

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Ten High 1S-07HM (Q)
Project:	Marshall County West Virginia.	TVD Reference:	RKB=1310+33 @ 1343.00usft (Nabors X08)
Site:	Ten High	MD Reference:	RKB=1310+33 @ 1343.00usft (Nabors X08)
Well:	Ten High 1S-07HM (Q)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Jul2216dt_v14

Project	Marshall County West Virginia.		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (84° 30' 00" W)		

Site	Ten High			
Site Position:	Northing:	14,456,545.60 usft	Latitude:	39.80680885
From:	Easting:	1,730,001.41 usft	Longitude:	-80.68101011
Position Uncertainty:	Slot Radius:	13-3/16 "	Grid Convergence:	0.20 °

Well	Ten High 1S-07HM (Q)			
Well Position	+N/-S	0.00 usft	Northing:	14,456,505.72 usft
	+E/-W	0.00 usft	Easting:	1,730,082.05 usft
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft
			Ground Level:	1,310.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	844	1/6/2019	-8.76	66.84	52,000.62552592

Design	Surveys Original Hole				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	148.69	

Survey Program	Date 1/17/2019			RECEIVED Office of Oil and Gas JUN 10 2020 WV Department of Environmental Protection	
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
192.00	2,818.00	MWD surf (Original Hole)	MWD	MWD - Standard	
2,919.00	16,777.00	MWD (Original Hole)	MWD	MWD - Standard	
16,832.00	16,832.00	Projection (Original Hole)	MWD	MWD - Standard	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,456,505.72	1,730,082.05	39.80669854	-80.68072351
192.00	0.07	30	192.00	-0.09	-0.07	14,456,505.63	1,730,081.98	39.80669828	-80.68072376
MWD surveys									
222.00	0.28	51	222.00	-0.09	-0.01	14,456,505.63	1,730,082.04	39.80669829	-80.68072355
251.00	0.31	04	251.00	-0.10	0.14	14,456,505.62	1,730,082.18	39.80669827	-80.68072303
281.00	0.30	09	281.00	-0.05	0.26	14,456,505.67	1,730,082.30	39.80669839	-80.68072260
312.00	0.22	09	312.00	0.07	0.32	14,456,505.79	1,730,082.37	39.80669873	-80.68072236
342.00	0.19	83	342.00	0.10	0.30	14,456,505.82	1,730,082.35	39.80669882	-80.68072245
373.00	0.15	10	373.00	0.05	0.28	14,456,505.77	1,730,082.33	39.80669868	-80.68072250
405.00	0.32	00	405.00	-0.05	0.36	14,456,505.67	1,730,082.41	39.80669839	-80.68072223

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Well:	Ten High 1S-07HM (Q)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original	Database:	DB_Jul2216dt_v14

