

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	9976.00	18.10	93.860	9833.90	-106.50	1216.39	0.00	0.000	-654.33	Survey @ 9976.00 MD 9833.90 TVD
2	10076.00	18.10	93.860	9928.95	-108.59	1247.38	0.00	0.000	-670.45	KOP Begin 6.52°/100' drop build/turn
3	11012.15	50.15	332.417	10753.20	233.03	1223.82	6.52	-131.513	-356.32	Begin 6.52°/100' drop build/turn
4	11055.22	50.00	336.072	10780.84	262.76	1209.47	6.52	94.196	-323.32	Begin 8°/100' build/turn
5	11583.57	91.00	324.826	10953.96	682.87	964.00	8.00	-16.852	162.64	Begin 91.00° lateral
6	20233.57	91.00	324.826	10803.00	7752.36	-4018.18	0.00	0.000	8731.83	PBHL/TD 20233.57 MD/10803.00 TVD

ANNOTATIONS SURVEYS ORIGINAL HOLE

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Annotation
207.00	0.30	126.230	207.00	-0.32	0.44	-0.49	MWD surveys
7621.00	14.23	79.790	7576.58	-62.85	545.92	-307.04	Survey @ 7621.00 MD 7576.58 TVD
7788.00	14.23	79.790	7738.46	-55.58	586.32	-319.17	Survey projected to 7788.00 MD 7738.46 TVD OH

ANNOTATIONS SURVEYS SIDETRACK 01 SURVEYS

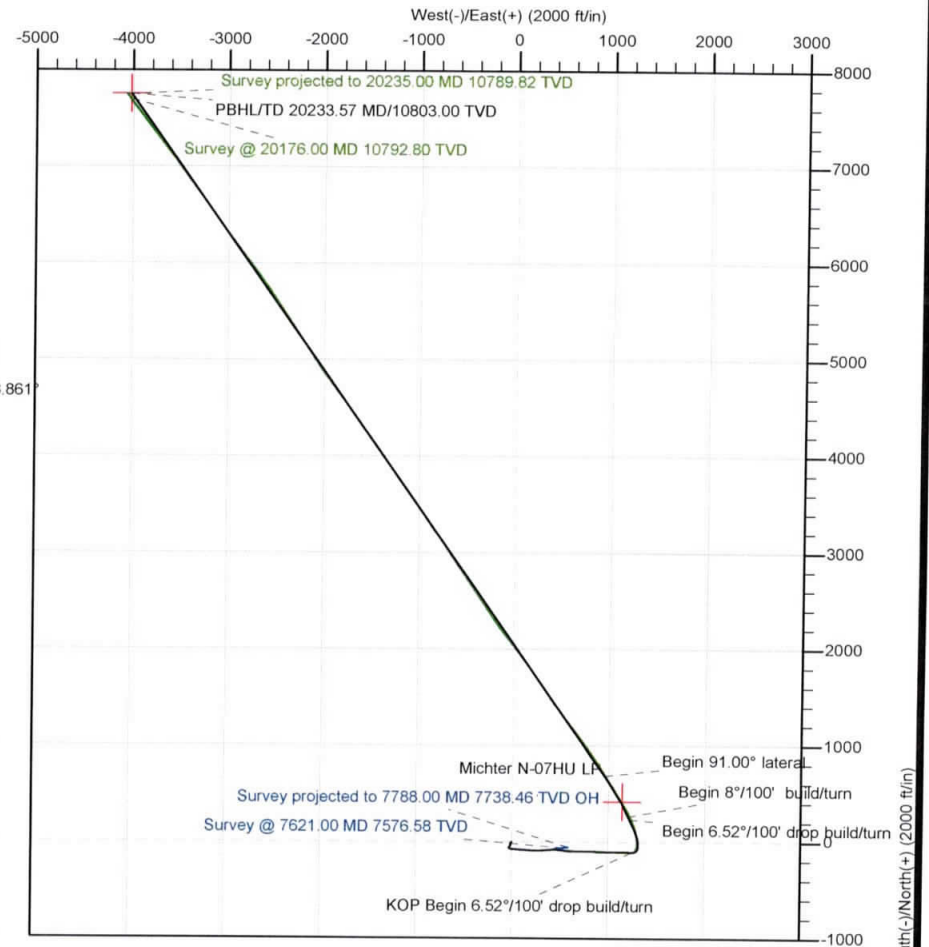
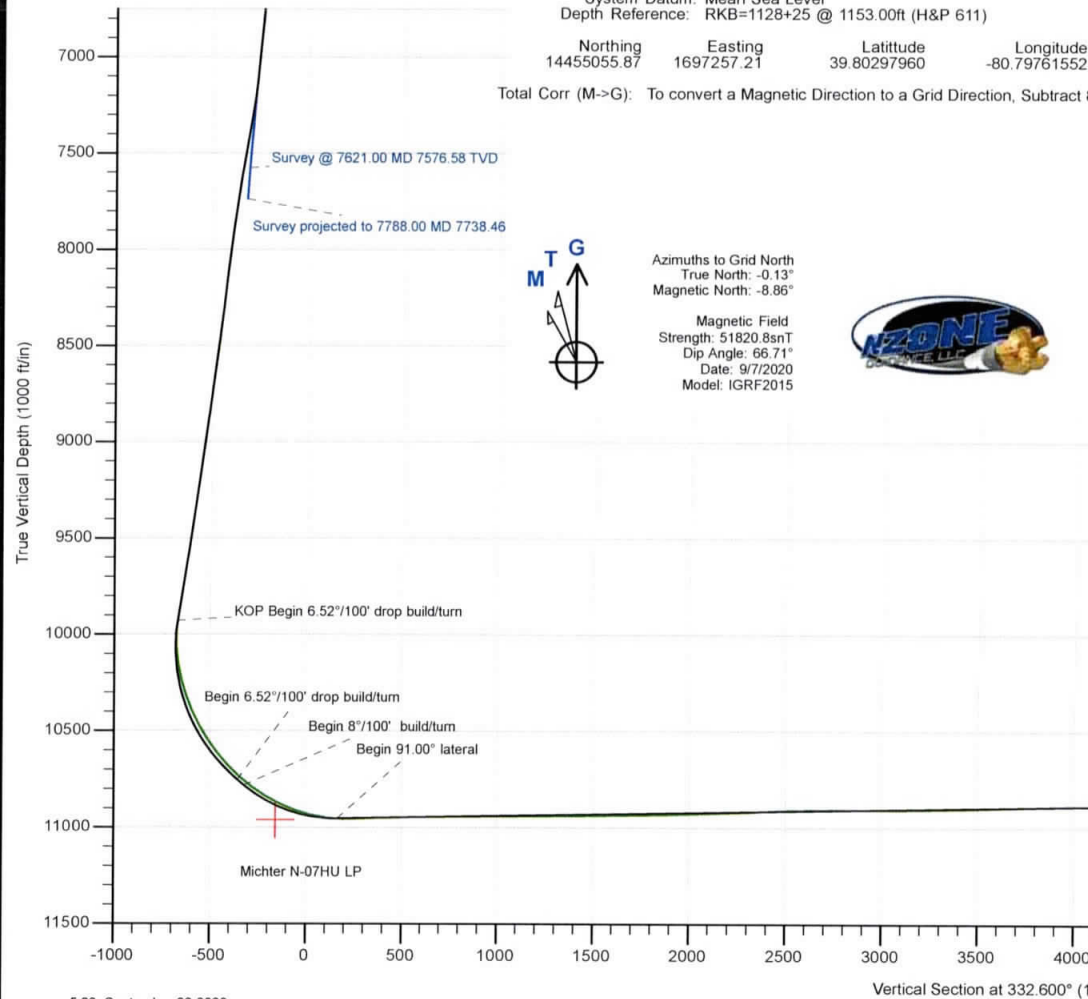
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Annotation
7147.00	14.18	84.720	7116.31	-78.97	433.86	-269.78	Tie into original hole @ 7147 MD
20176.00	92.90	323.280	10792.80	7701.50	-4023.77	8689.25	Survey @ 20176.00 MD 10792.80 TVD
20235.00	92.90	323.280	10789.82	7748.73	-4059.00	8747.39	Survey projected to 20235.00 MD 10789.82 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=1128+25 @ 1153.00ft (H&P 611)

Northing	Easting	Latitude	Longitude
14455055.87	1697257.21	39.80297960	-80.79761552

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.86°





<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Aug1919_v14

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

<b>Site</b>	Michter				
<b>Site Position:</b>		<b>Northing:</b>	14,454,962.42 usft	<b>Latitude:</b>	39.80272253
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,697,325.45 usft	<b>Longitude:</b>	-80.79737330
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.130 °

<b>Well</b>	Michter N-07HU (H)					
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	14,455,055.88 usft	<b>Latitude:</b>	39.80297960
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	1,697,257.21 usft	<b>Longitude:</b>	-80.79761552
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	1,128.00 ft

<b>Wellbore</b>	Original Hole				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	5/12/2018	-8.657	66.906	52,088.98610860

<b>Design</b>	Surveys Original Hole				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	332.600	

<b>Survey Program</b>	<b>Date</b>	2/17/2020			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
207.00	823.00	MWD surf (Original Hole)	MWD	MWD - Standard	
892.00	2,598.00	MWD int (Original Hole)	MWD	MWD - Standard	
2,691.00	7,621.00	MWD (Original Hole)	MWD	MWD - Standard	
7,788.00	7,788.00	Projection (Original Hole)	MWD	MWD - Standard	

<b>Survey</b>									
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
207.00	0.30	126.230	207.00	-0.32	0.44	-0.49	0.14	0.14	0.00
<b>MWD surveys</b>									
251.00	0.33	105.590	251.00	-0.42	0.65	-0.68	0.27	0.07	-46.91
298.00	0.31	125.520	298.00	-0.53	0.89	-0.88	0.24	-0.04	42.40
341.00	0.35	112.660	341.00	-0.65	1.10	-1.08	0.20	0.09	-29.91
388.00	0.32	128.600	388.00	-0.79	1.34	-1.31	0.21	-0.06	33.91
432.00	0.29	109.880	432.00	-0.90	1.54	-1.51	0.24	-0.07	-42.55





<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Aug1919_v14

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
479.00	0.39	155.730	478.99	-1.09	1.72	-1.76	0.60	0.21	97.55
523.00	0.36	154.540	522.99	-1.35	1.84	-2.04	0.07	-0.07	-2.70
570.00	0.57	187.120	569.99	-1.72	1.87	-2.38	0.70	0.45	69.32
615.00	0.75	204.170	614.99	-2.21	1.72	-2.75	0.59	0.40	37.89
662.00	1.06	259.460	661.98	-2.57	1.17	-2.82	1.88	0.66	117.64
705.00	1.51	215.870	704.97	-3.10	0.45	-2.96	2.42	1.05	-101.37
752.00	1.95	217.400	751.95	-4.24	-0.40	-3.57	0.94	0.94	3.26
796.00	2.15	233.120	795.93	-5.33	-1.52	-4.03	1.35	0.45	35.73
823.00	2.15	222.640	822.91	-6.00	-2.27	-4.29	1.45	0.00	-38.81
892.00	2.07	221.730	891.86	-7.88	-3.97	-5.17	0.13	-0.12	-1.32
987.00	1.74	207.840	986.81	-10.44	-5.79	-6.61	0.59	-0.35	-14.62
1,082.00	1.86	207.730	1,081.76	-13.08	-7.18	-8.31	0.13	0.13	-0.12
1,176.00	2.15	204.250	1,175.70	-16.04	-8.61	-10.28	0.33	0.31	-3.70
1,271.00	2.10	207.650	1,270.64	-19.20	-10.15	-12.38	0.14	-0.05	3.58
1,366.00	1.04	196.910	1,365.60	-21.57	-11.21	-13.99	1.15	-1.12	-11.31
1,461.00	0.61	159.660	1,460.59	-22.87	-11.29	-15.11	0.70	-0.45	-39.21
1,556.00	1.33	152.390	1,555.58	-24.32	-10.60	-16.72	0.77	0.76	-7.65
1,650.00	2.07	171.930	1,649.54	-26.97	-9.85	-19.41	0.99	0.79	20.79
1,745.00	2.63	189.610	1,744.46	-30.82	-9.98	-22.77	0.96	0.59	18.61
1,840.00	2.55	210.010	1,839.36	-34.80	-11.40	-25.65	0.97	-0.08	21.47
1,935.00	2.68	218.580	1,934.26	-38.36	-13.84	-27.69	0.43	0.14	9.02
2,029.00	3.15	204.070	2,028.14	-42.44	-16.26	-30.19	0.93	0.50	-15.44
2,124.00	2.89	206.350	2,123.01	-46.97	-18.39	-33.23	0.30	-0.27	2.40
2,219.00	2.79	217.200	2,217.89	-50.96	-20.85	-35.64	0.57	-0.11	11.42
2,314.00	3.25	217.100	2,312.76	-54.94	-23.88	-37.79	0.48	0.48	-0.11
2,408.00	3.05	196.810	2,406.62	-59.46	-26.21	-40.73	1.20	-0.21	-21.59
2,503.00	2.81	163.580	2,501.51	-64.12	-26.28	-44.83	1.78	-0.25	-34.98
2,598.00	3.65	123.400	2,596.37	-68.02	-23.10	-49.76	2.48	0.88	-42.29
2,691.00	5.02	111.370	2,689.10	-71.13	-16.83	-55.40	1.76	1.47	-12.94
2,786.00	4.43	107.040	2,783.78	-73.72	-9.46	-61.10	0.73	-0.62	-4.56
2,881.00	3.04	99.350	2,878.57	-75.20	-3.46	-65.17	1.55	-1.46	-8.09
2,976.00	2.82	93.120	2,973.45	-75.74	1.36	-67.87	0.41	-0.23	-6.56
3,070.00	3.46	91.070	3,067.31	-75.92	6.50	-70.39	0.69	0.68	-2.18
3,168.00	4.37	90.300	3,165.08	-75.99	13.19	-73.54	0.93	0.93	-0.79
3,263.00	4.68	92.950	3,259.78	-76.21	20.68	-77.18	0.39	0.33	2.79
3,358.00	4.97	91.870	3,354.44	-76.54	28.67	-81.15	0.32	0.31	-1.14
3,453.00	4.34	92.320	3,449.13	-76.82	36.37	-84.94	0.66	-0.66	0.47
3,547.00	4.12	95.130	3,542.87	-77.27	43.29	-88.52	0.32	-0.23	2.99
3,642.00	4.18	98.820	3,637.63	-78.11	50.11	-92.40	0.29	0.06	3.88
3,737.00	4.41	99.040	3,732.36	-79.21	57.14	-96.62	0.24	0.24	0.23
3,832.00	4.19	92.920	3,827.09	-79.96	64.21	-100.54	0.54	-0.23	-6.44
3,926.00	4.60	87.500	3,920.82	-79.97	71.40	-103.86	0.62	0.44	-5.77
4,021.00	5.35	92.800	4,015.46	-80.02	79.63	-107.69	0.93	0.79	5.58

