.38	77.040	3,693.07	75.42	242.81	14,439,499.884	1,700,360.904	39.760238731	-80.786696625
3,804.00	11.21	72.560	3,785.25	80.24	260.56	14,439,504.702	1,700,378.659	39.760251848	-80.786633406
3,899.00	10.59	74.400	3,878.53	85.36	277.78	14,439,509.818	1,700,395.877	39.760265783	-80.786572095
3,992.00	10.50	75.990	3,969.96	89.71	294.23	14,439,514.167	1,700,412.329	39.760277621	-80.786513514
4,087.00	11.21	77.390	4,063.26	93.82	311.64	14,439,518.279	1,700,429.740	39.760288798	-80.786451526
4,181.00	11.47	77.390	4,155.43	97.85	329.68	14,439,522.314	1,700,447.777	39.760299762	-80.786387309
4,275.00	11.29	79.500	4,247.58	101.57	347.85	14,439,526.031	1,700,465.945	39.760309852	-80.786322629
4,369.00	11.69	80.820	4,339.70	104.77	366.30	14,439,529.227	1,700,484.394	39.760318508	-80.786256956
4,463.00	11.65	80.640	4,431.75	107.83	385.06	14,439,532.290	1,700,503.159	39.760326797	-80.786190156
4,557.00	12.04	80.210	4,523.75	111.04	404.09	14,439,535.501	1,700,522.185	39.760335489	-80.786122429
4,651.00	11.38	76.780	4,615.80	114.83	422.78	14,439,539.289	1,700,540.875	39.760345769	-80.786055892
4,744.00	11.38	73.170	4,706.97	119.58	440.49	14,439,544.043	1,700,558.589	39.760358711	-80.785992818
4,839.00	10.46	72.650	4,800.25	124.87	457.70	14,439,549.329	1,700,575.791	39.760373112	-80.785931561
4,934.00	10.02	72.560	4,893.73	129.92	473.81	14,439,554.377	1,700,591.907	39.760386872	-80.785874171
5,029.00	10.50	72.210	4,987.22	135.04	489.94	14,439,559.499	1,700,608.034	39.760400831	-80.785816742
5,123.00	11.43	72.910	5,079.50	140.39	507.00	14,439,564.853	1,700,625.093	39.760415423	-80.785755996
5,217.00	11.03	73.440	5,171.70	145.69	524.52	14,439,570.153	1,700,642.615	39.760429864	-80.785693602
5,311.00	11.29	73.530	5,263.92	150.87	541.96	14,439,575.325	1,700,660.058	39.760443952	-80.785631489
5,405.00	11.38	72.820	5,356.09	156.21	559.65	14,439,580.673	1,700,677.742	39.760458523	-80.785568518
5,500.00	11.25	73.090	5,449.24	161.68	577.47	14,439,586.137	1,700,695.562	39.760473411	-80.785505060
5,593.00	10.72	73.440	5,540.54	166.78	594.44	14,439,591.241	1,700,712.533	39.760487316	-80.785444631
5,686.00	11.25	74.230	5,631.83	171.71	611.46	14,439,596.171	1,700,729.554	39.760500746	-80.785384022
5,780.00	11.78	75.460	5,723.94	176.61	629.57	14,439,601.072	1,700,747.666	39.760514086	-80.785319531
5,874.00	11.12	73.440	5,816.07	181.61	647.55	14,439,606.065	1,700,765.643	39.760527679	-80.785255520
5,967.00	10.99	71.680	5,907.34	186.95	664.56	14,439,611.408	1,700,782.654	39.760542239	-80.785194941
6,061.00	11.12	74.320	5,999.60	192.21	681.79	14,439,616.674	1,700,799.887	39.760556588	-80.785133574
6,156.00	11.78	75.720	6,092.71	197.08	700.01	14,439,621.542	1,700,818.106	39.760569836	-80.785068707
6,250.00	10.81	74.320	6,184.89	201.83	717.80	14,439,626.291	1,700,835.892	39.760582762	-80.785005377
6,345.00	10.59	73.260	6,278.24	206.75	734.73	14,439,631.213	1,700,852.829	39.760596168	-80.784945067
6,440.00	8.75	76.250	6,555.23	219.27	760.22	14,439,643.731	1,700,898.320	39.760630247	-80.784883084