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
436.00	0.30	100.08	436.00	-0.21	0.43	14,456,505.51	1,730,082.47	39.80669797	-80.68072200
467.00	0.53	100.07	467.00	-0.21	0.33	14,456,505.52	1,730,082.37	39.80669797	-80.68072234
499.00	0.38	100.11	499.00	-0.09	0.10	14,456,505.63	1,730,082.15	39.80669828	-80.68072315
531.00	0.38	100.10	531.00	-0.17	-0.01	14,456,505.55	1,730,082.03	39.80669808	-80.68072356
562.00	0.83	100.14	561.99	-0.48	-0.12	14,456,505.25	1,730,081.92	39.80669724	-80.68072396
594.00	0.05	100.18	593.99	-0.67	-0.21	14,456,505.05	1,730,081.83	39.80669669	-80.68072428
625.00	0.19	100.22	624.99	-0.61	-0.22	14,456,505.11	1,730,081.82	39.80669686	-80.68072432
657.00	0.24	100.24	656.99	-0.59	-0.18	14,456,505.13	1,730,081.87	39.80669693	-80.68072416
688.00	0.16	100.22	687.99	-0.64	-0.09	14,456,505.08	1,730,081.95	39.80669678	-80.68072385
720.00	0.05	100.18	719.99	-0.68	-0.08	14,456,505.04	1,730,081.97	39.80669668	-80.68072380
751.00	0.16	100.21	750.99	-0.72	-0.08	14,456,505.00	1,730,081.97	39.80669657	-80.68072380
783.00	0.06	100.19	782.99	-0.78	-0.06	14,456,504.94	1,730,081.99	39.80669640	-80.68072374
814.00	0.13	100.19	813.99	-0.83	-0.05	14,456,504.89	1,730,081.99	39.80669626	-80.68072371
845.00	0.13	100.20	844.99	-0.89	-0.08	14,456,504.84	1,730,081.97	39.80669611	-80.68072380
877.00	0.16	100.14	876.99	-0.87	-0.09	14,456,504.86	1,730,081.96	39.80669616	-80.68072385
909.00	0.16	100.15	908.99	-0.79	-0.11	14,456,504.93	1,730,081.94	39.80669636	-80.68072391
940.00	0.21	100.16	939.99	-0.77	-0.20	14,456,504.95	1,730,081.85	39.80669642	-80.68072423
972.00	0.22	100.10	971.99	-0.83	-0.29	14,456,504.89	1,730,081.76	39.80669626	-80.68072456
1,003.00	0.44	100.18	1,002.99	-0.99	-0.37	14,456,504.73	1,730,081.68	39.80669582	-80.68072483
1,034.00	0.10	100.15	1,033.99	-1.13	-0.42	14,456,504.59	1,730,081.62	39.80669545	-80.68072503
1,066.00	0.16	100.13	1,065.99	-1.18	-0.47	14,456,504.54	1,730,081.58	39.80669530	-80.68072520
1,098.00	0.27	100.11	1,097.99	-1.22	-0.58	14,456,504.50	1,730,081.47	39.80669520	-80.68072559
1,115.00	0.21	100.19	1,114.99	-1.25	-0.64	14,456,504.48	1,730,081.41	39.80669513	-80.68072581
1,187.00	0.26	100.12	1,186.99	-1.33	-0.57	14,456,504.40	1,730,081.47	39.80669491	-80.68072557
1,282.00	0.96	100.10	1,281.98	-1.31	0.44	14,456,504.42	1,730,082.48	39.80669495	-80.68072197
1,376.00	2.06	100.13	1,375.95	-1.77	2.85	14,456,503.95	1,730,084.89	39.80669365	-80.68071340
1,471.00	3.00	100.11	1,470.86	-2.84	6.90	14,456,502.88	1,730,088.95	39.80669067	-80.68069898
1,566.00	3.25	100.18	1,565.72	-4.32	11.86	14,456,501.40	1,730,093.90	39.80668656	-80.68068134
