



TUG HILL
OPERATING

Well: Burch Ridge 6 HU (slot F)
Site: Burch Ridge
Project: Marshall County, West Virginia
Design: rev7
Rig: HP 611

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
1	11176.00	7.38	132.96	10569.43	2678.59	-1405.01	0.00	0.000	-3020.34	Survey @ 11176.00 MD 10569.43 TVD
2	11234.00	10.09	136.42	10626.75	2672.37	-1398.78	4.76	12.688	-3011.81	Proj. Begin 8.33°/100' build/turn
3	12137.79	85.00	151.90	11195.30	2138.84	-1085.78	8.33	15.956	-2393.26	Begin 8.33°/100' build/turn
4	12191.08	89.00	149.98	11198.09	2092.34	-1059.94	8.33	-25.697	-2340.07	Begin 89.00° lateral
5	24559.42	89.00	149.98	11413.43	-8614.78	5127.73	0.00	0.000	10025.37	PBHL/TD 24559.42/11413.43

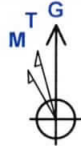
ANNOTATIONS SURVEYS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Annotation
177.00	1.05	98.07	176.99	-0.23	1.61	1.02	MWD surveys
24470.00	88.90	150.89	11409.61	-8547.25	5101.31	9953.83	Survey @ 24470.00 MD 11409.61 TVD
24541.00	88.90	150.89	11410.97	-8609.27	5135.84	10024.79	Survey Proj. to 24541.00 MD 11410.97 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=1313+25 @ 1338.00ft (HP 611)

Northing	Easting	Latitude	Longitude
14437347.35	1695925.32	39.75435517	-80.80249684

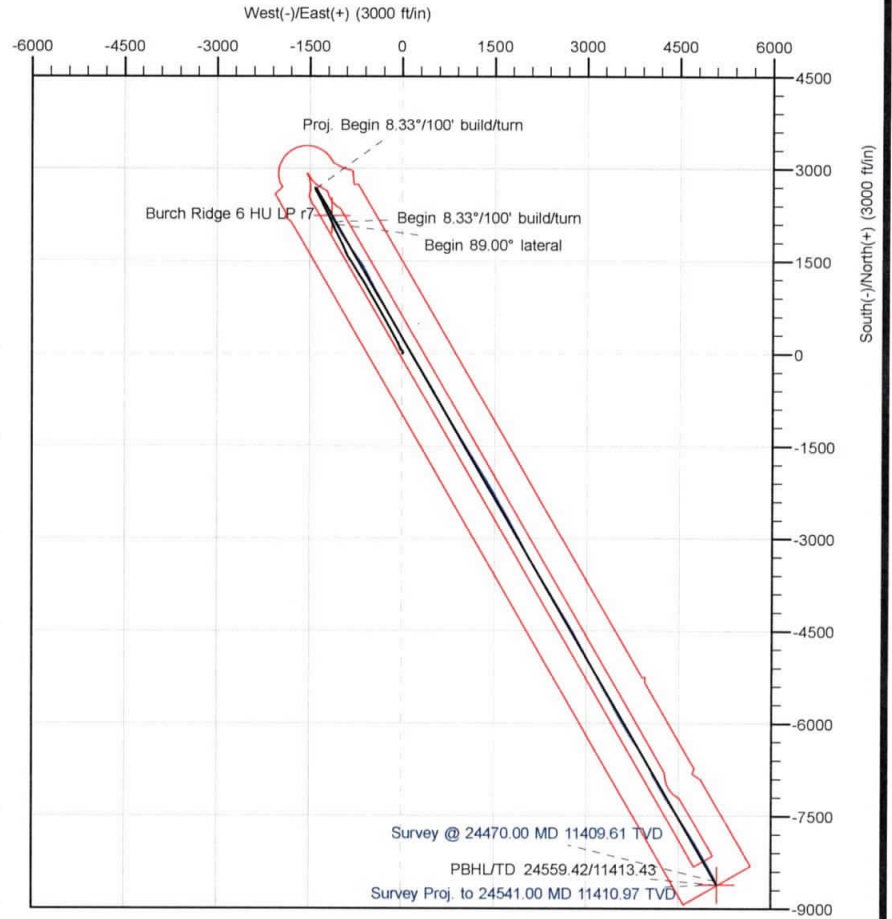
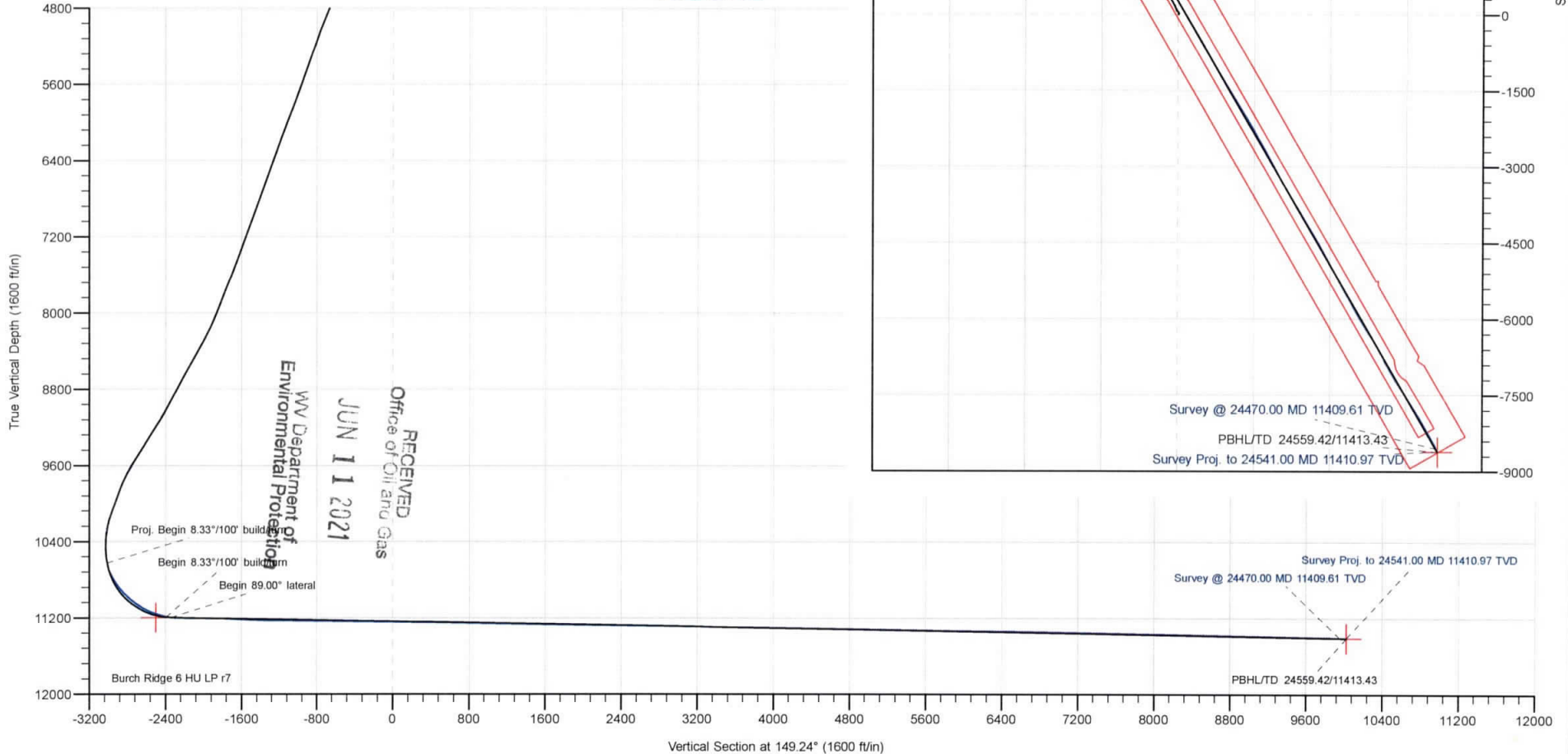


Azimuths to Grid North
True North: -0.13°
Magnetic North: -8.72°

Magnetic Field
Strength: 51813.3nT
Dip Angle: 66.60°
Date: 10/4/2020
Model: IGRF2020



Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.716°





Standard Survey-Geographic



Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Burch Ridge 6 HU (slot F)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Site:	Burch Ridge	MD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Well:	Burch Ridge 6 HU (slot F)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

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	Burch Ridge				
Site Position:		Northing:	14,437,347.35 usft	Latitude:	39.75435517
From:	Lat/Long	Easting:	1,695,925.32 usft	Longitude:	-80.80249684
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.126 °

Well	Burch Ridge 6 HU (slot F)					
Well Position	+N/-S	0.00 ft	Northing:	14,437,347.35 usft	Latitude:	39.75435517
	+E/-W	0.00 ft	Easting:	1,695,925.32 usft	Longitude:	-80.80249684
Position Uncertainty	0.00 ft		Wellhead Elevation:	ft	Ground Level:	1,313.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	10/4/2020	-8.590	66.595	51,813.26482342

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	149.24	

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Wellbore: Original Hole
Design: Surveys Original Hole

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MD Reference: RKB=1313+25 @ 1338.00ft (HP 611)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: DB_Dec2220_v16

Survey Program	Date											
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description								
177.00	2,671.00	MWD surf (Original Hole)	MWD	MWD - Standard								
2,806.00	24,470.00	MWD (Original Hole)	MWD	MWD - Standard								
24,541.00	24,541.00	Projection (Original Hole)	MWD	MWD - Standard								

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	V. Sec (ft)	Northing (usft)	Easting (usft)	Latitude (°)	Longitude (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	14,437,347.35	1,695,925.32	39.75435517	-80.80249684
177.00	1.05	98.07	176.99	-0.23	1.61	1.02	14,437,347.12	1,695,926.92	39.75435454	-80.80249113
MWD surveys										
214.00	1.01	99.30	213.98	-0.33	2.26	1.44	14,437,347.02	1,695,927.58	39.75435426	-80.80248879
227.00	1.01	96.31	226.98	-0.36	2.49	1.58	14,437,346.99	1,695,927.81	39.75435417	-80.80248798
265.00	0.88	94.46	264.98	-0.42	3.11	1.95	14,437,346.93	1,695,928.43	39.75435400	-80.80248576
295.00	0.88	91.48	294.97	-0.44	3.57	2.21	14,437,346.91	1,695,928.89	39.75435393	-80.80248413
324.00	0.79	91.30	323.97	-0.45	4.00	2.43	14,437,346.90	1,695,929.32	39.75435390	-80.80248262
356.00	0.75	93.23	355.97	-0.47	4.43	2.67	14,437,346.88	1,695,929.75	39.75435385	-80.80248110
386.00	0.70	90.86	385.97	-0.48	4.81	2.87	14,437,346.86	1,695,930.12	39.75435381	-80.80247975
415.00	0.79	97.63	414.96	-0.51	5.18	3.09	14,437,346.84	1,695,930.50	39.75435373	-80.80247841
447.00	0.92	88.49	446.96	-0.54	5.66	3.35	14,437,346.81	1,695,930.98	39.75435367	-80.80247672
477.00	1.14	77.24	476.95	-0.46	6.19	3.56	14,437,346.89	1,695,931.51	39.75435386	-80.80247483
507.00	1.45	69.24	506.95	-0.26	6.83	3.72	14,437,347.09	1,695,932.15	39.75435441	-80.80247253
537.00	1.89	62.03	536.93	0.10	7.63	3.81	14,437,347.45	1,695,932.94	39.75435541	-80.80246971
567.00	1.5	62.91	566.92	0.59	8.56	3.87	14,437,347.94	1,695,933.88	39.75435675	-80.80246637
598.00	1.42	59.13	597.89	1.19	9.64	3.91	14,437,348.54	1,695,934.96	39.75435839	-80.80246252
645.00	1.59	50.87	644.85	2.37	11.32	3.75	14,437,349.72	1,695,936.64	39.75436162	-80.80245655
688.00	2.86	44.10	687.80	3.76	12.82	3.33	14,437,351.10	1,695,938.14	39.75436541	-80.80245120
735.00	2.81	31.80	734.74	5.58	14.24	2.49	14,437,352.93	1,695,939.56	39.75437040	-80.80244612
777.00	3.03	27.49	776.69	7.44	15.30	1.43	14,437,354.78	1,695,940.62	39.75437550	-80.80244236

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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: DB_Dec2220_v16