6,535.00	9.84	75.550	6,648.98	223.01	795.10	14,439,647.475	1,700,913.200	39.760640429	-80.784821040
6,630.00	11.38	75.550	6,742.36	227.38	812.04	14,439,651.839	1,700,930.138	39.760652304	-80.784759796
6,725.00	12.52	74.490	6,835.30	232.47	831.04	14,439,656.932	1,700,949.137	39.760666164	-80.784698148
6,820.00	11.78	73.610	6,927.19	237.90	850.06	14,439,662.364	1,700,968.160	39.760680956	-80.784636410



Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well McMasters N-14 HU (slot B)
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-14 HU (slot B)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
7,099.00	11.16	76.070	7,019.31	242.80	868.10	14,439,667.261	1,700,986.195	39.760694287	-80.784470193
7,193.00	11.51	76.340	7,111.48	247.21	886.04	14,439,671.666	1,701,004.137	39.760706265	-80.784406310
7,286.00	10.77	74.930	7,202.73	251.66	903.45	14,439,676.117	1,701,021.544	39.760718372	-80.784344332
7,380.00	10.11	73.700	7,295.17	256.26	919.85	14,439,680.716	1,701,037.944	39.760730894	-80.784285937
7,474.00	10.28	72.470	7,387.69	261.10	935.77	14,439,685.558	1,701,053.860	39.760744087	-80.784229258
7,568.00	10.99	73.170	7,480.07	266.22	952.34	14,439,690.678	1,701,070.435	39.760758040	-80.784170236
7,662.00	11.65	72.730	7,572.24	271.63	969.98	14,439,696.090	1,701,088.074	39.760772786	-80.784107423
7,756.00	11.65	75.020	7,664.31	276.90	988.21	14,439,701.361	1,701,106.305	39.760787140	-80.784042504
7,850.00	11.25	79.150	7,756.44	281.08	1,006.38	14,439,705.540	1,701,124.479	39.760798497	-80.783977798
7,944.00	11.56	82.230	7,848.58	284.08	1,024.72	14,439,708.540	1,701,142.817	39.760806613	-80.783912521
8,038.00	10.85	78.010	7,940.79	287.19	1,042.71	14,439,711.651	1,701,160.804	39.760815038	-80.783848491
8,133.00	10.94	73.530	8,034.08	291.60	1,060.10	14,439,716.064	1,701,178.195	39.760827043	-80.783786568
8,227.00	11.51	75.810	8,126.28	296.43	1,077.75	14,439,720.892	1,701,195.841	39.760840185	-80.783723735
8,322.00	10.55	77.660	8,219.53	300.61	1,095.43	14,439,725.074	1,701,213.526	39.760851553	-80.783660768
8,416.00	9.58	74.230	8,312.08	304.58	1,111.37	14,439,729.040	1,701,229.461	39.760862337	-80.783604033
8,510.00	9.84	69.480	8,404.73	309.52	1,126.42	14,439,733.981	1,701,244.511	39.760875808	-80.783550436
8,604.00	10.37	69.830	8,497.28	315.25	1,141.88	14,439,739.714	1,701,259.975	39.760891449	-80.783495360
8,697.00	11.03	70.100	8,588.66	321.17	1,158.10	14,439,745.628	1,701,276.198	39.760907584	-80.783437584
8,791.00	11.82	76.340	8,680.80	326.50	1,175.91	14,439,750.963	1,701,294.009	39.760922116	-80.783374159
8,886.00	12.79	79.770	8,773.62	330.67	1,195.72	14,439,755.128	1,701,313.812	39.760933424	-80.783303655
8,979.00	12.66	80.730	8,864.33	334.14	1,215.91	14,439,758.598	1,701,334.001	39.760942819	-80.783231787
9,074.00	11.51	79.240	8,957.22	337.59	1,235.49	14,439,762.045	1,701,353.587	39.760952154	-80.783162061
9,168.00	11.03	76.690	9,049.41	341.41	1,253.46	14,439,765.866	1,701,371.552	39.760962529	-80.783098104
