



Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Blake 01 HM (slot G)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1326+18 @ 1344.00ft (Precision 528)
Site:	Blake Pad	MD Reference:	RKB=1326+18 @ 1344.00ft (Precision 528)
Well:	Blake 01 HM (slot G)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Aug0116_LT_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	Blake Pad				
Site Position:		Northing:	14,440,917.72 usft	Latitude:	39.76416471
From:	Lat/Long	Easting:	1,695,217.29 usft	Longitude:	-80.80498839
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.12 °

Well	Blake 01 HM (slot G)					
Well Position	+N/-S	0.00 ft	Northing:	14,440,917.72 usft	Latitude:	39.76416471
	+E/-W	0.00 ft	Easting:	1,695,217.29 usft	Longitude:	-80.80498839
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	1,326.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/27/2018	-8.66	66.84	52,015.26415151

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	308.13	

Survey Program	Date	11/20/2018			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	<p style="text-align: center;">RECEIVED Office of Oil and Gas JUL 10 2020 WV Department of Environmental Protection</p>
267.00	1,152.00	MWD 17 1/2 (Original Hole)	MWD	MWD - Standard	
1,192.00	2,801.00	MWD 12 3/8 (Original Hole)	MWD	MWD - Standard	
2,861.00	14,058.00	MWD 8 3/4 (Original Hole)	MWD	MWD - Standard	
14,112.00	14,112.00	Proj (Original Hole)	MWD	MWD - Standard	

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	0.00	0.00	0.00	0.00	14,440,917.72	1,695,217.29	39.76416471	-80.80498839
267.00	0.61	17.82	266.99	1.35	0.43	14,440,919.08	1,695,217.72	39.76416843	-80.80498683
MWD surveys									
334.00	0.48	44.96	333.99	1.89	0.74	14,440,919.61	1,695,218.03	39.76416990	-80.80498573
430.00	0.34	15.39	429.99	2.45	1.10	14,440,920.17	1,695,218.39	39.76417143	-80.80498445
523.00	0.25	11.23	522.99	2.92	1.21	14,440,920.64	1,695,218.50	39.76417271	-80.80498405
618.00	0.07	67.19	617.99	3.14	1.31	14,440,920.86	1,695,218.59	39.76417333	-80.80498371
713.00	0.11	66.61	712.99	3.20	1.45	14,440,920.92	1,695,218.73	39.76417349	-80.80498322
808.00	0.08	67.48	807.99	3.26	1.59	14,440,920.98	1,695,218.88	39.76417366	-80.80498270



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Design:	Surveys Original Hole	Database:	DB_Aug0116_LT_v14