**Company:** Tug Hill Operating LLC  
**Project:** Marshall County, West Virginia  
**Site:** Michter  
**Well:** Michter N-07HU (H)  
**Wellbore:** Original Hole  
**Design:** Surveys Original Hole

**Local Co-ordinate Reference:** Well Michter N-07HU (H)  
**TVD Reference:** RKB=1128+25 @ 1153.00ft (H&P 611)  
**MD Reference:** RKB=1128+25 @ 1153.00ft (H&P 611)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** DB\_Aug1919\_v14

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,116.00	5.26	97.420	4,110.05	-80.80	88.38	-112.41	0.46	-0.09	4.86
4,211.00	5.32	101.590	4,204.65	-82.25	97.01	-117.66	0.41	0.06	4.39
4,305.00	5.31	99.210	4,298.24	-83.82	105.57	-123.00	0.23	-0.01	-2.53
4,400.00	4.60	95.050	4,392.89	-84.86	113.70	-127.67	0.84	-0.75	-4.38
4,495.00	5.04	89.560	4,487.55	-85.16	121.67	-131.60	0.67	0.46	-5.78
4,590.00	5.47	90.070	4,582.15	-85.14	130.37	-135.58	0.46	0.45	0.54
4,684.00	6.27	93.440	4,675.66	-85.45	139.98	-140.28	0.93	0.85	3.59
4,779.00	6.04	97.330	4,770.11	-86.40	150.11	-145.79	0.50	-0.24	4.09
4,874.00	5.00	97.150	4,864.67	-87.55	159.18	-150.98	1.09	-1.09	-0.19
4,968.00	4.46	95.850	4,958.35	-88.43	166.88	-155.31	0.59	-0.57	-1.38
5,063.00	5.17	89.730	5,053.01	-88.79	174.83	-159.29	0.92	0.75	-6.44
5,158.00	6.23	89.480	5,147.54	-88.72	184.27	-163.57	1.12	1.12	-0.26
5,253.00	5.82	93.570	5,242.02	-88.98	194.23	-168.38	0.62	-0.43	4.31
5,347.00	5.04	98.980	5,335.60	-89.92	203.07	-173.28	0.99	-0.83	5.76
5,442.00	4.59	95.960	5,430.26	-90.96	210.97	-177.85	0.54	-0.47	-3.18
5,537.00	4.96	84.500	5,524.93	-90.96	218.84	-181.47	1.07	0.39	-12.06
5,632.00	5.15	87.530	5,619.56	-90.39	227.18	-184.80	0.34	0.20	3.19
5,727.00	4.84	98.060	5,714.21	-90.77	235.41	-188.92	1.02	-0.33	11.08
5,821.00	4.56	95.830	5,807.89	-91.70	243.06	-193.27	0.36	-0.30	-2.37
5,916.00	5.00	92.410	5,902.56	-92.26	250.95	-197.40	0.55	0.46	-3.60
6,011.00	4.94	90.380	5,997.20	-92.46	259.18	-201.36	0.20	-0.06	-2.14
6,106.00	4.88	92.130	6,091.85	-92.64	267.30	-205.26	0.17	-0.06	1.84
6,342.00	3.62	87.030	6,327.20	-92.62	284.78	-213.29	0.56	-0.53	-2.16
6,390.00	3.99	85.440	6,375.09	-92.41	287.95	-214.56	0.80	0.77	-3.31
6,487.00	6.24	84.400	6,471.70	-91.63	296.57	-217.83	2.32	2.32	-1.07
6,579.00	7.92	83.680	6,563.00	-90.44	307.84	-221.97	1.83	1.83	-0.78
6,674.00	10.03	84.860	6,656.83	-88.98	322.59	-227.46	2.23	2.22	1.24
6,769.00	12.55	83.930	6,749.98	-87.15	341.10	-234.35	2.66	2.65	-0.98
6,863.00	14.72	83.840	6,841.33	-84.79	363.13	-242.39	2.31	2.31	-0.10
7,053.00	14.41	86.490	7,025.22	-80.75	410.72	-260.71	0.39	-0.16	1.39
7,147.00	14.18	84.720	7,116.31	-78.97	433.86	-269.78	0.53	-0.24	-1.88
7,242.00	13.43	83.270	7,208.57	-76.61	456.41	-278.06	0.87	-0.79	-1.53
7,432.00	13.96	80.980	7,393.17	-70.43	500.96	-293.07	0.40	0.28	-1.21
7,526.00	13.83	80.490	7,484.42	-66.80	523.23	-300.10	0.19	-0.14	-0.52
7,621.00	14.23	79.790	7,576.58	-62.85	545.92	-307.04	0.46	0.42	-0.74
<b>Survey @ 7621.00 MD 7576.58 TVD</b>									
7,788.00	14.23	79.790	7,738.46	-55.58	586.32	-319.17	0.00	0.00	0.00
<b>Survey projected to 7788.00 MD 7738.46 TVD OH</b>									





<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Aug1919_v14

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
207.00	207.00	-0.32	0.44	MWD surveys
7,621.00	7,576.58	-62.85	545.92	Survey @ 7621.00 MD 7576.58 TVD
7,788.00	7,738.46	-55.58	586.32	Survey projected to 7788.00 MD 7738.46 TVD OH

<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Aug1919_v14

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

<b>Site</b>	Michter				
<b>Site Position:</b>		<b>Northing:</b>	14,454,962.42 usft	<b>Latitude:</b>	39.80272253
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,697,325.45 usft	<b>Longitude:</b>	-80.79737330
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.130 °

<b>Well</b>	Michter N-07HU (H)					
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	14,455,055.88 usft	<b>Latitude:</b>	39.80297960
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	1,697,257.21 usft	<b>Longitude:</b>	-80.79761552
<b>Position Uncertainty</b>	0.00 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	1,128.00 ft	

<b>Wellbore</b>	Original Hole				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	5/12/2018	-8.657	66.906	52,088.98610860

<b>Design</b>	Surveys Original Hole				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	332.600	

<b>Survey Program</b>	<b>Date</b>	2/17/2020			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
207.00	823.00	MWD surf (Original Hole)	MWD	MWD - Standard	
892.00	2,598.00	MWD int (Original Hole)	MWD	MWD - Standard	
2,691.00	7,621.00	MWD (Original Hole)	MWD	MWD - Standard	
7,788.00	7,788.00	Projection (Original Hole)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Map Northing (usft)</b>	<b>Map Easting (usft)</b>	<b>Latitude</b>	<b>Longitude</b>	
0.00	0.00	0.000	0.00	0.00	0.00	14,455,055.88	1,697,257.21	39.80297960	-80.79761552	
207.00	0.30	126.230	207.00	-0.32	0.44	14,455,055.55	1,697,257.64	39.80297872	-80.79761397	
<b>MWD surveys</b>										
251.00	0.33	105.590	251.00	-0.42	0.65	14,455,055.45	1,697,257.86	39.80297844	-80.79761320	
298.00	0.31	125.520	298.00	-0.53	0.89	14,455,055.34	1,697,258.09	39.80297813	-80.79761237	
341.00	0.35	112.660	341.00	-0.65	1.10	14,455,055.22	1,697,258.31	39.80297781	-80.79761160	
388.00	0.32	128.600	388.00	-0.79	1.34	14,455,055.09	1,697,258.54	39.80297743	-80.79761077	
432.00	0.29	109.880	432.00	-0.90	1.54	14,455,054.97	1,697,258.75	39.80297711	-80.79761005	
479.00	0.39	155.730	478.99	-1.09	1.72	14,455,054.79	1,697,258.92	39.80297660	-80.79760942	