9,261.00	11.29	74.490	9,140.65	345.89	1,270.89	14,439,770.348	1,701,388.981	39.760974723	-80.783036044
9,355.00	11.07	73.350	9,232.87	350.94	1,288.40	14,439,775.394	1,701,406.494	39.760988465	-80.782973685
9,448.00	9.58	76.250	9,324.36	355.33	1,304.47	14,439,779.792	1,701,422.566	39.761000436	-80.782916457
9,542.00	9.32	75.110	9,417.09	359.15	1,319.43	14,439,783.607	1,701,437.519	39.761010813	-80.782863213
9,636.00	10.06	75.810	9,509.75	363.12	1,334.74	14,439,787.576	1,701,452.835	39.761021610	-80.782808680
9,730.00	10.72	74.140	9,602.20	367.52	1,351.11	14,439,791.978	1,701,469.204	39.761033590	-80.782750394
9,823.00	11.29	73.440	9,693.49	372.48	1,368.16	14,439,796.936	1,701,486.251	39.761047094	-80.782689694
9,917.00	11.43	72.910	9,785.65	377.84	1,385.88	14,439,802.296	1,701,503.973	39.761061695	-80.782626585
10,010.00	10.72	73.440	9,876.92	383.01	1,402.98	14,439,807.469	1,701,521.072	39.761075789	-80.782565696
10,104.00	10.72	75.640	9,969.28	387.67	1,419.83	14,439,812.129	1,701,537.921	39.761088474	-80.782505699
10,198.00	11.25	75.980	10,061.56	392.06	1,437.19	14,439,816.519	1,701,555.287	39.761100413	-80.782443868
10,244.00	12.18	76.430	10,106.60	394.29	1,446.26	14,439,818.745	1,701,564.357	39.761106465	-80.782411572
10,319.00	12.13	73.000	10,179.92	398.45	1,461.49	14,439,822.905	1,701,579.584	39.761117789	-80.782357353
10,366.00	12.00	71.860	10,225.88	401.41	1,470.86	14,439,825.870	1,701,588.950	39.761125869	-80.782324002
10,412.00	11.69	66.320	10,270.90	404.77	1,479.67	14,439,829.230	1,701,597.762	39.761135039	-80.782292615
10,459.00	11.03	60.340	10,316.98	408.91	1,487.94	14,439,833.368	1,701,606.030	39.761146347	-80.782263159
10,507.00	10.73	53.490	10,364.12	413.84	1,495.52	14,439,838.299	1,701,613.612	39.761159838	-80.782236137
10,554.00	11.34	42.850	10,410.26	419.83	1,502.18	14,439,844.290	1,701,620.272	39.761176248	-80.782212386
10,602.00	12.57	32.300	10,457.22	427.71	1,508.18	14,439,852.166	1,701,626.273	39.761197837	-80.782190963
10,649.00	14.15	18.770	10,502.96	437.47	1,512.76	14,439,861.932	1,701,630.856	39.761224625	-80.782174571
10,697.00	16.62	9.980	10,549.24	449.79	1,515.84	14,439,874.251	1,701,633.934	39.761258437	-80.782163511
10,744.00	19.08	359.430	10,593.99	464.10	1,516.93	14,439,888.558	1,701,635.023	39.761297721	-80.782159512
10,791.00	20.92	351.880	10,638.16	480.09	1,515.67	14,439,904.551	1,701,633.761	39.761341649	-80.782163864
10,838.00	24.18	348.710	10,681.56	497.84	1,512.60	14,439,922.302	1,701,630.691	39.761390421	-80.782174637
10,886.00	28.48	346.780	10,724.57	518.63	1,508.05	14,439,943.094	1,701,626.147	39.761447551	-80.782190627
10,933.00	31.56	345.460	10,765.26	541.46	1,502.40	14,439,965.914	1,701,620.495	39.761510261	-80.782210541
10,981.00	33.32	344.140	10,805.77	566.30	1,495.64	14,439,990.757	1,701,613.737	39.761578532	-80.782234371
11,028.00	34.02	343.350	10,844.89	591.31	1,488.35	14,440,015.772	1,701,606.442	39.761647277	-80.782260114
11,075.00	35.69	342.380	10,883.45	616.98	1,480.43	14,440,041.437	1,701,598.524	39.761717814	-80.782288067