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	V. Sec (ft)	Northing (usft)	Easting (usft)	Latitude (°)	Longitude (°)
824.00	3.25	23.18	823.61	9.76	16.39	0.00	14,437,357.11	1,695,941.71	39.75438188	-80.80243843
872.00	3.16	18.53	871.54	12.27	17.35	-1.67	14,437,359.62	1,695,942.67	39.75438876	-80.80243501
919.00	3.08	8.51	918.47	14.75	17.95	-3.49	14,437,362.09	1,695,943.27	39.75439556	-80.80243286
967.00	3.21	356.38	966.40	17.36	18.06	-5.68	14,437,364.71	1,695,943.37	39.75440274	-80.80243246
1,061.00	3.78	344.95	1,060.22	22.98	17.08	-11.01	14,437,370.33	1,695,942.40	39.75441818	-80.80243587
1,156.00	3.65	334.23	1,155.03	28.73	14.96	-17.04	14,437,376.08	1,695,940.28	39.75443398	-80.80244340
1,251.00	2.99	328.52	1,249.87	33.56	12.35	-22.53	14,437,380.91	1,695,937.67	39.75444727	-80.80245264
1,345.00	2.72	324.03	1,343.75	37.46	9.76	-27.20	14,437,384.81	1,695,935.08	39.75445799	-80.80246183
1,440.00	2.59	322.98	1,438.65	41.00	7.14	-31.58	14,437,388.35	1,695,932.46	39.75446772	-80.80247111
1,535.00	2.55	314.98	1,533.55	44.21	4.35	-35.76	14,437,391.55	1,695,929.67	39.75447655	-80.80248100
1,629.00	2.86	319.46	1,627.45	47.47	1.35	-40.10	14,437,394.81	1,695,926.67	39.75448552	-80.80249166
1,724.00	2.64	304.79	1,722.34	50.52	-1.99	-44.42	14,437,397.86	1,695,923.33	39.75449391	-80.80250351
1,819.00	2.02	295.38	1,817.26	52.48	-5.30	-47.81	14,437,399.83	1,695,920.02	39.75449933	-80.80251527
1,913.00	1.80	298.28	1,911.21	53.89	-8.09	-50.45	14,437,401.24	1,695,917.23	39.75450322	-80.80252521
2,008.00	2.77	333.44	2,006.14	56.65	-10.43	-54.02	14,437,404.00	1,695,914.89	39.75451082	-80.80253352
2,103.00	3.34	335.72	2,101.00	61.23	-12.60	-59.06	14,437,408.58	1,695,912.72	39.75452340	-80.80254118
2,197.00	3.43	322.10	2,194.84	65.94	-15.45	-64.57	14,437,413.29	1,695,909.87	39.75453636	-80.80255130
2,292.00	3.08	290.72	2,289.69	69.09	-19.58	-69.38	14,437,416.44	1,695,905.73	39.75454503	-80.80256598
2,387.00	3.88	264.36	2,384.58	69.77	-24.18	-72.32	14,437,417.12	1,695,901.14	39.75454693	-80.80258233
2,481.00	3.85	245.20	2,478.50	68.92	-27.75	-73.42	14,437,416.27	1,695,897.57	39.75454461	-80.80259502
2,576.00	3.45	274.38	2,573.47	68.37	-30.34	-74.27	14,437,415.72	1,695,894.98	39.75454312	-80.80260424
2,671.00	3.76	326.23	2,668.43	69.67	-32.35	-76.42	14,437,417.02	1,695,892.97	39.75454671	-80.80261138
2,806.00	3.47	348.73	2,803.29	75.40	-34.30	-82.34	14,437,422.75	1,695,891.02	39.75456246	-80.80261828
2,869.00	3.60	348.47	2,866.17	79.21	-35.07	-86.00	14,437,426.56	1,695,890.25	39.75457292	-80.80262098
2,964.00	5.14	349.96	2,960.89	86.33	-36.40	-92.80	14,437,433.67	1,695,888.92	39.75459247	-80.80262569
3,059.00	6.24	346.71	3,055.42	95.54	-38.33	-101.70	14,437,442.89	1,695,886.99	39.75461778	-80.80263248
3,153.00	7.34	341.17	3,148.76	106.20	-41.44	-112.45	14,437,453.54	1,695,883.87	39.75464707	-80.80264347

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3,248.00	8.22	339.50	3,242.89	118.30	-45.78	-125.07	14,437,465.65	1,695,879.54	39.75468034	-80.80265881
3,343.00	9.58	336.87	3,336.74	131.93	-51.27	-139.59	14,437,479.28	1,695,874.05	39.75471781	-80.80267821
3,437.00	11.25	336.60	3,429.19	147.54	-57.98	-156.44	14,437,494.89	1,695,867.34	39.75476072	-80.80270198
3,532.00	13.27	334.05	3,522.02	165.85	-66.43	-176.50	14,437,513.20	1,695,858.89	39.75481105	-80.80273191
3,627.00	16.35	330.10	3,613.85	187.25	-77.87	-200.74	14,437,534.60	1,695,847.45	39.75486990	-80.80277245
3,722.00	19.25	330.36	3,704.30	212.46	-92.29	-229.77	14,437,559.81	1,695,833.03	39.75493921	-80.80282353
3,816.00	20.96	332.74	3,792.57	240.88	-107.65	-262.05	14,437,588.23	1,695,817.67	39.75501734	-80.80287798
3,911.00	21.09	333.09	3,881.24	271.22	-123.17	-296.06	14,437,618.57	1,695,802.15	39.75510077	-80.80293296
4,006.00	21.62	330.71	3,969.72	301.73	-139.47	-330.61	14,437,649.08	1,695,785.85	39.75518465	-80.80299071
4,101.00	21.14	330.54	4,058.18	331.91	-156.46	-365.23	14,437,679.26	1,695,768.86	39.75526764	-80.80305092
4,195.00	21.01	331.68	4,145.90	361.50	-172.79	-399.01	14,437,708.85	1,695,752.53	39.75534901	-80.80310879
4,290.00	21.75	331.86	4,234.36	392.02	-189.17	-433.61	14,437,739.36	1,695,736.15	39.75543290	-80.80316684
4,385.00	22.24	333.09	4,322.44	423.57	-205.60	-469.13	14,437,770.92	1,695,719.71	39.75551965	-80.80322508
4,479.00	22.37	330.71	4,409.41	455.03	-222.41	-504.77	14,437,802.38	1,695,702.91	39.75560617	-80.80328462
4,574.00	22.37	329.40	4,497.26	486.36	-240.45	-540.91	14,437,833.71	1,695,684.87	39.75569231	-80.80334859
4,669.00	22.90	330.80	4,584.95	518.06	-258.67	-577.47	14,437,865.40	1,695,666.65	39.75577946	-80.80341317
4,764.00	23.03	329.57	4,672.42	550.21	-277.10	-614.53	14,437,897.56	1,695,648.22	39.75586789	-80.80347849
4,858.00	22.15	328.60	4,759.21	581.19	-295.65	-650.64	14,437,928.54	1,695,629.67	39.75595308	-80.80354424
4,956.00	21.62	330.10	4,850.14	612.61	-314.27	-687.16	14,437,959.96	1,695,611.05	39.75603948	-80.80361026
5,051.00	21.84	331.42	4,938.39	643.30	-331.45	-722.32	14,437,990.65	1,695,593.87	39.75612387	-80.80367114
5,146.00	21.27	330.19	5,026.75	673.77	-348.47	-757.21	14,438,021.12	1,695,576.85	39.75620765	-80.80373146
5,240.00	20.08	330.36	5,114.69	702.59	-364.93	-790.39	14,438,049.94	1,695,560.39	39.75628689	-80.80378979
5,335.00	20.08	331.51	5,203.92	731.10	-380.77	-822.99	14,438,078.45	1,695,544.55	39.75636528	-80.80384595
5,430.00	20.52	332.47	5,293.02	760.20	-396.25	-855.91	14,438,107.55	1,695,529.07	39.75644529	-80.80390079
5,524.00	19.42	331.07	5,381.37	788.49	-411.42	-887.98	14,438,135.83	1,695,513.90	39.75652306	-80.80395456
5,619.00	19.07	330.80	5,471.06	815.86	-426.63	-919.28	14,438,163.20	1,695,498.69	39.75659832	-80.80400847
5,714.00	19.20	331.33	5,560.81	843.11	-441.70	-950.40	14,438,190.46	1,695,483.62	39.75667326	-80.80406186

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5,808.00	19.69	330.63	5,649.45	870.47	-456.88	-981.68	14,438,217.82	1,695,468.44	39.75674849	-80.80411567
5,903.00	21.09	332.12	5,738.49	899.53	-472.73	-1,014.75	14,438,246.88	1,695,452.59	39.75682839	-80.80417182
5,998.00	21.36	332.82	5,827.05	930.03	-488.62	-1,049.09	14,438,277.37	1,695,436.70	39.75691224	-80.80422814
6,093.00	21.67	331.77	5,915.43	960.87	-504.82	-1,083.88	14,438,308.22	1,695,420.50	39.75699704	-80.80428554
6,187.00	20.92	329.48	6,003.01	990.62	-521.55	-1,118.00	14,438,337.97	1,695,403.77	39.75707884	-80.80434485
6,282.00	20.65	329.66	6,091.83	1,019.69	-538.63	-1,151.71	14,438,367.03	1,695,386.69	39.75715877	-80.80440537
6,377.00	19.95	328.25	6,180.93	1,047.93	-555.62	-1,184.67	14,438,395.27	1,695,369.70	39.75723643	-80.80446561
6,472.00	20.17	328.08	6,270.17	1,075.61	-572.81	-1,217.25	14,438,422.96	1,695,352.51	39.75731256	-80.80452655
6,567.00	20.04	327.46	6,359.38	1,103.23	-590.22	-1,249.89	14,438,450.58	1,695,335.10	39.75738852	-80.80458831
6,662.00	19.69	329.83	6,448.73	1,130.79	-607.02	-1,282.16	14,438,478.14	1,695,318.30	39.75746431	-80.80464786
6,756.00	19.42	329.13	6,537.30	1,157.90	-623.00	-1,313.63	14,438,505.24	1,695,302.32	39.75753884	-80.80470450
6,846.00	20.00	328.34	6,622.03	1,183.84	-638.75	-1,343.98	14,438,531.19	1,695,286.57	39.75761018	-80.80476036
6,941.00	19.99	327.55	6,711.30	1,211.37	-655.99	-1,376.45	14,438,558.72	1,695,269.33	39.75768589	-80.80482149
7,036.00	20.03	325.26	6,800.57	1,238.44	-673.98	-1,408.91	14,438,585.79	1,695,251.34	39.75776035	-80.80488527
7,131.00	19.95	325.70	6,889.85	1,265.20	-692.38	-1,441.32	14,438,612.55	1,695,232.94	39.75783394	-80.80495055
7,226.00	19.56	328.96	6,979.26	1,292.22	-709.71	-1,473.40	14,438,639.56	1,695,215.61	39.75790824	-80.80501202
7,321.00	19.77	329.65	7,068.72	1,319.71	-726.03	-1,505.37	14,438,667.05	1,695,199.29	39.75798383	-80.80506987
7,416.00	20.17	329.84	7,158.01	1,347.73	-742.38	-1,537.81	14,438,695.08	1,695,182.94	39.75806090	-80.80512782
7,511.00	20.34	329.74	7,247.13	1,376.16	-758.93	-1,570.70	14,438,723.50	1,695,166.39	39.75813905	-80.80518649
7,605.00	20.17	329.69	7,335.32	1,404.25	-775.35	-1,603.24	14,438,751.60	1,695,149.97	39.75821631	-80.80524470
7,700.00	20.25	328.86	7,424.47	1,432.46	-792.13	-1,636.06	14,438,779.80	1,695,133.19	39.75829387	-80.80530418
7,795.00	21.09	327.90	7,513.35	1,461.01	-809.71	-1,669.59	14,438,808.35	1,695,115.61	39.75837238	-80.80536653
7,890.00	22.28	326.88	7,601.63	1,490.57	-828.64	-1,704.67	14,438,837.91	1,695,096.68	39.75845367	-80.80543366
7,985.00	22.54	327.29	7,689.45	1,520.96	-848.33	-1,740.86	14,438,868.31	1,695,076.99	39.75853727	-80.80550348
8,079.00	21.31	330.45	7,776.66	1,550.98	-866.49	-1,775.95	14,438,898.33	1,695,058.83	39.75861982	-80.80556787
8,174.00	20.74	332.21	7,865.33	1,580.88	-882.85	-1,810.00	14,438,928.23	1,695,042.47	39.75870203	-80.80562584
8,269.00	21.36	332.82	7,953.99	1,611.15	-898.59	-1,844.07	14,438,958.50	1,695,026.73	39.75878526	-80.80568163

