



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Tuesday, November 3, 2020
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BOULEVARD, PLAZA II
SUITE 200
CANONSBURG, PA 15317

Re: Permit Modification Approval for HILLROCK S-15HU
47-051-02263-00-00

Modified for corrected deviation survey and TVD

TUG HILL OPERATING, LLC

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.



James A. Martin
Chief

Operator's Well Number: HILLROCK S-15HU
Farm Name: TERRY E. & DEBORAH SIMMS
U.S. WELL NUMBER: 47-051-02263-00-00
Horizontal 6A New Drill
Date Modification Issued: November 3, 2020

Promoting a healthy environment.

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: Tug Hill Operating, LLC 494510851 Marshall Franklin Powhatan Point Z
Operator ID County District Quadrangle

2) Operator's Well Number: Hillrock S-15HU Well Pad Name: Simms

3) Farm Name/Surface Owner: Terry E. and Deborah Simms Public Road Access: Rines Ridge Road (County Route 76)

4) Elevation, current ground: 1219.50' Elevation, proposed post-construction: 1219.50'

5) Well Type (a) Gas Oil Underground Storage
Other

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):

Point Pleasant is the target formation at a depth of 11,382' - 11,262' - thickness of 120' and anticipated pressure of approx. 9500 psi.

8) Proposed Total Vertical Depth: 11,527'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 19,577'

11) Proposed Horizontal Leg Length: 7,507.05'

12) Approximate Fresh Water Strata Depths: 70' ; 838'

13) Method to Determine Fresh Water Depths: Offset well reports or noticeable flow at the flowline or when need to start soaping

14) Approximate Saltwater Depths: 2,167'

15) Approximate Coal Seam Depths: Sewickley Coal - 732' ; Pittsburgh Coal - 832'

16) Approximate Depth to Possible Void (coal mine, karst, other): none

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes No

(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

18)

CASING AND TUBING PROGRAM

TYPE	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	30"	NEW	BW	BW	120'	120'	259FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	943'	943'	1,528FT^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2732'	2732'	1,927FT^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	10,447'	10,447'	3,408FT^3(CTS)
Production	5 1/2"	NEW	P110	23#	19,880'	19,880'	4,732FT^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,815'	
Liners							

TYPE	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	20"	26"	.5	2,410	1,928	SEE # 24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.472	10,730	6,968	SEE #24	1.99
Production	5 1/2"	8 1/2"	.415	16,510	10,864	SEE #24	1.18
Tubing	2 7/8"			11,385	11,624		
Liners							

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill through the Point Pleasant and TD Pilot Hole 150' into the Trenton. Log vertical section and run a solid cement plug back to proposed KOP(11,315'). Drill curve and lateral per proposed well plan, run and cement production casing. Perform CBL from 60 deg to surface, make cleanout run, and stimulate.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Well to be completed with approximately 18,022,500 lb proppant and 278,641 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 11.63 acres

22) Area to be disturbed for well pad only, less access road (acres): 3.19 acres

23) Describe centralizer placement for each casing string:

Will run 3 centralizers on surface casing at equal distance. Intermediate will have 1 centralizer every third joint. Production casing will have one centralizer every third joint in lateral, one centralizer every joint through curve, one centralizer every third joint to surface.

24) Describe all cement additives associated with each cement type:

*See Attachment

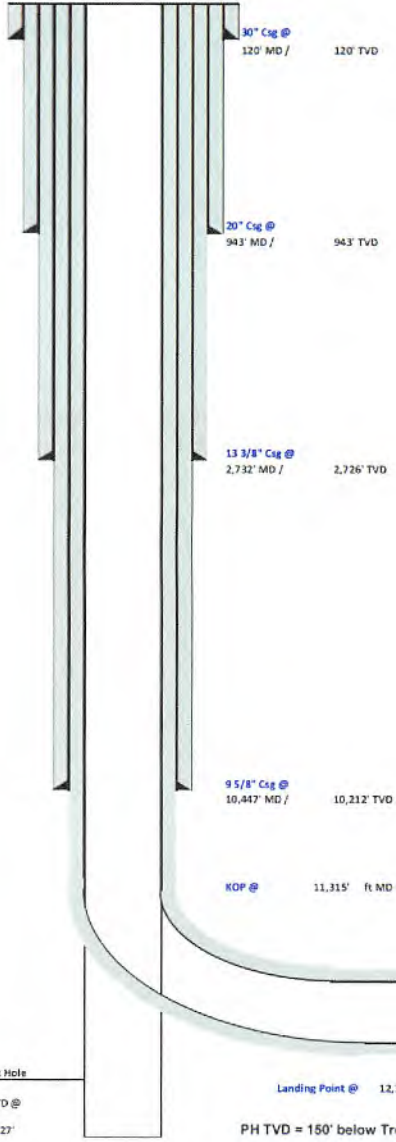
25) Proposed borehole conditioning procedures:

Will circulate a minimum of 3 hours at TD, short trip to curve, circulate bottoms up, check for flow, POOH

*Note: Attach additional sheets as needed.



WELL NAME: Hillrock S-15HU rev1
STATE: WV **COUNTY:** Marshall
DISTRICT: Franklin
DF Elev: 1,245' **GL Elev:** 1,219'
TD: 19,880'
TH Latitude: 39.74583707
TH Longitude: -80.77026272
BH Latitude: 39.72517668
BH Longitude: -80.74436797



FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	838'
Sewickley Coal	732'
Pittsburgh Coal	832'
Big Lime	2,063'
Berea	2,583'
Tully	6,417'
Marcellus	6,529'
Oronodaga	6,580'
Safina	7,285'
Lockport	8,335'
Utica	11,120'
Point Pleasant	11,262'
Landing Depth	11,912'
Trenton	11,382'
Pilot Hole TD	11,527'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	26	20	943'	943'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,732'	2,726'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,447'	10,212'	47	HPP110	Surface
Production	8 1/2	5 1/2	19,880'	11,430'	23	HCP110	Surface

	CEMENT SUMMARY			DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,647	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,088	A	15	Air	1 Centralizer every other jt
Intermediate 2	2,867	A	14.5	Air	1 Centralizer every other jt
Production	4,162	A	15	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to s/c

Pilot Hole
 PH TD @
 11,527'

Landing Point @ 12,375' MD / 11,312' TVD
 PH TVD = 150' below Trenton Top

Lateral TD @ 19,880' ft MD
 11,430' ft TVD



Tug Hill Operating, LLC Casing and Cement Program

Hillrock S-15HU rev1

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	943'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,732'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,447'	CTS
Production	5 1/2"	HCP110	8 1/2"	19,880'	CTS