<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Aug1919_v14

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
523.00	0.36	154.540	522.99	-1.35	1.84	14,455,054.52	1,697,259.04	39.80297588	-80.79760899
570.00	0.57	187.120	569.99	-1.72	1.87	14,455,054.16	1,697,259.08	39.80297488	-80.79760887
615.00	0.75	204.170	614.99	-2.21	1.72	14,455,053.67	1,697,258.93	39.80297353	-80.79760941
662.00	1.06	259.460	661.98	-2.57	1.17	14,455,053.31	1,697,258.38	39.80297255	-80.79761138
705.00	1.51	215.870	704.97	-3.10	0.45	14,455,052.78	1,697,257.65	39.80297109	-80.79761396
752.00	1.95	217.400	751.95	-4.24	-0.40	14,455,051.64	1,697,256.80	39.80296797	-80.79761699
796.00	2.15	233.120	795.93	-5.33	-1.52	14,455,050.55	1,697,255.69	39.80296499	-80.79762097
823.00	2.15	222.640	822.91	-6.00	-2.27	14,455,049.87	1,697,254.94	39.80296313	-80.79762364
892.00	2.07	221.730	891.86	-7.88	-3.97	14,455,047.99	1,697,253.24	39.80295797	-80.79762973
987.00	1.74	207.840	986.81	-10.44	-5.79	14,455,045.44	1,697,251.42	39.80295097	-80.79763621
1,082.00	1.86	207.730	1,081.76	-13.08	-7.18	14,455,042.80	1,697,250.03	39.80294373	-80.79764119
1,176.00	2.15	204.250	1,175.70	-16.04	-8.61	14,455,039.84	1,697,248.60	39.80293561	-80.79764631
1,271.00	2.10	207.650	1,270.64	-19.20	-10.15	14,455,036.67	1,697,247.06	39.80292692	-80.79765182
1,366.00	1.04	196.910	1,365.60	-21.57	-11.21	14,455,034.30	1,697,246.00	39.80292043	-80.79765561
1,461.00	0.61	159.660	1,460.59	-22.87	-11.29	14,455,033.00	1,697,245.92	39.80291686	-80.79765589
1,556.00	1.33	152.390	1,555.58	-24.32	-10.60	14,455,031.55	1,697,246.61	39.80291287	-80.79765345
1,650.00	2.07	171.930	1,649.54	-26.97	-9.85	14,455,028.91	1,697,247.35	39.80290560	-80.79765083
1,745.00	2.63	189.610	1,744.46	-30.82	-9.98	14,455,025.06	1,697,247.23	39.80289503	-80.79765130
1,840.00	2.55	210.010	1,839.36	-34.80	-11.40	14,455,021.08	1,697,245.81	39.80288411	-80.79765639
1,935.00	2.68	218.580	1,934.26	-38.36	-13.84	14,455,017.51	1,697,243.37	39.80287434	-80.79766511
2,029.00	3.15	204.070	2,028.14	-42.44	-16.26	14,455,013.44	1,697,240.94	39.80286316	-80.79767377
2,124.00	2.89	206.350	2,123.01	-46.97	-18.39	14,455,008.91	1,697,238.82	39.80285073	-80.79768139
2,219.00	2.79	217.200	2,217.89	-50.96	-20.85	14,455,004.92	1,697,236.35	39.80283979	-80.79769018
2,314.00	3.25	217.100	2,312.76	-54.94	-23.88	14,455,000.93	1,697,233.33	39.80282886	-80.79770097
2,408.00	3.05	196.810	2,406.62	-59.46	-26.21	14,454,996.41	1,697,231.00	39.80281646	-80.79770931
2,503.00	2.81	163.580	2,501.51	-64.12	-26.28	14,454,991.76	1,697,230.93	39.80280368	-80.79770960
2,598.00	3.65	123.400	2,596.37	-68.02	-23.10	14,454,987.86	1,697,234.11	39.80279296	-80.79769830
2,691.00	5.02	111.370	2,689.10	-71.13	-16.83	14,454,984.75	1,697,240.37	39.80278437	-80.79767603
2,786.00	4.43	107.040	2,783.78	-73.72	-9.46	14,454,982.16	1,697,247.75	39.80277721	-80.79764978
2,881.00	3.04	99.350	2,878.57	-75.20	-3.46	14,454,980.67	1,697,253.75	39.80277310	-80.79762845
2,976.00	2.82	93.120	2,973.45	-75.74	1.36	14,454,980.14	1,697,258.56	39.80277159	-80.79761130
3,070.00	3.46	91.070	3,067.31	-75.92	6.50	14,454,979.96	1,697,263.71	39.80277107	-80.79759298
3,168.00	4.37	90.300	3,165.08	-75.99	13.19	14,454,979.88	1,697,270.40	39.80277082	-80.79756916
3,263.00	4.68	92.950	3,259.78	-76.21	20.68	14,454,979.66	1,697,277.89	39.80277018	-80.79754249
3,358.00	4.97	91.870	3,354.44	-76.54	28.67	14,454,979.33	1,697,285.87	39.80276921	-80.79751407
3,453.00	4.34	92.320	3,449.13	-76.82	36.37	14,454,979.05	1,697,293.58	39.80276839	-80.79748664
3,547.00	4.12	95.130	3,542.87	-77.27	43.29	14,454,978.60	1,697,300.49	39.80276713	-80.79746202
3,642.00	4.18	98.820	3,637.63	-78.11	50.11	14,454,977.77	1,697,307.32	39.80276479	-80.79743774
3,737.00	4.41	99.040	3,732.36	-79.21	57.14	14,454,976.66	1,697,314.34	39.80276171	-80.79741272
3,832.00	4.19	92.920	3,827.09	-79.96	64.21	14,454,975.91	1,697,321.42	39.80275961	-80.79738755
3,926.00	4.60	87.500	3,920.82	-79.97	71.40	14,454,975.90	1,697,328.61	39.80275953	-80.79736193
4,021.00	5.35	92.800	4,015.46	-80.02	79.63	14,454,975.85	1,697,336.84	39.80275934	-80.79733263
4,116.00	5.26	97.420	4,110.05	-80.80	88.38	14,454,975.07	1,697,345.58	39.80275715	-80.79730151
4,211.00	5.32	101.590	4,204.65	-82.25	97.01	14,454,973.63	1,697,354.22	39.80275312	-80.79727078
4,305.00	5.31	99.210	4,298.24	-83.82	105.57	14,454,972.05	1,697,362.78	39.80274875	-80.79724031
4,400.00	4.60	95.050	4,392.89	-84.86	113.70	14,454,971.02	1,697,370.91	39.80274585	-80.79721136
4,495.00	5.04	89.560	4,487.55	-85.16	121.67	14,454,970.71	1,697,378.88	39.80274497	-80.79718299
4,590.00	5.47	90.070	4,582.15	-85.14	130.37	14,454,970.74	1,697,387.58	39.80274499	-80.79715201
4,684.00	6.27	93.440	4,675.66	-85.45	139.98	14,454,970.43	1,697,397.18	39.80274406	-80.79711782
4,779.00	6.04	97.330	4,770.11	-86.40	150.11	14,454,969.48	1,697,407.32	39.80274140	-80.79708174
4,874.00	5.00	97.150	4,864.67	-87.55	159.18	14,454,968.32	1,697,416.39	39.80273817	-80.79704947
4,968.00	4.46	95.850	4,958.35	-88.43	166.88	14,454,967.44	1,697,424.09	39.80273570	-80.79702206
5,063.00	5.17	89.730	5,053.01	-88.79	174.83	14,454,967.09	1,697,432.04	39.80273467	-80.79699374
5,158.00	6.23	89.480	5,147.54	-88.72	184.27	14,454,967.15	1,697,441.48	39.80273480	-80.79696014
5,253.00	5.82	93.570	5,242.02	-88.98	194.23	14,454,966.90	1,697,451.44	39.80273404	-80.79692468

<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Aug1919_v14

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,347.00	5.04	98.980	5,335.60	-89.92	203.07	14,454,965.96	1,697,460.27	39.80273140	-80.79689323
5,442.00	4.59	95.960	5,430.26	-90.96	210.97	14,454,964.91	1,697,468.18	39.80272848	-80.79686510
5,537.00	4.96	84.500	5,524.93	-90.96	218.84	14,454,964.91	1,697,476.04	39.80272843	-80.79683708
5,632.00	5.15	87.530	5,619.56	-90.39	227.18	14,454,965.49	1,697,484.39	39.80272996	-80.79680735
5,727.00	4.84	98.060	5,714.21	-90.77	235.41	14,454,965.11	1,697,492.62	39.80272887	-80.79677806
5,821.00	4.56	95.830	5,807.89	-91.70	243.06	14,454,964.17	1,697,500.26	39.80272625	-80.79675085
5,916.00	5.00	92.410	5,902.56	-92.26	250.95	14,454,963.62	1,697,508.16	39.80272467	-80.79672275
6,011.00	4.94	90.380	5,997.20	-92.46	259.18	14,454,963.42	1,697,516.38	39.80272407	-80.79669346
6,106.00	4.88	92.130	6,091.85	-92.64	267.30	14,454,963.24	1,697,524.51	39.80272353	-80.79666452
6,342.00	3.62	87.030	6,327.20	-92.62	284.78	14,454,963.25	1,697,541.98	39.80272346	-80.79660231
6,390.00	3.99	85.440	6,375.09	-92.41	287.95	14,454,963.46	1,697,545.16	39.80272402	-80.79659100
6,487.00	6.24	84.400	6,471.70	-91.63	296.57	14,454,964.24	1,697,553.77	39.80272611	-80.79656033
6,579.00	7.92	83.680	6,563.00	-90.44	307.84	14,454,965.43	1,697,565.05	39.80272930	-80.79652017
6,674.00	10.03	84.860	6,656.83	-88.98	322.59	14,454,966.89	1,697,579.80	39.80273322	-80.79646765
6,769.00	12.55	83.930	6,749.98	-87.15	341.10	14,454,968.73	1,697,598.30	39.80273814	-80.79640174
6,863.00	14.72	83.840	6,841.33	-84.79	363.13	14,454,971.09	1,697,620.33	39.80274449	-80.79632328
7,053.00	14.41	86.490	7,025.22	-80.75	410.72	14,454,975.12	1,697,667.93	39.80275528	-80.79615378
7,147.00	14.18	84.720	7,116.31	-78.97	433.86	14,454,976.90	1,697,691.07	39.80276001	-80.79607137
7,242.00	13.43	83.270	7,208.57	-76.61	456.41	14,454,979.26	1,697,713.61	39.80276636	-80.79599109
7,432.00	13.96	80.980	7,393.17	-70.43	500.96	14,454,985.44	1,697,758.16	39.80278305	-80.79583242
7,526.00	13.83	80.490	7,484.42	-66.80	523.23	14,454,989.08	1,697,780.44	39.80279289	-80.79575307
7,621.00	14.23	79.790	7,576.58	-62.85	545.92	14,454,993.02	1,697,803.13	39.80280359	-80.79567225
<b>Survey @ 7621.00 MD 7576.58 TVD</b>									
7,788.00	14.23	79.790	7,738.46	-55.58	586.32	14,455,000.30	1,697,843.53	39.80282332	-80.79552834
<b>Survey projected to 7788.00 MD 7738.46 TVD OH</b>									

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
207.00	207.00	-0.32	0.44	MWD surveys
7,621.00	7,576.58	-62.85	545.92	Survey @ 7621.00 MD 7576.58 TVD
7,788.00	7,738.46	-55.58	586.32	Survey projected to 7788.00 MD 7738.46 TVD OH





<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Aug1919_v14

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

<b>Site</b>	Michter				
<b>Site Position:</b>		<b>Northing:</b>	14,454,962.42 usft	<b>Latitude:</b>	39.80272253
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,697,325.45 usft	<b>Longitude:</b>	-80.79737330
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.130 °

<b>Well</b>	Michter N-07HU (H)					
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	14,455,055.88 usft	<b>Latitude:</b>	39.80297960
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	1,697,257.21 usft	<b>Longitude:</b>	-80.79761552
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	1,128.00 ft

<b>Wellbore</b>	Sidetrack 01				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	9/7/2020	-8.732	66.711	51,820.79737481

<b>Design</b>	Surveys Sidetrack 01				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	7,147.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	332.600	

<b>Survey Program</b>	<b>Date</b>	9/22/2020			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
207.00	823.00	MWD surf (Original Hole)	MWD	MWD - Standard	
892.00	2,598.00	MWD int (Original Hole)	MWD	MWD - Standard	
2,691.00	7,147.00	MWD (Original Hole)	MWD	MWD - Standard	
7,204.00	9,976.00	MWD ST1 (Sidetrack 01)	MWD	MWD - Standard	
10,034.00	20,176.00	MWD ST1 lat (Sidetrack 01)	MWD	MWD - Standard	
20,235.00	20,235.00	Projection (Sidetrack 01)	MWD	MWD - Standard	

<b>Survey</b>											
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>		
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
207.00	0.30	126.230	207.00	-0.32	0.44	-0.49	0.14	0.14	0.00	0.00	
251.00	0.33	105.590	251.00	-0.42	0.65	-0.68	0.27	0.07	-46.91		
298.00	0.31	125.520	298.00	-0.53	0.89	-0.88	0.24	-0.04	42.40		
341.00	0.35	112.660	341.00	-0.65	1.10	-1.08	0.20	0.09	-29.91		
388.00	0.32	128.600	388.00	-0.79	1.34	-1.31	0.21	-0.06	33.91		