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Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia
Site: Burch Ridge
Well: Burch Ridge 6 HU (slot F)
Wellbore: Original Hole
Design: Surveys Original Hole

Local Co-ordinate Reference: Well Burch Ridge 6 HU (slot F)
TVD Reference: RKB=1313+25 @ 1338.00ft (HP 611)
MD Reference: RKB=1313+25 @ 1338.00ft (HP 611)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: DB_Dec2220_v16

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	V. Sec (ft)	Northing (usft)	Easting (usft)	Latitude (°)	Longitude (°)
8,364.00	22.06	334.22	8,042.25	1,642.61	-914.26	-1,879.11	14,438,989.95	1,695,011.07	39.75887174	-80.80573712
8,458.00	24.52	335.98	8,128.59	1,676.33	-929.87	-1,916.07	14,439,023.67	1,694,995.45	39.75896443	-80.80579244
8,553.00	27.33	336.07	8,214.02	1,714.27	-946.75	-1,957.31	14,439,061.62	1,694,978.57	39.75906874	-80.80585218
8,648.00	28.74	335.99	8,297.87	1,755.07	-964.89	-2,001.65	14,439,102.42	1,694,960.43	39.75918090	-80.80591642
8,742.00	29.31	333.96	8,380.07	1,796.39	-984.18	-2,047.02	14,439,143.73	1,694,941.14	39.75929448	-80.80598476
8,837.00	28.56	332.91	8,463.21	1,837.50	-1,004.73	-2,092.86	14,439,184.85	1,694,920.59	39.75940750	-80.80605757
8,932.00	30.06	333.09	8,546.04	1,878.94	-1,025.85	-2,139.26	14,439,226.28	1,694,899.48	39.75952143	-80.80613237
9,026.00	29.93	332.21	8,627.46	1,920.68	-1,047.43	-2,186.17	14,439,268.02	1,694,877.89	39.75963618	-80.80620886
9,121.00	28.61	332.82	8,710.32	1,961.88	-1,068.87	-2,232.54	14,439,309.22	1,694,856.45	39.75974946	-80.80628484
9,216.00	27.64	335.72	8,794.11	2,002.20	-1,088.33	-2,277.14	14,439,349.55	1,694,836.99	39.75986032	-80.80635375
9,311.00	27.25	336.95	8,878.42	2,042.30	-1,105.90	-2,320.59	14,439,389.65	1,694,819.42	39.75997055	-80.80641598
9,406.00	27.77	337.04	8,962.68	2,082.69	-1,123.05	-2,364.07	14,439,430.04	1,694,802.27	39.76008157	-80.80647669
9,500.00	30.15	334.93	9,044.92	2,124.25	-1,141.60	-2,409.26	14,439,471.59	1,694,783.72	39.76019580	-80.80654237
9,595.00	32.04	334.23	9,126.27	2,168.55	-1,162.67	-2,458.11	14,439,515.90	1,694,762.65	39.76031761	-80.80661699
9,689.00	32.69	333.43	9,205.66	2,213.71	-1,184.86	-2,508.27	14,439,561.06	1,694,740.46	39.76044176	-80.80669562
9,784.00	32.12	333.88	9,285.87	2,259.33	-1,207.46	-2,559.02	14,439,606.68	1,694,717.87	39.76056718	-80.80677567
9,879.00	31.68	333.35	9,366.52	2,304.31	-1,229.76	-2,609.08	14,439,651.65	1,694,695.56	39.76069082	-80.80685471
9,973.00	32.70	334.50	9,446.07	2,349.29	-1,251.77	-2,658.99	14,439,696.63	1,694,673.55	39.76081448	-80.80693266
10,068.00	31.82	334.67	9,526.41	2,395.09	-1,273.53	-2,709.47	14,439,742.43	1,694,651.79	39.76094038	-80.80700975
10,163.00	30.37	333.88	9,607.75	2,439.30	-1,294.79	-2,758.34	14,439,786.65	1,694,630.54	39.76106195	-80.80708504
10,257.00	27.07	333.77	9,690.18	2,479.75	-1,314.87	-2,803.37	14,439,827.10	1,694,610.45	39.76117315	-80.80715621
10,352.00	24.57	331.42	9,775.69	2,516.39	-1,334.08	-2,844.68	14,439,863.74	1,694,591.24	39.76127389	-80.80722428
10,447.00	20.52	331.41	9,863.41	2,548.38	-1,351.48	-2,881.07	14,439,895.73	1,694,573.84	39.76136185	-80.80728594
10,542.00	19.38	332.47	9,952.71	2,577.00	-1,366.71	-2,913.44	14,439,924.34	1,694,558.62	39.76144051	-80.80733991
10,627.00	19.91	333.17	10,032.76	2,602.42	-1,379.76	-2,941.96	14,439,949.76	1,694,545.56	39.76151041	-80.80738616
10,660.00	19.82	332.74	10,063.80	2,612.41	-1,384.86	-2,953.15	14,439,959.75	1,694,540.47	39.76153786	-80.80740422
10,703.00	19.65	333.35	10,104.27	2,625.35	-1,391.44	-2,967.64	14,439,972.69	1,694,533.88	39.76157345	-80.80742755

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Database: DB_Dec2220_v16

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	V. Sec (ft)	Northing (usft)	Easting (usft)	Latitude (°)	Longitude (°)
10,750.00	17.32	335.37	10,148.84	2,638.77	-1,397.90	-2,982.48	14,439,986.11	1,694,527.42	39.76161035	-80.80745043
10,797.00	15.25	338.18	10,193.96	2,650.87	-1,403.11	-2,995.55	14,439,998.21	1,694,522.21	39.76164361	-80.80746890
10,844.00	12.75	340.29	10,239.56	2,661.49	-1,407.16	-3,006.74	14,440,008.84	1,694,518.16	39.76167281	-80.80748322
10,892.00	9.58	340.82	10,286.64	2,670.25	-1,410.26	-3,015.86	14,440,017.60	1,694,515.06	39.76169689	-80.80749418
10,939.00	7.03	346.62	10,333.15	2,676.75	-1,412.21	-3,022.44	14,440,024.09	1,694,513.11	39.76171473	-80.80750107
10,987.00	4.22	355.76	10,380.91	2,681.37	-1,413.02	-3,026.82	14,440,028.71	1,694,512.30	39.76172742	-80.80750392
11,034.00	1.67	31.36	10,427.85	2,683.68	-1,412.79	-3,028.69	14,440,031.02	1,694,512.53	39.76173376	-80.80750309
11,081.00	2.51	115.91	10,474.83	2,683.81	-1,411.51	-3,028.15	14,440,031.16	1,694,513.81	39.76173413	-80.80749852
11,128.00	5.14	128.83	10,521.72	2,682.04	-1,408.94	-3,025.31	14,440,029.39	1,694,516.38	39.76172925	-80.80748941
11,176.00	7.38	132.96	10,569.43	2,678.59	-1,405.01	-3,020.34	14,440,025.94	1,694,520.31	39.76171976	-80.80747544
11,224.00	9.49	130.76	10,616.91	2,673.91	-1,399.76	-3,013.63	14,440,021.25	1,694,525.56	39.76170686	-80.80745678
11,264.00	13.36	139.64	10,656.11	2,668.23	-1,394.27	-3,005.94	14,440,015.57	1,694,531.06	39.76169124	-80.80743728
11,311.00	19.78	149.04	10,701.14	2,657.26	-1,386.65	-2,992.62	14,440,004.60	1,694,538.67	39.76166106	-80.80741026
11,358.00	26.15	153.35	10,744.40	2,641.17	-1,377.90	-2,974.31	14,439,988.51	1,694,547.42	39.76161681	-80.80737926
11,405.00	29.45	154.05	10,785.97	2,621.52	-1,368.20	-2,952.46	14,439,968.86	1,694,557.12	39.76156279	-80.80734488
11,453.00	33.58	154.32	10,826.88	2,598.93	-1,357.28	-2,927.47	14,439,946.28	1,694,568.04	39.76150070	-80.80730619
11,500.00	37.54	153.88	10,865.11	2,574.39	-1,345.26	-2,900.24	14,439,921.73	1,694,580.06	39.76143323	-80.80726361
11,548.00	40.48	153.88	10,902.40	2,547.40	-1,331.69	-2,870.10	14,439,894.74	1,694,593.64	39.76135903	-80.80721552
11,595.00	43.16	152.81	10,937.42	2,519.53	-1,317.37	-2,838.83	14,439,866.87	1,694,607.95	39.76128239	-80.80716479
11,643.00	46.42	151.11	10,971.49	2,489.72	-1,301.41	-2,805.05	14,439,837.06	1,694,623.91	39.76120044	-80.80710823
11,690.00	49.58	149.57	11,002.93	2,459.37	-1,284.13	-2,770.14	14,439,806.72	1,694,641.19	39.76111700	-80.80704697
11,738.00	52.00	148.04	11,033.27	2,427.40	-1,265.14	-2,732.95	14,439,774.74	1,694,660.18	39.76102907	-80.80697966
11,785.00	54.68	148.78	11,061.33	2,395.11	-1,245.68	-2,695.25	14,439,742.45	1,694,679.65	39.76094029	-80.80691063
11,832.00	58.59	148.96	11,087.18	2,361.52	-1,225.39	-2,656.00	14,439,708.86	1,694,699.93	39.76084791	-80.80683869
11,879.00	62.37	150.01	11,110.33	2,326.29	-1,204.63	-2,615.11	14,439,673.63	1,694,720.69	39.76075103	-80.80676510
11,927.00	66.11	150.01	11,131.19	2,288.85	-1,183.03	-2,571.89	14,439,636.19	1,694,742.30	39.76064810	-80.80668851
11,974.00	69.27	150.01	11,149.03	2,251.20	-1,161.29	-2,528.42	14,439,598.54	1,694,764.03	39.76054456	-80.80661148

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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	V. Sec (ft)	Northing (usft)	Easting (usft)	Latitude (°)	Longitude (°)
12,022.00	72.48	149.92	11,164.75	2,211.94	-1,138.60	-2,483.08	14,439,559.28	1,694,786.72	39.76043661	-80.80653101
12,069.00	74.77	150.36	11,178.00	2,172.83	-1,116.15	-2,438.00	14,439,520.18	1,694,809.17	39.76032909	-80.80645143
12,116.00	78.55	150.36	11,188.85	2,133.09	-1,093.54	-2,392.28	14,439,480.44	1,694,831.78	39.76021982	-80.80637128
12,163.00	81.93	150.19	11,196.81	2,092.88	-1,070.57	-2,345.98	14,439,440.22	1,694,854.75	39.76010923	-80.80628987
12,211.00	86.86	149.83	11,201.50	2,051.51	-1,046.70	-2,298.22	14,439,398.86	1,694,878.62	39.75999549	-80.80620525
12,306.00	89.19	148.08	11,204.77	1,970.18	-997.74	-2,203.29	14,439,317.52	1,694,927.58	39.75977183	-80.80603166
12,400.00	90.11	147.64	11,205.35	1,890.59	-947.74	-2,109.32	14,439,237.93	1,694,977.58	39.75955295	-80.80585434
12,495.00	88.84	148.96	11,206.22	1,809.77	-897.82	-2,014.34	14,439,157.11	1,695,027.50	39.75933070	-80.80567735
12,538.00	89.16	150.01	11,206.97	1,772.73	-875.99	-1,971.35	14,439,120.07	1,695,049.33	39.75922885	-80.80559996
12,633.00	89.87	147.02	11,207.77	1,691.73	-826.38	-1,876.37	14,439,039.07	1,695,098.94	39.75900611	-80.80542406
12,727.00	88.46	143.51	11,209.14	1,614.50	-772.84	-1,782.63	14,438,961.85	1,695,152.48	39.75879370	-80.80523414
12,822.00	86.97	145.09	11,212.93	1,537.42	-717.45	-1,688.06	14,438,884.76	1,695,207.87	39.75858168	-80.80503764
12,853.00	86.44	145.44	11,214.71	1,511.99	-699.82	-1,657.19	14,438,859.33	1,695,225.51	39.75851173	-80.80497510
12,885.00	86.17	146.14	11,216.77	1,485.58	-681.86	-1,625.31	14,438,832.92	1,695,243.46	39.75843910	-80.80491142
12,916.00	86.35	147.20	11,218.80	1,459.73	-664.86	-1,594.41	14,438,807.08	1,695,260.46	39.75836802	-80.80485114
12,948.00	86.79	148.60	11,220.71	1,432.67	-647.89	-1,562.47	14,438,780.02	1,695,277.43	39.75829360	-80.80479095
12,980.00	86.97	149.48	11,222.45	1,405.27	-631.45	-1,530.52	14,438,752.62	1,695,293.87	39.75821826	-80.80473268
13,011.00	87.15	150.71	11,223.97	1,378.43	-616.02	-1,499.56	14,438,725.78	1,695,309.30	39.75814445	-80.80467796
13,043.00	88.00	152.12	11,225.17	1,350.36	-600.72	-1,467.61	14,438,697.70	1,695,324.60	39.75806725	-80.80462374
13,074.00	86.90	150.00	11,225.98	1,322.85	-586.44	-1,436.67	14,438,670.20	1,695,338.88	39.75799164	-80.80457314
13,106.00	88.81	151.00	11,226.67	1,294.35	-571.91	-1,404.75	14,438,641.69	1,695,353.41	39.75791326	-80.80452168
13,153.00	88.81	151.82	11,227.65	1,252.51	-550.51	-1,357.86	14,438,599.86	1,695,374.81	39.75779825	-80.80444586
13,201.00	88.08	153.17	11,228.53	1,209.75	-528.72	-1,309.97	14,438,557.10	1,695,396.60	39.75768069	-80.80436865
13,248.00	89.34	153.00	11,229.18	1,167.85	-507.45	-1,263.08	14,438,515.19	1,695,417.87	39.75756548	-80.80429329
13,295.00	89.25	152.30	11,229.76	1,126.11	-485.86	-1,216.17	14,438,473.45	1,695,439.46	39.75745071	-80.80421678
13,390.00	89.16	151.42	11,231.08	1,042.34	-441.06	-1,121.27	14,438,389.69	1,695,484.26	39.75722041	-80.80405803
13,485.00	89.25	151.07	11,232.39	959.07	-395.36	-1,026.34	14,438,306.41	1,695,529.96	39.75699143	-80.80389608