11,122.00	38.02	341.860	10,921.06	643.80	1,471.77	14,440,068.262	1,701,589.867	39.761791543	-80.782318642
11,169.00	38.81	340.980	10,957.88	671.48	1,462.47	14,440,095.942	1,701,580.560	39.761867622	-80.782351520



Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well McMasters N-14 HU (slot B)
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-14 HU (slot B)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
11,216.00	42.59	340.270	10,993.51	700.39	1,452.29	14,440,124.847	1,701,570.388	39.761947071	-80.782387468
11,263.00	46.99	339.390	11,026.86	731.46	1,440.87	14,440,155.917	1,701,558.964	39.762032473	-80.782427849
11,310.00	51.91	338.870	11,057.40	764.82	1,428.15	14,440,189.274	1,701,546.240	39.762124165	-80.782472839
11,358.00	56.70	337.990	11,085.40	801.05	1,413.81	14,440,225.512	1,701,531.905	39.762223780	-80.782523537
11,405.00	61.05	336.670	11,109.69	838.16	1,398.30	14,440,262.623	1,701,516.392	39.762325802	-80.782578417
11,452.00	63.78	336.490	11,131.45	876.39	1,381.74	14,440,300.844	1,701,499.836	39.762430879	-80.782637003
11,499.00	66.02	335.790	11,151.39	915.31	1,364.52	14,440,339.764	1,701,482.618	39.762537880	-80.782697934
11,546.00	68.48	335.000	11,169.56	954.71	1,346.48	14,440,379.168	1,701,464.571	39.762646213	-80.782761814
11,593.00	70.37	334.210	11,186.08	994.46	1,327.61	14,440,418.915	1,701,445.700	39.762755495	-80.782828624
11,640.00	72.88	333.770	11,200.90	1,034.54	1,308.05	14,440,458.997	1,701,426.140	39.762865703	-80.782897879
11,687.00	75.78	333.240	11,213.59	1,075.03	1,287.86	14,440,499.492	1,701,405.953	39.762977048	-80.782969367
11,734.00	80.48	332.630	11,223.25	1,115.98	1,266.93	14,440,540.437	1,701,385.029	39.763089635	-80.783043470
11,781.00	85.19	330.690	11,229.12	1,157.01	1,244.80	14,440,581.466	1,701,362.896	39.763202458	-80.783121877
11,829.00	90.95	329.110	11,230.73	1,198.49	1,220.75	14,440,622.950	1,701,338.847	39.763316545	-80.783207097
11,922.00	92.53	330.610	11,227.91	1,278.88	1,174.08	14,440,703.334	1,701,292.175	39.763537613	-80.783372490
12,017.00	92.00	331.920	11,224.15	1,362.11	1,128.45	14,440,786.568	1,701,246.540	39.763766500	-80.783534167
12,111.00	92.00	332.190	11,220.87	1,445.10	1,084.42	14,440,869.556	1,701,202.516	39.763994702	-80.783690113
12,206.00	91.12	331.480	11,218.29	1,528.82	1,039.60	14,440,953.275	1,701,157.692	39.764224915	-80.783848901
12,300.00	91.60	331.660	11,216.05	1,611.46	994.86	14,441,035.915	1,701,112.953	39.764452163	-80.784007398
12,395.00	90.99	331.570	11,213.91	1,695.01	949.71	14,441,119.471	1,701,067.803	39.764681932	-80.784167353
12,489.00	89.27	329.810	11,213.69	1,776.97	903.69	14,441,201.431	1,701,021.790	39.764907322	-80.784330389
12,588.00	89.80	330.250	11,214.50	1,862.73	854.24	14,441,287.190	1,700,972.337	39.765143167	-80.784505638
12,683.00	90.73	331.220	11,214.06	1,945.61	807.80	14,441,370.062	1,700,925.898	39.765371064	-80.784670187
12,777.00	90.20	332.450	11,213.30	2,028.47	763.44	14,441,452.927	1,700,881.531	39.765598927	-80.784827361
