



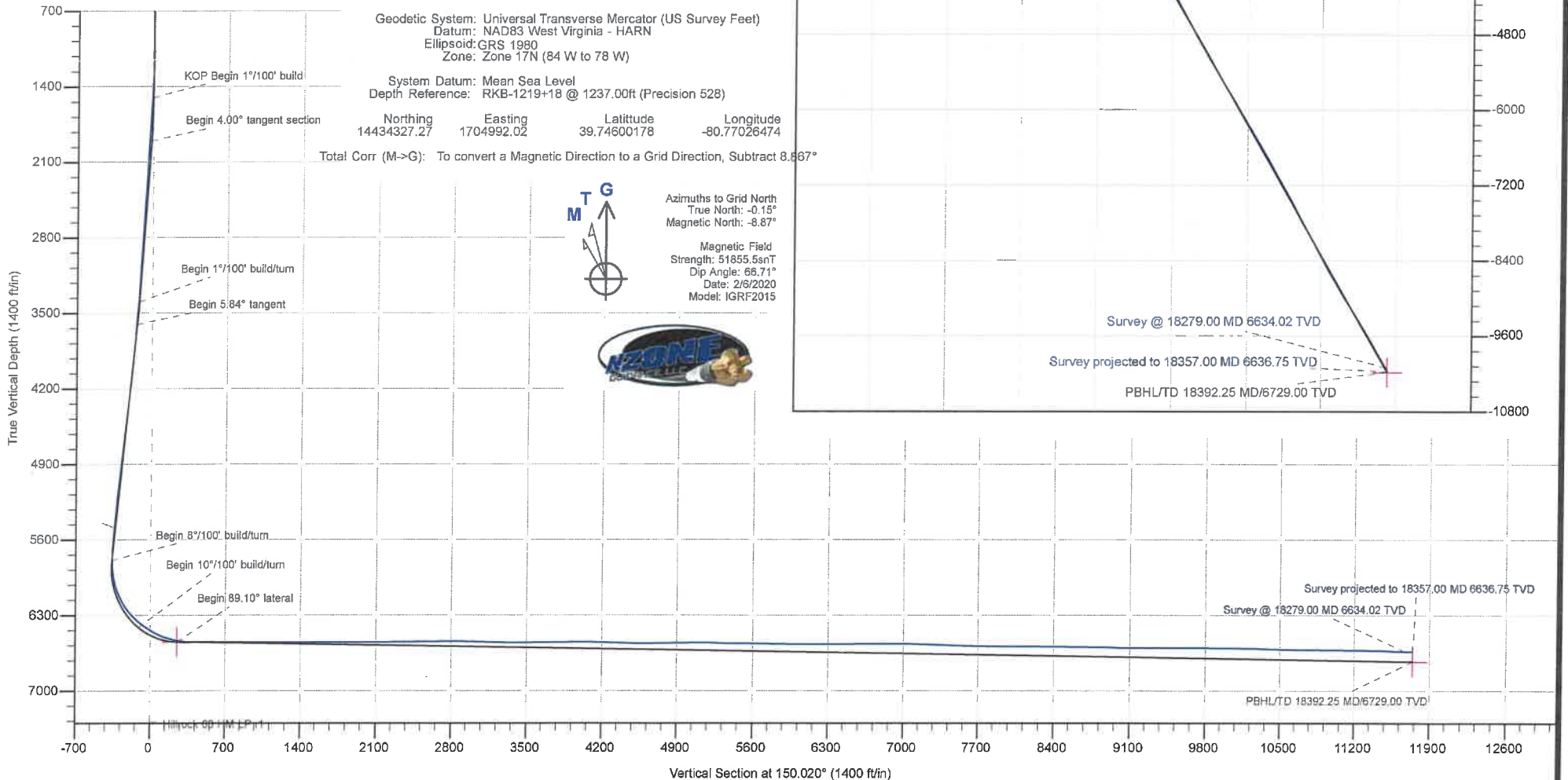
Well: Hillrock 08 HM (L)
Site: Hillrock/Simms
Project: Marshall County, West Virginia
Design: rev2
Rig: Precision 528

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
1	0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.000	0.00	
2	1500.00	0.00	0.000	1500.00	0.00	0.00	0.00	0.000	0.00	KOP Begin 1°/100' build
3	1900.00	4.00	338.000	1899.68	12.94	-5.23	1.00	338.000	-13.82	Begin 4.00° tangent section
4	3400.00	4.00	338.000	3396.02	109.96	-44.43	0.00	0.000	-117.44	Begin 1°/100' build/turn
5	3608.60	5.84	326.271	3603.85	125.53	-53.04	1.00	-34.616	-135.24	Begin 5.84° tangent
6	5808.87	5.84	326.271	5792.71	311.66	-177.31	0.00	0.000	-358.56	Begin 8°/100' build/turn
7	6506.68	50.00	150.302	6414.02	91.29	-54.75	8.00	-176.268	-106.43	Begin 10°/100' build/turn
8	6897.67	89.10	150.003	6548.00	-220.27	124.17	10.00	-0.474	252.84	Begin 89.10° lateral
9	18392.25	89.10	150.003	6729.00-10173.94	5870.23	0.00	0.000	1746.00		PBHL/TD 18392.25 MD/6729.00 TVD

ANNOTATIONS SURVEYS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Annotation
187.00	0.39	137.850	187.00	-0.47	0.43	0.62	MWD surveys
18279.00	88.00	149.690	6634.02-10103.13	5840.37	11669.75		Survey @ 18279.00 MD 6634.02 TVD
18357.00	88.00	149.690	6636.75-10170.43	5879.71	11747.70		Survey projected to 18357.00 MD 6636.75 TVD



Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Hillrock 08 HM (L)
Project:	Marshall County, West Virginia	TVD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Site:	Hillrock/Simms	MD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Well:	Hillrock 08 HM (L)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Aug1919_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 W to 78 W)		

Site	Hillrock/Simms				
Site Position:		Northing:	14,434,279.29 usft	Latitude:	39.74587001
From:	Lat/Long	Easting:	1,704,992.60 usft	Longitude:	-80.77026312
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.147 °

Well	Hillrock 08 HM (L)					
Well Position	+N/-S	0.00 ft	Northing:	14,434,327.27 usft	Latitude:	39.74600178
	+E/-W	0.00 ft	Easting:	1,704,992.02 usft	Longitude:	-80.77026474
Position Uncertainty	0.00 ft		Wellhead Elevation:	ft	Ground Level:	1,219.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/6/2020	-8.721	66.712	51,855.54784573

Design	Surveys Original Hole				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	150.020	

Survey Program	Date 2/24/2020				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
187.00	933.00	MWD surf (Original Hole)	MWD	MWD - Standard	
979.00	2,588.00	MWD int (Original Hole)	MWD	MWD - Standard	
2,682.00	18,279.00	MWD (Original Hole)	MWD	MWD - Standard	
18,357.00	18,357.00	Projection (Original Hole)	MWD	MWD - Standard	

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)	
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
187.00	0.39	137.850	187.00	-0.47	0.43	0.62	0.21	0.21	0.00	
MWD surveys										
217.00	0.01	68.350	217.00	-0.55	0.50	0.72	1.29	-1.27	-231.67	
247.00	0.55	162.500	247.00	-0.68	0.54	0.86	1.84	1.80	313.83	
277.00	0.30	116.010	277.00	-0.85	0.66	1.07	1.36	-0.83	-154.97	
307.00	0.42	143.570	307.00	-0.98	0.79	1.24	0.69	0.40	91.87	
338.00	0.33	145.660	338.00	-1.14	0.91	1.45	0.29	-0.29	6.74	

Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Hillrock/Simms
 Well: Hillrock 08 HM (L)
 Wellbore: Original Hole
 Design: Surveys Original Hole

Local Co-ordinate Reference: Well Hillrock 08 HM (L)
 TVD Reference: RKB-1219+18 @ 1237.00ft (Precision 528)
 MD Reference: RKB-1219+18 @ 1237.00ft (Precision 528)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: DB_Aug1919_v14