<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Aug1919_v14

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
432.00	0.29	109.880	432.00	-0.90	1.54	-1.51	0.24	-0.07	-42.55
479.00	0.39	155.730	478.99	-1.09	1.72	-1.76	0.60	0.21	97.55
523.00	0.36	154.540	522.99	-1.35	1.84	-2.04	0.07	-0.07	-2.70
570.00	0.57	187.120	569.99	-1.72	1.87	-2.38	0.70	0.45	69.32
615.00	0.75	204.170	614.99	-2.21	1.72	-2.75	0.59	0.40	37.89
662.00	1.06	259.460	661.98	-2.57	1.17	-2.82	1.88	0.66	117.64
705.00	1.51	215.870	704.97	-3.10	0.45	-2.96	2.42	1.05	-101.37
752.00	1.95	217.400	751.95	-4.24	-0.40	-3.57	0.94	0.94	3.26
796.00	2.15	233.120	795.93	-5.33	-1.52	-4.03	1.35	0.45	35.73
823.00	2.15	222.640	822.91	-6.00	-2.27	-4.29	1.45	0.00	-38.81
892.00	2.07	221.730	891.86	-7.88	-3.97	-5.17	0.13	-0.12	-1.32
987.00	1.74	207.840	986.81	-10.44	-5.79	-6.61	0.59	-0.35	-14.62
1,082.00	1.86	207.730	1,081.76	-13.08	-7.18	-8.31	0.13	0.13	-0.12
1,176.00	2.15	204.250	1,175.70	-16.04	-8.61	-10.28	0.33	0.31	-3.70
1,271.00	2.10	207.650	1,270.64	-19.20	-10.15	-12.38	0.14	-0.05	3.58
1,366.00	1.04	196.910	1,365.60	-21.57	-11.21	-13.99	1.15	-1.12	-11.31
1,461.00	0.61	159.660	1,460.59	-22.87	-11.29	-15.11	0.70	-0.45	-39.21
1,556.00	1.33	152.390	1,555.58	-24.32	-10.60	-16.72	0.77	0.76	-7.65
1,650.00	2.07	171.930	1,649.54	-26.97	-9.85	-19.41	0.99	0.79	20.79
1,745.00	2.63	189.610	1,744.46	-30.82	-9.98	-22.77	0.96	0.59	18.61
1,840.00	2.55	210.010	1,839.36	-34.80	-11.40	-25.65	0.97	-0.08	21.47
1,935.00	2.68	218.580	1,934.26	-38.36	-13.84	-27.69	0.43	0.14	9.02
2,029.00	3.15	204.070	2,028.14	-42.44	-16.26	-30.19	0.93	0.50	-15.44
2,124.00	2.89	206.350	2,123.01	-46.97	-18.39	-33.23	0.30	-0.27	2.40
2,219.00	2.79	217.200	2,217.89	-50.96	-20.85	-35.64	0.57	-0.11	11.42
2,314.00	3.25	217.100	2,312.76	-54.94	-23.88	-37.79	0.48	0.48	-0.11
2,408.00	3.05	196.810	2,406.62	-59.46	-26.21	-40.73	1.20	-0.21	-21.59
2,503.00	2.81	163.580	2,501.51	-64.12	-26.28	-44.83	1.78	-0.25	-34.98
2,598.00	3.65	123.400	2,596.37	-68.02	-23.10	-49.76	2.48	0.88	-42.29
2,691.00	5.02	111.370	2,689.10	-71.13	-16.83	-55.40	1.76	1.47	-12.94
2,786.00	4.43	107.040	2,783.78	-73.72	-9.46	-61.10	0.73	-0.62	-4.56
2,881.00	3.04	99.350	2,878.57	-75.20	-3.46	-65.17	1.55	-1.46	-8.09
2,976.00	2.82	93.120	2,973.45	-75.74	1.36	-67.87	0.41	-0.23	-6.56
3,070.00	3.46	91.070	3,067.31	-75.92	6.50	-70.39	0.69	0.68	-2.18
3,168.00	4.37	90.300	3,165.08	-75.99	13.19	-73.54	0.93	0.93	-0.79
3,263.00	4.68	92.950	3,259.78	-76.21	20.68	-77.18	0.39	0.33	2.79
3,358.00	4.97	91.870	3,354.44	-76.54	28.67	-81.15	0.32	0.31	-1.14
3,453.00	4.34	92.320	3,449.13	-76.82	36.37	-84.94	0.66	-0.66	0.47
3,547.00	4.12	95.130	3,542.87	-77.27	43.29	-88.52	0.32	-0.23	2.99
3,642.00	4.18	98.820	3,637.63	-78.11	50.11	-92.40	0.29	0.06	3.88
3,737.00	4.41	99.040	3,732.36	-79.21	57.14	-96.62	0.24	0.24	0.23
3,832.00	4.19	92.920	3,827.09	-79.96	64.21	-100.54	0.54	-0.23	-6.44
3,926.00	4.60	87.500	3,920.82	-79.97	71.40	-103.86	0.62	0.44	-5.77
4,021.00	5.35	92.800	4,015.46	-80.02	79.63	-107.69	0.93	0.79	5.58



<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Aug1919_v14

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,116.00	5.26	97.420	4,110.05	-80.80	88.38	-112.41	0.46	-0.09	4.86
4,211.00	5.32	101.590	4,204.65	-82.25	97.01	-117.66	0.41	0.06	4.39
4,305.00	5.31	99.210	4,298.24	-83.82	105.57	-123.00	0.23	-0.01	-2.53
4,400.00	4.60	95.050	4,392.89	-84.86	113.70	-127.67	0.84	-0.75	-4.38
4,495.00	5.04	89.560	4,487.55	-85.16	121.67	-131.60	0.67	0.46	-5.78
4,590.00	5.47	90.070	4,582.15	-85.14	130.37	-135.58	0.46	0.45	0.54
4,684.00	6.27	93.440	4,675.66	-85.45	139.98	-140.28	0.93	0.85	3.59
4,779.00	6.04	97.330	4,770.11	-86.40	150.11	-145.79	0.50	-0.24	4.09
4,874.00	5.00	97.150	4,864.67	-87.55	159.18	-150.98	1.09	-1.09	-0.19
4,968.00	4.46	95.850	4,958.35	-88.43	166.88	-155.31	0.59	-0.57	-1.38
5,063.00	5.17	89.730	5,053.01	-88.79	174.83	-159.29	0.92	0.75	-6.44
5,158.00	6.23	89.480	5,147.54	-88.72	184.27	-163.57	1.12	1.12	-0.26
5,253.00	5.82	93.570	5,242.02	-88.98	194.23	-168.38	0.62	-0.43	4.31
5,347.00	5.04	98.980	5,335.60	-89.92	203.07	-173.28	0.99	-0.83	5.76
5,442.00	4.59	95.960	5,430.26	-90.96	210.97	-177.85	0.54	-0.47	-3.18
5,537.00	4.96	84.500	5,524.93	-90.96	218.84	-181.47	1.07	0.39	-12.06
5,632.00	5.15	87.530	5,619.56	-90.39	227.18	-184.80	0.34	0.20	3.19
5,727.00	4.84	98.060	5,714.21	-90.77	235.41	-188.92	1.02	-0.33	11.08
5,821.00	4.56	95.830	5,807.89	-91.70	243.06	-193.27	0.36	-0.30	-2.37
5,916.00	5.00	92.410	5,902.56	-92.26	250.95	-197.40	0.55	0.46	-3.60
6,011.00	4.94	90.380	5,997.20	-92.46	259.18	-201.36	0.20	-0.06	-2.14
6,106.00	4.88	92.130	6,091.85	-92.64	267.30	-205.26	0.17	-0.06	1.84
6,342.00	3.62	87.030	6,327.20	-92.62	284.78	-213.29	0.56	-0.53	-2.16
6,390.00	3.99	85.440	6,375.09	-92.41	287.95	-214.56	0.80	0.77	-3.31
6,487.00	6.24	84.400	6,471.70	-91.63	296.57	-217.83	2.32	2.32	-1.07
6,579.00	7.92	83.680	6,563.00	-90.44	307.84	-221.97	1.83	1.83	-0.78
6,674.00	10.03	84.860	6,656.83	-88.98	322.59	-227.46	2.23	2.22	1.24
6,769.00	12.55	83.930	6,749.98	-87.15	341.10	-234.35	2.66	2.65	-0.98
6,863.00	14.72	83.840	6,841.33	-84.79	363.13	-242.39	2.31	2.31	-0.10
7,053.00	14.41	86.490	7,025.22	-80.75	410.72	-260.71	0.39	-0.16	1.39
7,147.00	14.18	84.720	7,116.31	-78.97	433.86	-269.78	0.53	-0.24	-1.88
<b>Tie into original hole @ 7147 MD</b>									
7,204.00	13.58	92.110	7,171.65	-78.58	447.50	-275.70	3.28	-1.05	12.96
7,236.00	13.80	95.010	7,202.75	-79.05	455.06	-279.60	2.25	0.69	9.06
7,331.00	15.56	97.750	7,294.64	-81.76	478.98	-293.01	1.99	1.85	2.88
7,425.00	17.01	97.210	7,384.87	-85.18	505.11	-308.08	1.55	1.54	-0.57
7,520.00	16.96	97.030	7,475.72	-88.62	532.65	-323.81	0.08	-0.05	-0.19
7,615.00	17.31	95.890	7,566.51	-91.77	560.46	-339.40	0.51	0.37	-1.20
7,710.00	16.08	94.390	7,657.50	-94.23	587.64	-354.09	1.37	-1.29	-1.58
7,804.00	15.64	92.460	7,747.92	-95.77	613.27	-367.25	0.73	-0.47	-2.05
7,899.00	16.13	91.760	7,839.30	-96.72	639.26	-380.06	0.55	0.52	-0.74
7,995.00	16.48	91.050	7,931.43	-97.38	666.20	-393.04	0.42	0.36	-0.74
8,089.00	15.56	91.050	8,021.78	-97.86	692.14	-405.40	0.98	-0.98	0.00



<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Aug1919_v14

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,198.00	14.15	89.910	8,127.14	-98.10	720.08	-418.48	1.32	-1.29	-1.05
8,278.00	14.11	89.470	8,204.72	-98.00	739.61	-427.37	0.14	-0.05	-0.55
8,373.00	14.15	89.640	8,296.84	-97.82	762.80	-437.89	0.06	0.04	0.18
8,467.00	14.37	89.990	8,387.95	-97.74	785.96	-448.48	0.25	0.23	0.37
8,562.00	14.55	90.440	8,479.94	-97.83	809.68	-459.47	0.22	0.19	0.47
8,657.00	15.07	92.200	8,571.78	-98.40	833.95	-471.15	0.72	0.55	1.85
8,752.00	14.94	93.420	8,663.54	-99.60	858.52	-483.52	0.36	-0.14	1.28
8,847.00	15.73	92.370	8,755.16	-100.87	883.61	-496.19	0.88	0.83	-1.11
8,942.00	16.25	91.220	8,846.48	-101.68	909.76	-508.95	0.64	0.55	-1.21
9,036.00	16.04	91.050	8,936.78	-102.20	935.90	-521.43	0.23	-0.22	-0.18
9,131.00	16.66	90.170	9,027.93	-102.48	962.64	-533.99	0.70	0.65	-0.93
9,226.00	16.96	90.260	9,118.87	-102.59	990.11	-546.73	0.32	0.32	0.09
9,321.00	17.09	90.520	9,209.71	-102.77	1,017.92	-559.69	0.16	0.14	0.27
9,415.00	17.18	91.140	9,299.54	-103.18	1,045.62	-572.79	0.22	0.10	0.66
9,510.00	17.71	90.700	9,390.17	-103.63	1,074.09	-586.30	0.57	0.56	-0.46
9,605.00	17.36	91.050	9,480.76	-104.07	1,102.71	-599.86	0.38	-0.37	0.37
9,700.00	17.79	90.350	9,571.32	-104.42	1,131.39	-613.37	0.50	0.45	-0.74
9,795.00	17.84	90.700	9,661.77	-104.68	1,160.46	-626.98	0.12	0.05	0.37
9,889.00	18.06	91.490	9,751.19	-105.24	1,189.42	-640.80	0.35	0.23	0.84
9,976.00	18.10	93.860	9,833.90	-106.50	1,216.39	-654.33	0.85	0.05	2.72
10,034.00	18.63	94.060	9,888.94	-107.76	1,234.62	-663.84	0.92	0.91	0.34
10,095.00	16.83	88.610	9,947.05	-108.24	1,253.17	-672.80	4.01	-2.95	-8.93
10,129.00	15.86	74.020	9,979.68	-106.84	1,262.56	-675.88	12.37	-2.85	-42.91
10,176.00	15.29	62.770	10,024.97	-102.23	1,274.24	-677.17	6.53	-1.21	-23.94
10,224.00	15.73	48.620	10,071.24	-95.03	1,284.76	-675.62	7.92	0.92	-29.48
10,271.00	16.66	32.450	10,116.40	-85.13	1,293.16	-670.69	9.76	1.98	-34.40
10,318.00	16.65	25.150	10,161.43	-73.35	1,299.63	-663.21	4.45	-0.02	-15.53
10,365.00	16.66	16.100	10,206.46	-60.78	1,304.37	-654.23	5.51	0.02	-19.26
10,413.00	18.37	9.510	10,252.24	-46.71	1,307.52	-643.19	5.45	3.56	-13.73
10,460.00	20.21	4.320	10,296.61	-31.30	1,309.36	-630.36	5.35	3.91	-11.04
10,508.00	22.28	358.870	10,341.34	-13.94	1,309.80	-615.14	5.96	4.31	-11.35
10,555.00	24.21	355.010	10,384.53	4.58	1,308.79	-598.24	5.23	4.11	-8.21
10,603.00	26.41	352.020	10,427.92	24.95	1,306.45	-579.07	5.30	4.58	-6.23
10,650.00	28.83	350.090	10,469.56	46.47	1,303.05	-558.40	5.49	5.15	-4.11
10,697.00	32.83	348.680	10,509.91	70.14	1,298.60	-535.34	8.65	8.51	-3.00
10,744.00	35.46	347.190	10,548.81	95.93	1,293.07	-509.90	5.87	5.60	-3.17
10,792.00	37.71	345.870	10,587.35	123.75	1,286.40	-482.14	4.97	4.69	-2.75
10,839.00	39.86	342.000	10,623.99	152.02	1,278.24	-453.28	6.89	4.57	-8.23
10,887.00	42.10	337.170	10,660.23	181.49	1,267.23	-422.05	8.08	4.67	-10.06
10,948.00	45.70	334.790	10,704.18	220.10	1,250.00	-379.84	6.49	5.90	-3.90
10,996.00	47.77	332.770	10,737.08	251.45	1,234.55	-344.90	5.29	4.31	-4.21
11,043.00	51.06	332.160	10,767.65	283.09	1,218.04	-309.21	7.07	7.00	-1.30
11,090.00	54.49	330.310	10,796.08	315.88	1,200.03	-271.81	7.94	7.30	-3.94