12,872.00	90.02	329.730	11,213.11	2,111.62	717.51	14,441,536.080	1,700,835.609	39.765827592	-80.784990069
12,966.00	90.20	329.640	11,212.93	2,192.77	670.07	14,441,617.226	1,700,788.163	39.766050756	-80.785158221
13,060.00	90.37	329.810	11,212.47	2,273.95	622.68	14,441,698.405	1,700,740.773	39.766274008	-80.785326171
13,153.00	90.90	330.690	11,211.43	2,354.69	576.53	14,441,779.141	1,700,694.629	39.766496036	-80.785489696
13,247.00	91.12	331.570	11,209.78	2,436.99	531.15	14,441,861.445	1,700,649.251	39.766722364	-80.785650479
13,342.00	90.81	331.480	11,208.18	2,520.49	485.87	14,441,944.940	1,700,603.964	39.766951963	-80.785810931
13,435.00	91.30	331.840	11,206.47	2,602.32	441.73	14,442,026.779	1,700,559.824	39.767177006	-80.785967314
13,529.00	90.11	331.130	11,205.31	2,684.91	396.86	14,442,109.368	1,700,514.954	39.767404112	-80.786126291
13,624.00	90.15	331.130	11,205.09	2,768.11	350.99	14,442,192.561	1,700,469.086	39.767632884	-80.786288815
13,718.00	90.46	330.870	11,204.59	2,850.32	305.42	14,442,274.773	1,700,423.515	39.767858962	-80.786450293
13,812.00	90.68	330.690	11,203.66	2,932.35	259.53	14,442,356.808	1,700,377.630	39.768084552	-80.786612890
13,906.00	91.21	330.870	11,202.11	3,014.38	213.65	14,442,438.835	1,700,331.749	39.768310122	-80.786775474
13,999.00	91.78	331.050	11,199.68	3,095.66	168.52	14,442,520.115	1,700,286.621	39.768533635	-80.786935387
14,094.00	90.77	330.690	11,197.57	3,178.62	122.29	14,442,603.077	1,700,240.387	39.768761774	-80.787099218
14,188.00	91.12	330.520	11,196.02	3,260.51	76.16	14,442,684.963	1,700,194.256	39.768986959	-80.787262697
14,282.00	90.64	329.380	11,194.57	3,341.86	29.09	14,442,766.317	1,700,147.191	39.769210687	-80.787429503
14,376.00	91.30	329.380	11,192.98	3,422.75	-18.78	14,442,847.198	1,700,099.321	39.769433121	-80.787599183
14,470.00	91.52	329.640	11,190.67	3,503.72	-66.46	14,442,928.175	1,700,051.641	39.769655816	-80.787768184
14,564.00	91.78	329.730	11,187.96	3,584.84	-113.88	14,443,009.288	1,700,004.214	39.769878884	-80.787936285
14,658.00	90.64	329.550	11,185.98	3,665.93	-161.38	14,443,090.378	1,699,956.715	39.770101888	-80.788104644
14,752.00	91.03	329.200	11,184.61	3,746.81	-209.26	14,443,171.257	1,699,908.835	39.770324318	-80.788274361
14,845.00	91.03	329.200	11,182.94	3,826.68	-256.88	14,443,251.128	1,699,861.223	39.770543973	-80.788443135
14,940.00	91.16	328.140	11,181.12	3,907.81	-306.26	14,443,332.259	1,699,811.836	39.770767104	-80.788618215
15,035.00	91.30	328.670	11,179.08	3,988.71	-356.02	14,443,413.159	1,699,762.076	39.770989599	-80.788794625
15,128.00	91.60	328.500	11,176.73	4,068.05	-404.48	14,443,492.500	1,699,713.617	39.771207808	-80.788966420
15,222.00	91.78	328.230	11,173.96	4,148.05	-453.76	14,443,572.498	1,699,664.335	39.771427821	-80.789141140
15,317.00	91.82	328.140	11,170.97	4,228.73	-503.82	14,443,653.184	1,699,614.278	39.771649733	-80.789318614
15,410.00	91.91	328.410	11,167.94	4,307.79	-552.70	14,443,732.246	1,699,565.400	39.771867176	-80.789491903