Survey

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)
369.00	0.48	156.340	369.00	-1.34	1.01	1.66	0.54	0.48	34.45
399.00	0.53	174.760	398.99	-1.59	1.08	1.91	0.56	0.17	61.40
429.00	0.37	110.920	428.99	-1.76	1.18	2.12	1.65	-0.53	-212.80
459.00	0.23	137.460	458.99	-1.84	1.31	2.25	0.65	-0.47	88.47
490.00	0.23	113.890	489.99	-1.91	1.41	2.36	0.30	0.00	-76.03
520.00	0.27	147.890	519.99	-2.00	1.50	2.48	0.50	0.13	113.33
567.00	0.21	182.240	566.99	-2.18	1.56	2.66	0.33	-0.13	73.09
609.00	0.31	142.040	608.99	-2.34	1.63	2.84	0.48	0.24	-95.71
656.00	0.33	192.680	655.99	-2.57	1.67	3.07	0.58	0.04	107.74
700.00	0.26	173.200	699.99	-2.80	1.66	3.25	0.28	-0.16	-44.27
747.00	0.39	177.430	746.99	-3.06	1.68	3.49	0.28	0.28	9.00
791.00	0.29	166.190	790.99	-3.32	1.71	3.73	0.27	-0.23	-25.55
838.00	0.41	152.420	837.99	-3.59	1.82	4.01	0.31	0.26	-29.30
886.00	0.50	137.290	885.99	-3.89	2.04	4.39	0.31	0.19	-31.52
933.00	0.52	135.230	932.98	-4.19	2.33	4.80	0.06	0.04	-4.38
979.00	0.49	131.990	978.98	-4.47	2.62	5.18	0.09	-0.07	-7.04
1,074.00	0.79	95.670	1,073.98	-4.81	3.57	5.95	0.52	0.32	-38.23
1,170.00	0.58	28.910	1,169.97	-4.45	4.47	6.09	0.81	-0.22	-69.54
1,264.00	1.70	326.700	1,263.95	-2.87	3.93	4.45	1.62	1.19	-66.18
1,357.00	2.63	308.710	1,356.89	-0.38	1.51	1.08	1.23	1.00	-19.34
1,451.00	2.69	316.510	1,450.79	2.57	-1.69	-3.07	0.39	0.06	8.30
1,546.00	3.39	344.790	1,545.66	6.90	-3.96	-7.95	1.72	0.74	29.77
1,642.00	3.87	354.590	1,641.47	12.86	-5.01	-13.64	0.82	0.50	10.21
1,737.00	3.86	342.570	1,736.25	19.10	-6.27	-19.68	0.85	-0.01	-12.65
1,831.00	3.85	330.210	1,830.04	24.86	-8.79	-25.93	0.88	-0.01	-13.15
1,925.00	3.47	334.880	1,923.85	30.18	-11.56	-31.92	0.51	-0.40	4.97
2,019.00	3.54	337.820	2,017.67	35.44	-13.87	-37.63	0.21	0.07	3.13
2,114.00	3.12	337.240	2,112.51	40.54	-15.97	-43.10	0.44	-0.44	-0.61
2,209.00	2.86	336.560	2,207.38	45.10	-17.92	-48.02	0.28	-0.27	-0.72
2,304.00	2.75	333.180	2,302.27	49.31	-19.89	-52.65	0.21	-0.12	-3.56
2,399.00	3.37	332.200	2,397.13	53.81	-22.22	-57.71	0.65	0.65	-1.03
2,494.00	4.68	341.990	2,491.90	59.97	-24.72	-64.29	1.55	1.38	10.31
2,588.00	3.83	336.150	2,585.64	66.48	-27.17	-71.17	1.01	-0.90	-6.21
2,682.00	3.17	319.210	2,679.46	71.32	-30.14	-76.84	1.30	-0.70	-18.02
2,776.00	3.35	312.860	2,773.31	75.16	-33.85	-82.02	0.43	0.19	-6.76
2,871.00	3.45	307.480	2,868.15	78.79	-38.16	-87.31	0.35	0.11	-5.66
2,966.00	3.66	329.730	2,962.97	83.14	-41.95	-92.98	1.46	0.22	23.42
3,061.00	3.78	344.820	3,057.77	88.79	-44.30	-99.04	1.04	0.13	15.88
3,156.00	3.83	340.880	3,152.56	94.81	-46.16	-105.19	0.28	0.05	-4.15
3,250.00	3.48	334.860	3,246.37	100.35	-48.40	-111.11	0.55	-0.37	-6.40
3,345.00	4.94	331.580	3,341.11	106.56	-51.57	-118.07	1.56	1.54	-3.45
3,439.00	4.73	329.220	3,434.78	113.45	-55.48	-126.00	0.31	-0.22	-2.51
3,533.00	4.44	326.680	3,528.48	119.82	-59.46	-133.50	0.38	-0.31	-2.70

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Project:	Marshall County, West Virginia	TVD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Site:	Hillrock/Simms	MD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Well:	Hillrock 08 HM (L)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	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)
3,628.00	5.05	330.700	3,623.15	126.54	-63.53	-141.36	0.73	0.64	4.23
3,722.00	4.80	328.880	3,716.80	133.52	-67.59	-149.42	0.31	-0.27	-1.94
3,817.00	4.21	338.220	3,811.51	140.16	-70.94	-156.85	0.99	-0.62	9.83
3,911.00	4.74	342.670	3,905.22	147.07	-73.37	-164.05	0.67	0.56	4.73
4,006.00	6.42	346.610	3,999.77	155.98	-75.77	-172.98	1.81	1.77	4.15
4,101.00	5.90	346.050	4,094.22	165.89	-78.18	-182.76	0.55	-0.55	-0.59
4,196.00	5.81	344.280	4,188.73	175.26	-80.66	-192.11	0.21	-0.09	-1.86
4,291.00	6.14	344.110	4,283.21	184.77	-83.35	-201.70	0.35	0.35	-0.18
4,386.00	6.57	343.280	4,377.63	194.86	-86.31	-211.92	0.46	0.45	-0.87
4,479.00	7.22	336.670	4,469.95	205.32	-90.15	-222.90	1.10	0.70	-7.11
4,575.00	7.07	327.000	4,565.21	215.82	-95.76	-234.79	1.26	-0.16	-10.07
4,670.00	7.35	326.950	4,659.46	225.82	-102.26	-246.70	0.29	0.29	-0.05
4,765.00	7.60	316.810	4,753.66	235.49	-109.87	-258.88	1.41	0.26	-10.67
4,859.00	5.91	316.520	4,847.00	243.53	-117.46	-269.64	1.80	-1.80	-0.31
4,955.00	5.67	321.100	4,942.51	250.81	-123.84	-279.13	0.54	-0.25	4.77
5,049.00	5.86	324.720	5,036.04	258.34	-129.52	-288.50	0.44	0.20	3.85
5,144.00	5.94	326.010	5,130.53	266.38	-135.07	-298.23	0.16	0.08	1.36
5,238.00	6.34	327.720	5,223.99	274.80	-140.56	-308.27	0.47	0.43	1.82
5,333.00	5.36	320.160	5,318.50	282.64	-146.21	-317.88	1.31	-1.03	-7.96
5,429.00	5.16	321.800	5,414.10	289.47	-151.75	-326.57	0.26	-0.21	1.71
5,524.00	4.99	324.060	5,508.72	296.18	-156.82	-334.91	0.28	-0.18	2.38
5,619.00	5.27	325.720	5,603.34	303.13	-161.70	-343.37	0.33	0.29	1.75
5,642.00	5.36	325.790	5,626.24	304.89	-162.90	-345.49	0.39	0.39	0.30
5,656.00	5.89	325.290	5,640.18	306.02	-163.67	-346.86	3.80	3.79	-3.57
5,752.00	3.96	337.770	5,735.82	313.14	-167.73	-355.06	2.29	-2.01	13.00
5,799.00	2.02	60.390	5,782.77	315.05	-167.63	-356.66	8.95	-4.13	175.79
5,847.00	5.14	96.870	5,830.68	315.21	-164.76	-355.36	7.74	6.50	76.00
5,894.00	7.08	107.500	5,877.41	314.09	-159.90	-351.97	4.76	4.13	22.62
5,940.00	10.20	109.170	5,922.88	311.90	-153.35	-346.79	6.80	6.78	3.63
5,987.00	12.62	122.880	5,968.96	307.74	-145.11	-339.08	7.70	5.15	29.17
6,036.00	15.78	135.270	6,016.46	300.10	-135.92	-327.86	8.91	6.45	25.29
6,083.00	19.30	151.180	6,061.30	288.74	-127.67	-313.91	12.59	7.49	33.85
6,131.00	23.96	151.180	6,105.91	273.25	-119.14	-296.22	9.71	9.71	0.00
6,178.00	27.91	148.900	6,148.17	255.46	-108.85	-275.67	8.67	8.40	-4.85
6,225.00	30.81	149.690	6,189.12	235.64	-97.10	-252.63	6.22	6.17	1.68
6,272.00	33.76	152.590	6,228.86	213.65	-85.01	-227.54	7.09	6.28	6.17
6,320.00	37.63	157.070	6,267.84	188.30	-73.15	-199.66	9.72	8.06	9.33
6,367.00	42.77	159.180	6,303.73	160.15	-61.88	-169.65	11.31	10.94	4.49
6,415.00	48.18	157.860	6,337.37	128.33	-49.34	-135.81	11.44	11.27	-2.75
6,462.00	52.53	156.460	6,367.35	94.99	-35.28	-99.91	9.53	9.26	-2.98
6,510.00	56.40	155.660	6,395.25	59.30	-19.43	-61.07	8.18	8.06	-1.67
6,557.00	58.59	155.140	6,420.50	23.26	-2.93	-21.61	4.75	4.66	-1.11
6,605.00	58.42	154.350	6,445.58	-13.75	14.54	19.17	1.45	-0.35	-1.65
6,652.00	61.93	152.850	6,468.95	-50.26	32.67	59.86	7.96	7.47	-3.19