<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Aug1919_v14

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,137.00	57.04	327.940	10,822.53	349.22	1,180.08	-233.03	6.84	5.43	-5.04
11,185.00	60.16	327.500	10,847.53	383.85	1,158.20	-192.21	6.55	6.50	-0.92
11,232.00	63.06	328.030	10,869.88	418.82	1,136.15	-151.02	6.25	6.17	1.13
11,280.00	66.71	328.030	10,890.25	455.69	1,113.14	-107.70	7.60	7.60	0.00
11,327.00	70.09	329.080	10,907.55	492.97	1,090.35	-64.12	7.49	7.19	2.23
11,375.00	73.43	329.340	10,922.57	532.12	1,067.02	-18.62	6.98	6.96	0.54
11,422.00	75.89	328.550	10,935.00	570.95	1,043.64	26.61	5.48	5.23	-1.68
11,469.00	79.45	325.650	10,945.04	609.48	1,018.70	72.30	9.68	7.57	-6.17
11,516.00	83.63	327.590	10,951.95	648.30	993.13	118.53	9.79	8.89	4.13
11,564.00	87.93	327.760	10,955.48	688.74	967.54	166.21	8.97	8.96	0.35
11,601.00	90.40	328.110	10,956.02	720.09	947.90	203.08	6.74	6.68	0.95
11,659.00	91.45	327.500	10,955.09	769.16	917.00	260.87	2.09	1.81	-1.05
11,753.00	91.98	324.690	10,952.27	847.14	864.60	354.21	3.04	0.56	-2.99
11,848.00	91.80	325.120	10,949.14	924.82	810.01	448.31	0.49	-0.19	0.45
11,943.00	91.71	322.660	10,946.23	1,001.53	754.05	542.16	2.59	-0.09	-2.59
12,038.00	90.79	323.450	10,944.16	1,077.44	696.97	635.82	1.28	-0.97	0.83
12,132.00	90.35	322.490	10,943.22	1,152.47	640.36	728.49	1.12	-0.47	-1.02
12,227.00	90.21	322.130	10,942.76	1,227.65	582.28	821.96	0.41	-0.15	-0.38
12,322.00	90.04	324.070	10,942.55	1,303.61	525.24	915.65	2.05	-0.18	2.04
12,417.00	89.91	324.950	10,942.59	1,380.96	470.09	1,009.71	0.94	-0.14	0.93
12,511.00	90.79	324.330	10,942.02	1,457.62	415.69	1,102.80	1.15	0.94	-0.66
12,606.00	90.92	325.040	10,940.60	1,535.13	360.78	1,196.88	0.76	0.14	0.75
12,700.00	90.70	324.770	10,939.27	1,612.03	306.75	1,290.02	0.37	-0.23	-0.29
12,794.00	90.52	324.950	10,938.27	1,688.90	252.64	1,383.16	0.27	-0.19	0.19
12,889.00	90.09	326.000	10,937.76	1,767.16	198.80	1,477.43	1.19	-0.45	1.11
12,984.00	90.53	324.600	10,937.25	1,845.27	144.72	1,571.65	1.54	0.46	-1.47
13,078.00	91.19	322.930	10,935.84	1,921.07	89.17	1,664.52	1.91	0.70	-1.78
13,173.00	90.92	322.490	10,934.09	1,996.64	31.62	1,758.10	0.54	-0.28	-0.46
13,267.00	90.75	321.870	10,932.72	2,070.89	-26.01	1,850.53	0.68	-0.18	-0.66
13,362.00	91.54	322.220	10,930.82	2,145.78	-84.43	1,943.91	0.91	0.83	0.37
13,456.00	91.89	324.160	10,928.01	2,221.00	-140.72	2,036.60	2.10	0.37	2.06
13,551.00	91.93	325.650	10,924.84	2,298.68	-195.31	2,130.69	1.57	0.04	1.57
13,646.00	91.36	325.390	10,922.11	2,376.96	-249.06	2,224.92	0.66	-0.60	-0.27
13,741.00	92.94	326.700	10,918.55	2,455.70	-302.09	2,319.23	2.16	1.66	1.38
13,835.00	92.90	326.180	10,913.76	2,533.93	-353.98	2,412.57	0.55	-0.04	-0.55
13,930.00	91.58	326.620	10,910.05	2,613.00	-406.51	2,506.94	1.46	-1.39	0.46
14,024.00	91.09	325.300	10,907.86	2,690.87	-459.12	2,600.28	1.50	-0.52	-1.40
14,119.00	91.27	325.830	10,905.90	2,769.20	-512.82	2,694.54	0.59	0.19	0.56
14,214.00	89.74	325.040	10,905.07	2,847.43	-566.72	2,788.79	1.81	-1.61	-0.83
14,309.00	90.09	326.000	10,905.21	2,925.74	-620.50	2,883.07	1.08	0.37	1.01
14,403.00	90.00	325.560	10,905.13	3,003.46	-673.36	2,976.40	0.48	-0.10	-0.47
14,498.00	90.04	324.950	10,905.10	3,081.52	-727.50	3,070.62	0.64	0.04	-0.64
14,593.00	90.48	325.040	10,904.67	3,159.34	-782.00	3,164.78	0.47	0.46	0.09
14,688.00	91.36	325.480	10,903.14	3,237.39	-836.13	3,258.99	1.04	0.93	0.46



<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Aug1919_v14

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
14,782.00	90.79	324.950	10,901.38	3,314.58	-889.75	3,352.20	0.83	-0.61	-0.56
14,877.00	91.71	325.650	10,899.31	3,392.66	-943.81	3,446.40	1.22	0.97	0.74
14,972.00	91.54	325.480	10,896.61	3,470.99	-997.51	3,540.65	0.25	-0.18	-0.18
15,066.00	91.63	324.690	10,894.01	3,548.04	-1,051.29	3,633.80	0.85	0.10	-0.84
15,161.00	91.85	325.740	10,891.13	3,626.02	-1,105.46	3,727.97	1.13	0.23	1.11
15,256.00	91.89	325.560	10,888.03	3,704.41	-1,159.04	3,822.22	0.19	0.04	-0.19
15,351.00	90.31	324.330	10,886.20	3,782.16	-1,213.59	3,916.35	2.11	-1.66	-1.29
15,446.00	90.44	324.240	10,885.58	3,859.29	-1,269.05	4,010.35	0.17	0.14	-0.09
15,540.00	90.40	323.630	10,884.89	3,935.28	-1,324.38	4,103.28	0.65	-0.04	-0.65
15,635.00	90.35	323.450	10,884.27	4,011.68	-1,380.84	4,197.09	0.20	-0.05	-0.19
15,729.00	90.79	324.600	10,883.34	4,087.75	-1,436.05	4,290.03	1.31	0.47	1.22
15,824.00	91.10	325.650	10,881.77	4,165.67	-1,490.36	4,384.21	1.15	0.33	1.11
15,919.00	91.23	325.740	10,879.84	4,244.13	-1,543.89	4,478.50	0.17	0.14	0.09
16,014.00	91.19	324.690	10,877.83	4,322.14	-1,598.08	4,572.69	1.11	-0.04	-1.11
16,108.00	91.14	324.770	10,875.92	4,398.87	-1,652.34	4,665.79	0.10	-0.05	0.09
16,203.00	91.19	324.600	10,873.99	4,476.37	-1,707.25	4,759.86	0.19	0.05	-0.18
16,298.00	90.75	323.630	10,872.38	4,553.32	-1,762.93	4,853.81	1.12	-0.46	-1.02
16,392.00	90.75	323.370	10,871.15	4,628.88	-1,818.84	4,946.62	0.28	0.00	-0.28
16,487.00	90.92	323.450	10,869.77	4,705.15	-1,875.46	5,040.39	0.20	0.18	0.08
16,582.00	91.76	323.890	10,867.54	4,781.66	-1,931.72	5,134.21	1.00	0.88	0.46
16,676.00	90.75	324.330	10,865.49	4,857.80	-1,986.81	5,227.16	1.17	-1.07	0.47
16,771.00	91.23	326.620	10,863.84	4,936.05	-2,040.65	5,321.40	2.46	0.51	2.41
16,866.00	89.96	326.100	10,862.86	5,015.13	-2,093.27	5,415.83	1.44	-1.34	-0.55
16,960.00	89.87	326.710	10,863.00	5,093.43	-2,145.28	5,509.28	0.66	-0.10	0.65
17,055.00	90.00	326.090	10,863.10	5,172.56	-2,197.85	5,603.73	0.67	0.14	-0.65
17,150.00	90.18	326.710	10,862.96	5,251.68	-2,250.42	5,698.17	0.68	0.19	0.65
17,245.00	91.10	325.830	10,861.89	5,330.69	-2,303.17	5,792.58	1.34	0.97	-0.93
17,340.00	91.36	326.180	10,859.86	5,409.43	-2,356.28	5,886.93	0.46	0.27	0.37
17,434.00	91.14	326.440	10,857.80	5,487.62	-2,408.40	5,980.34	0.36	-0.23	0.28
17,529.00	91.27	327.320	10,855.81	5,567.17	-2,460.30	6,074.85	0.94	0.14	0.93
17,624.00	91.80	326.090	10,853.26	5,646.55	-2,512.43	6,169.31	1.41	0.56	-1.29
17,719.00	91.49	324.510	10,850.53	5,724.62	-2,566.49	6,263.50	1.69	-0.33	-1.66
17,813.00	91.14	324.160	10,848.38	5,800.97	-2,621.28	6,356.50	0.53	-0.37	-0.37
17,908.00	91.23	323.280	10,846.41	5,877.53	-2,677.48	6,450.34	0.93	0.09	-0.93
18,003.00	91.19	323.450	10,844.41	5,953.75	-2,734.16	6,544.09	0.18	-0.04	0.18
18,098.00	91.05	322.490	10,842.55	6,029.57	-2,791.36	6,637.73	1.02	-0.15	-1.01
18,192.00	91.01	323.020	10,840.86	6,104.39	-2,848.24	6,730.33	0.57	-0.04	0.56
18,287.00	90.79	322.660	10,839.37	6,180.09	-2,905.62	6,823.94	0.44	-0.23	-0.38
18,382.00	91.05	325.300	10,837.84	6,256.91	-2,961.47	6,917.85	2.79	0.27	2.78
18,477.00	91.10	324.860	10,836.06	6,334.79	-3,015.84	7,012.01	0.47	0.05	-0.46
18,571.00	90.75	323.980	10,834.54	6,411.23	-3,070.53	7,105.05	1.01	-0.37	-0.94
18,666.00	90.88	324.580	10,833.19	6,488.35	-3,125.98	7,199.04	0.65	0.14	0.63
18,761.00	90.79	325.040	10,831.81	6,565.98	-3,180.73	7,293.15	0.49	-0.09	0.48

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<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Aug1919_v14

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
18,856.00	91.01	324.160	10,830.31	6,643.41	-3,235.75	7,387.21	0.95	0.23	-0.93
18,950.00	90.66	323.720	10,828.94	6,719.39	-3,291.08	7,480.13	0.60	-0.37	-0.47
19,045.00	91.10	323.890	10,827.49	6,796.05	-3,347.17	7,574.00	0.50	0.46	0.18
19,140.00	91.58	325.040	10,825.26	6,873.33	-3,402.37	7,668.02	1.31	0.51	1.21
19,234.00	91.49	324.510	10,822.75	6,950.09	-3,456.57	7,761.11	0.57	-0.10	-0.56
19,329.00	91.01	323.100	10,820.67	7,026.74	-3,512.65	7,854.97	1.57	-0.51	-1.48
19,424.00	91.71	323.280	10,818.42	7,102.77	-3,569.56	7,948.66	0.76	0.74	0.19
19,519.00	91.58	322.840	10,815.69	7,178.67	-3,626.63	8,042.31	0.48	-0.14	-0.46
19,613.00	91.23	323.190	10,813.39	7,253.74	-3,683.16	8,134.97	0.53	-0.37	0.37
19,708.00	91.49	321.790	10,811.13	7,329.07	-3,740.99	8,228.46	1.50	0.27	-1.47
19,802.00	92.07	322.660	10,808.21	7,403.33	-3,798.54	8,320.88	1.11	0.62	0.93
19,897.00	92.15	322.840	10,804.71	7,478.90	-3,856.00	8,414.42	0.21	0.08	0.19
19,991.00	92.24	322.490	10,801.11	7,553.59	-3,912.97	8,506.94	0.38	0.10	-0.37
20,086.00	92.59	323.450	10,797.11	7,629.36	-3,970.13	8,600.52	1.07	0.37	1.01
20,176.00	92.90	323.280	10,792.80	7,701.50	-4,023.77	8,689.25	0.39	0.34	-0.19
<b>Survey @ 20176.00 MD 10792.80 TVD</b>									
20,235.00	92.90	323.280	10,789.82	7,748.73	-4,059.00	8,747.39	0.00	0.00	0.00
<b>Survey projected to 20235.00 MD 10789.82 TVD</b>									