15,505.00	91.78	330.430	11,164.89	4,389.54	-601.00	14,443,813.987	1,699,517.098	39.772091970	-80.789663126
15,599.00	91.96	330.690	11,161.82	4,471.35	-647.18	14,443,895.805	1,699,470.920	39.772316963	-80.789826786

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well McMasters N-14 HU (slot B)
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-14 HU (slot B)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,693.00	91.30	331.050	11,159.14	4,553.43	-692.92	14,443,977.881	1,699,425.181	39.772542664	-80.789988886
15,787.00	90.59	331.750	11,157.59	4,635.95	-737.91	14,444,060.399	1,699,380.191	39.772769571	-80.790148317
15,881.00	91.38	333.680	11,155.98	4,719.47	-780.99	14,444,143.923	1,699,337.108	39.772999229	-80.790300951
15,976.00	90.51	332.630	11,154.41	4,804.22	-823.88	14,444,228.672	1,699,294.215	39.773232247	-80.790452902
16,070.00	90.64	333.150	11,153.47	4,887.89	-866.72	14,444,312.340	1,699,251.382	39.773462298	-80.790604650
16,163.00	89.58	330.610	11,153.29	4,969.90	-910.55	14,444,394.354	1,699,207.553	39.773687814	-80.790759955
16,257.00	90.02	330.690	11,153.62	5,051.84	-956.62	14,444,476.287	1,699,161.480	39.773913122	-80.790923249
16,351.00	90.51	330.520	11,153.18	5,133.73	-1,002.76	14,444,558.184	1,699,115.343	39.774138329	-80.791086773
16,446.00	90.68	330.780	11,152.20	5,216.54	-1,049.32	14,444,640.985	1,699,068.782	39.774366023	-80.791251799
16,539.00	91.34	331.310	11,150.56	5,297.90	-1,094.33	14,444,722.347	1,699,023.766	39.774589752	-80.791411340
16,634.00	91.91	331.840	11,147.86	5,381.41	-1,139.54	14,444,805.859	1,698,978.564	39.774819390	-80.791571526
16,728.00	90.51	330.430	11,145.88	5,463.71	-1,184.90	14,444,888.158	1,698,933.198	39.775045695	-80.791732307
16,824.00	90.51	330.340	11,145.02	5,547.16	-1,232.34	14,444,971.613	1,698,885.760	39.775275191	-80.791900455
16,918.00	91.03	331.480	11,143.76	5,629.30	-1,278.04	14,445,053.747	1,698,840.064	39.775501044	-80.792062414
17,011.00	90.59	329.900	11,142.45	5,710.38	-1,323.56	14,445,134.830	1,698,794.543	39.775724012	-80.792223758
17,106.00	90.95	329.730	11,141.17	5,792.49	-1,371.32	14,445,216.941	1,698,746.782	39.775949815	-80.792393068
17,200.00	90.77	329.200	11,139.76	5,873.45	-1,419.07	14,445,297.895	1,698,699.030	39.776172443	-80.792562358
17,294.00	91.16	329.810	11,138.17	5,954.43	-1,466.76	14,445,378.881	1,698,651.335	39.776395154	-80.792731443
17,388.00	91.65	329.810	11,135.87	6,035.66	-1,514.02	14,445,460.106	1,698,604.080	39.776618522	-80.792898964
17,482.00	90.88	329.380	11,133.96	6,116.71	-1,561.58	14,445,541.160	1,698,556.516	39.776841421	-80.793067586
17,576.00	90.81	329.640	11,132.74	6,197.71	-1,609.27	14,445,622.154	1,698,508.826	39.777064157	-80.793236659
17,670.00	91.12	329.900	11,131.15	6,278.91	-1,656.59	14,445,703.359	1,698,461.507	39.777287469	-80.793404412
17,763.00	91.25	330.960	11,129.23	6,359.78	-1,702.48	14,445,784.228	1,698,415.623	39.777509847	-80.793572059
17,857.00	90.51	331.570	11,127.79	6,442.19	-1,747.66	14,445,866.641	1,698,370.438	39.777736463	-80.793744177