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Survey										WV Department of Environmental Protection	
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude		
903.00	0.13	115.24	902.99	3.24	1.75	14,440,920.96	1,695,219.04	39.76417360	-80.80498214		
997.00	0.38	169.73	996.99	2.89	1.90	14,440,920.61	1,695,219.19	39.76417263	-80.80498160		
1,092.00	0.07	7.73	1,091.99	2.64	1.97	14,440,920.36	1,695,219.25	39.76417194	-80.80498138		
1,152.00	0.22	42.59	1,151.99	2.76	2.05	14,440,920.48	1,695,219.33	39.76417227	-80.80498108		
1,192.00	0.24	109.82	1,191.99	2.79	2.18	14,440,920.51	1,695,219.47	39.76417235	-80.80498061		
1,288.00	0.17	75.97	1,287.99	2.75	2.51	14,440,920.47	1,695,219.79	39.76417225	-80.80497945		
1,382.00	0.56	85.74	1,381.98	2.82	3.10	14,440,920.54	1,695,220.39	39.76417244	-80.80497734		
1,477.00	0.47	81.10	1,476.98	2.91	3.95	14,440,920.64	1,695,221.23	39.76417269	-80.80497432		
1,572.00	0.83	75.27	1,571.97	3.15	5.00	14,440,920.87	1,695,222.28	39.76417333	-80.80497058		
1,667.00	0.31	168.95	1,666.97	3.07	5.71	14,440,920.79	1,695,223.00	39.76417312	-80.80496804		
1,762.00	0.80	220.05	1,761.96	2.31	5.34	14,440,920.03	1,695,222.62	39.76417103	-80.80496939		
1,857.00	1.17	226.25	1,856.95	1.13	4.21	14,440,918.86	1,695,221.49	39.76416780	-80.80497341		
1,952.00	1.51	232.32	1,951.92	-0.30	2.52	14,440,917.42	1,695,219.80	39.76416387	-80.80497944		
2,046.00	0.98	251.72	2,045.90	-1.31	0.77	14,440,916.41	1,695,218.06	39.76416111	-80.80498565		
2,141.00	0.63	284.96	2,140.89	-1.43	-0.50	14,440,916.29	1,695,216.78	39.76416079	-80.80499019		
2,236.00	0.61	287.87	2,235.89	-1.14	-1.49	14,440,916.58	1,695,215.80	39.76416159	-80.80499370		
2,331.00	0.68	281.12	2,330.88	-0.88	-2.52	14,440,916.85	1,695,214.76	39.76416232	-80.80499738		
2,425.00	0.86	286.69	2,424.87	-0.57	-3.75	14,440,917.16	1,695,213.54	39.76416318	-80.80500173		
2,520.00	1.07	283.28	2,519.86	-0.16	-5.29	14,440,917.56	1,695,211.99	39.76416431	-80.80500722		
2,613.00	0.95	294.50	2,612.85	0.36	-6.84	14,440,918.08	1,695,210.45	39.76416574	-80.80501272		
2,707.00	0.49	33.04	2,706.84	1.02	-7.33	14,440,918.74	1,695,209.96	39.76416756	-80.80501446		
2,801.00	0.73	57.56	2,800.84	1.68	-6.60	14,440,919.40	1,695,210.68	39.76416936	-80.80501188		
2,861.00	0.85	75.82	2,860.83	1.99	-5.85	14,440,919.72	1,695,211.44	39.76417022	-80.80500919		
2,954.00	0.77	80.40	2,953.82	2.27	-4.57	14,440,919.99	1,695,212.72	39.76417096	-80.80500462		
3,049.00	0.69	69.35	3,048.81	2.57	-3.40	14,440,920.30	1,695,213.89	39.76417180	-80.80500047		
3,144.00	0.45	60.41	3,143.81	2.96	-2.54	14,440,920.68	1,695,214.75	39.76417286	-80.80499741		
3,238.00	0.56	62.58	3,237.80	3.35	-1.81	14,440,921.08	1,695,215.47	39.76417393	-80.80499481		