1,661.00	2.59	100.19	1,660.59	-5.97	16.41	14,456,499.75	1,730,098.45	39.80668199	-80.68066516
1,755.00	2.22	100.20	1,754.51	-7.03	20.19	14,456,498.69	1,730,102.23	39.80667903	-80.68065172
1,850.00	2.46	100.18	1,849.43	-7.61	24.02	14,456,498.11	1,730,106.07	39.80667741	-80.68063807
1,945.00	2.23	100.18	1,944.35	-7.88	27.89	14,456,497.84	1,730,109.94	39.80667662	-80.68062430
2,039.00	2.47	100.18	2,038.27	-8.02	31.74	14,456,497.70	1,730,113.79	39.80667619	-80.68061059
2,134.00	2.38	100.15	2,133.19	-8.28	35.75	14,456,497.44	1,730,117.80	39.80667545	-80.68059631
2,229.00	2.54	100.19	2,228.10	-8.17	39.81	14,456,497.55	1,730,121.86	39.80667572	-80.68058185
2,323.00	2.44	100.10	2,322.01	-7.80	43.88	14,456,497.93	1,730,125.93	39.80667670	-80.68056737
2,418.00	1.91	100.15	2,416.94	-7.73	47.48	14,456,497.99	1,730,129.53	39.80667685	-80.68055455
2,512.00	1.29	100.15	2,510.91	-7.85	50.10	14,456,497.87	1,730,132.15	39.80667648	-80.68054522
2,607.00	0.91	100.14	2,605.89	-8.09	51.90	14,456,497.63	1,730,133.95	39.80667581	-80.68053882
2,702.00	0.71	100.10	2,700.88	-8.27	53.22	14,456,497.45	1,730,135.26	39.80667531	-80.68053412
2,796.00	0.49	100.10	2,794.87	-8.32	54.20	14,456,497.40	1,730,136.24	39.80667516	-80.68053064
2,818.00	0.42	100.11	2,816.87	-8.35	54.37	14,456,497.37	1,730,136.42	39.80667508	-80.68053002
2,919.00	0.50	100.11	2,917.87	-8.11	55.06	14,456,497.61	1,730,137.10	39.80667572	-80.68052757
2,982.00	0.72	100.15	2,980.87	-7.63	55.52	14,456,498.09	1,730,137.57	39.80667704	-80.68052592
3,077.00	1.79	100.10	3,075.85	-7.91	57.21	14,456,497.81	1,730,139.25	39.80667625	-80.68051991
3,171.00	1.12	100.14	3,169.82	-9.52	58.71	14,456,496.20	1,730,140.76	39.80667181	-80.68051458
3,266.00	1.04	100.14	3,264.80	-11.28	58.89	14,456,494.44	1,730,140.94	39.80666698	-80.68051396
3,360.00	0.85	100.15	3,358.79	-12.82	58.72	14,456,492.90	1,730,140.77	39.80666275	-80.68051458
3,456.00	0.57	100.12	3,454.78	-13.99	58.72	14,456,491.74	1,730,140.77	39.80665956	-80.68051460
3,553.00	0.80	100.15	3,551.78	-15.13	58.77	14,456,490.60	1,730,140.82	39.80665642	-80.68051444
3,649.00	0.75	100.10	3,647.77	-16.41	58.58	14,456,489.31	1,730,140.63	39.80665290	-80.68051513
3,743.00	0.65	100.13	3,741.76	-17.53	58.33	14,456,488.19	1,730,140.38	39.80664983	-80.68051603
3,838.00	0.47	100.18	3,836.76	-18.38	57.99	14,456,487.34	1,730,140.04	39.80664749	-80.68051726
3,933.00	0.90	100.15	3,931.75	-18.06	57.43	14,456,487.66	1,730,139.47	39.80664839	-80.68051926
4,027.00	1.12	100.19	4,025.74	-16.63	56.59	14,456,489.09	1,730,138.64	39.80665232	-80.68052223