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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	V. Sec (ft)	Northing (usft)	Easting (usft)	Latitude (°)	Longitude (°)
13,580.00	89.34	151.42	11,233.56	875.79	-349.66	-931.41	14,438,223.13	1,695,575.66	39.75676245	-80.80373413
13,674.00	89.34	151.24	11,234.65	793.32	-304.57	-837.48	14,438,140.66	1,695,620.75	39.75653569	-80.80357432
13,769.00	89.25	151.07	11,235.81	710.11	-258.74	-742.54	14,438,057.46	1,695,666.58	39.75630690	-80.80341190
13,864.00	89.34	150.36	11,236.98	627.26	-212.27	-647.58	14,437,974.61	1,695,713.04	39.75607909	-80.80324722
13,958.00	89.34	150.19	11,238.07	545.63	-165.67	-553.60	14,437,892.98	1,695,759.65	39.75585464	-80.80308203
14,053.00	89.25	149.83	11,239.23	463.36	-118.19	-458.61	14,437,810.71	1,695,807.13	39.75562840	-80.80291373
14,148.00	89.34	149.83	11,240.40	381.23	-70.45	-363.63	14,437,728.58	1,695,854.87	39.75540258	-80.80274451
14,243.00	89.25	149.31	11,241.57	299.33	-22.33	-268.64	14,437,646.68	1,695,902.98	39.75517735	-80.80257396
14,338.00	89.25	149.48	11,242.82	217.57	26.03	-173.64	14,437,564.92	1,695,951.35	39.75495252	-80.80240253
14,432.00	89.34	149.31	11,243.97	136.67	73.88	-79.65	14,437,484.02	1,695,999.20	39.75473005	-80.80223290
14,527.00	89.34	149.48	11,245.07	54.91	122.24	15.34	14,437,402.26	1,696,047.56	39.75450522	-80.80206146
14,622.00	89.25	149.83	11,246.24	-27.07	170.23	110.33	14,437,320.28	1,696,095.55	39.75427979	-80.80189135
14,717.00	89.34	149.66	11,247.41	-109.12	218.10	205.32	14,437,238.22	1,696,143.41	39.75405416	-80.80172171
14,812.00	89.08	149.48	11,248.71	-191.03	266.21	300.31	14,437,156.32	1,696,191.53	39.75382893	-80.80155117
14,907.00	88.81	149.31	11,250.46	-272.78	314.57	395.29	14,437,074.57	1,696,239.88	39.75360412	-80.80137976
15,002.00	88.72	149.66	11,252.51	-354.61	362.79	490.27	14,436,992.74	1,696,288.11	39.75337912	-80.80120881
15,096.00	88.90	151.07	11,254.46	-436.29	409.26	584.23	14,436,911.06	1,696,334.58	39.75315451	-80.80104412
15,191.00	88.90	151.07	11,256.29	-519.42	455.21	679.16	14,436,827.93	1,696,380.53	39.75292593	-80.80088130
15,286.00	88.72	151.07	11,258.26	-602.55	501.15	774.09	14,436,744.80	1,696,426.47	39.75269736	-80.80071849
15,381.00	88.72	151.07	11,260.38	-685.67	547.10	869.02	14,436,661.68	1,696,472.42	39.75246879	-80.80055568
15,475.00	88.90	150.54	11,262.33	-767.71	592.94	962.97	14,436,579.64	1,696,518.26	39.75224320	-80.80039323
15,570.00	89.08	149.48	11,264.01	-849.98	640.42	1,057.94	14,436,497.37	1,696,565.73	39.75201698	-80.80022496
15,664.00	89.25	149.31	11,265.38	-930.88	688.27	1,151.93	14,436,416.47	1,696,613.59	39.75179453	-80.80005535
15,759.00	89.43	150.01	11,266.47	-1,012.86	736.25	1,246.92	14,436,334.49	1,696,661.57	39.75156908	-80.79988528
15,854.00	89.25	149.83	11,267.57	-1,095.06	783.86	1,341.91	14,436,252.29	1,696,709.18	39.75134304	-80.79971654
15,949.00	89.34	149.48	11,268.74	-1,177.04	831.85	1,436.90	14,436,170.31	1,696,757.17	39.75111761	-80.79954644
16,043.00	89.16	148.43	11,269.97	-1,257.57	880.33	1,530.89	14,436,089.79	1,696,805.64	39.75089616	-80.79937463

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Standard Survey-Geographic



Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia
Site: Burch Ridge
Well: Burch Ridge 6 HU (slot F)
Wellbore: Original Hole
Design: Surveys Original Hole

Local Co-ordinate Reference: Well Burch Ridge 6 HU (slot F)
TVD Reference: RKB=1313+25 @ 1338.00ft (HP 611)
MD Reference: RKB=1313+25 @ 1338.00ft (HP 611)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: DB_Dec2220_v16

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	V. Sec (ft)	Northing (usft)	Easting (usft)	Latitude (°)	Longitude (°)
16,138.00	89.25	149.13	11,271.29	-1,338.80	929.56	1,625.88	14,436,008.55	1,696,854.88	39.75067277	-80.79920010
16,233.00	89.34	149.83	11,272.45	-1,420.63	977.80	1,720.87	14,435,926.72	1,696,903.12	39.75044774	-80.79902912
16,327.00	89.34	149.66	11,273.54	-1,501.82	1,025.16	1,814.86	14,435,845.53	1,696,950.48	39.75022447	-80.79886128
16,422.00	89.25	148.43	11,274.71	-1,583.28	1,074.02	1,909.85	14,435,764.07	1,696,999.34	39.75000045	-80.79868809
16,516.00	89.25	148.43	11,275.94	-1,663.36	1,123.23	2,003.83	14,435,683.99	1,697,048.55	39.74978022	-80.79851366
16,611.00	89.08	148.43	11,277.32	-1,744.30	1,172.96	2,098.81	14,435,603.06	1,697,098.28	39.74955765	-80.79833737
16,706.00	88.99	147.90	11,278.92	-1,824.99	1,223.06	2,193.78	14,435,522.36	1,697,148.38	39.74933573	-80.79815976
16,801.00	88.99	148.60	11,280.60	-1,905.76	1,273.05	2,288.75	14,435,441.59	1,697,198.36	39.74911360	-80.79798259
16,896.00	89.16	148.43	11,282.13	-1,986.77	1,322.66	2,383.73	14,435,360.59	1,697,247.97	39.74889083	-80.79780674
16,990.00	89.08	148.60	11,283.57	-2,066.92	1,371.74	2,477.71	14,435,280.43	1,697,297.06	39.74867041	-80.79763274
17,085.00	88.99	150.01	11,285.17	-2,148.59	1,420.23	2,572.70	14,435,198.76	1,697,345.55	39.74844580	-80.79746089
17,180.00	88.99	150.71	11,286.85	-2,231.15	1,467.21	2,667.66	14,435,116.20	1,697,392.52	39.74821879	-80.79729444
17,274.00	88.81	150.36	11,288.65	-2,312.98	1,513.43	2,761.62	14,435,034.38	1,697,438.75	39.74799378	-80.79713062
17,369.00	89.08	150.54	11,290.40	-2,395.61	1,560.28	2,856.58	14,434,951.75	1,697,485.59	39.74776657	-80.79696463
17,464.00	89.08	150.71	11,291.93	-2,478.38	1,606.87	2,951.54	14,434,868.97	1,697,532.19	39.74753895	-80.79679953
17,559.00	89.25	150.71	11,293.31	-2,561.23	1,653.34	3,046.50	14,434,786.13	1,697,578.66	39.74731114	-80.79663487
17,653.00	89.16	150.36	11,294.62	-2,643.06	1,699.58	3,140.47	14,434,704.29	1,697,624.89	39.74708612	-80.79647105
17,748.00	89.25	150.01	11,295.93	-2,725.48	1,746.81	3,235.45	14,434,621.88	1,697,672.12	39.74685948	-80.79630369
17,843.00	89.08	150.71	11,297.32	-2,808.04	1,793.78	3,330.42	14,434,539.32	1,697,719.10	39.74663245	-80.79613723
17,937.00	89.25	150.47	11,298.69	-2,890.70	1,838.50	3,424.32	14,434,456.65	1,697,763.82	39.74640514	-80.79597881
18,032.00	89.34	152.82	11,299.86	-2,975.08	1,882.15	3,519.15	14,434,372.28	1,697,807.47	39.74617317	-80.79582421
18,127.00	89.25	153.00	11,301.03	-3,059.65	1,925.41	3,613.95	14,434,287.71	1,697,850.72	39.74594064	-80.79567100
18,221.00	89.16	152.47	11,302.33	-3,143.19	1,968.47	3,707.76	14,434,204.16	1,697,893.78	39.74571092	-80.79551849
18,316.00	89.34	152.12	11,303.57	-3,227.30	2,012.63	3,802.62	14,434,120.06	1,697,937.94	39.74547968	-80.79536206
18,411.00	89.34	149.83	11,304.67	-3,310.35	2,058.72	3,897.56	14,434,037.00	1,697,984.03	39.74525129	-80.79519878
18,505.00	89.25	148.96	11,305.82	-3,391.25	2,106.57	3,991.55	14,433,956.10	1,698,031.88	39.74502882	-80.79502920
18,600.00	89.08	148.96	11,307.21	-3,472.64	2,155.55	4,086.54	14,433,874.72	1,698,080.86	39.74480499	-80.79485561