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Well:	Hillrock 08 HM (L)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	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)
6,700.00	65.89	150.390	6,490.06	-88.17	53.17	102.94	9.45	8.25	-5.13
6,747.00	71.47	151.270	6,507.14	-126.39	74.49	146.70	12.00	11.87	1.87
6,795.00	75.56	152.150	6,520.76	-166.91	96.30	192.70	8.70	8.52	1.83
6,842.00	78.68	151.620	6,531.23	-207.32	117.89	238.49	6.73	6.64	-1.13
6,890.00	82.59	150.830	6,539.04	-248.82	140.68	285.83	8.31	8.15	-1.65
6,937.00	85.32	149.950	6,543.99	-289.45	163.78	332.56	6.10	5.81	-1.87
6,985.00	89.45	147.580	6,546.18	-330.44	188.63	380.48	9.92	8.60	-4.94
7,080.00	89.49	146.960	6,547.06	-410.35	240.00	475.37	0.65	0.04	-0.65
7,175.00	89.89	149.950	6,547.58	-491.30	289.69	570.32	3.18	0.42	3.15
7,270.00	89.54	150.220	6,548.05	-573.64	337.07	665.32	0.47	-0.37	0.28
7,365.00	89.49	149.600	6,548.85	-655.84	384.70	760.32	0.65	-0.05	-0.65
7,460.00	90.20	152.410	6,549.11	-738.92	430.74	855.29	3.05	0.75	2.96
7,555.00	89.63	152.150	6,549.25	-823.02	474.93	950.22	0.66	-0.60	-0.27
7,650.00	89.05	151.010	6,550.34	-906.56	520.14	1,045.18	1.35	-0.61	-1.20
7,745.00	90.64	150.830	6,550.60	-989.58	566.31	1,140.16	1.68	1.67	-0.19
7,840.00	90.15	150.130	6,549.95	-1,072.25	613.12	1,235.15	0.90	-0.52	-0.74
7,934.00	89.89	150.920	6,549.91	-1,154.08	659.37	1,329.15	0.88	-0.28	0.84
8,029.00	90.15	151.530	6,549.88	-1,237.35	705.10	1,424.13	0.70	0.27	0.64
8,124.00	90.20	151.880	6,549.59	-1,321.00	750.13	1,519.09	0.37	0.05	0.37
8,218.00	91.12	150.040	6,548.51	-1,403.17	795.75	1,613.06	2.19	0.98	-1.96
8,312.00	90.46	149.950	6,547.21	-1,484.56	842.76	1,707.05	0.71	-0.70	-0.10
8,407.00	89.14	149.950	6,547.54	-1,566.79	890.33	1,802.05	1.39	-1.39	0.00
8,502.00	89.93	148.720	6,548.31	-1,648.50	938.78	1,897.04	1.54	0.83	-1.29
8,597.00	89.45	148.550	6,548.83	-1,729.62	988.22	1,992.01	0.54	-0.51	-0.18
8,692.00	90.51	147.580	6,548.86	-1,810.24	1,038.47	2,086.95	1.51	1.12	-1.02
8,787.00	90.24	146.700	6,548.24	-1,890.04	1,090.01	2,181.83	0.97	-0.28	-0.93
8,882.00	91.16	148.020	6,547.08	-1,970.03	1,141.25	2,276.71	1.69	0.97	1.39
8,977.00	90.68	148.190	6,545.55	-2,050.67	1,191.44	2,371.65	0.54	-0.51	0.18
9,072.00	89.71	148.280	6,545.23	-2,131.44	1,241.45	2,466.60	1.03	-1.02	0.09
9,166.00	91.08	150.220	6,544.58	-2,212.22	1,289.50	2,560.58	2.53	1.46	2.06
9,261.00	91.30	151.010	6,542.61	-2,294.98	1,336.11	2,655.56	0.86	0.23	0.83
9,356.00	90.07	150.390	6,541.47	-2,377.81	1,382.59	2,750.54	1.45	-1.29	-0.65
9,451.00	90.29	151.010	6,541.17	-2,460.66	1,429.09	2,845.53	0.69	0.23	0.65
9,546.00	88.40	151.970	6,542.26	-2,544.13	1,474.42	2,940.49	2.23	-1.99	1.01
9,641.00	87.47	152.060	6,545.68	-2,627.97	1,518.97	3,035.37	0.98	-0.98	0.09
9,736.00	87.78	150.220	6,549.62	-2,711.09	1,564.79	3,130.27	1.96	0.33	-1.94
9,831.00	90.15	149.250	6,551.34	-2,793.12	1,612.65	3,225.24	2.70	2.49	-1.02
9,926.00	89.80	148.720	6,551.38	-2,874.54	1,661.60	3,320.23	0.67	-0.37	-0.56
10,021.00	89.27	148.280	6,552.15	-2,955.54	1,711.24	3,415.19	0.73	-0.56	-0.46
10,115.00	88.31	148.630	6,554.13	-3,035.63	1,760.41	3,509.13	1.09	-1.02	0.37
10,209.00	91.69	149.860	6,554.13	-3,116.40	1,808.47	3,603.11	3.83	3.60	1.31
10,304.00	91.91	149.780	6,551.15	-3,198.48	1,856.20	3,698.06	0.25	0.23	-0.08
10,398.00	91.69	149.690	6,548.20	-3,279.63	1,903.55	3,792.01	0.25	-0.23	-0.10

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Hillrock 08 HM (L)
Project:	Marshall County, West Virginia	TVD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Site:	Hillrock/Simms	MD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Well:	Hillrock 08 HM (L)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Aug1919_v14

Survey

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)
10,493.00	90.33	149.950	6,546.52	-3,361.73	1,951.30	3,886.99	1.46	-1.43	0.27
10,588.00	90.07	151.710	6,546.19	-3,444.68	1,997.60	3,981.98	1.87	-0.27	1.85
10,683.00	89.71	150.570	6,546.37	-3,527.88	2,043.46	4,076.96	1.26	-0.38	-1.20
10,778.00	88.44	149.690	6,547.91	-3,610.25	2,090.76	4,171.95	1.63	-1.34	-0.93
10,873.00	88.18	148.630	6,550.71	-3,691.78	2,139.44	4,266.89	1.15	-0.27	-1.12
10,968.00	88.22	149.250	6,553.69	-3,773.12	2,188.43	4,361.83	0.65	0.04	0.65
11,063.00	87.38	148.900	6,557.34	-3,854.55	2,237.22	4,456.74	0.96	-0.88	-0.37
11,157.00	89.49	149.160	6,559.91	-3,935.12	2,285.57	4,550.69	2.26	2.24	0.28
11,252.00	89.89	148.110	6,560.42	-4,016.23	2,335.01	4,645.66	1.18	0.42	-1.11
11,346.00	90.51	149.340	6,560.09	-4,096.57	2,383.81	4,739.63	1.47	0.66	1.31
11,441.00	91.56	149.780	6,558.38	-4,178.46	2,431.93	4,834.61	1.20	1.11	0.46
11,536.00	91.38	151.970	6,555.94	-4,261.42	2,478.15	4,929.56	2.31	-0.19	2.31
11,630.00	90.59	151.970	6,554.32	-4,344.38	2,522.32	5,023.50	0.84	-0.84	0.00
11,725.00	89.32	152.590	6,554.40	-4,428.47	2,566.51	5,118.42	1.49	-1.34	0.65
11,821.00	88.75	152.060	6,556.02	-4,513.48	2,611.09	5,214.33	0.81	-0.59	-0.55
11,916.00	88.40	152.940	6,558.38	-4,597.72	2,654.94	5,309.21	1.00	-0.37	0.93
12,010.00	89.67	151.090	6,559.96	-4,680.71	2,699.04	5,403.13	2.39	1.35	-1.97
12,105.00	88.88	151.270	6,561.16	-4,763.93	2,744.83	5,498.10	0.85	-0.83	0.19
12,200.00	88.26	151.180	6,563.53	-4,847.18	2,790.55	5,593.05	0.66	-0.65	-0.09
12,295.00	89.80	150.300	6,565.14	-4,930.04	2,836.97	5,688.03	1.87	1.62	-0.93
12,390.00	88.75	149.950	6,566.34	-5,012.41	2,884.29	5,783.02	1.17	-1.11	-0.37
12,485.00	90.51	150.220	6,566.96	-5,094.74	2,931.66	5,878.01	1.87	1.85	0.28
12,579.00	89.45	150.390	6,566.99	-5,176.40	2,978.23	5,972.01	1.14	-1.13	0.18
12,674.00	89.27	150.130	6,568.05	-5,258.88	3,025.35	6,067.00	0.33	-0.19	-0.27
12,769.00	90.59	149.420	6,568.17	-5,340.96	3,073.17	6,162.00	1.58	1.39	-0.75
12,864.00	90.15	148.550	6,567.55	-5,422.38	3,122.12	6,256.98	1.03	-0.46	-0.92
12,960.00	89.67	148.550	6,567.71	-5,504.28	3,172.21	6,352.95	0.50	-0.50	0.00
13,054.00	90.07	149.420	6,567.92	-5,584.84	3,220.64	6,446.93	1.02	0.43	0.93
13,149.00	91.43	148.900	6,566.67	-5,666.39	3,269.34	6,541.91	1.53	1.43	-0.55
13,244.00	90.77	149.340	6,564.85	-5,747.91	3,318.09	6,636.88	0.83	-0.69	0.46
13,340.00	90.15	149.070	6,564.08	-5,830.37	3,367.23	6,732.87	0.70	-0.65	-0.28
13,435.00	90.24	148.810	6,563.76	-5,911.75	3,416.25	6,827.85	0.29	0.09	-0.27
13,530.00	89.76	149.070	6,563.76	-5,993.13	3,465.26	6,922.83	0.57	-0.51	0.27
13,625.00	89.58	149.250	6,564.30	-6,074.70	3,513.96	7,017.82	0.27	-0.19	0.19
13,720.00	88.13	149.860	6,566.20	-6,156.58	3,562.09	7,112.79	1.66	-1.53	0.64
13,815.00	87.78	149.340	6,569.59	-6,238.46	3,610.13	7,207.73	0.66	-0.37	-0.55
13,909.00	87.38	148.980	6,573.56	-6,319.10	3,658.28	7,301.64	0.57	-0.43	-0.38
14,004.00	88.18	149.070	6,577.24	-6,400.49	3,707.13	7,396.55	0.85	0.84	0.09
14,100.00	87.12	149.160	6,581.18	-6,482.81	3,756.37	7,492.46	1.11	-1.10	0.09
14,193.00	89.54	148.810	6,583.89	-6,562.47	3,804.26	7,585.39	2.63	2.60	-0.38
14,288.00	88.88	148.720	6,585.20	-6,643.69	3,853.52	7,680.36	0.70	-0.69	-0.09
14,383.00	89.89	150.040	6,586.22	-6,725.44	3,901.90	7,775.35	1.75	1.06	1.39
14,478.00	88.79	150.220	6,587.31	-6,807.81	3,949.21	7,870.34	1.17	-1.16	0.19

