

Company:	Tug Hill Operating, LLC	Local Co-ordinate Reference:	Well Heaven Hill 2-05 HM (slot G)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1331+33 @ 1364.00usft (Nabors X08)
Site:	Heaven Hill 2	MD Reference:	RKB=1331+33 @ 1364.00usft (Nabors X08)
Well:	Heaven Hill 2-05 (slot G)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Jul2216dt_v14

Project	Marshall County, West Virginia		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (82 to 78 W)		

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Site	Heaven Hill 2		
Site Position:		Northing:	14,457,660.30 usft
From:	Lat/Long	Easting:	1,720,974.97 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	39.80995400
		Longitude:	-80.71313800
		Grid Convergence:	0.18 °

WV Department of Environmental Protection

Well	Heaven Hill 2-05 HM (slot G)				
Well Position	+N/-S	0.00 usft	Latitude:	39.80998480	
	+E/-W	0.00 usft	Longitude:	-80.71297580	
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level:	1,331.00 usft

Wellbore	Original Hole		
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	MF2015	7/15/2017	-8.69	66.97	52,176.45988093
	MF2015	3/31/2018	-8.71	66.91	52,094.50795421

Design	Surveys Original Hole		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:			
	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°)
			160.15

Survey Program	Date 6/17/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	2,814.00	Gyro (Original Hole)	NS-GYRO-MS	North sensing gyrocompassing m/s
2,924.00	6,427.00	MWD TIP=2814 MD (Original Hole)	MWD	MWD - Standard
6,500.00	15,039.00	MWD lat (Original Hole)	MWD	MWD - Standard
15,089.00	15,089.00	Projection (Original Hole)	MWD	MWD - Standard

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,457,671.66	1,721,020.48	39.80998480	-80.71297580
100.00	1.34	17.37	99.99	0.71	-0.93	14,457,672.37	1,721,019.55	39.80998676	-80.71297910
Gyro									
200.00	1.12	17.10	199.97	1.51	-2.83	14,457,673.17	1,721,017.65	39.80998896	-80.71298587
300.00	0.52	16.04	299.96	1.72	-4.24	14,457,673.38	1,721,016.24	39.80998956	-80.71299088
400.00	0.38	15.08	399.96	2.13	-4.84	14,457,673.80	1,721,015.64	39.80999070	-80.71299302
500.00	0.30	14.85	499.95	2.60	-5.20	14,457,674.26	1,721,015.29	39.80999199	-80.71299428
600.00	0.43	14.14	599.95	3.12	-5.23	14,457,674.79	1,721,015.25	39.80999343	-80.71299440

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Design:	Surveys Original	Database:	DB_Jul2216dt_v14