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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	V. Sec (ft)	Northing (usft)	Easting (usft)	Latitude (°)	Longitude (°)
18,695.00	89.25	149.31	11,308.59	-3,554.18	2,204.28	4,181.53	14,433,793.18	1,698,129.60	39.74458076	-80.79468291
18,789.00	89.25	149.13	11,309.82	-3,634.93	2,252.38	4,275.52	14,433,712.43	1,698,177.70	39.74435869	-80.79451245
18,884.00	89.16	149.31	11,311.14	-3,716.54	2,300.99	4,370.52	14,433,630.82	1,698,226.31	39.74413426	-80.79434019
18,978.00	89.25	148.96	11,312.45	-3,797.22	2,349.21	4,464.51	14,433,550.14	1,698,274.52	39.74391238	-80.79416931
19,073.00	88.81	148.60	11,314.05	-3,878.45	2,398.44	4,559.49	14,433,468.91	1,698,323.76	39.74368899	-80.79399482
19,168.00	88.64	148.78	11,316.17	-3,959.59	2,447.80	4,654.46	14,433,387.76	1,698,373.11	39.74346583	-80.79381990
19,262.00	88.72	149.13	11,318.33	-4,040.11	2,496.26	4,748.43	14,433,307.25	1,698,421.58	39.74324441	-80.79364815
19,357.00	88.72	149.31	11,320.46	-4,121.71	2,544.87	4,843.41	14,433,225.65	1,698,470.18	39.74302001	-80.79347592
19,452.00	88.90	149.31	11,322.43	-4,203.38	2,593.34	4,938.39	14,433,143.97	1,698,518.66	39.74279540	-80.79330413
19,546.00	88.81	149.31	11,324.31	-4,284.20	2,641.31	5,032.37	14,433,063.16	1,698,566.63	39.74257314	-80.79313416
19,641.00	89.16	148.96	11,325.99	-4,365.73	2,690.04	5,127.36	14,432,981.62	1,698,615.35	39.74234892	-80.79296148
19,736.00	89.16	149.48	11,327.38	-4,447.34	2,738.65	5,222.35	14,432,900.01	1,698,663.96	39.74212449	-80.79278922
19,831.00	89.25	151.24	11,328.70	-4,529.90	2,785.63	5,317.31	14,432,817.46	1,698,710.94	39.74189746	-80.79262279
19,925.00	89.25	151.59	11,329.93	-4,612.44	2,830.60	5,411.24	14,432,734.92	1,698,755.91	39.74167051	-80.79246349
20,020.00	89.16	151.42	11,331.25	-4,695.92	2,875.92	5,506.15	14,432,651.44	1,698,801.23	39.74144095	-80.79230296
20,115.00	89.16	151.24	11,332.64	-4,779.26	2,921.49	5,601.08	14,432,568.09	1,698,846.80	39.74121178	-80.79214153
20,209.00	89.16	151.24	11,334.02	-4,861.66	2,966.71	5,695.01	14,432,485.70	1,698,892.02	39.74098521	-80.79198134
20,304.00	89.25	151.42	11,335.34	-4,945.00	3,012.29	5,789.94	14,432,402.35	1,698,937.60	39.74075603	-80.79181991
20,399.00	89.34	151.24	11,336.51	-5,028.35	3,057.86	5,884.87	14,432,319.01	1,698,983.17	39.74052684	-80.79165848
20,493.00	89.16	151.07	11,337.74	-5,110.68	3,103.20	5,978.81	14,432,236.68	1,699,028.52	39.74030045	-80.79149785
20,588.00	89.25	151.42	11,339.06	-5,193.96	3,148.90	6,073.74	14,432,153.40	1,699,074.21	39.74007145	-80.79133598
20,683.00	89.25	151.24	11,340.30	-5,277.30	3,194.48	6,168.67	14,432,070.06	1,699,119.79	39.73984227	-80.79117455
20,777.00	89.16	150.71	11,341.60	-5,359.49	3,240.08	6,262.62	14,431,987.87	1,699,165.39	39.73961627	-80.79101301
20,872.00	89.25	150.54	11,342.92	-5,442.27	3,286.67	6,357.58	14,431,905.09	1,699,211.99	39.73938864	-80.79084795
20,967.00	89.16	150.54	11,344.24	-5,524.98	3,333.39	6,452.55	14,431,822.38	1,699,258.70	39.73916120	-80.79068244
21,061.00	89.25	150.71	11,345.54	-5,606.88	3,379.50	6,546.51	14,431,740.48	1,699,304.81	39.73893597	-80.79051912
21,156.00	89.16	150.89	11,346.86	-5,689.80	3,425.84	6,641.47	14,431,657.56	1,699,351.15	39.73870795	-80.79035496

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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	V. Sec (ft)	Northing (usft)	Easting (usft)	Latitude (°)	Longitude (°)
21,250.00	89.16	151.07	11,348.24	-5,771.99	3,471.43	6,735.41	14,431,575.37	1,699,396.75	39.73848194	-80.79019345
21,345.00	89.25	151.07	11,349.56	-5,855.13	3,517.39	6,830.36	14,431,492.23	1,699,442.70	39.73825332	-80.79003068
21,440.00	89.34	150.54	11,350.73	-5,938.05	3,563.72	6,925.31	14,431,409.31	1,699,489.03	39.73802529	-80.78986655
21,534.00	89.25	148.60	11,351.88	-6,019.09	3,611.33	7,019.30	14,431,328.27	1,699,536.64	39.73780242	-80.78969789
21,629.00	89.16	148.25	11,353.20	-6,100.02	3,661.06	7,114.28	14,431,247.34	1,699,586.38	39.73757985	-80.78952164
21,724.00	89.34	148.43	11,354.45	-6,180.88	3,710.92	7,209.26	14,431,166.48	1,699,636.23	39.73735747	-80.78934496
21,818.00	88.90	147.37	11,355.89	-6,260.50	3,760.87	7,303.22	14,431,086.86	1,699,686.18	39.73713849	-80.78916796
21,913.00	88.72	147.90	11,357.86	-6,340.72	3,811.71	7,398.16	14,431,006.64	1,699,737.02	39.73691784	-80.78898778
22,008.00	88.46	148.96	11,360.20	-6,421.63	3,861.43	7,493.12	14,430,925.73	1,699,786.74	39.73669531	-80.78881159
22,102.00	88.81	150.89	11,362.44	-6,502.95	3,908.52	7,587.09	14,430,844.41	1,699,833.83	39.73647168	-80.78864477
22,197.00	88.81	151.07	11,364.41	-6,586.01	3,954.60	7,682.02	14,430,761.35	1,699,879.91	39.73624329	-80.78848157
22,292.00	88.64	151.07	11,366.53	-6,669.13	4,000.54	7,776.95	14,430,678.23	1,699,925.85	39.73601471	-80.78831884
22,386.00	88.64	151.07	11,368.76	-6,751.38	4,046.00	7,870.88	14,430,595.98	1,699,971.31	39.73578854	-80.78815783
22,481.00	88.72	151.24	11,370.95	-6,834.57	4,091.82	7,965.80	14,430,512.79	1,700,017.13	39.73555977	-80.78799554
22,576.00	88.72	151.59	11,373.07	-6,917.97	4,137.26	8,060.70	14,430,429.39	1,700,062.57	39.73533044	-80.78783460
22,670.00	88.72	151.07	11,375.17	-7,000.42	4,182.35	8,154.62	14,430,346.94	1,700,107.66	39.73510370	-80.78767492
22,765.00	88.81	150.54	11,377.22	-7,083.34	4,228.68	8,249.56	14,430,264.03	1,700,153.99	39.73487570	-80.78751083
22,860.00	88.81	148.78	11,379.19	-7,165.30	4,276.65	8,344.53	14,430,182.06	1,700,201.96	39.73465028	-80.78734087
22,954.00	88.72	148.25	11,381.21	-7,245.45	4,325.74	8,438.50	14,430,101.92	1,700,251.05	39.73442986	-80.78716696
23,049.00	88.81	148.25	11,383.26	-7,326.21	4,375.71	8,533.47	14,430,021.15	1,700,301.02	39.73420773	-80.78698987
23,144.00	88.81	148.25	11,385.23	-7,406.98	4,425.69	8,628.43	14,429,940.39	1,700,351.00	39.73398560	-80.78681278
23,238.00	88.90	148.25	11,387.11	-7,486.89	4,475.15	8,722.40	14,429,860.47	1,700,400.46	39.73376580	-80.78663755
23,333.00	89.08	147.73	11,388.79	-7,567.44	4,525.50	8,817.36	14,429,779.93	1,700,450.81	39.73354428	-80.78645914
23,428.00	89.25	147.73	11,390.17	-7,647.75	4,576.21	8,912.32	14,429,699.61	1,700,501.52	39.73332337	-80.78627943
23,522.00	89.34	148.08	11,391.33	-7,727.38	4,626.15	9,006.29	14,429,619.98	1,700,551.46	39.73310436	-80.78610247
23,617.00	89.25	148.25	11,392.50	-7,808.09	4,676.26	9,101.26	14,429,539.28	1,700,601.57	39.73288240	-80.78592493
23,712.00	89.25	148.08	11,393.74	-7,888.79	4,726.36	9,196.24	14,429,458.58	1,700,651.67	39.73266044	-80.78574739

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Standard Survey-Geographic



Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia
Site: Burch Ridge
Well: Burch Ridge 6 HU (slot F)
Wellbore: Original Hole
Design: Surveys Original Hole

Local Co-ordinate Reference: Well Burch Ridge 6 HU (slot F)
TVD Reference: RKB=1313+25 @ 1338.00ft (HP 611)
MD Reference: RKB=1313+25 @ 1338.00ft (HP 611)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: DB_Dec2220_v16

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	V. Sec (ft)	Northing (usft)	Easting (usft)	Latitude (°)	Longitude (°)
23,807.00	88.99	148.96	11,395.20	-7,969.80	4,775.97	9,291.22	14,429,377.57	1,700,701.28	39.73243764	-80.78557165
23,901.00	88.64	149.83	11,397.14	-8,050.68	4,823.81	9,385.20	14,429,296.68	1,700,749.12	39.73221519	-80.78540215
23,996.00	88.72	150.19	11,399.33	-8,132.94	4,871.29	9,480.16	14,429,214.42	1,700,796.60	39.73198897	-80.78523400
24,091.00	88.81	150.71	11,401.38	-8,215.56	4,918.13	9,575.12	14,429,131.80	1,700,843.44	39.73176175	-80.78506809
24,186.00	88.72	151.07	11,403.43	-8,298.55	4,964.33	9,670.06	14,429,048.82	1,700,889.64	39.73153355	-80.78490446
24,280.00	88.81	151.42	11,405.45	-8,380.93	5,009.54	9,763.98	14,428,966.43	1,700,934.85	39.73130699	-80.78474436
24,375.00	88.64	151.07	11,407.57	-8,464.20	5,055.23	9,858.90	14,428,883.17	1,700,980.54	39.73107802	-80.78458256
24,470.00	88.90	150.89	11,409.61	-8,547.25	5,101.31	9,953.83	14,428,800.11	1,701,026.62	39.73084963	-80.78441938
Survey @ 24470.00 MD 11409.61 TVD										
24,541.00	88.90	150.89	11,410.97	-8,609.27	5,135.84	10,024.79	14,428,738.09	1,701,061.15	39.73067907	-80.78429708
Survey Proj. to 24541.00 MD 11410.97 TVD										

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
177.00	176.99	-0.23	1.61	MWD surveys
24,470.00	11,409.61	-8,547.25	5,101.31	Survey @ 24470.00 MD 11409.61 TVD
24,541.00	11,410.97	-8,609.27	5,135.84	Survey Proj. to 24541.00 MD 11410.97 TVD

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Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Burch Ridge 6 HU (slot F)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Site:	Burch Ridge	MD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Well:	Burch Ridge 6 HU (slot F)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

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	Burch Ridge				
Site Position:		Northing:	14,437,347.35 usft	Latitude:	39.75435517
From:	Lat/Long	Easting:	1,695,925.32 usft	Longitude:	-80.80249684
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "		

Well	Burch Ridge 6 HU (slot F)					
Well Position	+N/-S	0.00 ft	Northing:	14,437,347.35 usft	Latitude:	39.75435517
	+E/-W	0.00 ft	Easting:	1,695,925.32 usft	Longitude:	-80.80249684
Position Uncertainty	0.00 ft		Wellhead Elevation:	ft	Ground Level:	1,313.00 ft
Grid Convergence:	0.126 °					

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	10/4/2020	-8.590	66.595	51,813.26482343

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	149.24	

Survey Program	Date	1/11/2021			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
177.00	2,671.00	MWD surf (Original Hole)	MWD	MWD - Standard	
2,806.00	24,470.00	MWD (Original Hole)	MWD	MWD - Standard	
24,541.00	24,541.00	Projection (Original Hole)	MWD	MWD - Standard	

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Survey	WV Department of Environmental Protection									
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
177.00	1.05	98.07	176.99	-0.23	1.61	1.02	0.59	0.59	0.00	
MWD surveys										
214.00	1.01	99.30	213.98	-0.33	2.26	1.44	0.12	-0.11	3.32	
227.00	1.01	96.31	226.98	-0.36	2.49	1.58	0.41	0.00	-23.00	
265.00	0.88	94.46	264.98	-0.42	3.11	1.95	0.35	-0.34	-4.87	
295.00	0.88	91.48	294.97	-0.44	3.57	2.21	0.15	0.00	-9.93	
324.00	0.79	91.30	323.97	-0.45	4.00	2.43	0.31	-0.31	-0.62	