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,147.00	7,116.31	-78.97	433.86	Tie into original hole @ 7147 MD
20,176.00	10,792.80	7,701.50	-4,023.77	Survey @ 20176.00 MD 10792.80 TVD
20,235.00	10,789.82	7,748.73	-4,059.00	Survey projected to 20235.00 MD 10789.82 TVD

<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Aug1919_v14

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

<b>Site</b>	Michter				
<b>Site Position:</b>		<b>Northing:</b>	14,454,962.42 usft	<b>Latitude:</b>	39.80272253
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,697,325.45 usft	<b>Longitude:</b>	-80.79737330
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.130 °

<b>Well</b>	Michter N-07HU (H)					
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	14,455,055.88 usft	<b>Latitude:</b>	39.80297960
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	1,697,257.21 usft	<b>Longitude:</b>	-80.79761552
<b>Position Uncertainty</b>	0.00 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	1,128.00 ft	

<b>Wellbore</b>	Sidetrack 01				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	9/7/2020	-8.732	66.711	51,820.79737481

<b>Design</b>	Surveys Sidetrack 01				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	7,147.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	332.600	

<b>Survey Program</b>	<b>Date</b>	9/22/2020			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
207.00	823.00	MWD surf (Original Hole)	MWD	MWD - Standard	
892.00	2,598.00	MWD int (Original Hole)	MWD	MWD - Standard	
2,691.00	7,147.00	MWD (Original Hole)	MWD	MWD - Standard	
7,204.00	9,976.00	MWD ST1 (Sidetrack 01)	MWD	MWD - Standard	
10,034.00	20,176.00	MWD ST1 lat (Sidetrack 01)	MWD	MWD - Standard	
20,235.00	20,235.00	Projection (Sidetrack 01)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Map Northing (usft)</b>	<b>Map Easting (usft)</b>	<b>Latitude</b>	<b>Longitude</b>	
0.00	0.00	0.000	0.00	0.00	0.00	14,455,055.88	1,697,257.21	39.80297960	-80.79761552	
207.00	0.30	126.230	207.00	-0.32	0.44	14,455,055.55	1,697,257.64	39.80297872	-80.79761397	
251.00	0.33	105.590	251.00	-0.42	0.65	14,455,055.45	1,697,257.86	39.80297844	-80.79761320	
298.00	0.31	125.520	298.00	-0.53	0.89	14,455,055.34	1,697,258.09	39.80297813	-80.79761237	
341.00	0.35	112.660	341.00	-0.65	1.10	14,455,055.22	1,697,258.31	39.80297781	-80.79761160	
388.00	0.32	128.600	388.00	-0.79	1.34	14,455,055.09	1,697,258.54	39.80297743	-80.79761077	
432.00	0.29	109.880	432.00	-0.90	1.54	14,455,054.97	1,697,258.75	39.80297711	-80.79761005	

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<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Aug1919_v14

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
479.00	0.39	155.730	478.99	-1.09	1.72	14,455,054.79	1,697,258.92	39.80297660	-80.79760942
523.00	0.36	154.540	522.99	-1.35	1.84	14,455,054.52	1,697,259.04	39.80297588	-80.79760899
570.00	0.57	187.120	569.99	-1.72	1.87	14,455,054.16	1,697,259.08	39.80297488	-80.79760887
615.00	0.75	204.170	614.99	-2.21	1.72	14,455,053.67	1,697,258.93	39.80297353	-80.79760941
662.00	1.06	259.460	661.98	-2.57	1.17	14,455,053.31	1,697,258.38	39.80297255	-80.79761138
705.00	1.51	215.870	704.97	-3.10	0.45	14,455,052.78	1,697,257.65	39.80297109	-80.79761396
752.00	1.95	217.400	751.95	-4.24	-0.40	14,455,051.64	1,697,256.80	39.80296797	-80.79761699
796.00	2.15	233.120	795.93	-5.33	-1.52	14,455,050.55	1,697,255.69	39.80296499	-80.79762097
823.00	2.15	222.640	822.91	-6.00	-2.27	14,455,049.87	1,697,254.94	39.80296313	-80.79762364
892.00	2.07	221.730	891.86	-7.88	-3.97	14,455,047.99	1,697,253.24	39.80295797	-80.79762973
987.00	1.74	207.840	986.81	-10.44	-5.79	14,455,045.44	1,697,251.42	39.80295097	-80.79763621
1,082.00	1.86	207.730	1,081.76	-13.08	-7.18	14,455,042.80	1,697,250.03	39.80294373	-80.79764119
1,176.00	2.15	204.250	1,175.70	-16.04	-8.61	14,455,039.84	1,697,248.60	39.80293561	-80.79764631
1,271.00	2.10	207.650	1,270.64	-19.20	-10.15	14,455,036.67	1,697,247.06	39.80292692	-80.79765182
1,366.00	1.04	196.910	1,365.60	-21.57	-11.21	14,455,034.30	1,697,246.00	39.80292043	-80.79765561
1,461.00	0.61	159.660	1,460.59	-22.87	-11.29	14,455,033.00	1,697,245.92	39.80291686	-80.79765589
1,556.00	1.33	152.390	1,555.58	-24.32	-10.60	14,455,031.55	1,697,246.61	39.80291287	-80.79765345
1,650.00	2.07	171.930	1,649.54	-26.97	-9.85	14,455,028.91	1,697,247.35	39.80290560	-80.79765083
1,745.00	2.63	189.610	1,744.46	-30.82	-9.98	14,455,025.06	1,697,247.23	39.80289503	-80.79765130
1,840.00	2.55	210.010	1,839.36	-34.80	-11.40	14,455,021.08	1,697,245.81	39.80288411	-80.79765639
1,935.00	2.68	218.580	1,934.26	-38.36	-13.84	14,455,017.51	1,697,243.37	39.80287434	-80.79766511
2,029.00	3.15	204.070	2,028.14	-42.44	-16.26	14,455,013.44	1,697,240.94	39.80286316	-80.79767377
2,124.00	2.89	206.350	2,123.01	-46.97	-18.39	14,455,008.91	1,697,238.82	39.80285073	-80.79768139
2,219.00	2.79	217.200	2,217.89	-50.96	-20.85	14,455,004.92	1,697,236.35	39.80283979	-80.79769018
2,314.00	3.25	217.100	2,312.76	-54.94	-23.88	14,455,000.93	1,697,233.33	39.80282886	-80.79770097
2,408.00	3.05	196.810	2,406.62	-59.46	-26.21	14,454,996.41	1,697,231.00	39.80281646	-80.79770931
2,503.00	2.81	163.580	2,501.51	-64.12	-26.28	14,454,991.76	1,697,230.93	39.80280368	-80.79770960
2,598.00	3.65	123.400	2,596.37	-68.02	-23.10	14,454,987.86	1,697,234.11	39.80279296	-80.79769830
2,691.00	5.02	111.370	2,689.10	-71.13	-16.83	14,454,984.75	1,697,240.37	39.80278437	-80.79767603
2,786.00	4.43	107.040	2,783.78	-73.72	-9.46	14,454,982.16	1,697,247.75	39.80277721	-80.79764978
2,881.00	3.04	99.350	2,878.57	-75.20	-3.46	14,454,980.67	1,697,253.75	39.80277310	-80.79762845
2,976.00	2.82	93.120	2,973.45	-75.74	1.36	14,454,980.14	1,697,258.56	39.80277159	-80.79761130
3,070.00	3.46	91.070	3,067.31	-75.92	6.50	14,454,979.96	1,697,263.71	39.80277107	-80.79759298
3,168.00	4.37	90.300	3,165.08	-75.99	13.19	14,454,979.88	1,697,270.40	39.80277082	-80.79756916
3,263.00	4.68	92.950	3,259.78	-76.21	20.68	14,454,979.66	1,697,277.89	39.80277018	-80.79754249
3,358.00	4.97	91.870	3,354.44	-76.54	28.67	14,454,979.33	1,697,285.87	39.80276921	-80.79751407
3,453.00	4.34	92.320	3,449.13	-76.82	36.37	14,454,979.05	1,697,293.58	39.80276839	-80.79748664
3,547.00	4.12	95.130	3,542.87	-77.27	43.29	14,454,978.60	1,697,300.49	39.80276713	-80.79746202
3,642.00	4.18	98.820	3,637.63	-78.11	50.11	14,454,977.77	1,697,307.32	39.80276479	-80.79743774
3,737.00	4.41	99.040	3,732.36	-79.21	57.14	14,454,976.66	1,697,314.34	39.80276171	-80.79741272
3,832.00	4.19	92.920	3,827.09	-79.96	64.21	14,454,975.91	1,697,321.42	39.80275961	-80.79738755
3,926.00	4.60	87.500	3,920.82	-79.97	71.40	14,454,975.90	1,697,328.61	39.80275953	-80.79736193
4,021.00	5.35	92.800	4,015.46	-80.02	79.63	14,454,975.85	1,697,336.84	39.80275934	-80.79733263
4,116.00	5.26	97.420	4,110.05	-80.80	88.38	14,454,975.07	1,697,345.58	39.80275715	-80.79730151
4,211.00	5.32	101.590	4,204.65	-82.25	97.01	14,454,973.63	1,697,354.22	39.80275312	-80.79727078
4,305.00	5.31	99.210	4,298.24	-83.82	105.57	14,454,972.05	1,697,362.78	39.80274875	-80.79724031
4,400.00	4.60	95.050	4,392.89	-84.86	113.70	14,454,971.02	1,697,370.91	39.80274585	-80.79721136
4,495.00	5.04	89.560	4,487.55	-85.16	121.67	14,454,970.71	1,697,378.88	39.80274497	-80.79718299
4,590.00	5.47	90.070	4,582.15	-85.14	130.37	14,454,970.74	1,697,387.58	39.80274499	-80.79715201
4,684.00	6.27	93.440	4,675.66	-85.45	139.98	14,454,970.43	1,697,397.18	39.80274406	-80.79711782
4,779.00	6.04	97.330	4,770.11	-86.40	150.11	14,454,969.48	1,697,407.32	39.80274140	-80.79708174
4,874.00	5.00	97.150	4,864.67	-87.55	159.18	14,454,968.32	1,697,416.39	39.80273817	-80.79704947
4,968.00	4.46	95.850	4,958.35	-88.43	166.88	14,454,967.44	1,697,424.09	39.80273570	-80.79702206
5,063.00	5.17	89.730	5,053.01	-88.79	174.83	14,454,967.09	1,697,432.04	39.80273467	-80.79699374
5,158.00	6.23	89.480	5,147.54	-88.72	184.27	14,454,967.15	1,697,441.48	39.80273480	-80.79696014