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Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	WV Department of Environmental Protection	
								Latitude	Longitude
700.00	0.60	22.18	699.95	3.75	-5.52	14,457,675.41	1,721,014.96	39.80999514	-80.71299542
800.00	0.63	22.94	799.95	4.27	-5.47	14,457,675.93	1,721,015.01	39.80999656	-80.71299524
900.00	0.34	22.82	899.94	4.33	-4.74	14,457,676.00	1,721,015.75	39.80999674	-80.71299262
1,000.00	0.31	22.10	999.94	4.38	-4.33	14,457,676.04	1,721,016.15	39.80999686	-80.71299118
1,100.00	0.18	22.18	1,099.94	4.74	-4.14	14,457,676.41	1,721,016.35	39.80999787	-80.71299048
1,200.00	0.13	22.64	1,199.94	5.00	-4.15	14,457,676.66	1,721,016.33	39.80999857	-80.71299054
1,300.00	0.15	22.52	1,299.94	4.97	-4.18	14,457,676.64	1,721,016.31	39.80999850	-80.71299062
1,400.00	0.14	22.52	1,399.94	4.73	-4.19	14,457,676.39	1,721,016.29	39.80999783	-80.71299067
1,500.00	0.41	22.35	1,499.94	4.78	-3.91	14,457,676.44	1,721,016.57	39.80999796	-80.71298968
1,600.00	0.57	22.28	1,599.94	5.18	-3.16	14,457,676.84	1,721,017.33	39.80999905	-80.71298698
1,700.00	1.14	22.58	1,699.92	6.08	-1.98	14,457,677.74	1,721,018.50	39.81000151	-80.71298279
1,800.00	1.57	22.53	1,799.90	8.08	-0.93	14,457,679.75	1,721,019.56	39.81000701	-80.71297901
1,900.00	0.51	22.03	1,899.88	9.85	-0.51	14,457,681.51	1,721,019.97	39.81001186	-80.71297752
2,000.00	0.62	22.80	1,999.88	10.31	-0.96	14,457,681.98	1,721,019.52	39.81001313	-80.71297910
2,100.00	1.20	22.95	2,099.87	9.29	-1.52	14,457,680.95	1,721,018.97	39.81001033	-80.71298110
2,200.00	1.61	22.88	2,199.84	7.30	-2.58	14,457,678.97	1,721,017.91	39.81000488	-80.71298490
2,300.00	1.31	22.38	2,299.81	5.57	-4.45	14,457,677.23	1,721,016.04	39.81000014	-80.71299157
2,400.00	1.07	22.07	2,399.79	4.11	-5.92	14,457,675.78	1,721,014.56	39.80999614	-80.71299685
2,500.00	0.62	22.27	2,499.78	3.00	-6.89	14,457,674.66	1,721,013.60	39.80999310	-80.71300029
2,600.00	0.58	22.62	2,599.77	2.05	-7.26	14,457,673.72	1,721,013.23	39.80999051	-80.71300162
2,700.00	0.62	22.23	2,699.77	1.41	-7.84	14,457,673.08	1,721,012.65	39.80998875	-80.71300370
2,800.00	1.08	22.52	2,799.76	0.57	-8.99	14,457,672.23	1,721,011.50	39.80998645	-80.71300779
2,814.00	1.87	22.79	2,813.75	0.25	-9.14	14,457,671.92	1,721,011.34	39.80998558	-80.71300836
2,924.00	0.97	22.78	2,923.72	-1.76	-10.57	14,457,669.90	1,721,009.91	39.80998006	-80.71301346
MWD surveys									
2,987.00	1.01	22.75	2,986.71	-1.87	-11.63	14,457,669.79	1,721,008.86	39.80997976	-80.71301722
3,082.00	0.60	22.76	3,081.70	-1.77	-12.96	14,457,669.90	1,721,007.53	39.80998006	-80.71302195
3,177.00	0.89	22.65	3,176.69	-1.52	-14.15	14,457,670.14	1,721,006.33	39.80998074	-80.71302621