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Hillrock 08 HM (L)
Project:	Marshall County, West Virginia	TVD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Site:	Hillrock/Simms	MD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Well:	Hillrock 08 HM (L)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Aug1919_v14

Survey

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)
14,573.00	90.11	151.010	6,588.22	-6,890.58	3,995.82	7,965.33	1.62	1.39	0.83
14,669.00	89.14	150.920	6,588.85	-6,974.52	4,042.42	8,061.31	1.01	-1.01	-0.09
14,764.00	90.81	150.650	6,588.89	-7,057.43	4,088.78	8,156.30	1.78	1.76	-0.28
14,859.00	89.71	150.220	6,588.46	-7,140.06	4,135.65	8,251.29	1.24	-1.16	-0.45
14,953.00	89.36	149.510	6,589.23	-7,221.35	4,182.84	8,345.29	0.84	-0.37	-0.76
15,048.00	88.57	149.510	6,590.94	-7,303.20	4,231.04	8,440.27	0.83	-0.83	0.00
15,143.00	90.51	150.740	6,591.70	-7,385.57	4,278.35	8,535.26	2.42	2.04	1.29
15,237.00	89.93	151.010	6,591.34	-7,467.68	4,324.10	8,629.25	0.68	-0.62	0.29
15,332.00	89.32	151.180	6,591.96	-7,550.84	4,370.02	8,724.23	0.67	-0.64	0.18
15,427.00	88.40	151.530	6,593.85	-7,634.20	4,415.55	8,819.18	1.04	-0.97	0.37
15,522.00	88.04	152.150	6,596.81	-7,717.91	4,460.37	8,914.09	0.75	-0.38	0.65
15,617.00	87.08	152.240	6,600.85	-7,801.87	4,504.64	9,008.93	1.01	-1.01	0.09
15,711.00	89.05	150.740	6,604.02	-7,884.41	4,549.48	9,102.84	2.63	2.10	-1.60
15,807.00	90.68	150.480	6,604.25	-7,968.06	4,596.59	9,198.83	1.72	1.70	-0.27
15,902.00	89.98	151.090	6,603.70	-8,050.97	4,642.96	9,293.82	0.98	-0.74	0.64
15,996.00	89.93	151.270	6,603.78	-8,133.33	4,688.27	9,387.80	0.20	-0.05	0.19
16,091.00	89.14	151.450	6,604.55	-8,216.70	4,733.80	9,482.77	0.85	-0.83	0.19
16,186.00	90.81	151.710	6,604.59	-8,300.25	4,779.01	9,577.73	1.78	1.76	0.27
16,281.00	90.11	151.010	6,603.83	-8,383.62	4,824.54	9,672.70	1.04	-0.74	-0.74
16,376.00	89.32	150.390	6,604.30	-8,466.46	4,871.04	9,767.69	1.06	-0.83	-0.65
16,472.00	90.73	149.780	6,604.26	-8,549.67	4,918.91	9,863.69	1.60	1.47	-0.64
16,567.00	90.64	150.220	6,603.12	-8,631.94	4,966.41	9,958.68	0.47	-0.09	0.46
16,662.00	89.89	150.300	6,602.68	-8,714.42	5,013.53	10,053.68	0.79	-0.79	0.08
16,756.00	88.97	150.390	6,603.62	-8,796.11	5,060.04	10,147.67	0.98	-0.98	0.10
16,849.00	88.18	149.690	6,605.93	-8,876.65	5,106.47	10,240.64	1.13	-0.85	-0.75
16,945.00	86.81	149.340	6,610.13	-8,959.30	5,155.12	10,336.55	1.47	-1.43	-0.36
17,039.00	88.35	148.460	6,614.10	-9,039.71	5,203.63	10,430.44	1.89	1.64	-0.94
17,134.00	89.76	147.050	6,615.66	-9,120.05	5,254.31	10,525.35	2.10	1.48	-1.48
17,229.00	89.10	147.750	6,616.61	-9,200.08	5,305.49	10,620.24	1.01	-0.69	0.74
17,324.00	88.62	146.700	6,618.50	-9,279.93	5,356.90	10,715.11	1.22	-0.51	-1.11
17,419.00	89.63	147.750	6,619.95	-9,359.80	5,408.32	10,809.98	1.53	1.06	1.11
17,514.00	90.55	150.130	6,619.80	-9,441.17	5,457.33	10,904.96	2.69	0.97	2.51
17,609.00	90.02	149.950	6,619.33	-9,523.48	5,504.78	10,999.96	0.59	-0.56	-0.19
17,704.00	89.32	149.780	6,619.87	-9,605.64	5,552.47	11,094.96	0.76	-0.74	-0.18
17,799.00	88.92	150.480	6,621.33	-9,688.00	5,599.78	11,189.94	0.85	-0.42	0.74
17,894.00	88.18	150.740	6,623.74	-9,770.75	5,646.38	11,284.91	0.83	-0.78	0.27
17,989.00	89.19	149.600	6,625.92	-9,853.14	5,693.62	11,379.88	1.60	1.06	-1.20
18,084.00	88.62	149.420	6,627.73	-9,934.99	5,741.82	11,474.86	0.63	-0.60	-0.19
18,179.00	88.00	149.690	6,630.53	-10,016.85	5,789.93	11,569.81	0.71	-0.65	0.28
18,279.00	88.00	149.690	6,634.02	-10,103.13	5,840.37	11,669.75	0.00	0.00	0.00
Survey @ 18279.00 MD 6634.02 TVD									
18,357.00	88.00	149.690	6,636.75	-10,170.43	5,879.71	11,747.70	0.00	0.00	0.00
Survey projected to 18357.00 MD 6636.75 TVD									

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Hillrock 08 HM (L)
Project:	Marshall County, West Virginia	TVD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Site:	Hillrock/Simms	MD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Well:	Hillrock 08 HM (L)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Aug1919_v14

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
187.00	187.00	-0.47	0.43	MWD surveys
18,279.00	6,634.02	-10,103.13	5,840.37	Survey @ 18279.00 MD 6634.02 TVD
18,357.00	6,636.75	-10,170.43	5,879.71	Survey projected to 18357.00 MD 6636.75 TVD