3,332.00	0.43	46.58	3,331.80	3.81	-1.15	14,440,921.53	1,695,216.14	39.76417518	-80.80499245		
3,427.00	0.59	35.35	3,426.80	4.45	-0.61	14,440,922.17	1,695,216.68	39.76417694	-80.80499051		
3,520.00	0.48	23.71	3,519.79	5.20	-0.17	14,440,922.92	1,695,217.11	39.76417899	-80.80498896		
3,613.00	0.57	35.44	3,612.79	5.93	0.25	14,440,923.66	1,695,217.54	39.76418100	-80.80498745		
3,707.00	0.66	23.44	3,706.78	6.81	0.74	14,440,924.53	1,695,218.02	39.76418341	-80.80498571		
3,803.00	0.68	8.15	3,802.78	7.88	1.04	14,440,925.60	1,695,218.33	39.76418635	-80.80498463		
3,898.00	0.76	16.22	3,897.77	9.05	1.30	14,440,926.77	1,695,218.58	39.76418954	-80.80498371		
3,993.00	0.59	258.96	3,992.77	9.56	0.99	14,440,927.28	1,695,218.28	39.76419095	-80.80498479		
4,086.00	1.61	306.21	4,085.75	10.24	-0.53	14,440,927.96	1,695,216.75	39.76419283	-80.80499021		
4,181.00	3.29	325.85	4,180.66	13.28	-3.14	14,440,931.00	1,695,214.15	39.76420120	-80.80499946		
4,275.00	3.08	334.09	4,274.52	17.78	-5.76	14,440,935.51	1,695,211.53	39.76421359	-80.80500874		
4,369.00	4.25	337.86	4,368.32	23.28	-8.17	14,440,941.00	1,695,209.11	39.76422870	-80.80501730		
4,464.00	6.78	324.05	4,462.88	31.08	-12.79	14,440,948.81	1,695,204.49	39.76425016	-80.80503368		
4,558.00	7.92	338.29	4,556.11	41.59	-18.45	14,440,959.32	1,695,198.84	39.76427905	-80.80505372		
4,654.00	10.89	339.69	4,650.81	56.25	-24.04	14,440,973.97	1,695,193.24	39.76431933	-80.80507351		
4,748.00	12.85	333.48	4,742.80	73.93	-31.79	14,440,991.65	1,695,185.49	39.76436793	-80.80510096		
4,843.00	14.10	327.88	4,835.19	93.18	-42.66	14,441,010.91	1,695,174.62	39.76442088	-80.80513949		
4,937.00	15.27	313.96	4,926.14	111.48	-57.67	14,441,029.20	1,695,159.62	39.76447121	-80.80519274		
5,033.00	12.80	307.44	5,019.28	126.72	-75.21	14,441,044.45	1,695,142.07	39.76451318	-80.80525506		
5,127.00	12.35	308.46	5,111.02	139.31	-91.35	14,441,057.03	1,695,125.93	39.76454783	-80.80531240		
5,222.00	11.83	316.37	5,203.92	152.68	-106.03	14,441,070.40	1,695,111.26	39.76458463	-80.80536452		
5,317.00	11.33	316.74	5,296.99	166.52	-119.14	14,441,084.24	1,695,098.14	39.76462273	-80.80541108		
5,412.00	10.72	317.89	5,390.23	179.87	-131.46	14,441,097.59	1,695,085.82	39.76465947	-80.80545482		
5,506.00	10.10	317.68	5,482.69	192.45	-142.88	14,441,110.17	1,695,074.41	39.76469409	-80.80549533		
5,600.00	9.73	313.08	5,575.28	203.97	-154.23	14,441,121.69	1,695,063.06	39.76472579	-80.80553564		
5,696.00	9.87	327.29	5,669.90	216.44	-164.60	14,441,134.16	1,695,052.69	39.76476009	-80.80557245		
5,790.00	12.62	326.79	5,762.08	231.81	-174.58	14,441,149.53	1,695,042.71	39.76480237	-80.80560785		
5,878.00	14.22	323.13	5,847.68	248.50	-186.33	14,441,166.22	1,695,030.96	39.76484828	-80.80564954		