3,271.00	0.66	22.55	3,270.68	-0.98	-15.28	14,457,670.69	1,721,005.20	39.80998226	-80.71303024
3,366.00	0.90	22.46	3,365.68	-0.42	-16.44	14,457,671.24	1,721,004.05	39.80998379	-80.71303433
3,461.00	1.14	22.01	3,460.66	-0.52	-18.03	14,457,671.14	1,721,002.46	39.80998352	-80.71304000
3,556.00	2.73	22.90	3,555.61	-2.20	-20.74	14,457,669.47	1,720,999.75	39.80997895	-80.71304967
3,650.00	4.56	22.81	3,649.41	-6.12	-25.23	14,457,665.54	1,720,995.26	39.80996822	-80.71306570
3,745.00	6.77	22.18	3,743.94	-12.77	-31.84	14,457,658.90	1,720,988.65	39.80995002	-80.71308931
3,839.00	8.63	22.47	3,837.09	-21.78	-40.64	14,457,649.89	1,720,979.84	39.80992536	-80.71312076
3,933.00	10.45	22.06	3,929.79	-32.72	-51.72	14,457,638.94	1,720,968.77	39.80989539	-80.71316034
4,028.00	13.20	22.28	4,022.76	-46.34	-65.63	14,457,625.33	1,720,954.85	39.80985812	-80.71321004
4,123.00	15.71	22.75	4,114.75	-62.79	-82.71	14,457,608.88	1,720,937.77	39.80981311	-80.71327104
4,217.00	19.31	22.79	4,204.38	-82.15	-103.31	14,457,589.51	1,720,917.17	39.80976010	-80.71334463
4,312.00	23.71	22.16	4,292.74	-106.85	-127.84	14,457,564.81	1,720,892.64	39.80969248	-80.71343225
4,406.00	27.29	22.87	4,377.57	-136.70	-155.16	14,457,534.97	1,720,865.32	39.80961077	-80.71352987
4,501.00	27.86	22.79	4,461.78	-169.46	-184.49	14,457,502.20	1,720,836.00	39.80952104	-80.71363468
4,595.00	26.08	22.56	4,545.55	-201.06	-213.10	14,457,470.60	1,720,807.38	39.80943451	-80.71373693
4,690.00	27.43	22.44	4,630.42	-230.10	-244.35	14,457,441.57	1,720,776.13	39.80935505	-80.71384853
4,785.00	28.83	22.08	4,714.21	-256.19	-280.70	14,457,415.48	1,720,739.79	39.80928371	-80.71397825
4,880.00	32.90	22.70	4,795.74	-283.56	-321.00	14,457,388.11	1,720,699.48	39.80920890	-80.71412207
4,975.00	31.42	22.45	4,876.16	-313.56	-361.69	14,457,358.10	1,720,658.79	39.80912686	-80.71426731
5,070.00	33.97	22.08	4,956.11	-344.23	-402.83	14,457,327.43	1,720,617.66	39.80904300	-80.71441413
5,164.00	32.25	22.29	5,034.84	-374.98	-443.94	14,457,296.68	1,720,576.54	39.80895891	-80.71456088
5,259.00	30.33	22.76	5,116.03	-406.30	-482.04	14,457,265.36	1,720,538.45	39.80887323	-80.71469688
5,353.00	28.98	22.16	5,197.72	-437.43	-516.58	14,457,234.23	1,720,503.90	39.80878804	-80.71482025
5,448.00	28.55	22.26	5,280.99	-468.19	-550.40	14,457,203.47	1,720,470.09	39.80870385	-80.71494101
5,543.00	29.14	22.90	5,364.21	-498.21	-585.03	14,457,173.46	1,720,435.45	39.80862173	-80.71506467
5,638.00	27.84	22.90	5,447.71	-525.87	-620.88	14,457,145.80	1,720,399.61	39.80854609	-80.71519263
5,732.00	27.37	22.03	5,531.01	-551.18	-656.32	14,457,120.48	1,720,364.16	39.80847688	-80.71531913