<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Aug1919_v14

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,253.00	5.82	93.570	5,242.02	-88.98	194.23	14,454,966.90	1,697,451.44	39.80273404	-80.79692468
5,347.00	5.04	98.980	5,335.60	-89.92	203.07	14,454,965.96	1,697,460.27	39.80273140	-80.79689323
5,442.00	4.59	95.960	5,430.26	-90.96	210.97	14,454,964.91	1,697,468.18	39.80272848	-80.79686510
5,537.00	4.96	84.500	5,524.93	-90.96	218.84	14,454,964.91	1,697,476.04	39.80272843	-80.79683708
5,632.00	5.15	87.530	5,619.56	-90.39	227.18	14,454,965.49	1,697,484.39	39.80272996	-80.79680735
5,727.00	4.84	98.060	5,714.21	-90.77	235.41	14,454,965.11	1,697,492.62	39.80272887	-80.79677806
5,821.00	4.56	95.830	5,807.89	-91.70	243.06	14,454,964.17	1,697,500.26	39.80272625	-80.79675085
5,916.00	5.00	92.410	5,902.56	-92.26	250.95	14,454,963.62	1,697,508.16	39.80272467	-80.79672275
6,011.00	4.94	90.380	5,997.20	-92.46	259.18	14,454,963.42	1,697,516.38	39.80272407	-80.79669346
6,106.00	4.88	92.130	6,091.85	-92.64	267.30	14,454,963.24	1,697,524.51	39.80272353	-80.79666452
6,342.00	3.62	87.030	6,327.20	-92.62	284.78	14,454,963.25	1,697,541.98	39.80272346	-80.79660231
6,390.00	3.99	85.440	6,375.09	-92.41	287.95	14,454,963.46	1,697,545.16	39.80272402	-80.79659100
6,487.00	6.24	84.400	6,471.70	-91.63	296.57	14,454,964.24	1,697,553.77	39.80272611	-80.79656033
6,579.00	7.92	83.680	6,563.00	-90.44	307.84	14,454,965.43	1,697,565.05	39.80272930	-80.79652017
6,674.00	10.03	84.860	6,656.83	-88.98	322.59	14,454,966.89	1,697,579.80	39.80273322	-80.79646765
6,769.00	12.55	83.930	6,749.98	-87.15	341.10	14,454,968.73	1,697,598.30	39.80273814	-80.79640174
6,863.00	14.72	83.840	6,841.33	-84.79	363.13	14,454,971.09	1,697,620.33	39.80274449	-80.79632328
7,053.00	14.41	86.490	7,025.22	-80.75	410.72	14,454,975.12	1,697,667.93	39.80275528	-80.79615378
7,147.00	14.18	84.720	7,116.31	-78.97	433.86	14,454,976.90	1,697,691.07	39.80276001	-80.79607137
<b>Tie into original hole @ 7147 MD</b>									
7,204.00	13.58	92.110	7,171.65	-78.58	447.50	14,454,977.30	1,697,704.71	39.80276101	-80.79602280
7,236.00	13.80	95.010	7,202.75	-79.05	455.06	14,454,976.82	1,697,712.27	39.80275967	-80.79599590
7,331.00	15.56	97.750	7,294.64	-81.76	478.98	14,454,974.12	1,697,736.18	39.80275208	-80.79591077
7,425.00	17.01	97.210	7,384.87	-85.18	505.11	14,454,970.69	1,697,762.32	39.80274251	-80.79581775
7,520.00	16.96	97.030	7,475.72	-88.62	532.65	14,454,967.25	1,697,789.85	39.80273289	-80.79571973
7,615.00	17.31	95.890	7,566.51	-91.77	560.46	14,454,964.10	1,697,817.66	39.80272408	-80.79562074
7,710.00	16.08	94.390	7,657.50	-94.23	587.64	14,454,961.65	1,697,844.84	39.80271716	-80.79552399
7,804.00	15.64	92.460	7,747.92	-95.77	613.27	14,454,960.11	1,697,870.48	39.80271277	-80.79543271
7,899.00	16.13	91.760	7,839.30	-96.72	639.26	14,454,959.15	1,697,896.47	39.80270998	-80.79534020
7,995.00	16.48	91.050	7,931.43	-97.38	666.20	14,454,958.49	1,697,923.41	39.80270800	-80.79524428
8,089.00	15.56	91.050	8,021.78	-97.86	692.14	14,454,958.02	1,697,949.35	39.80270653	-80.79515193
8,198.00	14.15	89.910	8,127.14	-98.10	720.08	14,454,957.77	1,697,977.29	39.80270568	-80.79505245
8,278.00	14.11	89.470	8,204.72	-98.00	739.61	14,454,957.88	1,697,996.82	39.80270585	-80.79498291
8,373.00	14.15	89.640	8,296.84	-97.82	762.80	14,454,958.06	1,698,020.01	39.80270620	-80.79490034
8,467.00	14.37	89.990	8,387.95	-97.74	785.96	14,454,958.13	1,698,043.16	39.80270625	-80.79481790
8,562.00	14.55	90.440	8,479.94	-97.83	809.68	14,454,958.04	1,698,066.88	39.80270586	-80.79473344
8,657.00	15.07	92.200	8,571.78	-98.40	833.95	14,454,957.48	1,698,091.16	39.80270415	-80.79464701
8,752.00	14.94	93.420	8,663.54	-99.60	858.52	14,454,956.27	1,698,115.72	39.80270069	-80.79455956
8,847.00	15.73	92.370	8,755.16	-100.87	883.61	14,454,955.01	1,698,140.81	39.80269706	-80.79447023
8,942.00	16.25	91.220	8,846.48	-101.68	909.76	14,454,954.19	1,698,166.97	39.80269466	-80.79437711
9,036.00	16.04	91.050	8,936.78	-102.20	935.90	14,454,953.67	1,698,193.10	39.80269307	-80.79428407
9,131.00	16.66	90.170	9,027.93	-102.48	962.64	14,454,953.39	1,698,219.84	39.80269213	-80.79418886
9,226.00	16.96	90.260	9,118.87	-102.59	990.11	14,454,953.29	1,698,247.32	39.80269167	-80.79409104
9,321.00	17.09	90.520	9,209.71	-102.77	1,017.92	14,454,953.10	1,698,275.13	39.80269098	-80.79399201
9,415.00	17.18	91.140	9,299.54	-103.18	1,045.62	14,454,952.70	1,698,302.82	39.80268970	-80.79389341
9,510.00	17.71	90.700	9,390.17	-103.63	1,074.09	14,454,952.24	1,698,331.30	39.80268827	-80.79379203
9,605.00	17.36	91.050	9,480.76	-104.07	1,102.71	14,454,951.81	1,698,359.92	39.80268689	-80.79369013
9,700.00	17.79	90.350	9,571.32	-104.42	1,131.39	14,454,951.46	1,698,388.60	39.80268575	-80.79358801
9,795.00	17.84	90.700	9,661.77	-104.68	1,160.46	14,454,951.19	1,698,417.66	39.80268483	-80.79348453
9,889.00	18.06	91.490	9,751.19	-105.24	1,189.42	14,454,950.64	1,698,446.63	39.80268313	-80.79338141
9,976.00	18.10	93.860	9,833.90	-106.50	1,216.39	14,454,949.38	1,698,473.59	39.80267949	-80.79328541
10,034.00	18.63	94.060	9,888.94	-107.76	1,234.62	14,454,948.11	1,698,491.82	39.80267591	-80.79322051
10,095.00	16.83	88.610	9,947.05	-108.24	1,253.17	14,454,947.64	1,698,510.37	39.80267449	-80.79315447
10,129.00	15.86	74.020	9,979.68	-106.84	1,262.56	14,454,949.04	1,698,519.76	39.80267827	-80.79312102
10,176.00	15.29	62.770	10,024.97	-102.23	1,274.24	14,454,953.64	1,698,531.45	39.80269084	-80.79307937





Company: Tug Hill Operating LLC  
 Project: Marshall County, West Virginia  
 Site: Michter  
 Well: Michter N-07HU (H)  
 Wellbore: Sidetrack 01  
 Design: Surveys Sidetrack 01

Local Co-ordinate Reference: Well Michter N-07HU (H)  
 TVD Reference: RKB=1128+25 @ 1153.00ft (H&P 611)  
 MD Reference: RKB=1128+25 @ 1153.00ft (H&P 611)  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: DB\_Aug1919\_v14

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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,224.00	15.73	48.620	10,071.24	-95.03	1,284.76	14,454,960.84	1,698,541.96	39.80271055	-80.79304188
10,271.00	16.66	32.450	10,116.40	-85.13	1,293.16	14,454,970.74	1,698,550.36	39.80273769	-80.79301189
10,318.00	16.65	25.150	10,161.43	-73.35	1,299.63	14,454,982.53	1,698,556.84	39.80277000	-80.79298873
10,365.00	16.66	16.100	10,206.46	-60.78	1,304.37	14,454,995.10	1,698,561.57	39.80280449	-80.79297178
10,413.00	18.37	9.510	10,252.24	-46.71	1,307.52	14,455,009.17	1,698,564.73	39.80284312	-80.79296042
10,460.00	20.21	4.320	10,296.61	-31.30	1,309.36	14,455,024.57	1,698,566.56	39.80288541	-80.79295376
10,508.00	22.28	358.870	10,341.34	-13.94	1,309.80	14,455,041.94	1,698,567.01	39.80293310	-80.79295203
10,555.00	24.21	355.010	10,384.53	4.58	1,308.79	14,455,060.45	1,698,566.00	39.80298395	-80.79295549
10,603.00	26.41	352.020	10,427.92	24.95	1,306.45	14,455,080.83	1,698,563.66	39.80303993	-80.79296365
10,650.00	28.83	350.090	10,469.56	46.47	1,303.05	14,455,102.35	1,698,560.25	39.80309904	-80.79297558
10,697.00	32.83	348.680	10,509.91	70.14	1,298.60	14,455,126.01	1,698,555.80	39.80316406	-80.79299124
10,744.00	35.46	347.190	10,548.81	95.93	1,293.07	14,455,151.80	1,698,550.28	39.80323493	-80.79301070
10,792.00	37.71	345.870	10,587.35	123.75	1,286.40	14,455,179.62	1,698,543.61	39.80331136	-80.79303423
10,839.00	39.86	342.000	10,623.99	152.02	1,278.24	14,455,207.89	1,698,535.44	39.80338905	-80.79306307
10,887.00	42.10	337.170	10,660.23	181.49	1,267.23	14,455,237.36	1,698,524.44	39.80347006	-80.79310199
10,948.00	45.70	334.790	10,704.18	220.10	1,250.00	14,455,275.97	1,698,507.20	39.80357620	-80.79316305
10,996.00	47.77	332.770	10,737.08	251.45	1,234.55	14,455,307.32	1,698,491.75	39.80366239	-80.79321780
11,043.00	51.06	332.160	10,767.65	283.09	1,218.04	14,455,338.96	1,698,475.25	39.80374940	-80.79327630
11,090.00	54.49	330.310	10,796.08	315.88	1,200.03	14,455,371.76	1,698,457.23	39.80383957	-80.79334019
11,137.00	57.04	327.940	10,822.53	349.22	1,180.08	14,455,405.09	1,698,437.29	39.80393125	-80.79341093
11,185.00	60.16	327.500	10,847.53	383.85	1,158.20	14,455,439.73	1,698,415.41	39.80402649	-80.79348855
11,232.00	63.06	328.030	10,869.88	418.82	1,136.15	14,455,474.70	1,698,393.36	39.80412268	-80.79356678
11,280.00	66.71	328.030	10,890.25	455.69	1,113.14	14,455,511.56	1,698,370.35	39.80422406	-80.79364840
11,327.00	70.09	329.080	10,907.55	492.97	1,090.35	14,455,548.84	1,698,347.56	39.80432658	-80.79372923
11,375.00	73.43	329.340	10,922.57	532.12	1,067.02	14,455,588.00	1,698,324.23	39.80443426	-80.79381199
11,422.00	75.89	328.550	10,935.00	570.95	1,043.64	14,455,626.82	1,698,300.84	39.80454103	-80.79389492
11,469.00	79.45	325.650	10,945.04	609.48	1,018.70	14,455,665.36	1,698,275.90	39.80464702	-80.79398341
11,516.00	83.63	327.590	10,951.95	648.30	993.13	14,455,704.17	1,698,250.34	39.80475377	-80.79407413
11,564.00	87.93	327.760	10,955.48	688.74	967.54	14,455,744.61	1,698,224.75	39.80486500	-80.79416491
11,601.00	90.40	328.110	10,956.02	720.09	947.90	14,455,775.96	1,698,205.11	39.80495122	-80.79423458
11,659.00	91.45	327.500	10,955.09	769.16	917.00	14,455,825.04	1,698,174.21	39.80508618	-80.79434420
11,753.00	91.98	324.690	10,952.27	847.14	864.60	14,455,903.01	1,698,121.80	39.80530065	-80.79453016
11,848.00	91.80	325.120	10,949.14	924.82	810.01	14,455,980.70	1,698,067.22	39.80551434	-80.79472390
11,943.00	91.71	322.660	10,946.23	1,001.53	754.05	14,456,057.40	1,698,011.26	39.80572535	-80.79492251
12,038.00	90.79	323.450	10,944.16	1,077.44	696.97	14,456,133.31	1,697,954.18	39.80593417	-80.79512516
12,132.00	90.35	322.490	10,943.22	1,152.47	640.36	14,456,208.35	1,697,897.57	39.80614060	-80.79532610
12,227.00	90.21	322.130	10,942.76	1,227.65	582.28	14,456,283.52	1,697,839.49	39.80634741	-80.79553230
12,322.00	90.04	324.070	10,942.55	1,303.61	525.24	14,456,359.49	1,697,782.45	39.80655639	-80.79573478
12,417.00	89.91	324.950	10,942.59	1,380.96	470.09	14,456,436.84	1,697,727.30	39.80676916	-80.79593053
12,511.00	90.79	324.330	10,942.02	1,457.62	415.69	14,456,513.49	1,697,672.90	39.80698003	-80.79612360
12,606.00	90.92	325.040	10,940.60	1,535.13	360.78	14,456,591.00	1,697,617.99	39.80719323	-80.79631850
12,700.00	90.70	324.770	10,939.27	1,612.03	306.75	14,456,667.91	1,697,563.95	39.80740476	-80.79651029
12,794.00	90.52	324.950	10,938.27	1,688.90	252.64	14,456,744.77	1,697,509.85	39.80761619	-80.79670231
12,889.00	90.09	326.000	10,937.76	1,767.16	198.80	14,456,823.04	1,697,456.01	39.80783146	-80.79689339
12,984.00	90.53	324.600	10,937.25	1,845.27	144.72	14,456,901.14	1,697,401.93	39.80804629	-80.79708533
13,078.00	91.19	322.930	10,935.84	1,921.07	89.17	14,456,976.95	1,697,346.38	39.80825482	-80.79728254
13,173.00	90.92	322.490	10,934.09	1,996.64	31.62	14,457,052.51	1,697,288.83	39.80846271	-80.79748684
13,267.00	90.75	321.870	10,932.72	2,070.89	-26.01	14,457,126.76	1,697,231.20	39.80866696	-80.79769146
13,362.00	91.54	322.220	10,930.82	2,145.78	-84.43	14,457,201.65	1,697,172.78	39.80887300	-80.79789887
13,456.00	91.89	324.160	10,928.01	2,221.00	-140.72	14,457,276.87	1,697,116.49	39.80907992	-80.79809872
13,551.00	91.93	325.650	10,924.84	2,298.68	-195.31	14,457,354.55	1,697,061.90	39.80929360	-80.79829247
13,646.00	91.36	325.390	10,922.11	2,376.96	-249.06	14,457,432.83	1,697,008.14	39.80950891	-80.79848327
13,741.00	92.94	326.700	10,918.55	2,455.70	-302.09	14,457,511.57	1,696,955.12	39.80972548	-80.79867144
13,835.00	92.90	326.180	10,913.76	2,533.93	-353.98	14,457,589.80	1,696,903.23	39.80994063	-80.79885561
13,930.00	91.58	326.620	10,910.05	2,613.00	-406.51	14,457,668.87	1,696,850.69	39.81015809	-80.79904204