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Burch Ridge 6 HU (slot F)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Site:	Burch Ridge	MD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Well:	Burch Ridge 6 HU (slot F)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

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)
356.00	0.75	93.23	355.97	-0.47	4.43	2.67	0.15	-0.13	6.03
386.00	0.70	90.86	385.97	-0.48	4.81	2.87	0.19	-0.17	-7.90
415.00	0.79	97.63	414.96	-0.51	5.18	3.09	0.43	0.31	23.34
447.00	0.92	88.49	446.96	-0.54	5.66	3.35	0.59	0.41	-28.56
477.00	1.14	77.24	476.95	-0.46	6.19	3.56	0.99	0.73	-37.50
507.00	1.45	69.24	506.95	-0.26	6.83	3.72	1.19	1.03	-26.67
537.00	1.89	62.03	536.93	0.10	7.63	3.81	1.62	1.47	-24.03
567.00	2.15	62.91	566.92	0.59	8.56	3.87	0.87	0.87	2.93
598.00	2.42	59.13	597.89	1.19	9.64	3.91	1.00	0.87	-12.19
645.00	2.59	50.87	644.85	2.37	11.32	3.75	0.85	0.36	-17.57
688.00	2.86	44.10	687.80	3.76	12.82	3.33	0.98	0.63	-15.74
735.00	2.81	31.80	734.74	5.58	14.24	2.49	1.30	-0.11	-26.17
777.00	3.03	27.49	776.69	7.44	15.30	1.43	0.74	0.52	-10.26
824.00	3.25	23.18	823.61	9.76	16.39	0.00	0.69	0.47	-9.17
872.00	3.16	18.53	871.54	12.27	17.35	-1.67	0.57	-0.19	-9.69
919.00	3.08	8.51	918.47	14.75	17.95	-3.49	1.17	-0.17	-21.32
967.00	3.21	356.38	966.40	17.36	18.06	-5.68	1.41	0.27	-25.27
1,061.00	3.78	344.95	1,060.22	22.98	17.08	-11.01	0.95	0.61	-12.16
1,156.00	3.65	334.23	1,155.03	28.73	14.96	-17.04	0.74	-0.14	-11.28
1,251.00	2.99	328.52	1,249.87	33.56	12.35	-22.53	0.78	-0.69	-6.01
1,345.00	2.72	324.03	1,343.75	37.46	9.76	-27.20	0.37	-0.29	-4.78
1,440.00	2.59	322.98	1,438.65	41.00	7.14	-31.58	0.15	-0.14	-1.11
1,535.00	2.55	314.98	1,533.55	44.21	4.35	-35.76	0.38	-0.04	-8.42
1,629.00	2.86	319.46	1,627.45	47.47	1.35	-40.10	0.40	0.33	4.77
1,724.00	2.64	304.79	1,722.34	50.52	-1.99	-44.42	0.77	-0.23	-15.44
1,819.00	2.02	295.38	1,817.26	52.48	-5.30	-47.81	0.76	-0.65	-9.91
1,913.00	1.80	298.28	1,911.21	53.89	-8.09	-50.45	0.26	-0.23	3.09
2,008.00	2.77	333.44	2,006.14	56.65	-10.43	-54.02	1.75	1.02	37.01
2,103.00	3.34	335.72	2,101.00	61.23	-12.60	-59.06	0.61	0.60	2.40
2,197.00	3.43	322.10	2,194.84	65.94	-15.45	-64.57	0.86	0.10	-14.49
2,292.00	3.08	290.72	2,289.69	69.09	-19.58	-69.38	1.89	-0.37	-33.03
2,387.00	2.68	264.36	2,384.58	69.77	-24.18	-72.32	1.44	-0.85	-27.75
2,481.00	1.85	245.20	2,478.50	68.92	-27.75	-73.42	1.18	-0.85	-20.38
2,576.00	1.45	274.38	2,573.47	68.37	-30.34	-74.27	0.97	0.42	30.72
2,671.00	1.76	326.23	2,668.43	69.67	-32.35	-76.42	1.51	0.33	54.58
2,806.00	3.47	348.73	2,803.29	75.40	-34.30	-82.34	1.44	0.21	16.67
2,869.00	3.60	348.47	2,866.17	79.21	-35.07	-86.00	0.21	0.21	-0.41
2,964.00	5.14	349.96	2,960.89	86.33	-36.40	-92.80	1.63	1.62	16.57
3,059.00	6.24	346.71	3,055.42	95.54	-38.33	-101.70	1.21	1.16	-3.42
3,153.00	7.34	341.17	3,148.76	106.20	-41.44	-112.45	1.36	1.17	-5.89
3,248.00	8.22	339.50	3,242.89	118.30	-45.78	-125.07	0.96	0.93	-1.76
3,343.00	9.58	336.87	3,336.74	131.93	-51.27	-139.59	1.49	1.43	-2.77
3,437.00	11.25	336.60	3,429.19	147.54	-57.98	-156.44	1.78	1.78	-0.29

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Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Burch Ridge 6 HU (slot F)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Site:	Burch Ridge	MD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Well:	Burch Ridge 6 HU (slot F)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

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)	
3,532.00	13.27	334.05	3,522.02	165.85	-66.43	-176.50	2.20	2.13	-2.68	
3,627.00	16.35	330.10	3,613.85	187.25	-77.87	-200.74	3.41	3.24	-4.16	
3,722.00	19.25	330.36	3,704.30	212.46	-92.29	-229.77	3.05	3.05	0.27	
3,816.00	20.96	332.74	3,792.57	240.88	-107.65	-262.05	2.02	1.82	2.53	
3,911.00	21.09	333.09	3,881.24	271.22	-123.17	-296.06	0.19	0.14	0.37	
4,006.00	21.62	330.71	3,969.72	301.73	-139.47	-330.61	1.07	0.56	-2.51	
4,101.00	21.14	330.54	4,058.18	331.91	-156.46	-365.23	0.51	-0.51	-0.18	
4,195.00	21.01	331.68	4,145.90	361.50	-172.79	-399.01	0.46	-0.14	1.21	
4,290.00	21.75	331.86	4,234.36	392.02	-189.17	-433.61	0.78	0.78	0.19	
4,385.00	22.24	333.09	4,322.44	423.57	-205.60	-469.13	0.71	0.52	1.29	
4,479.00	22.37	330.71	4,409.41	455.03	-222.41	-504.77	0.97	0.14	-2.53	
4,574.00	22.37	329.40	4,497.26	486.36	-240.45	-540.91	0.52	0.00	-1.38	
4,669.00	22.90	330.80	4,584.95	518.06	-258.67	-577.47	0.80	0.56	1.47	
4,764.00	23.03	329.57	4,672.42	550.21	-277.10	-614.53	0.52	0.14	-1.29	
4,858.00	22.15	328.60	4,759.21	581.19	-295.65	-650.64	1.02	-0.94	-1.03	
4,956.00	21.62	330.10	4,850.14	612.61	-314.27	-687.16	0.79	-0.54	1.53	
5,051.00	21.84	331.42	4,938.39	643.30	-331.45	-722.32	0.56	0.23	1.39	
5,146.00	21.27	330.19	5,026.75	673.77	-348.47	-757.21	0.77	-0.60	-1.29	
5,240.00	20.08	330.36	5,114.69	702.59	-364.93	-790.39	1.27	-1.27	0.18	
5,335.00	20.08	331.51	5,203.92	731.10	-380.77	-822.99	0.42	0.00	1.21	
5,430.00	20.52	332.47	5,293.02	760.20	-396.25	-855.91	0.58	0.46	1.01	
5,524.00	19.42	331.07	5,381.37	788.49	-411.42	-887.98	1.28	-1.17	-1.49	
5,619.00	19.07	330.80	5,471.06	815.86	-426.63	-919.28	0.38	-0.37	-0.28	
5,714.00	19.20	331.33	5,560.81	843.11	-441.70	-950.40	0.23	0.14	0.56	
5,808.00	19.69	330.63	5,649.45	870.47	-456.88	-981.68	0.58	0.52	-0.74	
5,903.00	21.09	332.12	5,738.49	899.53	-472.73	-1,014.75	1.57	1.47	1.57	
5,998.00	21.36	332.82	5,827.05	930.03	-488.62	-1,049.09	0.39	0.28	0.74	
6,093.00	21.67	331.77	5,915.43	960.87	-504.82	-1,083.88	0.52	0.33	-1.11	
6,187.00	20.92	329.48	6,003.01	990.62	-521.55	-1,118.00	1.19	-0.80	-2.44	
6,282.00	20.65	329.66	6,091.83	1,019.69	-538.63	-1,151.71	0.29	-0.28	0.19	
6,377.00	19.95	328.25	6,180.93	1,047.93	-555.62	-1,184.67	0.90	-0.74	-1.48	
6,472.00	20.17	328.08	6,270.17	1,075.61	-572.81	-1,217.25	0.24	0.23	-0.18	
6,567.00	20.04	327.46	6,359.38	1,103.23	-590.22	-1,249.89	0.26	0.26	-0.65	
6,662.00	19.69	329.83	6,448.73	1,130.79	-607.02	-1,282.16	0.92	-0.37	2.49	
6,756.00	19.42	329.13	6,537.30	1,157.90	-623.00	-1,313.63	0.38	0.29	-0.74	
6,846.00	20.00	328.34	6,622.03	1,183.84	-638.75	-1,343.98	0.64	0.64	-0.88	
6,941.00	19.99	327.55	6,711.30	1,211.37	-655.99	-1,376.45	0.28	0.28	-0.83	
7,036.00	20.03	325.26	6,800.57	1,238.44	-673.98	-1,408.91	0.83	0.83	-2.41	
7,131.00	19.95	325.70	6,889.85	1,265.20	-692.38	-1,441.32	0.18	-0.08	0.46	
7,226.00	19.56	328.96	6,979.26	1,292.22	-709.71	-1,473.40	1.23	-0.41	3.43	
7,321.00	19.77	329.65	7,068.72	1,319.71	-726.03	-1,505.37	0.33	0.22	0.73	
7,416.00	20.17	329.84	7,158.01	1,347.73	-742.38	-1,537.81	0.43	0.42	0.20	
7,511.00	20.34	329.74	7,247.13	1,376.16	-758.93	-1,570.70	0.18	0.18	-0.11	
7,605.00	20.17	329.65	7,335.32	1,404.25	-775.35	-1,603.24	0.18	-0.18	-0.10	

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Site:	Burch Ridge	MD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
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Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