Cement

Surface: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2

Intermediate 1: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.2

Intermediate 2: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.99

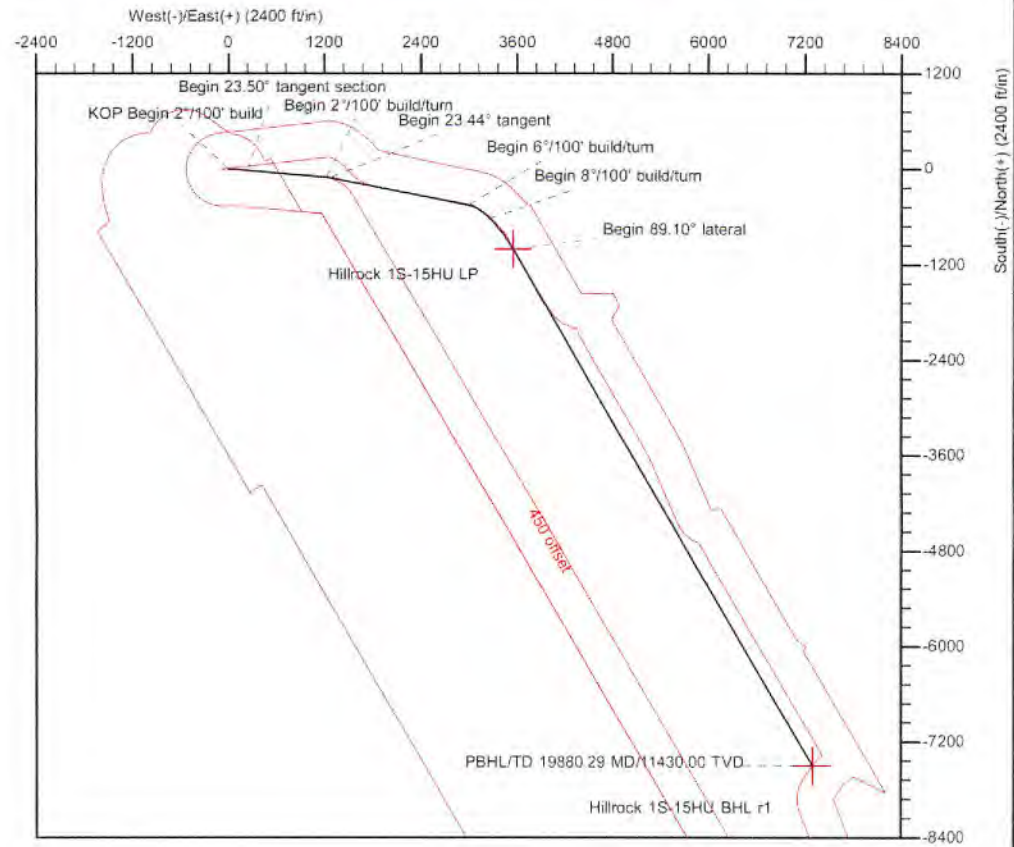
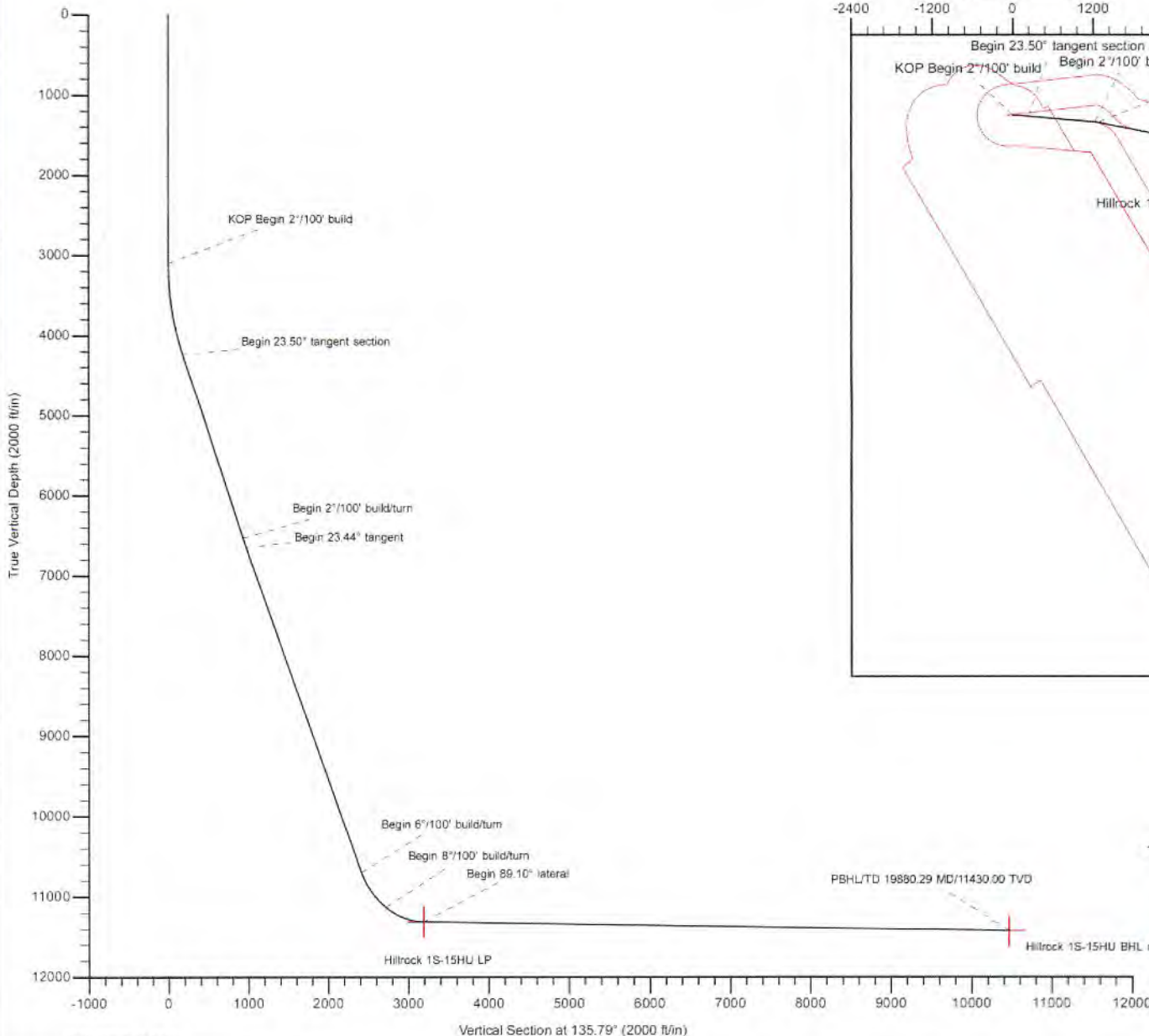
Production: 50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.18