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Hillrock 08 HM (L)
Project:	Marshall County, West Virginia	TVD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Site:	Hillrock/Simms	MD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Well:	Hillrock 08 HM (L)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Aug1919_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 W to 78 W)		

Site	Hillrock/Simms				
Site Position:		Northing:	14,434,279.29 usft	Latitude:	39.74587001
From:	Lat/Long	Easting:	1,704,992.60 usft	Longitude:	-80.77026312
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.147 °

Well	Hillrock 08 HM (L)					
Well Position	+N/-S	0.00 ft	Northing:	14,434,327.27 usft	Latitude:	39.74600178
	+E/-W	0.00 ft	Easting:	1,704,992.02 usft	Longitude:	-80.77026474
Position Uncertainty	0.00 ft		Wellhead Elevation:	ft	Ground Level:	1,219.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/6/2020	-8.721	66.712	51,855.54784573

Design	Surveys Original Hole				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	150.020	

Survey Program	Date	2/24/2020			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
187.00	933.00	MWD surf (Original Hole)	MWD	MWD - Standard	
979.00	2,588.00	MWD int (Original Hole)	MWD	MWD - Standard	
2,682.00	18,279.00	MWD (Original Hole)	MWD	MWD - Standard	
18,357.00	18,357.00	Projection (Original Hole)	MWD	MWD - Standard	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.000	0.00	0.00	0.00	14,434,327.27	1,704,992.02	39.74600178	-80.77026474	
187.00	0.39	137.850	187.00	-0.47	0.43	14,434,326.80	1,704,992.45	39.74600048	-80.77026323	
MWD surveys										
217.00	0.01	68.350	217.00	-0.55	0.50	14,434,326.72	1,704,992.52	39.74600028	-80.77026297	
247.00	0.55	162.500	247.00	-0.68	0.54	14,434,326.59	1,704,992.56	39.74599990	-80.77026281	
277.00	0.30	116.010	277.00	-0.85	0.66	14,434,326.42	1,704,992.68	39.74599943	-80.77026241	
307.00	0.42	143.570	307.00	-0.98	0.79	14,434,326.29	1,704,992.81	39.74599909	-80.77026193	
338.00	0.33	145.660	338.00	-1.14	0.91	14,434,326.13	1,704,992.93	39.74599864	-80.77026151	
369.00	0.48	156.340	369.00	-1.34	1.01	14,434,325.93	1,704,993.03	39.74599811	-80.77026115	

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Hillrock 08 HM (L)
Project:	Marshall County, West Virginia	TVD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Site:	Hillrock/Simms	MD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Well:	Hillrock 08 HM (L)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Aug1919_v14

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
399.00	0.53	174.760	398.99	-1.59	1.08	14,434,325.68	1,704,993.10	39.74599741	-80.77026092
429.00	0.37	110.920	428.99	-1.76	1.18	14,434,325.51	1,704,993.20	39.74599694	-80.77026056
459.00	0.23	137.460	458.99	-1.84	1.31	14,434,325.43	1,704,993.33	39.74599672	-80.77026009
490.00	0.23	113.890	489.99	-1.91	1.41	14,434,325.36	1,704,993.43	39.74599652	-80.77025974
520.00	0.27	147.890	519.99	-2.00	1.50	14,434,325.27	1,704,993.52	39.74599629	-80.77025941
567.00	0.21	182.240	566.99	-2.18	1.56	14,434,325.09	1,704,993.58	39.74599580	-80.77025922
609.00	0.31	142.040	608.99	-2.34	1.63	14,434,324.93	1,704,993.64	39.74599534	-80.77025898
656.00	0.33	192.680	655.99	-2.57	1.67	14,434,324.70	1,704,993.69	39.74599470	-80.77025881
700.00	0.26	173.200	699.99	-2.80	1.66	14,434,324.47	1,704,993.68	39.74599409	-80.77025887
747.00	0.39	177.430	746.99	-3.06	1.68	14,434,324.21	1,704,993.70	39.74599336	-80.77025880
791.00	0.29	166.190	790.99	-3.32	1.71	14,434,323.95	1,704,993.73	39.74599265	-80.77025868
838.00	0.41	152.420	837.99	-3.59	1.82	14,434,323.68	1,704,993.84	39.74599192	-80.77025831
886.00	0.50	137.290	885.99	-3.89	2.04	14,434,323.38	1,704,994.06	39.74599108	-80.77025752
933.00	0.52	135.230	932.98	-4.19	2.33	14,434,323.08	1,704,994.35	39.74599025	-80.77025650
979.00	0.49	131.990	978.98	-4.47	2.62	14,434,322.80	1,704,994.64	39.74598948	-80.77025546
1,074.00	0.79	95.670	1,073.98	-4.81	3.57	14,434,322.46	1,704,995.59	39.74598855	-80.77025207
1,170.00	0.58	28.910	1,169.97	-4.45	4.47	14,434,322.82	1,704,996.49	39.74598953	-80.77024889
1,264.00	1.70	326.700	1,263.95	-2.87	3.93	14,434,324.40	1,704,995.95	39.74599388	-80.77025078
1,357.00	2.63	308.710	1,356.89	-0.38	1.51	14,434,326.89	1,704,993.53	39.74600073	-80.77025937
1,451.00	2.69	316.510	1,450.79	2.57	-1.69	14,434,329.84	1,704,990.33	39.74600885	-80.77027073
1,546.00	3.39	344.790	1,545.66	6.90	-3.96	14,434,334.17	1,704,988.06	39.74602075	-80.77027877
1,642.00	3.87	354.590	1,641.47	12.86	-5.01	14,434,340.13	1,704,987.01	39.74603714	-80.77028245
1,737.00	3.86	342.570	1,736.25	19.10	-6.27	14,434,346.37	1,704,985.75	39.74605429	-80.77028688
1,831.00	3.85	330.210	1,830.04	24.86	-8.79	14,434,352.13	1,704,983.23	39.74607012	-80.77029578
1,925.00	3.47	334.880	1,923.85	30.18	-11.56	14,434,357.45	1,704,980.46	39.74608473	-80.77030560
2,019.00	3.54	337.820	2,017.67	35.44	-13.87	14,434,362.71	1,704,978.15	39.74609920	-80.77031375
2,114.00	3.12	337.240	2,112.51	40.54	-15.97	14,434,367.81	1,704,976.05	39.74611322	-80.77032120
2,209.00	2.86	336.560	2,207.38	45.10	-17.92	14,434,372.37	1,704,974.10	39.74612576	-80.77032807
2,304.00	2.75	333.180	2,302.27	49.31	-19.89	14,434,376.57	1,704,972.13	39.74613733	-80.77033504
2,399.00	3.37	332.200	2,397.13	53.81	-22.22	14,434,381.08	1,704,969.80	39.74614971	-80.77034329
2,494.00	4.68	341.990	2,491.90	59.97	-24.72	14,434,387.23	1,704,967.30	39.74616664	-80.77035213
2,588.00	3.83	336.150	2,585.64	66.48	-27.17	14,434,393.75	1,704,964.85	39.74618456	-80.77036081
2,682.00	3.17	319.210	2,679.46	71.32	-30.14	14,434,398.59	1,704,961.88	39.74619787	-80.77037132
2,776.00	3.35	312.860	2,773.31	75.16	-33.85	14,434,402.43	1,704,958.17	39.74620843	-80.77038449
2,871.00	3.45	307.480	2,868.15	78.79	-38.16	14,434,406.06	1,704,953.86	39.74621842	-80.77039977
2,966.00	3.66	329.730	2,962.97	83.14	-41.95	14,434,410.41	1,704,950.07	39.74623041	-80.77041323
3,061.00	3.78	344.820	3,057.77	88.79	-44.30	14,434,416.05	1,704,947.72	39.74624592	-80.77042154
3,156.00	3.83	340.880	3,152.56	94.81	-46.16	14,434,422.07	1,704,945.86	39.74626247	-80.77042810
3,250.00	3.48	334.860	3,246.37	100.35	-48.40	14,434,427.62	1,704,943.62	39.74627772	-80.77043602
3,345.00	4.94	331.580	3,341.11	106.56	-51.57	14,434,433.83	1,704,940.45	39.74629479	-80.77044724
3,439.00	4.73	329.220	3,434.78	113.45	-55.48	14,434,440.72	1,704,936.54	39.74631374	-80.77046109
3,533.00	4.44	326.680	3,528.48	119.82	-59.46	14,434,447.09	1,704,932.56	39.74633126	-80.77047520
3,628.00	5.05	330.700	3,623.15	126.54	-63.53	14,434,453.81	1,704,928.49	39.74634975	-80.77048960
3,722.00	4.80	328.880	3,716.80	133.52	-67.59	14,434,460.78	1,704,924.43	39.74636893	-80.77050397
3,817.00	4.21	338.220	3,811.51	140.16	-70.94	14,434,467.43	1,704,921.08	39.74638719	-80.77051583
3,911.00	4.74	342.670	3,905.22	147.07	-73.37	14,434,474.34	1,704,918.65	39.74640619	-80.77052443
4,006.00	6.42	346.610	3,999.77	155.98	-75.77	14,434,483.25	1,704,916.25	39.74643069	-80.77053289
4,101.00	5.90	346.050	4,094.22	165.89	-78.18	14,434,493.16	1,704,913.84	39.74645791	-80.77054136
4,196.00	5.81	344.280	4,188.73	175.26	-80.66	14,434,502.52	1,704,911.36	39.74648365	-80.77055010
4,291.00	6.14	344.110	4,283.21	184.77	-83.35	14,434,512.04	1,704,908.67	39.74650980	-80.77055959
4,386.00	6.57	343.280	4,377.63	194.86	-86.31	14,434,522.13	1,704,905.71	39.74653754	-80.77057001
4,479.00	7.22	336.670	4,469.95	205.32	-90.15	14,434,532.59	1,704,901.87	39.74656629	-80.77058360
4,575.00	7.07	327.000	4,565.21	215.82	-95.76	14,434,543.09	1,704,896.26	39.74659515	-80.77060345
4,670.00	7.35	326.950	4,659.46	225.82	-102.26	14,434,553.08	1,704,889.76	39.74662265	-80.77062648
4,765.00	7.60	316.810	4,753.66	235.49	-109.87	14,434,562.76	1,704,882.15	39.74664928	-80.77065348