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 Site: Blake Pad
 Well: Blake 01 HM (slot G)
 Wellbore: Original Hole
 Design: Surveys Original Hole

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Survey										WV Department of Environmental Protection
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ustf)	Map Easting (ustf)	Latitude	Longitude	
5.913.00	14.51	323.18	5,881.58	255.45	-191.54	14,441,173.17	1,695,025.75	39.76486739	-80.80566801	
5.961.00	18.68	328.10	5,927.58	266.79	-199.21	14,441,184.52	1,695,018.08	39.76489859	-80.80569522	
6.009.00	23.38	333.99	5,972.37	281.89	-207.45	14,441,199.61	1,695,009.84	39.76494010	-80.80572444	
6.056.00	27.12	337.68	6,014.88	300.19	-215.61	14,441,217.91	1,695,001.67	39.76499040	-80.80575334	
6.103.00	31.12	336.01	6,055.93	321.20	-224.62	14,441,238.92	1,694,992.66	39.76504817	-80.80578524	
6.150.00	35.47	333.20	6,095.21	344.48	-235.72	14,441,262.21	1,694,981.57	39.76511217	-80.80582454	
6.199.00	37.67	328.02	6,134.57	369.88	-250.06	14,441,287.60	1,694,967.23	39.76518201	-80.80587539	
6.246.00	37.27	324.33	6,171.87	393.63	-265.97	14,441,311.35	1,694,951.32	39.76524732	-80.80593181	
6.294.00	36.70	320.55	6,210.22	416.51	-283.56	14,441,334.24	1,694,933.73	39.76531027	-80.80599423	
6.341.00	35.60	315.18	6,248.18	437.07	-302.13	14,441,354.79	1,694,915.16	39.76536683	-80.80606016	
6.389.00	35.12	309.30	6,287.34	455.73	-322.67	14,441,373.45	1,694,894.62	39.76541820	-80.80613311	
6.436.00	36.09	305.25	6,325.56	472.28	-344.44	14,441,390.01	1,694,872.85	39.76546379	-80.80621045	
6.483.00	39.52	304.46	6,362.69	488.74	-368.08	14,441,406.46	1,694,849.21	39.76550912	-80.80629445	
6.530.00	45.98	303.41	6,397.18	506.53	-394.54	14,441,424.25	1,694,822.74	39.76555813	-80.80638850	
6.578.00	53.45	302.18	6,428.20	526.33	-425.31	14,441,444.05	1,694,791.97	39.76561268	-80.80649784	
6.625.00	60.22	303.50	6,453.89	547.66	-458.34	14,441,465.38	1,694,758.95	39.76567148	-80.80661520	
6.674.00	67.47	304.73	6,475.48	572.33	-494.72	14,441,490.05	1,694,722.57	39.76573942	-80.80674448	
6.721.00	71.65	305.43	6,491.89	597.63	-530.75	14,441,515.35	1,694,686.54	39.76580914	-80.80687250	
6.769.00	75.56	305.60	6,505.44	624.38	-568.22	14,441,542.10	1,694,649.06	39.76588281	-80.80700565	
6.816.00	76.92	305.60	6,516.61	650.95	-605.34	14,441,568.67	1,694,611.95	39.76595601	-80.80713754	
6.864.00	80.00	305.52	6,526.22	678.30	-643.60	14,441,596.02	1,694,573.69	39.76603134	-80.80727346	
6.911.00	84.75	305.25	6,532.45	705.27	-681.57	14,441,622.99	1,694,535.72	39.76610563	-80.80740837	
6.958.00	85.49	304.81	6,536.45	732.15	-719.91	14,441,649.87	1,694,497.38	39.76617967	-80.80754463	
7.004.00	87.34	304.37	6,539.33	758.21	-757.70	14,441,675.93	1,694,459.58	39.76625147	-80.80767892	
7.052.00	88.18	304.46	6,541.20	785.32	-797.27	14,441,703.04	1,694,420.02	39.76632615	-80.80781952	
7.100.00	90.15	304.73	6,541.90	812.57	-836.78	14,441,730.29	1,694,380.51	39.76640121	-80.80795990	