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JUN 10 2020

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
4,122.00	0.62	33.47	4,120.73	-15.37	56.32	14,456,490.35	1,730,138.36	39.80665577	-80.68052318	
4,217.00	0.66	33.03	4,215.72	-14.49	56.89	14,456,491.23	1,730,138.93	39.80665820	-80.68052114	
4,311.00	0.65	33.24	4,309.71	-13.64	57.54	14,456,492.08	1,730,139.59	39.80666053	-80.68051879	
4,406.00	0.49	33.15	4,404.71	-12.92	58.15	14,456,492.80	1,730,140.20	39.80666248	-80.68051661	
4,501.00	2.36	33.19	4,499.68	-11.11	57.24	14,456,494.61	1,730,139.29	39.80666748	-80.68051982	
4,595.00	3.94	33.18	4,593.54	-6.93	54.21	14,456,498.79	1,730,136.26	39.80667899	-80.68053056	
4,690.00	3.64	33.14	4,688.33	-2.00	50.34	14,456,503.72	1,730,132.39	39.80669256	-80.68054428	
4,785.00	4.68	33.12	4,783.08	3.52	46.25	14,456,509.24	1,730,128.30	39.80670775	-80.68055878	
4,879.00	6.45	33.17	4,876.63	11.57	42.04	14,456,517.30	1,730,124.09	39.80672992	-80.68057367	
4,974.00	9.16	33.19	4,970.75	23.75	37.89	14,456,529.47	1,730,119.93	39.80676339	-80.68058831	
5,068.00	12.30	33.10	5,063.10	40.84	34.20	14,456,546.56	1,730,116.24	39.80681035	-80.68060123	
5,163.00	13.68	33.16	5,155.66	61.83	30.29	14,456,567.55	1,730,112.33	39.80686804	-80.68061488	
5,258.00	14.42	33.13	5,247.82	84.50	26.09	14,456,590.23	1,730,108.13	39.80693035	-80.68062955	
5,353.00	16.15	33.20	5,339.46	109.13	21.56	14,456,614.86	1,730,103.61	39.80699804	-80.68064534	
5,450.00	17.36	33.17	5,432.34	136.52	15.92	14,456,642.24	1,730,097.97	39.80707330	-80.68066509	
5,545.00	18.64	33.17	5,522.69	165.14	9.38	14,456,670.86	1,730,091.42	39.80715195	-80.68068802	
5,640.00	20.89	33.12	5,612.09	196.12	0.97	14,456,701.84	1,730,083.01	39.80723713	-80.68071758	
5,735.00	20.47	33.14	5,700.97	228.37	-8.27	14,456,734.09	1,730,073.78	39.80732579	-80.68075005	
5,829.00	19.61	33.11	5,789.27	259.55	-16.35	14,456,765.27	1,730,065.69	39.80741149	-80.68077844	
5,938.00	21.41	33.11	5,891.36	296.62	-25.52	14,456,802.35	1,730,056.53	39.80751339	-80.68081061	
5,985.00	20.79	33.13	5,935.21	312.99	-29.81	14,456,818.71	1,730,052.24	39.80755837	-80.68082569	
6,032.00	19.78	33.13	5,979.29	328.70	-34.12	14,456,834.42	1,730,047.93	39.80760157	-80.68084083	
6,079.00	17.98	33.16	6,023.77	343.59	-37.06	14,456,849.31	1,730,044.99	39.80764248	-80.68085111	
6,127.00	15.38	33.16	6,069.75	357.31	-38.11	14,456,863.03	1,730,043.94	39.80768017	-80.68085467	
6,174.00	12.79	33.18	6,115.34	368.72	-37.74	14,456,874.44	1,730,044.31	39.80771150	-80.68085320	
6,222.00	10.73	33.15	6,162.33	378.24	-35.78	14,456,883.96	1,730,046.27	39.80773764	-80.68084610	
6,269.00	9.49	33.15	6,208.61	385.56	-32.15	14,456,891.28	1,730,049.90	39.80775769	-80.68083308	