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Survey								WV Department of Environmental Protection	
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5,827.00	27.44	333	5,615.35	-577.38	-691.32	14,457,094.28	1,720,329.16	39.80840523	-80.71544406
5,921.00	28.48	342	5,698.38	-604.29	-726.23	14,457,067.38	1,720,294.25	39.80833165	-80.71556866
6,016.00	29.02	350	5,781.67	-631.31	-763.06	14,457,040.35	1,720,257.42	39.80825776	-80.71570012
6,111.00	29.88	358	5,864.39	-658.09	-801.33	14,457,013.58	1,720,219.15	39.80818455	-80.71583670
6,205.00	30.10	367	5,945.81	-685.46	-839.52	14,456,986.20	1,720,180.97	39.80810970	-80.71597297
6,299.00	29.36	372	6,027.44	-714.32	-876.10	14,456,957.35	1,720,144.38	39.80803078	-80.71610356
6,394.00	30.19	378	6,109.91	-746.24	-910.79	14,456,925.42	1,720,109.69	39.80794342	-80.71622745
6,427.00	31.14	385	6,138.30	-758.18	-922.65	14,456,913.48	1,720,097.83	39.80791072	-80.71626981
6,502.00	30.24	388	6,202.81	-786.97	-947.79	14,456,884.69	1,720,072.69	39.80783188	-80.71635967
6,597.00	31.74	395	6,284.36	-828.82	-972.53	14,456,842.84	1,720,047.95	39.80771716	-80.71644823
6,692.00	41.32	405	6,360.66	-882.21	-990.56	14,456,789.46	1,720,029.92	39.80757072	-80.71651303
6,786.00	49.23	417	6,426.80	-947.66	-1,003.17	14,456,724.01	1,720,017.31	39.80739108	-80.71655867
6,881.00	51.08	425	6,487.67	-1,020.16	-1,010.93	14,456,651.50	1,720,009.55	39.80719203	-80.71658712
6,976.00	53.85	432	6,545.59	-1,095.40	-1,012.32	14,456,576.27	1,720,008.17	39.80698543	-80.71659290
7,071.00	57.05	438	6,599.53	-1,172.95	-1,003.02	14,456,498.72	1,720,017.46	39.80677238	-80.71656068
7,166.00	59.60	443	6,649.46	-1,250.96	-982.15	14,456,420.71	1,720,038.33	39.80655796	-80.71648725
7,261.00	63.21	448	6,694.95	-1,328.52	-951.64	14,456,343.14	1,720,068.84	39.80634468	-80.71637948
7,355.00	65.93	452	6,735.32	-1,404.67	-914.19	14,456,266.99	1,720,106.30	39.80613523	-80.71624697
7,449.00	68.18	455	6,771.97	-1,479.91	-871.42	14,456,191.75	1,720,149.06	39.80592823	-80.71609555
7,543.00	70.20	458	6,805.37	-1,555.97	-827.45	14,456,115.69	1,720,193.03	39.80571896	-80.71593984
7,637.00	80.48	461	6,829.13	-1,636.39	-785.27	14,456,035.27	1,720,235.22	39.80549775	-80.71579055
7,732.00	81.93	463	6,843.66	-1,720.33	-743.22	14,455,951.34	1,720,277.27	39.80526687	-80.71564177
7,827.00	85.32	465	6,854.20	-1,803.79	-699.13	14,455,867.87	1,720,321.35	39.80503727	-80.71548574
7,921.00	90.77	467	6,857.41	-1,885.59	-653.00	14,455,786.07	1,720,367.48	39.80481223	-80.71532241
8,016.00	92.26	468	6,854.90	-1,967.51	-604.97	14,455,704.15	1,720,415.52	39.80458684	-80.71515231
8,111.00	89.67	469	6,853.30	-2,049.59	-557.18	14,455,622.08	1,720,463.31	39.80436101	-80.71498309
8,205.00	90.24	470	6,853.37	-2,131.92	-511.82	14,455,539.75	1,720,508.66	39.80413452	-80.71482253