WV Department of Environmental Protection

08/27/2021



<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Aug1919_v14

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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,024.00	91.09	325.300	10,907.86	2,690.87	-459.12	14,457,746.74	1,696,798.09	39.81037227	-80.79922873
14,119.00	91.27	325.830	10,905.90	2,769.20	-512.82	14,457,825.07	1,696,744.38	39.81058773	-80.79941935
14,214.00	89.74	325.040	10,905.07	2,847.43	-566.72	14,457,903.30	1,696,690.49	39.81080288	-80.79961064
14,309.00	90.09	326.000	10,905.21	2,925.74	-620.50	14,457,981.61	1,696,636.71	39.81101827	-80.79980153
14,403.00	90.00	325.560	10,905.13	3,003.46	-673.36	14,458,059.33	1,696,583.85	39.81123206	-80.79998915
14,498.00	90.04	324.950	10,905.10	3,081.52	-727.50	14,458,137.39	1,696,529.71	39.81144676	-80.80018133
14,593.00	90.48	325.040	10,904.67	3,159.34	-782.00	14,458,215.21	1,696,475.21	39.81166800	-80.80037477
14,688.00	91.36	325.480	10,903.14	3,237.39	-836.13	14,458,293.26	1,696,421.08	39.81187549	-80.80056690
14,782.00	90.79	324.950	10,901.38	3,314.58	-889.75	14,458,370.45	1,696,367.46	39.81208779	-80.80075722
14,877.00	91.71	325.650	10,899.31	3,392.66	-943.81	14,458,448.53	1,696,313.40	39.81230256	-80.80094914
14,972.00	91.54	325.480	10,896.61	3,470.99	-997.51	14,458,526.85	1,696,259.70	39.81251798	-80.80113974
15,066.00	91.63	324.690	10,894.01	3,548.04	-1,051.29	14,458,603.90	1,696,205.92	39.81272991	-80.80133064
15,161.00	91.85	325.740	10,891.13	3,626.02	-1,105.46	14,458,681.89	1,696,151.75	39.81294441	-80.80152293
15,256.00	91.89	325.560	10,888.03	3,704.41	-1,159.04	14,458,760.28	1,696,098.17	39.81316002	-80.80171310
15,351.00	90.31	324.330	10,886.20	3,782.16	-1,213.59	14,458,838.03	1,696,043.62	39.81337387	-80.80190675
15,446.00	90.44	324.240	10,885.58	3,859.29	-1,269.05	14,458,915.16	1,695,988.16	39.81358603	-80.80210362
15,540.00	90.40	323.630	10,884.89	3,935.28	-1,324.38	14,458,991.14	1,695,932.83	39.81379503	-80.80230008
15,635.00	90.35	323.450	10,884.27	4,011.68	-1,380.84	14,459,067.55	1,695,876.37	39.81400520	-80.80250052
15,729.00	90.79	324.600	10,883.34	4,087.75	-1,436.05	14,459,143.61	1,695,821.16	39.81421443	-80.80269655
15,824.00	91.10	325.650	10,881.77	4,165.67	-1,490.36	14,459,221.54	1,695,766.85	39.81442876	-80.80288934
15,919.00	91.23	325.740	10,879.84	4,244.13	-1,543.89	14,459,300.00	1,695,713.32	39.81464456	-80.80307936
16,014.00	91.19	324.690	10,877.83	4,322.14	-1,598.08	14,459,378.00	1,695,659.13	39.81485910	-80.80327171
16,108.00	91.14	324.770	10,875.92	4,398.87	-1,652.34	14,459,454.73	1,695,604.87	39.81507015	-80.80346436
16,203.00	91.19	324.600	10,873.99	4,476.37	-1,707.25	14,459,532.23	1,695,549.96	39.81528332	-80.80365928
16,298.00	90.75	323.630	10,872.38	4,553.32	-1,762.93	14,459,609.19	1,695,494.28	39.81549500	-80.80385696
16,392.00	90.75	323.370	10,871.15	4,628.88	-1,818.84	14,459,684.75	1,695,438.38	39.81570283	-80.80405547
16,487.00	90.92	323.450	10,869.77	4,705.15	-1,875.46	14,459,761.02	1,695,381.75	39.81591263	-80.80425651
16,582.00	91.76	323.890	10,867.54	4,781.66	-1,931.72	14,459,837.53	1,695,325.49	39.81612309	-80.80445629
16,676.00	90.75	324.330	10,865.49	4,857.80	-1,986.81	14,459,913.66	1,695,270.40	39.81633250	-80.80465189
16,771.00	91.23	326.620	10,863.84	4,936.05	-2,040.65	14,459,991.91	1,695,216.57	39.81654773	-80.80484299
16,866.00	89.96	326.100	10,862.86	5,015.13	-2,093.27	14,460,071.00	1,695,163.94	39.81676523	-80.80502978
16,960.00	89.87	326.710	10,863.00	5,093.43	-2,145.28	14,460,149.29	1,695,111.93	39.81698057	-80.80521440
17,055.00	90.00	326.090	10,863.10	5,172.56	-2,197.85	14,460,228.42	1,695,059.36	39.81719818	-80.80540101
17,150.00	90.18	326.710	10,862.96	5,251.68	-2,250.42	14,460,307.55	1,695,006.79	39.81741580	-80.80558762
17,245.00	91.10	325.830	10,861.89	5,330.69	-2,303.17	14,460,386.55	1,694,954.04	39.81763307	-80.80577486
17,340.00	91.36	326.180	10,859.86	5,409.43	-2,356.28	14,460,465.29	1,694,900.94	39.81784965	-80.80596337
17,434.00	91.14	326.440	10,857.80	5,487.62	-2,408.40	14,460,543.49	1,694,848.81	39.81806470	-80.80614841
17,529.00	91.27	327.320	10,855.81	5,567.17	-2,460.30	14,460,623.04	1,694,796.91	39.81828346	-80.80633262
17,624.00	91.80	326.090	10,853.26	5,646.55	-2,512.43	14,460,702.41	1,694,744.78	39.81850176	-80.80651766
17,719.00	91.49	324.510	10,850.53	5,724.62	-2,566.49	14,460,780.48	1,694,690.72	39.81871648	-80.80670957
17,813.00	91.14	324.160	10,848.38	5,800.97	-2,621.28	14,460,856.83	1,694,635.93	39.81892648	-80.80690412
17,908.00	91.23	323.280	10,846.41	5,877.53	-2,677.48	14,460,933.39	1,694,579.73	39.81913708	-80.80710369
18,003.00	91.19	323.450	10,844.41	5,953.75	-2,734.16	14,461,009.61	1,694,523.06	39.81934672	-80.80730494
18,098.00	91.05	322.490	10,842.55	6,029.57	-2,791.36	14,461,085.43	1,694,465.86	39.81955529	-80.80750808
18,192.00	91.01	323.020	10,840.86	6,104.39	-2,848.24	14,461,160.25	1,694,408.97	39.81976110	-80.80771008
18,287.00	90.79	322.660	10,839.37	6,180.09	-2,905.62	14,461,235.95	1,694,351.60	39.81996933	-80.80791385
18,382.00	91.05	325.300	10,837.84	6,256.91	-2,961.47	14,461,312.77	1,694,295.74	39.82018063	-80.80811218
18,477.00	91.10	324.860	10,836.06	6,334.79	-3,015.84	14,461,390.65	1,694,241.37	39.82039483	-80.80830522
18,571.00	90.75	323.980	10,834.54	6,411.23	-3,070.53	14,461,467.09	1,694,186.69	39.82060507	-80.80849940
18,666.00	90.88	324.580	10,833.19	6,488.35	-3,125.98	14,461,544.21	1,694,131.23	39.82081719	-80.80869632
18,761.00	90.79	325.040	10,831.81	6,565.98	-3,180.73	14,461,621.84	1,694,076.49	39.82103071	-80.80889069
18,856.00	91.01	324.160	10,830.31	6,643.41	-3,235.75	14,461,699.27	1,694,021.46	39.82124366	-80.80908607
18,950.00	90.66	323.720	10,828.94	6,719.39	-3,291.08	14,461,775.25	1,693,966.14	39.82145265	-80.80928253
19,045.00	91.10	323.890	10,827.49	6,796.05	-3,347.17	14,461,851.91	1,693,910.04	39.82166350	-80.80948173
19,140.00	91.58	325.040	10,825.26	6,873.33	-3,402.37	14,461,929.19	1,693,854.85	39.82187606	-80.80967773



<b>Company:</b>	Tug Hill Operating LLC	<b>Local Co-ordinate Reference:</b>	Well Michter N-07HU (H)
<b>Project:</b>	Marshall County, West Virginia	<b>TVD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Site:</b>	Michter	<b>MD Reference:</b>	RKB=1128+25 @ 1153.00ft (H&P 611)
<b>Well:</b>	Michter N-07HU (H)	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack 01	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Sidetrack 01	<b>Database:</b>	DB_Aug1919_v14

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
19,234.00	91.49	324.510	10,822.75	6,950.09	-3,456.57	14,462,005.95	1,693,800.65	39.82208718	-80.80987018
19,329.00	91.01	323.100	10,820.67	7,026.74	-3,512.65	14,462,082.60	1,693,744.56	39.82229800	-80.81006935
19,424.00	91.71	323.280	10,818.42	7,102.77	-3,569.56	14,462,158.64	1,693,687.66	39.82250715	-80.81027144
19,519.00	91.58	322.840	10,815.69	7,178.67	-3,626.63	14,462,234.53	1,693,630.59	39.82271592	-80.81047413
19,613.00	91.23	323.190	10,813.39	7,253.74	-3,683.16	14,462,309.60	1,693,574.06	39.82292239	-80.81067491
19,708.00	91.49	321.790	10,811.13	7,329.07	-3,740.99	14,462,384.93	1,693,516.23	39.82312962	-80.81088030
19,802.00	92.07	322.660	10,808.21	7,403.33	-3,798.54	14,462,459.20	1,693,458.68	39.82333390	-80.81108472
19,897.00	92.15	322.840	10,804.71	7,478.90	-3,856.00	14,462,534.76	1,693,401.21	39.82354176	-80.81128881
19,991.00	92.24	322.490	10,801.11	7,553.59	-3,912.97	14,462,609.45	1,693,344.25	39.82374720	-80.81149115
20,086.00	92.59	323.450	10,797.11	7,629.36	-3,970.13	14,462,685.22	1,693,287.09	39.82395562	-80.81169416
20,176.00	92.90	323.280	10,792.80	7,701.50	-4,023.77	14,462,757.36	1,693,233.44	39.82415403	-80.81188468
<b>Survey @ 20176.00 MD 10792.80 TVD</b>									
20,235.00	92.90	323.280	10,789.82	7,748.73	-4,059.00	14,462,804.59	1,693,198.21	39.82428395	-80.81200980
<b>Survey projected to 20235.00 MD 10789.82 TVD</b>									

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,147.00	7,116.31	-78.97	433.86	Tie into original hole @ 7147 MD
20,176.00	10,792.80	7,701.50	-4,023.77	Survey @ 20176.00 MD 10792.80 TVD
20,235.00	10,789.82	7,748.73	-4,059.00	Survey projected to 20235.00 MD 10789.82 TVD