6,315.00	9.67	33.16	6,253.98	391.10	-26.97	14,456,896.83	1,730,055.08	39.80777287	-80.68081458	
6,362.00	11.78	33.17	6,300.16	395.65	-19.58	14,456,901.38	1,730,062.47	39.80778529	-80.68078819	
6,410.00	13.58	33.12	6,347.00	399.09	-9.67	14,456,904.82	1,730,072.38	39.80779464	-80.68075288	
6,504.00	17.32	33.15	6,437.68	399.18	14.83	14,456,904.90	1,730,096.88	39.80779464	-80.68066563	
6,599.00	21.05	33.18	6,527.57	386.08	42.26	14,456,891.80	1,730,124.31	39.80775840	-80.68056812	
6,694.00	29.05	33.10	6,613.62	357.84	70.59	14,456,863.57	1,730,152.63	39.80768058	-80.68046762	
6,788.00	37.85	33.16	6,692.00	316.14	101.13	14,456,821.86	1,730,183.18	39.80756575	-80.68035938	
6,882.00	47.43	33.19	6,761.07	262.90	135.92	14,456,768.62	1,730,217.97	39.80741919	-80.68023618	
6,977.00	59.16	33.17	6,817.75	199.47	177.85	14,456,705.19	1,730,259.90	39.80724460	-80.68008770	
7,071.00	68.09	33.18	6,859.47	129.74	224.91	14,456,635.46	1,730,306.96	39.80705262	-80.67992102	
7,165.00	74.59	33.15	6,889.53	54.96	273.17	14,456,560.68	1,730,355.22	39.80684679	-80.67975012	
7,260.00	79.38	33.17	6,910.93	-25.28	319.24	14,456,480.45	1,730,401.29	39.80662600	-80.67958711	
7,355.00	85.23	33.15	6,923.64	-108.48	363.21	14,456,397.24	1,730,445.25	39.80639707	-80.67943162	
7,449.00	88.79	33.17	6,928.54	-191.42	407.13	14,456,314.30	1,730,489.17	39.80616885	-80.67927630	
7,544.00	90.11	33.13	6,929.45	-274.93	452.42	14,456,230.80	1,730,534.46	39.80593909	-80.67911610	
7,638.00	89.98	33.13	6,929.38	-357.00	498.24	14,456,148.72	1,730,580.29	39.80571324	-80.67895399	
7,732.00	90.33	33.18	6,929.13	-438.47	545.12	14,456,067.25	1,730,627.17	39.80548904	-80.67878809	
7,826.00	89.71	33.13	6,929.09	-519.54	592.70	14,455,986.18	1,730,674.75	39.80526593	-80.67861973	
7,921.00	90.24	33.17	6,929.14	-601.14	641.34	14,455,904.58	1,730,723.39	39.80504135	-80.67844757	
8,015.00	88.70	33.15	6,930.00	-681.95	689.34	14,455,823.77	1,730,771.39	39.80481895	-80.67827769	
8,110.00	89.67	33.16	6,931.36	-763.88	737.42	14,455,741.84	1,730,819.47	39.80459349	-80.67810756	
8,205.00	88.66	33.12	6,932.74	-846.06	785.06	14,455,659.66	1,730,867.10	39.80436734	-80.67793900	
8,297.00	88.53	33.19	6,935.00	-925.74	830.99	14,455,579.99	1,730,913.04	39.80414807	-80.67777645	
8,392.00	89.14	33.13	6,936.93	-1,008.10	878.30	14,455,497.63	1,730,960.35	39.80392142	-80.67760906	
8,486.00	90.24	33.10	6,937.44	-1,090.03	924.38	14,455,415.70	1,731,006.42	39.80369596	-80.67744607	
8,580.00	90.15	33.18	6,937.12	-1,172.31	969.82	14,455,333.41	1,731,051.87	39.80346954	-80.67728533	
8,675.00	90.68	33.16	6,936.43	-1,255.33	1,016.00	14,455,250.39	1,731,098.04	39.80324109	-80.67712197	
8,770.00	89.93	33.19	6,935.92	-1,337.85	1,063.06	14,455,167.87	1,731,145.11	39.80301401	-80.67695545	