8,300.00	90.99	471	6,852.35	-2,215.64	-466.95	14,455,456.02	1,720,553.54	39.80390419	-80.71466370
8,395.00	88.13	472	6,853.08	-2,298.56	-420.61	14,455,373.11	1,720,599.88	39.80367608	-80.71449965
8,490.00	88.79	473	6,855.64	-2,380.40	-372.45	14,455,291.26	1,720,648.04	39.80345089	-80.71432910
8,585.00	89.54	474	6,857.02	-2,462.08	-323.96	14,455,209.58	1,720,696.53	39.80322615	-80.71415738
8,679.00	90.68	475	6,856.84	-2,543.06	-276.22	14,455,128.61	1,720,744.26	39.80300336	-80.71398833
8,774.00	91.30	476	6,855.20	-2,624.77	-227.80	14,455,046.89	1,720,792.69	39.80277852	-80.71381685
8,868.00	89.19	477	6,854.80	-2,705.04	-178.89	14,454,966.62	1,720,841.59	39.80255766	-80.71364363
8,963.00	88.92	478	6,856.36	-2,785.35	-128.16	14,454,886.32	1,720,892.32	39.80233667	-80.71346393
9,057.00	90.11	479	6,857.16	-2,865.38	-78.89	14,454,806.28	1,720,941.60	39.80211644	-80.71328939
9,152.00	90.90	480	6,856.32	-2,946.69	-29.77	14,454,724.97	1,720,990.72	39.80189271	-80.71311544
9,246.00	89.89	481	6,855.67	-3,027.62	18.03	14,454,644.04	1,721,038.51	39.80167003	-80.71294619
9,341.00	90.55	482	6,855.31	-3,110.37	64.70	14,454,561.30	1,721,085.18	39.80144238	-80.71278096
9,436.00	90.68	483	6,854.29	-3,193.00	111.56	14,454,478.66	1,721,132.04	39.80121504	-80.71261507
9,531.00	87.34	484	6,855.93	-3,274.70	159.98	14,454,396.97	1,721,180.46	39.80099025	-80.71244361
9,625.00	87.03	485	6,860.55	-3,355.20	208.28	14,454,316.46	1,721,228.77	39.80076874	-80.71227254
9,720.00	87.47	486	6,865.10	-3,437.13	256.16	14,454,234.54	1,721,276.65	39.80054333	-80.71210300
9,814.00	90.07	487	6,867.12	-3,518.69	302.83	14,454,152.97	1,721,323.31	39.80031892	-80.71193779
9,909.00	90.77	488	6,866.43	-3,601.62	349.17	14,454,070.05	1,721,369.66	39.80009078	-80.71177374
10,003.00	91.16	489	6,864.84	-3,683.73	394.90	14,453,987.93	1,721,415.38	39.79986487	-80.71161189
10,098.00	92.09	490	6,862.15	-3,766.59	441.29	14,453,905.08	1,721,461.77	39.79963691	-80.71144767
10,192.00	91.56	491	6,859.16	-3,849.29	485.86	14,453,822.38	1,721,506.35	39.79940940	-80.71128991
10,287.00	91.87	492	6,856.31	-3,933.86	529.05	14,453,737.81	1,721,549.53	39.79917677	-80.71113714
10,381.00	88.70	493	6,855.84	-4,017.59	571.72	14,453,654.07	1,721,592.21	39.79894643	-80.71098616
10,475.00	89.54	494	6,857.29	-4,101.37	614.33	14,453,570.30	1,721,634.82	39.79871598	-80.71083541
10,569.00	89.14	495	6,858.37	-4,184.88	657.46	14,453,486.78	1,721,677.94	39.79848625	-80.71068284
10,664.00	87.12	496	6,861.47	-4,268.36	702.70	14,453,403.31	1,721,723.18	39.79825661	-80.71052274
10,759.00	87.56	497	6,865.88	-4,351.19	749.00	14,453,320.47	1,721,769.48	39.79802871	-80.71035884
10,853.00	87.87	498	6,869.63	-4,432.86	795.39	14,453,238.81	1,721,815.88	39.79780402	-80.71019461