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Hillrock 08 HM (L)
Project:	Marshall County, West Virginia	TVD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Site:	Hillrock/Simms	MD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Well:	Hillrock 08 HM (L)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Aug1919_v14

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,859.00	5.91	316.520	4,847.00	243.53	-117.46	14,434,570.80	1,704,874.56	39.74667142	-80.77068039
4,955.00	5.67	321.100	4,942.51	250.81	-123.84	14,434,578.08	1,704,868.18	39.74669145	-80.77070302
5,049.00	5.86	324.720	5,036.04	258.34	-129.52	14,434,585.61	1,704,862.50	39.74671217	-80.77072318
5,144.00	5.94	326.010	5,130.53	266.38	-135.07	14,434,593.65	1,704,856.95	39.74673428	-80.77074285
5,238.00	6.34	327.720	5,223.99	274.80	-140.56	14,434,602.07	1,704,851.46	39.74675744	-80.77076231
5,333.00	5.36	320.160	5,318.50	282.64	-146.21	14,434,609.91	1,704,845.81	39.74677902	-80.77078232
5,429.00	5.16	321.800	5,414.10	289.47	-151.75	14,434,616.74	1,704,840.27	39.74679783	-80.77080197
5,524.00	4.99	324.060	5,508.72	296.18	-156.82	14,434,623.45	1,704,835.20	39.74681627	-80.77081994
5,619.00	5.27	325.720	5,603.34	303.13	-161.70	14,434,630.40	1,704,830.32	39.74683539	-80.77083724
5,642.00	5.36	325.790	5,626.24	304.89	-162.90	14,434,632.16	1,704,829.12	39.74684024	-80.77084149
5,656.00	5.89	325.290	5,640.18	306.02	-163.67	14,434,633.29	1,704,828.34	39.74684335	-80.77084425
5,752.00	3.96	337.770	5,735.82	313.14	-167.73	14,434,640.41	1,704,824.29	39.74686293	-80.77085862
5,799.00	2.02	60.390	5,782.77	315.05	-167.63	14,434,642.32	1,704,824.39	39.74686818	-80.77085823
5,847.00	5.14	96.870	5,830.68	315.21	-164.76	14,434,642.48	1,704,827.26	39.74686860	-80.77084801
5,894.00	7.08	107.500	5,877.41	314.09	-159.90	14,434,641.36	1,704,832.12	39.74686548	-80.77083076
5,940.00	10.20	109.170	5,922.88	311.90	-153.35	14,434,639.17	1,704,838.67	39.74685942	-80.77080746
5,987.00	12.62	122.880	5,968.96	307.74	-145.11	14,434,635.01	1,704,846.91	39.74684795	-80.77077817
6,036.00	15.78	135.270	6,016.46	300.10	-135.92	14,434,627.37	1,704,856.10	39.74682690	-80.77074555
6,083.00	19.30	151.180	6,061.30	288.74	-127.67	14,434,616.01	1,704,864.35	39.74679565	-80.77071630
6,131.00	23.96	151.180	6,105.91	273.25	-119.14	14,434,600.52	1,704,872.88	39.74675303	-80.77068611
6,178.00	27.91	148.900	6,148.17	255.46	-108.85	14,434,582.73	1,704,883.17	39.74670411	-80.77064967
6,225.00	30.81	149.690	6,189.12	235.64	-97.10	14,434,562.91	1,704,894.92	39.74664961	-80.77060802
6,272.00	33.76	152.590	6,228.86	213.65	-85.01	14,434,540.92	1,704,907.01	39.74658913	-80.77052326
6,320.00	37.63	157.070	6,267.84	188.30	-73.15	14,434,515.57	1,704,918.87	39.74651943	-80.77048343
6,367.00	42.77	159.180	6,303.73	160.15	-61.88	14,434,487.42	1,704,930.14	39.74644205	-80.77044834
6,415.00	48.18	157.860	6,337.37	128.33	-49.34	14,434,455.60	1,704,942.68	39.74635456	-80.77043909
6,462.00	52.53	156.460	6,367.35	94.99	-35.28	14,434,422.26	1,704,956.74	39.74626290	-80.77038939
6,510.00	56.40	155.660	6,395.25	59.30	-19.43	14,434,386.57	1,704,972.59	39.74616478	-80.77033332
6,557.00	58.59	155.140	6,420.50	23.26	-2.93	14,434,350.53	1,704,989.09	39.74606569	-80.77027494
6,605.00	58.42	154.350	6,445.58	-13.75	14.54	14,434,313.52	1,705,006.55	39.74596391	-80.77021316
6,652.00	61.93	152.850	6,468.95	-50.26	32.67	14,434,277.01	1,705,024.69	39.74586352	-80.77014897
6,700.00	65.89	150.390	6,490.06	-88.17	53.17	14,434,239.10	1,705,045.19	39.74575926	-80.77007640
6,747.00	71.47	151.270	6,507.14	-126.39	74.49	14,434,200.88	1,705,066.51	39.74565415	-80.77000088
6,795.00	75.56	152.150	6,520.76	-166.91	96.30	14,434,160.36	1,705,088.32	39.74554271	-80.76992367
6,842.00	78.68	151.620	6,531.23	-207.32	117.89	14,434,119.95	1,705,109.91	39.74543160	-80.76984723
6,890.00	82.59	150.830	6,539.04	-248.82	140.68	14,434,078.45	1,705,132.70	39.74531746	-80.76976652
6,937.00	85.32	149.950	6,543.99	-289.45	163.78	14,434,037.82	1,705,155.79	39.74520571	-80.76968474
6,985.00	89.45	147.580	6,546.18	-330.44	188.63	14,433,996.83	1,705,180.65	39.74509298	-80.76959668
7,080.00	89.49	146.960	6,547.06	-410.35	240.00	14,433,916.92	1,705,232.02	39.74487315	-80.76941469
7,175.00	89.89	149.950	6,547.58	-491.30	289.69	14,433,835.97	1,705,281.71	39.74465048	-80.76923864
7,270.00	89.54	150.220	6,548.05	-573.64	337.07	14,433,753.63	1,705,329.09	39.74442401	-80.76907085
7,365.00	89.49	149.600	6,548.85	-655.84	384.70	14,433,671.43	1,705,376.71	39.74419795	-80.76890217
7,460.00	90.20	152.410	6,549.11	-738.92	430.74	14,433,588.35	1,705,422.76	39.74396945	-80.76873913
7,555.00	89.63	152.150	6,549.25	-823.02	474.93	14,433,504.25	1,705,466.95	39.74373818	-80.76858270
7,650.00	89.05	151.010	6,550.34	-906.56	520.14	14,433,420.71	1,705,512.16	39.74350843	-80.76842263
7,745.00	90.64	150.830	6,550.60	-989.58	566.31	14,433,337.69	1,705,558.33	39.74328010	-80.76825914
7,840.00	90.15	150.130	6,549.95	-1,072.25	613.12	14,433,255.02	1,705,605.14	39.74305275	-80.76809339
7,934.00	89.89	150.920	6,549.91	-1,154.08	659.37	14,433,173.19	1,705,651.39	39.74282768	-80.76792961
8,029.00	90.15	151.530	6,549.88	-1,237.35	705.10	14,433,089.92	1,705,697.12	39.74259868	-80.76776769
8,124.00	90.20	151.880	6,549.59	-1,321.00	750.13	14,433,006.27	1,705,742.15	39.74236863	-80.76760827
8,218.00	91.12	150.040	6,548.51	-1,403.17	795.75	14,432,924.10	1,705,787.77	39.74214264	-80.76744673
8,312.00	90.46	149.950	6,547.21	-1,484.56	842.76	14,432,842.71	1,705,834.77	39.74191877	-80.76728027
8,407.00	89.14	149.950	6,547.54	-1,566.79	890.33	14,432,760.48	1,705,882.34	39.74169261	-80.76711181
8,502.00	89.93	148.720	6,548.31	-1,648.50	938.78	14,432,678.77	1,705,930.79	39.74146786	-80.76694021
8,597.00	89.45	148.550	6,548.83	-1,729.62	988.22	14,432,597.65	1,705,980.24	39.74124474	-80.76676507