WV Department of Environmental Protection

Company: Tug Hill Operating, LLC	Local Co-ordinate Reference: Well Ten High 1S-07HM (Q)
Project: Marshall County West Virginia.	TVD Reference: RKB=1310+33 @ 1343.00usft (Nabors X08)
Site: Ten High	MD Reference: RKB=1310+33 @ 1343.00usft (Nabors X08)
Well: Ten High 1S-07HM (Q)	North Reference: Grid
Wellbore: Original Hole	Survey Calculation Method: Minimum Curvature
Design: Surveys Original	Database: DB_Jul2216dt_v14

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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,864.00	90.20	118.83	6,935.82	-1,419.57	1,109.51	14,455,086.15	1,731,191.56	39.80278912	-80.67679113
8,959.00	88.31	118.21	6,937.05	-1,502.26	1,156.25	14,455,003.46	1,731,238.30	39.80256157	-80.67662576
9,053.00	88.97	117.47	6,939.28	-1,583.92	1,202.76	14,454,921.80	1,731,284.80	39.80233685	-80.67646124
9,148.00	89.67	117.74	6,940.41	-1,666.68	1,249.38	14,454,839.04	1,731,331.43	39.80210910	-80.67629630
9,243.00	91.03	117.79	6,939.83	-1,749.98	1,295.05	14,454,755.74	1,731,377.10	39.80187990	-80.67613477
9,337.00	90.55	117.44	6,938.53	-1,832.67	1,339.73	14,454,673.05	1,731,421.78	39.80165236	-80.67597674
9,432.00	91.47	117.62	6,936.86	-1,916.17	1,385.01	14,454,589.55	1,731,467.06	39.80142261	-80.67581661
9,526.00	91.12	117.56	6,934.73	-1,998.43	1,430.44	14,454,507.29	1,731,512.49	39.80119624	-80.67565591
9,621.00	90.29	117.63	6,933.57	-2,080.35	1,478.52	14,454,425.37	1,731,560.56	39.80097078	-80.67548581
9,715.00	89.14	118.86	6,934.03	-2,161.13	1,526.58	14,454,344.59	1,731,608.63	39.80074847	-80.67531572
9,810.00	89.93	117.47	6,934.80	-2,243.54	1,573.84	14,454,262.19	1,731,655.89	39.80052169	-80.67514851
9,905.00	88.62	118.91	6,936.01	-2,326.37	1,620.35	14,454,179.36	1,731,702.39	39.80029376	-80.67498402
10,000.00	89.45	117.65	6,937.61	-2,409.26	1,666.71	14,454,096.46	1,731,748.76	39.80006564	-80.67482001
10,094.00	89.58	117.98	6,938.40	-2,490.51	1,713.97	14,454,015.21	1,731,796.02	39.79984204	-80.67465280
10,189.00	89.89	117.57	6,938.84	-2,571.31	1,763.93	14,453,934.41	1,731,845.97	39.79961964	-80.67447599
10,284.00	90.86	117.40	6,938.22	-2,651.42	1,814.99	14,453,854.30	1,731,897.04	39.79939914	-80.67429523
10,378.00	89.01	118.78	6,938.33	-2,730.33	1,866.06	14,453,775.39	1,731,948.11	39.79918191	-80.67411443
10,473.00	89.23	118.80	6,939.78	-2,810.70	1,916.69	14,453,695.02	1,731,998.73	39.79896070	-80.67393522
10,568.00	90.55	118.36	6,939.97	-2,891.77	1,966.21	14,453,613.96	1,732,048.26	39.79873758	-80.67375995
10,662.00	90.24	118.59	6,939.32	-2,972.32	2,014.66	14,453,533.41	1,732,096.70	39.79851588	-80.67358852
10,757.00	90.20	118.42	6,938.95	-3,054.17	2,062.87	14,453,451.55	1,732,144.91	39.79829060	-80.67341794
10,852.00	89.36	118.51	6,939.32	-3,136.00	2,111.13	14,453,369.72	1,732,193.18	39.79806541	-80.67324717
10,946.00	90.59	118.89	6,939.36	-3,216.74	2,159.26	14,453,288.98	1,732,241.31	39.79784319	-80.67307686
11,041.00	90.68	118.33	6,938.31	-3,298.26	2,208.03	14,453,207.46	1,732,290.08	39.79761883	-80.67290429
11,135.00	90.73	118.12	6,937.15	-3,379.43	2,255.42	14,453,126.29	1,732,337.46	39.79739543	-80.67273664