Company: Tug Hill Operating, LLC	Local Co-ordinate Reference: Well Heaven Hill 2-05 HM (slot G)
Project: Marshall County West Virginia	TVD Reference: RKB=1331+33 @ 1364.00usft (Nabors X08)
Site: Heaven Hill 2	MD Reference: RKB=1331+33 @ 1364.00usft (Nabors X08)
Well: Heaven Hill 2-05 (slot G)	North Reference: Grid
Wellbore: Original Hole	Survey Calculation Method: Minimum Curvature
Design: Surveys Original	Database: DB_Jul2216dt_v14

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Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,948.00	88.44	289	6,872.69	-4,515.53	842.10	14,453,156.14	1,721,862.58	39.79757658	-80.71002928
11,042.00	89.45	290	6,874.42	-4,597.28	888.45	14,453,074.38	1,721,908.93	39.79735164	-80.70986521
11,137.00	89.58	290	6,875.22	-4,677.86	938.74	14,452,993.81	1,721,959.22	39.79712992	-80.70968710
11,231.00	92.13	295	6,873.82	-4,756.49	990.20	14,452,915.17	1,722,010.68	39.79691350	-80.70950480
11,326.00	92.84	298	6,869.70	-4,836.46	1,041.31	14,452,835.20	1,722,061.79	39.79669342	-80.70932375
11,421.00	91.65	294	6,865.98	-4,917.10	1,091.39	14,452,754.56	1,722,111.87	39.79647152	-80.70914641
11,515.00	90.11	294	6,864.53	-4,997.88	1,139.43	14,452,673.78	1,722,159.91	39.79624925	-80.70897631
11,610.00	88.70	296	6,865.52	-5,080.19	1,186.85	14,452,591.47	1,722,207.33	39.79602280	-80.70880843
11,704.00	89.54	298	6,866.96	-5,162.16	1,232.83	14,452,509.50	1,722,253.31	39.79579727	-80.70864567
11,799.00	89.76	298	6,867.55	-5,244.91	1,279.49	14,452,426.76	1,722,299.98	39.79556961	-80.70848050
11,894.00	90.68	297	6,867.18	-5,327.58	1,326.29	14,452,344.08	1,722,346.77	39.79534214	-80.70831487
11,988.00	88.44	294	6,867.90	-5,409.42	1,372.52	14,452,262.25	1,722,393.01	39.79511699	-80.70815122
12,083.00	88.70	293	6,870.27	-5,492.00	1,419.42	14,452,179.67	1,722,439.91	39.79488979	-80.70798520
12,178.00	89.49	295	6,871.77	-5,575.02	1,465.58	14,452,096.65	1,722,486.06	39.79466138	-80.70782186
12,272.00	90.24	294	6,872.00	-5,657.59	1,510.49	14,452,014.07	1,722,530.98	39.79443421	-80.70766291
12,367.00	91.34	297	6,870.69	-5,741.17	1,555.63	14,451,930.49	1,722,576.11	39.79420427	-80.70750320
12,461.00	90.68	295	6,869.03	-5,823.94	1,600.16	14,451,847.73	1,722,620.64	39.79397657	-80.70734564
12,556.00	91.21	294	6,867.46	-5,907.62	1,645.09	14,451,764.04	1,722,665.58	39.79374635	-80.70718663
12,651.00	90.33	297	6,866.18	-5,991.48	1,689.71	14,451,680.18	1,722,710.20	39.79351565	-80.70702877
12,746.00	90.29	297	6,865.67	-6,074.72	1,735.48	14,451,596.94	1,722,755.97	39.79328663	-80.70686679
12,840.00	90.37	297	6,865.13	-6,155.59	1,783.40	14,451,516.08	1,722,803.88	39.79306413	-80.70669715
12,935.00	89.41	297	6,865.31	-6,235.94	1,834.07	14,451,435.72	1,722,854.55	39.79284300	-80.70651770
13,029.00	90.20	297	6,865.63	-6,315.06	1,884.82	14,451,356.60	1,722,905.30	39.79262525	-80.70633796
13,123.00	90.51	297	6,865.05	-6,393.99	1,935.87	14,451,277.67	1,722,956.35	39.79240804	-80.70615715
13,218.00	88.62	295	6,865.77	-6,472.87	1,988.80	14,451,198.80	1,723,009.28	39.79219095	-80.70596963