7.147.00	90.59	303.58	6,541.60	838.95	-875.67	14,441,756.67	1,694,341.62	39.76647391	-80.80809810	
7.242.00	90.81	303.67	6,540.44	891.56	-954.77	14,441,809.28	1,694,262.52	39.76661883	-80.80837919	
7.337.00	90.68	305.96	6,539.20	945.79	-1,032.75	14,441,863.51	1,694,184.54	39.76676822	-80.80865629	
7.431.00	90.73	304.46	6,538.04	999.98	-1,109.55	14,441,917.70	1,694,107.74	39.76691750	-80.80892917	
7.526.00	90.99	304.29	6,536.62	1,053.61	-1,187.95	14,441,971.33	1,694,029.34	39.76706525	-80.80920776	
7.619.00	90.90	306.48	6,535.08	1,107.45	-1,263.75	14,442,025.17	1,693,953.54	39.76721356	-80.80947712	
7.713.00	90.90	309.21	6,533.61	1,165.11	-1,337.97	14,442,082.83	1,693,879.32	39.76737234	-80.80974079	
7.807.00	91.60	308.68	6,531.56	1,224.18	-1,411.06	14,442,141.90	1,693,806.23	39.76753499	-80.81000045	
7.900.00	89.27	309.74	6,530.85	1,282.97	-1,483.11	14,442,200.69	1,693,734.18	39.76769685	-80.81025642	
7.995.00	89.49	309.56	6,531.88	1,343.58	-1,556.25	14,442,261.30	1,693,661.04	39.76786374	-80.81051625	
8.090.00	91.43	307.01	6,531.12	1,402.43	-1,630.81	14,442,320.15	1,693,586.48	39.76802580	-80.81078114	
8.185.00	90.59	306.57	6,529.44	1,459.32	-1,706.87	14,442,377.04	1,693,510.42	39.76818246	-80.81105141	
8.280.00	91.25	306.04	6,527.92	1,515.56	-1,783.42	14,442,433.28	1,693,433.87	39.76833735	-80.81132341	
8.376.00	90.46	305.52	6,526.48	1,571.68	-1,861.29	14,442,489.40	1,693,356.00	39.76849193	-80.81160011	
8.470.00	91.03	304.99	6,525.26	1,625.93	-1,938.05	14,442,543.65	1,693,279.24	39.76864137	-80.81187285	
8.565.00	91.03	306.84	6,523.55	1,681.65	-2,014.97	14,442,599.37	1,693,202.32	39.76879482	-80.81214619	
8.659.00	91.65	306.40	6,521.36	1,737.70	-2,090.39	14,442,655.42	1,693,126.90	39.76894920	-80.81241419	
8.754.00	91.21	307.21	6,518.98	1,794.60	-2,166.43	14,442,712.32	1,693,050.86	39.76910588	-80.81268438	
8.848.00	90.68	306.92	6,517.43	1,851.25	-2,241.43	14,442,768.96	1,692,975.86	39.76926189	-80.81295085	
8.943.00	91.16	306.40	6,515.91	1,907.96	-2,317.63	14,442,825.68	1,692,899.66	39.76941807	-80.81322161	
9.038.00	89.85	307.80	6,515.07	1,965.26	-2,393.39	14,442,882.98	1,692,823.90	39.76957587	-80.81349081	
9.132.00	90.33	307.98	6,514.92	2,022.99	-2,467.58	14,442,940.71	1,692,749.72	39.76973483	-80.81375439	
9.227.00	90.81	306.92	6,513.98	2,080.75	-2,542.99	14,442,998.47	1,692,674.30	39.76989390	-80.81402235	
9.322.00	89.71	307.10	6,513.55	2,137.94	-2,618.85	14,443,055.65	1,692,598.44	39.77005137	-80.81429189	
9.416.00	90.15	306.92	6,513.66	2,194.52	-2,693.91	14,443,112.24	1,692,523.38	39.77020720	-80.81455861	
9.510.00	89.93	307.98	6,513.60	2,251.68	-2,768.53	14,443,169.39	1,692,448.76	39.77036459	-80.81482377	
9.605.00	90.68	308.07	6,513.09	2,310.20	-2,843.37	14,443,227.91	1,692,373.92	39.77052573	-80.81508966	
9.700.00	91.16	307.98	6,511.57	2,368.71	-2,918.19	14,443,286.43	1,692,299.10	39.77068684	-80.81535552	
9.794.00	90.64	307.45	6,510.09	2,426.20	-2,992.54	14,443,343.92	1,692,224.75	39.77084516	-80.81561971	