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)
7,700.00	20.25	328.86	7,424.47	1,432.46	-792.13	-1,636.06	0.30	0.08	-0.83
7,795.00	21.09	327.90	7,513.35	1,461.01	-809.71	-1,669.59	0.95	0.88	-1.01
7,890.00	22.28	326.85	7,601.63	1,490.57	-828.64	-1,704.67	1.32	1.25	-1.11
7,985.00	22.54	327.29	7,689.45	1,520.96	-848.33	-1,740.86	0.33	0.27	0.46
8,079.00	21.31	330.45	7,776.66	1,550.98	-866.49	-1,775.95	1.81	-1.31	3.36
8,174.00	20.74	332.21	7,865.33	1,580.88	-882.85	-1,810.00	0.90	-0.60	1.85
8,269.00	21.36	332.82	7,953.99	1,611.15	-898.59	-1,844.07	0.69	0.65	0.64
8,364.00	22.06	334.22	8,042.25	1,642.61	-914.26	-1,879.11	0.92	0.74	1.47
8,458.00	24.52	335.98	8,128.59	1,676.33	-929.87	-1,916.07	2.72	2.62	1.87
8,553.00	27.33	336.07	8,214.02	1,714.27	-946.75	-1,957.31	2.96	2.96	0.09
8,648.00	28.74	335.99	8,297.87	1,755.07	-964.89	-2,001.65	1.48	1.48	-0.08
8,742.00	29.31	333.96	8,380.07	1,796.39	-984.18	-2,047.02	1.21	0.61	-2.16
8,837.00	28.56	332.91	8,463.21	1,837.50	-1,004.73	-2,092.86	0.95	-0.79	-1.11
8,932.00	30.06	333.09	8,546.04	1,878.94	-1,025.85	-2,139.26	1.58	1.58	0.19
9,026.00	29.93	332.21	8,627.46	1,920.68	-1,047.43	-2,186.17	0.49	-0.14	-0.94
9,121.00	28.61	332.82	8,710.32	1,961.88	-1,068.87	-2,232.54	1.42	-1.39	0.64
9,216.00	27.64	335.72	8,794.11	2,002.20	-1,088.33	-2,277.14	1.76	-1.02	3.05
9,311.00	27.25	336.95	8,878.42	2,042.30	-1,105.90	-2,320.59	0.72	-0.41	1.29
9,406.00	27.77	337.04	8,962.68	2,082.69	-1,123.05	-2,364.07	0.55	0.55	0.09
9,500.00	30.15	334.93	9,044.92	2,124.25	-1,141.60	-2,409.26	2.75	2.53	-2.24
9,595.00	32.04	334.23	9,126.27	2,168.55	-1,162.67	-2,458.11	2.03	1.99	-0.74
9,689.00	32.69	333.43	9,205.66	2,213.71	-1,184.86	-2,508.27	0.83	0.69	-0.85
9,784.00	32.12	333.88	9,285.87	2,259.33	-1,207.46	-2,559.02	0.65	-0.60	0.47
9,879.00	31.68	333.35	9,366.52	2,304.31	-1,229.76	-2,609.08	0.55	-0.46	-0.56
9,973.00	32.70	334.50	9,446.07	2,349.29	-1,251.77	-2,658.99	1.27	1.09	1.22
10,068.00	31.82	334.67	9,526.41	2,395.09	-1,273.53	-2,709.47	0.93	-0.93	0.18
10,163.00	30.37	333.97	9,607.75	2,439.30	-1,294.79	-2,758.34	1.57	-1.53	-0.74
10,257.00	27.07	333.17	9,690.18	2,479.75	-1,314.87	-2,803.37	3.53	-3.51	-0.85
10,352.00	24.57	331.42	9,775.69	2,516.39	-1,334.08	-2,844.68	2.75	-2.63	-1.84
10,447.00	20.52	331.51	9,863.41	2,548.38	-1,351.48	-2,881.07	4.26	-4.26	0.09
10,542.00	19.38	332.47	9,952.71	2,577.00	-1,366.71	-2,913.44	1.25	-1.20	1.01
10,627.00	19.91	333.17	10,032.76	2,602.42	-1,379.76	-2,941.96	0.68	0.62	0.82
10,660.00	19.82	332.74	10,063.80	2,612.41	-1,384.86	-2,953.15	0.52	-0.52	-1.30
10,703.00	19.65	333.35	10,104.27	2,625.35	-1,391.44	-2,967.64	0.62	-0.40	1.42
10,750.00	17.32	335.37	10,148.85	2,638.77	-1,397.90	-2,982.48	5.44	-4.96	4.30
10,797.00	15.25	338.18	10,193.96	2,650.87	-1,403.11	-2,995.55	4.71	-4.20	5.98
10,844.00	12.75	340.29	10,239.56	2,661.49	-1,407.16	-3,006.74	3.44	-3.32	4.49
10,892.00	9.58	340.82	10,286.64	2,670.26	-1,410.26	-3,015.86	6.61	-5.43	1.10
10,939.00	7.03	346.62	10,333.15	2,676.75	-1,412.21	-3,022.44	5.70	-5.43	12.34
10,987.00	4.22	355.76	10,380.91	2,681.37	-1,413.02	-3,026.82	6.13	-5.85	19.04
11,034.00	1.67	31.36	10,427.85	2,683.68	-1,412.79	-3,028.69	6.43	-5.43	75.74
11,081.00	2.51	115.91	10,474.83	2,683.81	-1,411.51	-3,028.15	6.13	1.79	179.89
11,128.00	5.14	128.83	10,521.72	2,682.04	-1,408.94	-3,025.31	5.85	5.60	27.49

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Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Burch Ridge 6 HU (slot F)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Site:	Burch Ridge	MD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Well:	Burch Ridge 6 HU (slot F)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

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)
11,176.00	7.38	132.96	10,569.43	2,678.59	-1,405.01	-3,020.34	4.76	4.67	8.60
11,224.00	9.49	130.76	10,616.91	2,673.91	-1,399.76	-3,013.63	4.45	4.40	-4.58
11,264.00	13.36	139.64	10,656.11	2,668.23	-1,394.27	-3,005.94	10.60	9.68	22.20
11,311.00	19.78	149.04	10,701.14	2,657.26	-1,386.65	-2,992.62	14.76	13.66	20.00
11,358.00	26.15	153.35	10,744.40	2,641.17	-1,377.90	-2,974.31	14.01	13.55	9.17
11,405.00	29.45	154.05	10,785.97	2,621.52	-1,368.20	-2,952.46	7.06	7.02	1.49
11,453.00	33.58	154.32	10,826.88	2,598.93	-1,357.28	-2,927.47	8.61	8.60	0.56
11,500.00	37.54	153.53	10,865.11	2,574.39	-1,345.26	-2,900.24	8.48	8.43	-1.68
11,548.00	40.48	153.09	10,902.40	2,547.40	-1,331.69	-2,870.10	6.15	6.13	-0.92
11,595.00	43.16	152.56	10,937.43	2,519.53	-1,317.37	-2,838.83	5.75	5.70	-1.13
11,643.00	46.42	151.15	10,971.49	2,489.72	-1,301.41	-2,805.05	7.10	6.79	-2.94
11,690.00	49.58	149.57	11,002.93	2,459.37	-1,284.13	-2,770.14	7.17	6.72	-3.36
11,738.00	52.00	149.04	11,033.27	2,427.40	-1,265.14	-2,732.95	5.11	5.04	-1.10
11,785.00	54.68	148.78	11,061.33	2,395.11	-1,245.68	-2,695.25	5.72	5.70	-0.55
11,832.00	58.59	148.96	11,087.18	2,361.52	-1,225.39	-2,656.00	8.33	8.32	0.38
11,879.00	62.37	150.01	11,110.33	2,326.29	-1,204.63	-2,615.11	8.27	8.04	2.23
11,927.00	66.11	150.01	11,131.19	2,288.85	-1,183.03	-2,571.89	7.79	7.79	0.00
11,974.00	69.27	150.01	11,149.03	2,251.20	-1,161.29	-2,528.42	6.72	6.72	0.00
12,022.00	72.48	149.92	11,164.75	2,211.94	-1,138.60	-2,483.08	6.69	6.69	-0.19
12,069.00	74.77	150.36	11,178.00	2,172.83	-1,116.15	-2,438.00	4.95	4.87	0.94
12,116.00	78.55	150.36	11,188.85	2,133.09	-1,093.54	-2,392.28	8.04	8.04	0.00
12,163.00	81.93	150.19	11,196.81	2,092.88	-1,070.57	-2,345.98	7.20	7.19	-0.36
12,211.00	86.86	149.83	11,201.50	2,051.51	-1,046.70	-2,298.22	10.30	10.27	-0.75
12,306.00	89.19	148.08	11,204.77	1,970.18	-997.74	-2,203.29	3.07	2.45	-1.84
12,400.00	90.11	147.64	11,205.35	1,890.59	-947.74	-2,109.32	1.08	0.98	-0.47
12,495.00	88.84	148.96	11,206.22	1,809.77	-897.82	-2,014.34	1.93	-1.34	1.39
12,538.00	89.16	150.01	11,206.97	1,772.73	-875.99	-1,971.35	2.55	0.74	2.44
12,633.00	89.87	147.02	11,207.77	1,691.73	-826.38	-1,876.37	3.23	0.75	-3.15
12,727.00	88.46	143.51	11,209.14	1,614.50	-772.84	-1,782.63	4.02	-1.50	-3.73
12,822.00	86.97	145.09	11,212.93	1,537.42	-717.45	-1,688.06	2.29	-1.57	1.66
12,853.00	86.44	145.44	11,214.71	1,511.99	-699.82	-1,657.19	2.05	-1.71	1.13
12,885.00	86.17	146.14	11,216.77	1,485.58	-681.86	-1,625.31	2.34	0.54	2.19
12,916.00	86.35	147.20	11,218.80	1,459.73	-664.86	-1,594.41	3.46	0.56	3.42
12,948.00	86.79	148.60	11,220.71	1,432.67	-647.89	-1,562.47	4.58	0.56	4.38
12,980.00	86.97	149.48	11,222.45	1,405.27	-631.45	-1,530.52	4.60	0.56	2.75
13,011.00	87.41	150.71	11,223.97	1,378.43	-616.02	-1,499.56	4.21	1.42	3.97
13,043.00	88.29	152.12	11,225.17	1,350.36	-600.72	-1,467.61	5.19	1.39	4.41
13,074.00	88.72	153.00	11,225.98	1,322.85	-586.44	-1,436.67	3.16	1.39	2.84
13,106.00	88.81	153.00	11,226.67	1,294.35	-571.91	-1,404.75	0.28	0.28	0.00
13,153.00	88.81	152.82	11,227.65	1,252.51	-550.51	-1,357.86	0.38	0.00	-0.38
13,201.00	89.08	153.17	11,228.53	1,209.75	-528.72	-1,309.97	0.92	0.56	0.73
13,248.00	89.34	153.00	11,229.18	1,167.85	-507.45	-1,263.08	0.66	0.55	-0.36
13,295.00	89.25	152.30	11,229.76	1,126.11	-485.86	-1,216.17	1.50	-0.19	-1.49

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Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Burch Ridge 6 HU (slot F)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Site:	Burch Ridge	MD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Well:	Burch Ridge 6 HU (slot F)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

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)
13,390.00	89.16	151.42	11,231.08	1,042.34	-441.06	-1,121.27	0.93	-0.09	-0.93
13,485.00	89.25	151.07	11,232.39	959.07	-395.36	-1,026.34	0.38	0.09	-0.37
13,580.00	89.34	151.42	11,233.56	875.79	-349.66	-931.41	0.38	0.09	0.37
13,674.00	89.34	151.24	11,234.65	793.32	-304.57	-837.48	0.19	0.00	-0.19
13,769.00	89.25	151.07	11,235.81	710.11	-258.74	-742.54	0.20	-0.09	-0.18
13,864.00	89.34	150.36	11,236.98	627.26	-212.27	-647.58	0.75	0.09	-0.75
13,958.00	89.34	150.19	11,238.07	545.63	-165.67	-553.60	0.18	0.00	-0.18
14,053.00	89.25	149.83	11,239.24	463.36	-118.19	-458.61	0.39	-0.09	-0.38
14,148.00	89.34	149.83	11,240.40	381.23	-70.45	-363.63	0.09	0.09	0.00
14,243.00	89.25	149.31	11,241.57	299.33	-22.33	-268.64	0.56	-0.09	-0.55
14,338.00	89.25	149.48	11,242.82	217.57	26.03	-173.64	0.18	0.00	0.18
14,432.00	89.34	149.31	11,243.97	136.67	73.88	-79.65	0.20	0.10	-0.18
14,527.00	89.34	149.48	11,245.07	54.91	122.24	15.34	0.18	0.00	0.18
14,622.00	89.25	149.83	11,246.24	-27.07	170.23	110.33	0.38	-0.09	0.37
14,717.00	89.34	149.66	11,247.41	-109.12	218.10	205.32	0.20	0.09	-0.18
14,812.00	89.08	149.48	11,248.72	-191.03	266.21	300.31	0.33	-0.27	-0.19
14,907.00	88.81	149.31	11,250.46	-272.78	314.57	395.29	0.34	-0.28	-0.18
15,002.00	88.72	149.66	11,252.51	-354.61	362.79	490.27	0.38	-0.09	0.37
15,096.00	88.90	151.07	11,254.46	-436.29	409.26	584.23	1.51	0.19	1.50
15,191.00	88.90	151.07	11,256.29	-519.42	455.21	679.16	0.00	0.00	0.00
15,286.00	88.72	151.07	11,258.26	-602.55	501.15	774.09	0.19	-0.19	0.00
15,381.00	88.72	151.07	11,260.38	-685.67	547.10	869.02	0.00	0.00	0.00
15,475.00	88.90	150.54	11,262.34	-767.71	592.94	962.97	0.60	0.19	-0.56
15,570.00	89.08	149.48	11,264.01	-849.98	640.42	1,057.94	1.13	0.19	-1.12
15,664.00	89.25	149.31	11,265.38	-930.88	688.27	1,151.93	0.26	0.18	-0.18
15,759.00	89.43	150.01	11,266.47	-1,012.86	736.25	1,246.92	0.76	0.19	0.74
15,854.00	89.25	149.83	11,267.57	-1,095.06	783.86	1,341.91	0.27	-0.19	-0.19
15,949.00	89.34	149.48	11,268.74	-1,177.04	831.85	1,436.90	0.38	0.09	-0.37
16,043.00	89.16	148.43	11,269.97	-1,257.57	880.33	1,530.89	1.13	-0.19	-1.12
16,138.00	89.25	149.13	11,271.29	-1,338.80	929.56	1,625.88	0.74	0.09	0.74
16,233.00	89.34	149.83	11,272.45	-1,420.63	977.80	1,720.87	0.74	0.09	0.74
16,327.00	89.34	149.66	11,273.54	-1,501.82	1,025.16	1,814.86	0.18	0.00	-0.18
16,422.00	89.25	148.43	11,274.71	-1,583.28	1,074.02	1,909.85	1.30	-0.09	-1.29
16,516.00	89.25	148.43	11,275.94	-1,663.36	1,123.23	2,003.83	0.00	0.00	0.00
16,611.00	89.08	148.43	11,277.32	-1,744.30	1,172.96	2,098.81	0.18	0.00	0.00
16,706.00	88.99	147.90	11,278.92	-1,824.99	1,223.06	2,193.78	0.57	-0.09	-0.56
16,801.00	88.99	148.60	11,280.60	-1,905.76	1,273.05	2,288.75	0.74	0.00	0.74
16,896.00	89.16	148.43	11,282.13	-1,986.77	1,322.66	2,383.73	0.25	0.18	-0.18
16,990.00	89.08	148.60	11,283.57	-2,066.92	1,371.74	2,477.71	0.20	0.00	0.18
17,085.00	88.99	150.01	11,285.17	-2,148.59	1,420.23	2,572.70	1.49	0.00	1.48
17,180.00	88.99	150.71	11,286.85	-2,231.15	1,467.21	2,667.66	0.74	0.00	0.74
17,274.00	88.81	150.36	11,288.65	-2,312.98	1,513.43	2,761.62	0.42	-0.19	-0.37
17,369.00	89.08	150.54	11,290.40	-2,395.61	1,560.28	2,856.58	0.34	0.28	0.19
17,464.00	89.08	150.71	11,291.93	-2,478.38	1,606.87	2,951.54	0.18	0.00	0.18