17,952.00	90.77	331.220	11,126.72	6,525.59	-1,793.14	14,445,950.040	1,698,324.958	39.777965787	-80.793888400
18,046.00	89.76	328.940	11,126.29	6,607.06	-1,840.03	14,446,031.504	1,698,278.076	39.778189808	-80.794054598
18,141.00	90.33	328.940	11,126.22	6,688.44	-1,889.04	14,446,112.883	1,698,229.062	39.778413607	-80.794228385
18,235.00	91.08	329.020	11,125.06	6,768.99	-1,937.48	14,446,193.433	1,698,180.624	39.778635126	-80.794400129
18,329.00	91.69	328.410	11,122.79	6,849.29	-1,986.28	14,446,273.741	1,698,131.826	39.778855980	-80.794573163
18,423.00	92.04	329.810	11,119.73	6,929.92	-2,034.51	14,446,354.362	1,698,083.594	39.779077693	-80.794744177
18,518.00	91.74	328.140	11,116.59	7,011.28	-2,083.44	14,446,435.724	1,698,034.658	39.779301444	-80.794917691
18,612.00	92.09	328.760	11,113.45	7,091.34	-2,132.60	14,446,515.784	1,697,985.501	39.779521620	-80.795092005
18,707.00	92.53	326.560	11,109.62	7,171.53	-2,183.38	14,446,595.978	1,697,934.726	39.779742174	-80.795272076
18,801.00	92.09	329.200	11,105.83	7,251.07	-2,233.31	14,446,675.518	1,697,884.793	39.779960927	-80.795449161
18,895.00	91.78	329.290	11,102.66	7,331.81	-2,281.35	14,446,756.252	1,697,836.752	39.780182945	-80.795619500
18,989.00	91.16	328.230	11,100.25	7,412.15	-2,330.08	14,446,836.594	1,697,788.018	39.780403892	-80.795792309
19,083.00	91.87	329.730	11,097.76	7,492.68	-2,378.51	14,446,917.120	1,697,739.595	39.780625341	-80.795964013
19,177.00	91.91	330.610	11,094.66	7,574.18	-2,425.24	14,446,998.620	1,697,692.862	39.780849456	-80.796129691
19,270.00	92.00	330.430	11,091.49	7,655.09	-2,470.98	14,447,079.532	1,697,647.122	39.781071948	-80.796291844
19,364.00	90.81	331.310	11,089.19	7,737.17	-2,516.72	14,447,161.615	1,697,601.379	39.781297658	-80.796453999
19,458.00	91.08	330.960	11,087.64	7,819.48	-2,562.10	14,447,243.925	1,697,556.007	39.781523987	-80.796614831
19,553.00	91.03	331.570	11,085.89	7,902.77	-2,607.76	14,447,327.211	1,697,510.343	39.781753000	-80.796776697
19,647.00	91.38	331.840	11,083.91	7,985.52	-2,652.31	14,447,409.961	1,697,465.796	39.781980532	-80.796934592
19,741.00	91.16	332.100	11,081.83	8,068.47	-2,696.47	14,447,492.915	1,697,421.633	39.782208620	-80.797091119
19,835.00	91.38	331.920	11,079.74	8,151.46	-2,740.57	14,447,575.899	1,697,377.528	39.782436792	-80.797247440
19,929.00	91.30	331.840	11,077.54	8,234.34	-2,784.87	14,447,658.780	1,697,333.236	39.782664683	-80.797404429
20,023.00	91.25	332.630	11,075.45	8,317.49	-2,828.64	14,447,741.936	1,697,289.458	39.782893325	-80.797559588
20,118.00	91.34	331.130	11,073.31	8,401.26	-2,873.41	14,447,825.699	1,697,244.696	39.783123638	-80.797718247
20,212.00	91.34	330.430	11,071.11	8,483.27	-2,919.28	14,447,907.714	1,697,198.821	39.783349160	-80.797880880
20,307.00	91.47	330.870	11,068.78	8,566.05	-2,965.83	14,447,990.495	1,697,152.272	39.783576787	-80.798045909
20,400.00	91.82	331.130	11,066.11	8,647.36	-3,010.90	14,448,071.801	1,697,107.203	39.783800355	-80.798205680
20,494.00	90.24	329.990	11,064.42	8,729.20	-3,057.09	14,448,153.645	1,697,061.011	39.784025408	-80.798369449