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Blake 01 HM (slot G)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1326+18 @ 1344.00ft (Precision 528)
Site:	Blake Pad	MD Reference:	RKB=1326+18 @ 1344.00ft (Precision 528)
Well:	Blake 01 HM (slot G)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Aug0116_LT_v14

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Survey									JUL 10 2020	
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	WV Department of Environmental Protection		
								Latitude	Longitude	
9.889.00	91.03	307.19	6,508.71	2,483.79	-3,068.09	14,443,401.51	1,692,149.21	39.77100374	-80.81588813	
9.983.00	91.03	306.66	6,507.02	2,540.26	-3,143.22	14,443,457.97	1,692,074.07	39.77115923	-80.81615511	
10,078.00	91.69	307.80	6,504.76	2,597.72	-3,218.84	14,443,515.43	1,691,998.46	39.77131746	-80.81642380	
10,173.00	88.75	308.33	6,504.40	2,656.28	-3,293.62	14,443,574.00	1,691,923.67	39.77147871	-80.81668953	
10,267.00	89.05	307.98	6,506.20	2,714.34	-3,367.52	14,443,632.06	1,691,849.77	39.77163858	-80.81695212	
10,362.00	90.29	306.57	6,506.75	2,771.87	-3,443.11	14,443,689.59	1,691,774.18	39.77179701	-80.81722073	
10,458.00	90.68	305.17	6,505.93	2,828.12	-3,520.90	14,443,745.84	1,691,696.39	39.77195191	-80.81749716	
10,552.00	91.91	303.76	6,503.81	2,881.30	-3,598.38	14,443,799.02	1,691,618.91	39.77209839	-80.81777251	
10,647.00	91.96	306.22	6,500.60	2,935.74	-3,676.16	14,443,853.46	1,691,541.13	39.77224834	-80.81804893	
10,742.00	92.22	308.07	6,497.14	2,993.07	-3,751.83	14,443,910.78	1,691,465.46	39.77240618	-80.81831783	
10,837.00	91.12	308.24	6,494.37	3,051.73	-3,826.50	14,443,969.45	1,691,390.79	39.77256771	-80.81858315	
10,931.00	89.98	309.38	6,493.47	3,110.64	-3,899.74	14,444,028.35	1,691,317.55	39.77272990	-80.81884339	
11,027.00	90.42	309.47	6,493.13	3,171.61	-3,973.90	14,444,089.32	1,691,243.40	39.77289774	-80.81910687	
11,121.00	90.02	308.51	6,492.77	3,230.75	-4,046.96	14,444,148.46	1,691,170.34	39.77306056	-80.81936647	
11,214.00	89.93	306.92	6,492.81	3,287.64	-4,120.52	14,444,205.35	1,691,096.77	39.77321721	-80.81962788	
11,310.00	90.33	306.48	6,492.59	3,345.01	-4,197.49	14,444,262.72	1,691,019.80	39.77337519	-80.81990141	
11,404.00	90.81	306.48	6,491.66	3,400.89	-4,273.07	14,444,318.61	1,690,944.22	39.77352908	-80.82016999	
11,499.00	91.16	306.13	6,490.02	3,457.13	-4,349.62	14,444,374.85	1,690,867.68	39.77368395	-80.82044203	
11,594.00	91.30	305.87	6,487.99	3,512.96	-4,426.46	14,444,430.67	1,690,790.84	39.77383769	-80.82071510	
11,689.00	91.34	306.13	6,485.80	3,568.78	-4,503.29	14,444,486.50	1,690,714.00	39.77399142	-80.82098816	
11,784.00	91.38	306.66	6,483.54	3,625.14	-4,579.74	14,444,542.85	1,690,637.55	39.77414660	-80.82125985	
11,877.00	89.67	307.01	6,482.69	3,680.89	-4,654.17	14,444,598.60	1,690,563.13	39.77430011	-80.82152434	
11,972.00	90.07	306.48	6,482.91	3,737.72	-4,730.29	14,444,655.43	1,690,487.00	39.77445661	-80.82179487	
12,067.00	90.15	307.27	6,482.72	3,794.73	-4,806.29	14,444,712.44	1,690,411.01	39.77461358	-80.82206494	