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Hillrock 08 HM (L)
Project:	Marshall County, West Virginia	TVD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Site:	Hillrock/Simms	MD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Well:	Hillrock 08 HM (L)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Aug1919_v14

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,692.00	90.51	147.580	6,548.86	-1,810.24	1,038.47	14,432,517.03	1,706,030.49	39.74102297	-80.76658706
8,787.00	90.24	146.700	6,548.24	-1,890.04	1,090.01	14,432,437.24	1,706,082.03	39.74080346	-80.76640444
8,882.00	91.16	148.020	6,547.08	-1,970.03	1,141.25	14,432,357.25	1,706,133.27	39.74058342	-80.76622292
8,977.00	90.68	148.190	6,545.55	-2,050.67	1,191.44	14,432,276.60	1,706,183.45	39.74036158	-80.76604514
9,072.00	89.71	148.280	6,545.23	-2,131.44	1,241.45	14,432,195.83	1,706,233.46	39.74013941	-80.76586799
9,166.00	91.08	150.220	6,544.58	-2,212.22	1,289.50	14,432,115.06	1,706,281.52	39.73991723	-80.76569778
9,261.00	91.30	151.010	6,542.81	-2,294.98	1,336.11	14,432,032.30	1,706,328.12	39.73968962	-80.76553277
9,356.00	90.07	150.390	6,541.47	-2,377.81	1,382.59	14,431,949.46	1,706,374.61	39.73946178	-80.76536818
9,451.00	90.29	151.010	6,541.17	-2,460.66	1,429.09	14,431,866.61	1,706,421.10	39.73923393	-80.76520357
9,546.00	88.40	151.970	6,542.26	-2,544.13	1,474.42	14,431,783.15	1,706,466.44	39.73900437	-80.76504306
9,641.00	87.47	152.060	6,545.68	-2,627.97	1,518.97	14,431,699.31	1,706,510.99	39.73877381	-80.76488538
9,736.00	87.78	150.220	6,549.62	-2,711.09	1,564.79	14,431,616.18	1,706,556.80	39.73854520	-80.76472319
9,831.00	90.15	149.250	6,551.34	-2,793.12	1,612.65	14,431,534.15	1,706,604.67	39.73831957	-80.76455368
9,926.00	89.80	148.720	6,551.38	-2,874.54	1,661.60	14,431,452.73	1,706,653.62	39.73809562	-80.76438031
10,021.00	89.27	148.280	6,552.15	-2,955.54	1,711.24	14,431,371.74	1,706,703.25	39.73787282	-80.76420451
10,115.00	88.31	148.630	6,554.13	-3,035.63	1,760.41	14,431,291.65	1,706,752.42	39.73765251	-80.76403037
10,209.00	91.69	149.860	6,554.13	-3,116.40	1,808.47	14,431,210.88	1,706,800.48	39.73743035	-80.76386016
10,304.00	91.91	149.780	6,551.15	-3,198.48	1,856.20	14,431,128.80	1,706,848.22	39.73720459	-80.76369113
10,398.00	91.69	149.690	6,548.20	-3,279.63	1,903.55	14,431,047.65	1,706,895.57	39.73698139	-80.76352346
10,493.00	90.33	149.950	6,546.52	-3,361.73	1,951.30	14,430,965.54	1,706,943.32	39.73675555	-80.76335438
10,588.00	90.07	151.710	6,546.19	-3,444.68	1,997.60	14,430,882.59	1,706,989.62	39.73652741	-80.76319046
10,683.00	89.71	150.570	6,546.37	-3,527.88	2,043.46	14,430,799.40	1,707,035.47	39.73629859	-80.76302814
10,778.00	88.44	149.690	6,547.91	-3,610.25	2,090.76	14,430,717.03	1,707,082.78	39.73607204	-80.76286064
10,873.00	88.18	148.630	6,550.71	-3,691.78	2,139.44	14,430,635.50	1,707,131.46	39.73584778	-80.76268825
10,968.00	88.22	149.250	6,553.69	-3,773.12	2,188.43	14,430,554.16	1,707,180.45	39.73562405	-80.76251476
11,063.00	87.38	148.900	6,557.34	-3,854.55	2,237.22	14,430,472.73	1,707,229.23	39.73540005	-80.76234200
11,157.00	89.49	149.160	6,559.91	-3,935.12	2,285.57	14,430,392.16	1,707,277.58	39.73517844	-80.76217077
11,252.00	89.89	148.110	6,560.42	-4,016.23	2,335.01	14,430,311.05	1,707,327.03	39.73495532	-80.76199566
11,346.00	90.51	149.340	6,560.09	-4,096.57	2,383.81	14,430,230.71	1,707,375.82	39.73473433	-80.76182284
11,441.00	91.56	149.780	6,558.38	-4,178.46	2,431.93	14,430,148.82	1,707,423.95	39.73450908	-80.76165245
11,536.00	91.38	151.970	6,555.94	-4,261.42	2,478.15	14,430,065.86	1,707,470.17	39.73428093	-80.76148883
11,630.00	90.59	151.970	6,554.32	-4,344.38	2,522.32	14,429,982.90	1,707,514.33	39.73405277	-80.76133251
11,725.00	89.32	152.590	6,554.40	-4,428.47	2,566.51	14,429,898.81	1,707,558.52	39.73382150	-80.76117613
11,821.00	88.75	152.060	6,556.02	-4,513.48	2,611.09	14,429,813.80	1,707,603.10	39.73358772	-80.76101837
11,916.00	88.40	152.940	6,558.38	-4,597.72	2,654.94	14,429,729.56	1,707,646.95	39.73335606	-80.76086319
12,010.00	89.67	151.090	6,559.96	-4,680.71	2,699.04	14,429,646.57	1,707,691.05	39.73312782	-80.76070711
12,105.00	88.88	151.270	6,561.16	-4,763.93	2,744.83	14,429,563.35	1,707,736.85	39.73289892	-80.76054503
12,200.00	88.26	151.180	6,563.53	-4,847.18	2,790.55	14,429,480.10	1,707,782.56	39.73266997	-80.76038321
12,295.00	89.80	150.300	6,565.14	-4,930.04	2,836.97	14,429,397.24	1,707,828.99	39.73244206	-80.76022187
12,390.00	88.75	149.950	6,566.34	-5,012.41	2,884.29	14,429,314.87	1,707,876.30	39.73221551	-80.76005136
12,485.00	90.51	150.220	6,566.96	-5,094.74	2,931.66	14,429,232.54	1,707,923.68	39.73198904	-80.75988363
12,579.00	89.45	150.390	6,566.99	-5,176.40	2,978.23	14,429,150.88	1,707,970.24	39.73176445	-80.75971878
12,674.00	89.27	150.130	6,568.05	-5,258.88	3,025.35	14,429,068.40	1,708,017.36	39.73153758	-80.75955196
12,769.00	90.59	149.420	6,568.17	-5,340.96	3,073.17	14,428,986.32	1,708,065.19	39.73131181	-80.75938265
12,864.00	90.15	148.550	6,567.55	-5,422.38	3,122.12	14,428,904.90	1,708,114.13	39.73108786	-80.75920933
12,960.00	89.67	148.550	6,567.71	-5,504.28	3,172.21	14,428,823.01	1,708,164.22	39.73086257	-80.75903196
13,054.00	90.07	149.420	6,567.92	-5,584.84	3,220.64	14,428,742.45	1,708,212.66	39.73064097	-80.75886046
13,149.00	91.43	148.900	6,566.67	-5,666.39	3,269.34	14,428,660.89	1,708,261.35	39.73041663	-80.75868804
13,244.00	90.77	149.340	6,564.85	-5,747.91	3,318.09	14,428,579.37	1,708,310.10	39.73019240	-80.75851543
13,340.00	90.15	149.070	6,564.08	-5,830.37	3,367.23	14,428,496.91	1,708,359.25	39.72996557	-80.75834141
13,435.00	90.24	148.810	6,563.76	-5,911.75	3,416.25	14,428,415.53	1,708,408.26	39.72974172	-80.75816787
13,530.00	89.76	149.070	6,563.76	-5,993.13	3,465.26	14,428,334.15	1,708,457.27	39.72951787	-80.75799432
13,625.00	89.58	149.250	6,564.30	-6,074.70	3,513.96	14,428,252.59	1,708,505.97	39.72929350	-80.75782189
13,720.00	88.13	149.860	6,566.20	-6,156.58	3,562.09	14,428,170.70	1,708,554.10	39.72906827	-80.75765150
13,815.00	87.78	149.340	6,569.59	-6,238.46	3,610.13	14,428,088.82	1,708,602.14	39.72884303	-80.75748142