11,230.00	90.42	118.09	6,936.20	-3,462.19	2,302.04	14,453,043.53	1,732,384.09	39.79716767	-80.67257172
11,325.00	91.12	117.79	6,934.92	-3,545.63	2,347.46	14,452,960.10	1,732,429.50	39.79693809	-80.67241113
11,419.00	90.07	118.53	6,933.94	-3,628.35	2,392.07	14,452,877.37	1,732,474.12	39.79671045	-80.67225336
11,514.00	90.51	118.62	6,933.46	-3,711.90	2,437.29	14,452,793.82	1,732,519.34	39.79648056	-80.67209345
11,609.00	91.47	118.70	6,931.82	-3,795.50	2,482.38	14,452,710.22	1,732,564.43	39.79625052	-80.67193402
11,704.00	90.07	118.26	6,930.55	-3,878.96	2,527.74	14,452,626.76	1,732,609.79	39.79602086	-80.67177364
11,798.00	91.03	117.79	6,929.64	-3,961.59	2,572.55	14,452,544.14	1,732,654.60	39.79579350	-80.67161517
11,892.00	90.07	118.00	6,928.74	-4,044.11	2,617.55	14,452,461.62	1,732,699.60	39.79556643	-80.67145604
11,987.00	88.70	118.95	6,929.76	-4,126.76	2,664.37	14,452,378.96	1,732,746.41	39.79533896	-80.67129047
12,082.00	89.71	118.21	6,931.08	-4,209.09	2,711.75	14,452,296.63	1,732,793.79	39.79511239	-80.67112286
12,177.00	87.21	118.39	6,933.63	-4,291.58	2,758.79	14,452,214.15	1,732,840.84	39.79488539	-80.67095645
12,271.00	88.44	118.95	6,937.20	-4,373.06	2,805.52	14,452,132.66	1,732,887.56	39.79466114	-80.67079118
12,365.00	89.80	118.59	6,938.64	-4,454.27	2,852.84	14,452,051.46	1,732,934.88	39.79443765	-80.67062378
12,460.00	91.34	118.98	6,937.70	-4,535.93	2,901.36	14,451,969.79	1,732,983.40	39.79421289	-80.67045212
12,554.00	92.40	118.24	6,934.63	-4,616.55	2,949.59	14,451,889.17	1,733,031.63	39.79399099	-80.67028146
12,648.00	91.21	118.86	6,931.67	-4,697.55	2,997.20	14,451,808.18	1,733,079.25	39.79376808	-80.67011302
12,742.00	89.54	118.83	6,931.05	-4,779.23	3,043.71	14,451,726.49	1,733,125.75	39.79354329	-80.66994853
12,836.00	90.29	118.39	6,931.19	-4,861.13	3,089.84	14,451,644.59	1,733,171.88	39.79331790	-80.66978538
12,931.00	89.23	118.12	6,931.59	-4,943.61	3,136.97	14,451,562.11	1,733,219.02	39.79309091	-80.66961868
13,025.00	89.41	118.56	6,932.71	-5,025.29	3,183.48	14,451,480.43	1,733,265.53	39.79286613	-80.66945416
13,120.00	88.84	118.79	6,934.16	-5,108.51	3,229.28	14,451,397.22	1,733,311.33	39.79263713	-80.66929222
13,214.00	88.75	118.79	6,936.13	-5,191.32	3,273.70	14,451,314.40	1,733,355.75	39.79240925	-80.66913516
13,309.00	89.98	118.06	6,937.19	-5,275.14	3,318.41	14,451,230.58	1,733,400.46	39.79217862	-80.66897712
13,403.00	89.76	118.62	6,937.40	-5,358.01	3,362.77	14,451,147.71	1,733,444.82	39.79195058	-80.66882028
13,498.00	89.63	118.53	6,937.91	-5,441.56	3,407.99	14,451,064.17	1,733,490.04	39.79172068	-80.66866040
13,592.00	88.62	118.95	6,939.34	-5,523.55	3,453.93	14,450,982.17	1,733,535.97	39.79149504	-80.66849795
13,686.00	88.18	118.59	6,941.97	-5,604.74	3,501.24	14,450,900.99	1,733,583.28	39.79127161	-80.66833061
13,781.00	89.05	118.03	6,944.26	-5,686.82	3,548.99	14,450,818.90	1,733,631.04	39.79104568	-80.66816168
13,876.00	90.07	118.74	6,944.99	-5,769.41	3,595.94	14,450,736.31	1,733,677.98	39.79081840	-80.66799565
13,971.00	89.27	118.03	6,945.54	-5,852.00	3,642.88	14,450,653.72	1,733,724.93	39.79059112	-80.66782963