20,588.00	90.81	330.610	11,063.56	8,810.85	-3,103.66	14,448,235.292	1,697,014.440	39.784249921	-80.798534567
20,683.00	91.34	330.780	11,061.77	8,893.68	-3,150.15	14,448,318.120	1,696,967.950	39.784477676	-80.798699389

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well McMasters N-14 HU (slot B)
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-14 HU (slot B)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,776.00	90.59	329.460	11,060.21	8,974.30	-3,196.48	14,448,398.743	1,696,921.627	39.784699376	-80.798863636
20,870.00	90.37	329.290	11,059.42	9,055.19	-3,244.36	14,448,479.629	1,696,873.743	39.784921807	-80.799033436
20,964.00	90.24	329.110	11,058.92	9,135.93	-3,292.49	14,448,560.370	1,696,825.612	39.785143840	-80.799204120
21,058.00	91.08	329.460	11,057.84	9,216.74	-3,340.50	14,448,641.177	1,696,777.604	39.785366055	-80.799374367
21,151.00	91.34	329.990	11,055.87	9,297.03	-3,387.38	14,448,721.475	1,696,730.728	39.785586863	-80.799540587
21,245.00	90.81	329.550	11,054.11	9,378.24	-3,434.69	14,448,802.677	1,696,683.410	39.785810158	-80.799708374
21,339.00	91.52	329.730	11,052.20	9,459.33	-3,482.19	14,448,883.769	1,696,635.910	39.786033150	-80.799876814
21,433.00	91.16	329.640	11,050.00	9,540.45	-3,529.63	14,448,964.893	1,696,588.476	39.786256231	-80.800045018
21,526.00	90.86	328.500	11,048.36	9,620.21	-3,577.42	14,449,044.654	1,696,540.684	39.786475570	-80.800214511
21,620.00	91.96	329.200	11,046.05	9,700.63	-3,626.03	14,449,125.075	1,696,492.075	39.786696725	-80.800386905
21,713.00	91.69	328.760	11,043.09	9,780.29	-3,673.93	14,449,204.734	1,696,444.173	39.786915784	-80.800556790
21,807.00	91.91	329.380	11,040.13	9,860.89	-3,722.22	14,449,285.326	1,696,395.882	39.787137408	-80.800728053
21,900.00	91.69	329.200	11,037.21	9,940.80	-3,769.69	14,449,365.244	1,696,348.411	39.787357176	-80.800896404
21,995.00	92.00	329.290	11,034.15	10,022.40	-3,818.25	14,449,446.841	1,696,299.857	39.787581560	-80.801068600
22,090.00	92.09	329.460	11,030.76	10,104.10	-3,866.61	14,449,528.538	1,696,251.493	39.787806218	-80.801240117
22,184.00	90.99	330.080	11,028.24	10,185.28	-3,913.92	14,449,609.724	1,696,204.185	39.788029465	-80.801407882
22,278.00	90.68	329.900	11,026.87	10,266.67	-3,960.93	14,449,691.113	1,696,157.176	39.788253269	-80.801574582
22,372.00	90.95	329.990	11,025.53	10,348.03	-4,008.00	14,449,772.466	1,696,110.103	39.788476972	-80.801741511
22,466.00	91.03	330.430	11,023.91	10,429.59	-4,054.70	14,449,854.032	1,696,063.409	39.788701258	-80.801907090
Survey @ 22466.00 MD 11023.91 TVD									
22,560.00	91.03	330.430	11,022.22	10,511.34	-4,101.08	14,449,935.775	1,696,017.028	39.788926030	-80.802071551
Survey Proj. to 22560.00 MD 11022.22 TVD									

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
171.00	171.00	-0.04	0.33	MWD surveys
22,466.00	11,023.91	10,429.59	-4,054.70	Survey @ 22466.00 MD 11023.91 TVD
22,560.00	11,022.22	10,511.34	-4,101.08	Survey Proj. to 22560.00 MD 11022.22 TVD