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Hillrock 08 HM (L)
Project:	Marshall County, West Virginia	TVD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Site:	Hillrock/Simms	MD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Well:	Hillrock 08 HM (L)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Aug1919_v14

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
13,909.00	87.38	148.980	6,573.56	-6,319.10	3,658.28	14,428,008.18	1,708,650.29	39.72862122	-80.75731095
14,004.00	88.18	149.070	6,577.24	-6,400.49	3,707.13	14,427,926.79	1,708,699.14	39.72839734	-80.75713797
14,100.00	87.12	149.160	6,581.18	-6,482.81	3,756.37	14,427,844.47	1,708,748.38	39.72817091	-80.75696365
14,193.00	89.54	148.810	6,583.89	-6,562.47	3,804.26	14,427,764.81	1,708,796.28	39.72795177	-80.75679407
14,288.00	88.88	148.720	6,585.20	-6,643.69	3,853.52	14,427,683.59	1,708,845.53	39.72772834	-80.75661966
14,383.00	89.89	150.040	6,586.22	-6,725.44	3,901.90	14,427,601.84	1,708,893.92	39.72750348	-80.75644837
14,478.00	88.79	150.220	6,587.31	-6,807.81	3,949.21	14,427,519.47	1,708,941.22	39.72727691	-80.75628090
14,573.00	90.11	151.010	6,588.22	-6,890.58	3,995.82	14,427,436.70	1,708,987.83	39.72704925	-80.75611593
14,669.00	89.14	150.920	6,588.85	-6,974.52	4,042.42	14,427,352.77	1,709,034.43	39.72681840	-80.75595103
14,764.00	90.81	150.650	6,588.89	-7,057.43	4,088.78	14,427,269.85	1,709,080.79	39.72659035	-80.75578693
14,859.00	89.71	150.220	6,588.46	-7,140.06	4,135.65	14,427,187.23	1,709,127.67	39.72636308	-80.75562102
14,953.00	89.36	149.510	6,589.23	-7,221.35	4,182.84	14,427,105.93	1,709,174.86	39.72613947	-80.75545397
15,048.00	88.57	149.510	6,590.94	-7,303.20	4,231.04	14,427,024.09	1,709,223.05	39.72591433	-80.75528337
15,143.00	90.51	150.740	6,591.70	-7,385.57	4,278.35	14,426,941.72	1,709,270.36	39.72568777	-80.75511589
15,237.00	89.93	151.010	6,591.34	-7,467.88	4,324.10	14,426,859.60	1,709,316.11	39.72546192	-80.75495397
15,332.00	89.32	151.180	6,591.96	-7,550.84	4,370.02	14,426,776.44	1,709,362.03	39.72523318	-80.75479147
15,427.00	88.40	151.530	6,593.85	-7,634.20	4,415.55	14,426,693.09	1,709,407.56	39.72500392	-80.75463035
15,522.00	88.04	152.150	6,596.81	-7,717.91	4,460.37	14,426,609.37	1,709,452.38	39.72477368	-80.75447179
15,617.00	87.08	152.240	6,600.85	-7,801.87	4,504.64	14,426,525.42	1,709,496.65	39.72454279	-80.75431515
15,711.00	89.05	150.740	6,604.02	-7,884.41	4,549.48	14,426,442.87	1,709,541.49	39.72431575	-80.75415648
15,807.00	90.68	150.480	6,604.25	-7,968.06	4,596.59	14,426,359.23	1,709,588.60	39.72408569	-80.75398975
15,902.00	89.98	151.090	6,603.70	-8,050.97	4,642.96	14,426,276.32	1,709,634.97	39.72385764	-80.75382566
15,996.00	89.93	151.270	6,603.78	-8,133.33	4,688.27	14,426,193.96	1,709,680.28	39.72363112	-80.75366531
16,091.00	89.14	151.450	6,604.55	-8,216.70	4,733.80	14,426,110.59	1,709,725.81	39.72340181	-80.75350419
16,186.00	90.81	151.710	6,604.59	-8,300.25	4,779.01	14,426,027.04	1,709,771.02	39.72317202	-80.75334422
16,281.00	90.11	151.010	6,603.83	-8,383.62	4,824.54	14,425,943.67	1,709,816.55	39.72294271	-80.75318310
16,376.00	89.32	150.390	6,604.30	-8,466.46	4,871.04	14,425,860.82	1,709,863.04	39.72271484	-80.75301857
16,472.00	90.73	149.780	6,604.26	-8,549.67	4,918.91	14,425,777.62	1,709,910.92	39.72248597	-80.75284913
16,567.00	90.64	150.220	6,603.12	-8,631.94	4,966.41	14,425,695.35	1,709,958.42	39.72225968	-80.75268102
16,662.00	89.89	150.300	6,602.68	-8,714.42	5,013.53	14,425,612.86	1,710,005.54	39.72203279	-80.75251423
16,756.00	88.97	150.390	6,603.62	-8,796.11	5,060.04	14,425,531.18	1,710,052.05	39.72180812	-80.75234964
16,849.00	88.18	149.690	6,605.93	-8,876.65	5,106.47	14,425,450.64	1,710,098.48	39.72158656	-80.75218532
16,945.00	86.81	149.340	6,610.13	-8,959.30	5,155.12	14,425,367.99	1,710,147.13	39.72135921	-80.75201310
17,039.00	88.35	148.460	6,614.10	-9,039.71	5,203.63	14,425,287.57	1,710,195.64	39.72113800	-80.75184138
17,134.00	89.76	147.050	6,615.66	-9,120.05	5,254.31	14,425,207.24	1,710,246.32	39.72091700	-80.75166195
17,229.00	89.10	147.750	6,616.61	-9,200.08	5,305.49	14,425,127.21	1,710,297.50	39.72069683	-80.75148072
17,324.00	88.62	146.700	6,618.50	-9,279.93	5,356.90	14,425,047.35	1,710,348.91	39.72047712	-80.75129866
17,419.00	89.63	147.750	6,619.95	-9,359.80	5,408.32	14,424,967.49	1,710,400.33	39.72025740	-80.75111658
17,514.00	90.55	150.130	6,619.80	-9,441.17	5,457.33	14,424,886.12	1,710,449.34	39.72003355	-80.75094310
17,609.00	90.02	149.950	6,619.33	-9,523.48	5,504.78	14,424,803.81	1,710,496.78	39.71980716	-80.75077519
17,704.00	89.32	149.780	6,619.87	-9,605.64	5,552.47	14,424,721.65	1,710,544.48	39.71958116	-80.75060640
17,799.00	88.92	150.480	6,621.33	-9,688.00	5,599.78	14,424,639.28	1,710,591.78	39.71935459	-80.75043898
17,894.00	88.18	150.740	6,623.74	-9,770.75	5,646.38	14,424,556.54	1,710,638.39	39.71912699	-80.75027406
17,989.00	89.19	149.600	6,625.92	-9,853.14	5,693.62	14,424,474.15	1,710,685.63	39.71890036	-80.75010687
18,084.00	88.62	149.420	6,627.73	-9,934.99	5,741.82	14,424,392.30	1,710,733.82	39.71867521	-80.74993630
18,179.00	88.00	149.690	6,630.53	-10,016.85	5,789.93	14,424,310.44	1,710,781.94	39.71845002	-80.74976600
18,279.00	88.00	149.690	6,634.02	-10,103.13	5,840.37	14,424,224.16	1,710,832.38	39.71821269	-80.74958750
Survey @ 18279.00 MD 6634.02 TVD									
18,357.00	88.00	149.690	6,636.75	-10,170.43	5,879.71	14,424,156.86	1,710,871.72	39.71802757	-80.74944826
Survey projected to 18357.00 MD 6636.75 TVD									

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Hillrock 08 HM (L)
Project:	Marshall County, West Virginia	TVD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Site:	Hillrock/Simms	MD Reference:	RKB-1219+18 @ 1237.00ft (Precision 528)
Well:	Hillrock 08 HM (L)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Aug1919_v14

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
187.00	187.00	-0.47	0.43	MWD surveys
18,279.00	6,634.02	-10,103.13	5,840.37	Survey @ 18279.00 MD 6634.02 TVD
18,357.00	6,636.75	-10,170.43	5,879.71	Survey projected to 18357.00 MD 6636.75 TVD