WV Department of Environmental Protection

Company: Tug Hill Operating Co	Local Co-ordinate Reference: Well Ten High 1S-07HM (Q)
Project: Marshall County West Virginia.	TVD Reference: RKB=1310+33 @ 1343.00usft (Nabors X08)
Site: Ten High	MD Reference: RKB=1310+33 @ 1343.00usft (Nabors X08)
Well: Ten High 1S-07HM (Q)	North Reference: Grid
Wellbore: Original Hole	Survey Calculation Method: Minimum Curvature
Design: Surveys Original	Database: DB_Jul2216dt_v14

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WV Department of Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,065.00	89.49	29.16	6,946.56	-5,933.35	3,689.96	14,450,572.37	1,733,772.00	39.79036722	-80.66766312
14,160.00	90.77	29.19	6,946.34	-6,015.73	3,737.28	14,450,489.99	1,733,819.32	39.79014052	-80.66749576
14,255.00	88.31	29.16	6,947.10	-6,098.09	3,784.59	14,450,407.63	1,733,866.64	39.78991383	-80.66732842
14,349.00	89.19	29.10	6,949.15	-6,179.55	3,831.47	14,450,326.18	1,733,913.51	39.78968967	-80.66716263
14,444.00	89.80	29.13	6,949.99	-6,262.28	3,878.15	14,450,243.44	1,733,960.20	39.78946199	-80.66699754
14,539.00	89.54	29.11	6,950.54	-6,344.98	3,924.90	14,450,160.74	1,734,006.95	39.78923440	-80.66683221
14,633.00	89.27	29.19	6,951.52	-6,426.62	3,971.47	14,450,079.10	1,734,053.52	39.78900970	-80.66666751
14,728.00	90.46	29.15	6,951.74	-6,509.32	4,018.22	14,449,996.40	1,734,100.27	39.78878211	-80.66650219
14,822.00	89.14	29.16	6,952.07	-6,590.65	4,065.35	14,449,915.08	1,734,147.40	39.78855830	-80.66633548
14,917.00	89.19	29.14	6,953.45	-6,671.64	4,114.98	14,449,834.09	1,734,197.03	39.78833537	-80.66615988
15,012.00	89.54	29.12	6,954.50	-6,752.09	4,165.49	14,449,753.63	1,734,247.54	39.78811390	-80.66598116
15,107.00	88.62	29.18	6,956.03	-6,833.34	4,214.70	14,449,672.39	1,734,296.74	39.78789028	-80.66580708
15,202.00	88.97	29.21	6,958.03	-6,915.54	4,262.26	14,449,590.18	1,734,344.31	39.78766403	-80.66563885
15,297.00	89.14	29.12	6,959.59	-6,997.01	4,311.09	14,449,508.71	1,734,393.14	39.78743979	-80.66546612
15,392.00	89.27	29.13	6,960.91	-7,077.81	4,361.04	14,449,427.91	1,734,443.09	39.78721739	-80.66528939
15,486.00	88.22	29.10	6,962.97	-7,158.75	4,408.78	14,449,346.97	1,734,490.83	39.78699462	-80.66512051
15,581.00	88.13	29.12	6,966.00	-7,241.15	4,455.96	14,449,264.57	1,734,538.01	39.78676783	-80.66495369
15,675.00	88.88	29.12	6,968.45	-7,322.34	4,503.27	14,449,183.38	1,734,585.32	39.78654438	-80.66478636
15,770.00	88.48	29.12	6,970.64	-7,404.11	4,551.59	14,449,101.61	1,734,633.63	39.78631934	-80.66461546
15,864.00	88.84	29.14	6,972.84	-7,484.94	4,599.52	14,449,020.78	1,734,681.57	39.78609687	-80.66444590
15,959.00	89.01	29.10	6,974.62	-7,567.29	4,646.84	14,448,938.43	1,734,728.89	39.78587022	-80.66427857
16,054.00	88.79	29.13	6,976.44	-7,650.85	4,691.99	14,448,854.87	1,734,774.04	39.78564027	-80.66411896
16,149.00	89.41	29.13	6,977.93	-7,734.90	4,736.25	14,448,770.82	1,734,818.30	39.78540900	-80.66396254
16,244.00	90.73	29.14	6,977.82	-7,818.92	4,780.58	14,448,686.80	1,734,862.62	39.78517780	-80.66380588
16,338.00	89.23	29.15	6,977.85	-7,901.72	4,825.07	14,448,604.00	1,734,907.12	39.78494996	-80.66364859
16,433.00	88.70	29.15	6,979.57	-7,985.07	4,870.62	14,448,520.65	1,734,952.66	39.78472058	-80.66348760
16,527.00	89.14	29.12	6,981.34	-8,067.06	4,916.56	14,448,438.66	1,734,998.61	39.78449495	-80.66332516
16,622.00	87.60	29.14	6,984.04	-8,148.73	4,964.99	14,448,356.99	1,735,047.04	39.78427015	-80.66315384
16,717.00	88.97	29.19	6,986.88	-8,229.58	5,014.80	14,448,276.14	1,735,096.85	39.78404761	-80.66297765
16,777.00	89.10	29.19	6,987.90	-8,280.56	5,046.42	14,448,225.16	1,735,128.47	39.78390728	-80.66286577
Survey @ 16777.00 MD 6987.90 TVD									
16,832.00	89.10	29.19	6,988.76	-8,327.29	5,075.41	14,448,178.43	1,735,157.45	39.78377864	-80.66276322
Survey projected to 16832.00 MD 6988.76 TVD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
192.00	192.00	-0.09	-0.07	MWD surveys
16,777.00	987.90	-8,280.56	5,046.42	Survey @ 16777.00 MD 6987.90 TVD
16,832.00	988.76	-8,327.29	5,075.41	Survey projected to 16832.00 MD 6988.76 TVD