13,313.00	89.98	295	6,866.93	-6,551.42	2,042.21	14,451,120.25	1,723,062.70	39.79197475	-80.70578040
13,408.00	90.95	294	6,866.16	-6,630.26	2,095.20	14,451,041.40	1,723,115.69	39.79175775	-80.70559268
13,503.00	90.11	296	6,865.28	-6,710.26	2,146.42	14,450,961.41	1,723,166.91	39.79153759	-80.70541129
13,597.00	89.41	297	6,865.68	-6,791.59	2,193.53	14,450,880.08	1,723,214.02	39.79131381	-80.70524454
13,692.00	90.95	294	6,865.38	-6,875.14	2,238.73	14,450,796.52	1,723,259.21	39.79108394	-80.70508462
13,786.00	89.98	295	6,864.61	-6,958.33	2,282.49	14,450,713.34	1,723,302.98	39.79085509	-80.70492979
13,881.00	88.40	294	6,865.96	-7,042.18	2,327.11	14,450,629.48	1,723,347.59	39.79062440	-80.70477195
13,976.00	89.45	294	6,867.74	-7,125.52	2,372.69	14,450,546.15	1,723,393.17	39.79039513	-80.70461068
14,071.00	90.07	294	6,868.14	-7,208.86	2,418.27	14,450,462.80	1,723,438.75	39.79016583	-80.70444939
14,165.00	91.30	297	6,867.01	-7,291.33	2,463.37	14,450,380.34	1,723,483.85	39.78993895	-80.70428981
14,259.00	89.49	295	6,866.37	-7,373.06	2,509.79	14,450,298.61	1,723,530.27	39.78971408	-80.70412552
14,354.00	89.80	294	6,866.95	-7,454.75	2,558.28	14,450,216.92	1,723,578.77	39.78948930	-80.70395386
14,448.00	90.33	297	6,866.85	-7,534.79	2,607.56	14,450,136.88	1,723,628.05	39.78926904	-80.70377937
14,543.00	89.41	295	6,867.06	-7,615.57	2,657.55	14,450,056.09	1,723,678.04	39.78904674	-80.70360237
14,638.00	90.37	297	6,867.25	-7,696.69	2,706.98	14,449,974.97	1,723,727.47	39.78882350	-80.70342736
14,732.00	89.98	297	6,866.96	-7,777.59	2,754.85	14,449,894.07	1,723,775.33	39.78860090	-80.70325794
14,827.00	90.55	297	6,866.52	-7,860.37	2,801.45	14,449,811.29	1,723,821.94	39.78837314	-80.70309301
14,921.00	89.80	297	6,866.23	-7,941.45	2,849.00	14,449,730.22	1,723,869.48	39.78815005	-80.70292470
15,016.00	89.67	296	6,866.67	-8,021.25	2,900.53	14,449,650.41	1,723,921.01	39.78793042	-80.70274222
15,039.00	89.93	296	6,866.75	-8,040.28	2,913.45	14,449,631.38	1,723,933.93	39.78787804	-80.70269646
Survey @ 15039.00 MD 6866.75 TVD									
15,089.00	89.93	296	6,866.81	-8,081.54	2,941.69	14,449,590.12	1,723,962.17	39.78776447	-80.70259642
Survey projected to 15089.00 MD 6866.81 TVD									

WV Department of Environmental Protection

Company:	Tug Hill Operating, LLC	Local Co-ordinate Reference:	Well Heaven Hill 2-05 HM (slot G)
Project:	Marshall County West Virginia	TVD Reference:	RKB=1331+33 @ 1364.00usft (Nabors X08)
Site:	Heaven Hill 2	MD Reference:	RKB=1331+33 @ 1364.00usft (Nabors X08)
Well:	Heaven Hill 2-05 HM (slot G)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original	Database:	DB_Jul2216dt_v14

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
100.00	99.99	0.71	-0.93	Gyro
2,924.00	2,923.72	-1.76	-10.57	MWD surveys
15,039.00	15,038.866.75	-8,040.28	2,913.45	Survey @ 15039.00 MD 6866.75 TVD
15,089.00	15,088.866.81	-8,081.54	2,941.69	Survey projected to 15089.00 MD 6866.81 TVD

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