12,159.00	90.51	307.45	6,482.19	3,850.55	-4,879.41	14,444,768.27	1,690,337.88	39.77476730	-80.82232480	
12,254.00	90.15	308.42	6,481.65	3,908.95	-4,954.34	14,444,826.67	1,690,262.96	39.77492809	-80.82259105	
12,349.00	90.46	308.33	6,481.14	3,967.93	-5,028.81	14,444,885.64	1,690,188.48	39.77509046	-80.82285570	
12,444.00	91.08	308.24	6,479.86	4,026.78	-5,103.37	14,444,944.50	1,690,113.92	39.77525249	-80.82312066	
12,539.00	91.30	307.45	6,477.89	4,085.05	-5,178.38	14,445,002.77	1,690,038.92	39.77541293	-80.82338719	
12,634.00	91.38	307.01	6,475.67	4,142.52	-5,253.99	14,445,060.23	1,689,963.30	39.77557114	-80.82365593	
12,729.00	90.90	306.66	6,473.78	4,199.46	-5,330.01	14,445,117.17	1,689,887.28	39.77572793	-80.82392609	
12,824.00	90.11	307.19	6,472.94	4,256.53	-5,405.96	14,445,174.24	1,689,811.34	39.77588507	-80.82419598	
12,919.00	89.98	307.80	6,472.87	4,314.35	-5,481.33	14,445,232.07	1,689,735.97	39.77604428	-80.82446384	
13,014.00	90.33	308.33	6,472.61	4,372.93	-5,556.12	14,445,290.64	1,689,661.17	39.77620554	-80.82472963	
13,109.00	90.59	308.42	6,471.85	4,431.90	-5,630.60	14,445,349.61	1,689,586.70	39.77636790	-80.82499429	
13,204.00	89.89	308.51	6,471.45	4,490.99	-5,704.98	14,445,408.71	1,689,512.32	39.77653059	-80.82525862	
13,299.00	89.54	308.24	6,471.92	4,549.97	-5,779.46	14,445,467.68	1,689,437.84	39.77669295	-80.82552328	
13,394.00	89.63	307.71	6,472.61	4,608.42	-5,854.34	14,445,526.13	1,689,362.96	39.77685388	-80.82578941	
13,489.00	89.71	307.45	6,473.16	4,666.36	-5,929.63	14,445,584.07	1,689,287.67	39.77701339	-80.82605696	
13,584.00	89.63	306.75	6,473.70	4,723.66	-6,005.39	14,445,641.37	1,689,211.90	39.77717117	-80.82632625	
13,679.00	90.46	307.71	6,473.63	4,781.14	-6,081.03	14,445,698.85	1,689,136.26	39.77732941	-80.82659506	
13,774.00	90.99	307.63	6,472.43	4,839.19	-6,156.22	14,445,756.90	1,689,061.07	39.77748924	-80.82686228	
13,870.00	91.43	307.45	6,470.40	4,897.67	-6,232.33	14,445,815.38	1,688,984.97	39.77765024	-80.82713275	
13,964.00	91.25	306.92	6,468.20	4,954.47	-6,307.20	14,445,872.18	1,688,910.10	39.77780662	-80.82739884	
14,058.00	91.38	307.19	6,466.05	5,011.09	-6,382.19	14,445,928.81	1,688,835.11	39.77796253	-80.82766538	
Survey @ 14058.00 MD 6466.05 TVD										
14,112.00	91.38	307.19	6,464.74	5,043.72	-6,425.20	14,445,961.44	1,688,792.10	39.77805238	-80.82781823	
Survey Projected to 14112.00 MD 6464.74 TVD										



Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Blake 01 HM (slot G)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1326+18 @ 1344.00ft (Precision 528)
Site:	Blake Pad	MD Reference:	RKB=1326+18 @ 1344.00ft (Precision 528)
Well:	Blake 01 HM (slot G)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Aug0116_LT_v14

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Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
267.00	266.99	1.35	0.43	MWD surveys
14,058.00	6,466.05	5,011.09	-6,382.19	Survey @ 14058.00 MD 6466.05 TVD
14,112.00	6,464.74	5,043.72	-6,425.20	Survey Projected to 14112.00 MD 6464.74 TVD

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