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Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Burch Ridge 6 HU (slot F)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Site:	Burch Ridge	MD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Well:	Burch Ridge 6 HU (slot F)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

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)
17,559.00	89.25	150.71	11,293.31	-2,561.23	1,653.34	3,046.50	0.18	0.18	0.00
17,653.00	89.16	150.36	11,294.62	-2,643.06	1,699.58	3,140.47	0.38	-0.10	-0.37
17,748.00	89.25	150.01	11,295.93	-2,725.48	1,746.81	3,235.45	0.38	0.09	-0.37
17,843.00	89.08	150.71	11,297.32	-2,808.04	1,793.78	3,330.42	0.76	-0.18	0.74
17,937.00	89.25	152.47	11,298.69	-2,890.70	1,838.50	3,424.32	1.88	0.18	1.87
18,032.00	89.34	152.82	11,299.86	-2,975.08	1,882.15	3,519.15	0.38	0.09	0.37
18,127.00	89.25	153.00	11,301.03	-3,059.65	1,925.41	3,613.95	0.21	-0.09	0.19
18,221.00	89.16	152.47	11,302.33	-3,143.19	1,968.47	3,707.76	0.57	-0.10	-0.56
18,316.00	89.34	152.12	11,303.57	-3,227.30	2,012.63	3,802.62	0.41	0.19	-0.37
18,411.00	89.34	149.83	11,304.67	-3,310.35	2,058.72	3,897.56	2.41	0.00	-2.41
18,505.00	89.25	148.96	11,305.82	-3,391.25	2,106.57	3,991.55	0.93	-0.10	-0.93
18,600.00	89.08	148.96	11,307.21	-3,472.64	2,155.55	4,086.54	0.18	-0.18	0.00
18,695.00	89.25	149.31	11,308.59	-3,554.18	2,204.28	4,181.53	0.41	0.18	0.37
18,789.00	89.25	149.13	11,309.82	-3,634.93	2,252.38	4,275.52	0.19	0.00	-0.19
18,884.00	89.16	149.31	11,311.14	-3,716.54	2,300.99	4,370.52	0.21	-0.09	0.19
18,978.00	89.25	148.96	11,312.45	-3,797.22	2,349.21	4,464.51	0.38	0.10	-0.37
19,073.00	88.81	148.60	11,314.05	-3,878.45	2,398.44	4,559.49	0.60	-0.46	-0.38
19,168.00	88.64	148.78	11,316.17	-3,959.59	2,447.80	4,654.46	0.26	-0.18	0.19
19,262.00	88.72	149.13	11,318.33	-4,040.11	2,496.26	4,748.43	0.38	0.09	0.37
19,357.00	88.72	149.31	11,320.46	-4,121.71	2,544.87	4,843.41	0.19	0.00	0.19
19,452.00	88.90	149.31	11,322.43	-4,203.38	2,593.34	4,938.39	0.19	0.19	0.00
19,546.00	88.81	149.31	11,324.31	-4,284.20	2,641.31	5,032.37	0.10	-0.10	0.00
19,641.00	89.16	148.96	11,325.99	-4,365.73	2,690.04	5,127.36	0.52	0.37	-0.37
19,736.00	89.16	149.48	11,327.38	-4,447.34	2,738.65	5,222.35	0.55	0.00	0.55
19,831.00	89.25	151.24	11,328.70	-4,529.90	2,786.63	5,317.31	1.85	0.09	1.85
19,925.00	89.25	151.59	11,329.93	-4,612.44	2,830.60	5,411.24	0.37	0.00	0.37
20,020.00	89.16	151.42	11,331.25	-4,695.92	2,875.92	5,506.15	0.20	-0.09	-0.18
20,115.00	89.16	151.24	11,332.64	-4,779.26	2,921.49	5,601.08	0.19	0.00	-0.19
20,209.00	89.16	151.24	11,334.02	-4,861.66	2,966.71	5,695.01	0.00	0.00	0.00
20,304.00	89.25	151.42	11,335.34	-4,945.00	3,012.29	5,789.94	0.21	0.09	0.19
20,399.00	89.34	151.24	11,336.51	-5,028.35	3,057.86	5,884.87	0.21	0.09	-0.19
20,493.00	89.16	151.07	11,337.74	-5,110.68	3,103.20	5,978.81	0.26	-0.19	-0.18
20,588.00	89.25	151.42	11,339.06	-5,193.96	3,148.90	6,073.74	0.38	0.09	0.37
20,683.00	89.25	151.24	11,340.30	-5,277.30	3,194.48	6,168.67	0.19	0.00	-0.19
20,777.00	89.16	150.71	11,341.60	-5,359.49	3,240.08	6,262.62	0.57	-0.10	-0.56
20,872.00	89.25	150.54	11,342.92	-5,442.27	3,286.67	6,357.58	0.20	0.00	-0.18
20,967.00	89.16	150.54	11,344.24	-5,524.98	3,333.39	6,452.55	0.09	-0.09	0.00
21,061.00	89.25	150.71	11,345.54	-5,606.88	3,379.50	6,546.51	0.20	0.00	0.18
21,156.00	89.16	150.89	11,346.86	-5,689.80	3,425.84	6,641.47	0.19	-0.09	0.19
21,250.00	89.16	151.07	11,348.24	-5,771.99	3,471.43	6,735.41	0.19	0.00	0.19
21,345.00	89.25	151.07	11,349.56	-5,855.13	3,517.39	6,830.36	0.09	0.00	0.00
21,440.00	89.34	150.54	11,350.73	-5,938.05	3,563.72	6,925.31	0.57	0.09	-0.56
21,534.00	89.25	148.60	11,351.88	-6,019.09	3,611.33	7,019.30	2.07	-0.10	-2.06

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Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Burch Ridge 6 HU (slot F)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Site:	Burch Ridge	MD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Well:	Burch Ridge 6 HU (slot F)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

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)
21,629.00	89.16	148.25	11,353.20	-6,100.02	3,661.06	7,114.28	0.38	-0.09	-0.37
21,724.00	89.34	148.43	11,354.45	-6,180.88	3,710.92	7,209.26	0.27	0.19	0.19
21,818.00	88.90	147.37	11,355.89	-6,260.50	3,760.87	7,303.22	1.22	-0.47	-1.13
21,913.00	88.72	147.90	11,357.86	-6,340.72	3,811.71	7,398.16	0.59	-0.19	0.56
22,008.00	88.46	148.96	11,360.20	-6,421.63	3,861.43	7,493.12	1.15	-0.27	1.12
22,102.00	88.81	150.89	11,362.44	-6,502.95	3,908.52	7,587.09	2.09	0.37	2.05
22,197.00	88.81	151.07	11,364.41	-6,586.01	3,954.60	7,682.02	0.19	0.00	0.19
22,292.00	88.64	151.07	11,366.53	-6,669.13	4,000.54	7,776.95	0.18	-0.18	0.00
22,386.00	88.64	151.07	11,368.76	-6,751.38	4,046.00	7,870.88	0.00	0.00	0.00
22,481.00	88.72	151.24	11,370.95	-6,834.57	4,091.82	7,965.80	0.20	0.08	0.18
22,576.00	88.72	151.59	11,373.07	-6,917.97	4,137.26	8,060.70	0.37	0.00	0.37
22,670.00	88.72	151.07	11,375.17	-7,000.42	4,182.35	8,154.62	0.55	0.00	-0.55
22,765.00	88.81	150.54	11,377.22	-7,083.34	4,228.68	8,249.56	0.57	0.09	-0.56
22,860.00	88.81	148.78	11,379.19	-7,165.30	4,276.65	8,344.53	1.85	0.00	-1.85
22,954.00	88.72	148.25	11,381.21	-7,245.45	4,325.74	8,438.50	0.57	-0.10	-0.56
23,049.00	88.81	148.25	11,383.26	-7,326.21	4,375.71	8,533.47	0.09	0.09	0.00
23,144.00	88.81	148.25	11,385.24	-7,406.98	4,425.69	8,628.43	0.00	0.00	0.00
23,238.00	88.90	148.25	11,387.11	-7,486.89	4,475.15	8,722.40	0.10	0.10	0.00
23,333.00	89.08	147.73	11,388.79	-7,567.44	4,525.50	8,817.36	0.58	0.19	-0.55
23,428.00	89.25	147.73	11,390.17	-7,647.75	4,576.21	8,912.32	0.18	0.18	0.00
23,522.00	89.34	148.08	11,391.33	-7,727.38	4,626.15	9,006.29	0.38	0.10	0.37
23,617.00	89.25	148.25	11,392.50	-7,808.09	4,676.26	9,101.26	0.20	-0.09	0.18
23,712.00	89.25	148.08	11,393.74	-7,888.79	4,726.37	9,196.24	0.18	0.00	-0.18
23,807.00	88.99	148.96	11,395.20	-7,969.80	4,775.97	9,291.22	0.97	-0.27	0.93
23,901.00	88.64	149.83	11,397.14	-8,050.68	4,823.81	9,385.20	1.00	-0.37	0.93
23,996.00	88.72	150.19	11,399.33	-8,132.94	4,871.29	9,480.16	0.39	0.08	0.38
24,091.00	88.81	150.71	11,401.38	-8,215.56	4,918.13	9,575.12	0.56	0.09	0.55
24,186.00	88.72	151.07	11,403.43	-8,298.55	4,964.33	9,670.06	0.39	-0.09	0.38
24,280.00	88.81	151.42	11,405.45	-8,380.93	5,009.54	9,763.98	0.38	0.10	0.37
24,375.00	88.64	151.07	11,407.57	-8,464.20	5,055.23	9,858.90	0.41	-0.18	-0.37
24,470.00	88.90	150.89	11,409.61	-8,547.25	5,101.31	9,953.83	0.33	0.27	-0.19
Survey @ 24470.00 MD 11409.61 TVD									
24,541.00	88.90	150.89	11,410.97	-8,609.27	5,135.84	10,024.79	0.00	0.00	0.00
Survey Proj. to 24541.00 MD 11410.97 TVD									

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
177.00	176.99	-0.23	1.61	MWD surveys
24,470.00	11,409.61	-8,547.25	5,101.31	Survey @ 24470.00 MD 11409.61 TVD
24,541.00	11,410.97	-8,609.27	5,135.84	Survey Proj. to 24541.00 MD 11410.97 TVD

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Site:	Burch Ridge	MD Reference:	RKB=1313+25 @ 1338.00ft (HP 611)
Well:	Burch Ridge 6 HU (slot F)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

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