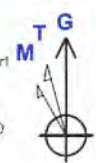
Well: Hillrock 1S-15 HU (G)
 Site: Hillrock/Simms
 Project: Marshall County, West Virginia
 Design: rev1

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	3100.00	0.00	0.00	3100.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2°/100' build
3	4275.00	23.50	95.00	4242.33	-20.71	236.70	2.00	95.00	179.90	Begin 23.50° tangent section
4	6775.00	23.50	95.00	6534.98	-107.59	1229.78	0.00	0.00	934.69	Begin 2°/100' build/turn
5	6896.76	23.44	101.11	6646.69	-114.38	1277.74	2.00	94.16	973.00	Begin 23.44° tangent
6	11315.29	23.44	101.11	10700.51	-453.25	3002.58	0.00	0.00	2418.68	Begin 6°/100' build/turn
7	11854.53	50.00	134.31	11132.73	-622.73	3262.57	6.00	51.60	2721.45	Begin 8°/100' build/turn
8	12374.84	89.10	150.00	11312.00	-1004.14	3547.90	8.00	24.02	3193.79	Begin 89.10° lateral
9	19880.29	89.10	150.00	11430.00	-7503.26	7300.15	0.00	0.00	0466.57	PBHL/TD 19880.29 MD/11430.00 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: GL @ 1219.00ft
 Northing: 14434267.29
 Easting: 1704992.74
 Latitude: 39.74583707
 Longitude: -80.77026272
 Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.82°



Azimuths to Grid North
 True North: -0.15°
 Magnetic North: -8.82°
 Magnetic Field
 Strength: 52030.3nT
 Dip Angle: 66.84°
 Date: 8/2/2018
 Model: IGRF2015



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Hillrock 1S-15 HU (G)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1219.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1219.00ft
Site:	Hillrock/Simms	North Reference:	Grid
Well:	Hillrock 1S-15 HU (G)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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

Site	Hillrock/Simms				
Site Position:		Northing:	14,434,279.29 usft	Latitude:	39.74587001
From:	Lat/Long	Easting:	1,704,992.60 usft	Longitude:	-80.77026312
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.15 "

Well	Hillrock 1S-15 HU (G)					
Well Position	+N/-S	-11.99 ft	Northing:	14,434,267.30 usft	Latitude:	39.74583707
	+E/-W	0.14 ft	Easting:	1,704,992.74 usft	Longitude:	-80.77026272
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	1,219.00 ft

Wellbore	Original Hole				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/2/2018	-8.67	66.84	52,030.34312068

Design	rev1				
Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:		Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
		0.00	0.00	0.00	135.79

Plan Survey Tool Program	Date	3/13/2019			
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	19,880.29	rev1 (Original Hole)	MWD	MWD - Standard

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,275.00	23.50	95.00	4,242.33	-20.71	236.70	2.00	2.00	0.00	95.00	
6,775.00	23.50	95.00	6,534.98	-107.59	1,229.78	0.00	0.00	0.00	0.00	
6,896.76	23.44	101.11	6,646.69	-114.38	1,277.74	2.00	-0.05	5.02	94.16	
11,315.29	23.44	101.11	10,700.51	-453.25	3,002.58	0.00	0.00	0.00	0.00	
11,854.53	50.00	134.31	11,132.73	-622.73	3,262.57	6.00	4.92	6.16	51.60	
12,374.84	89.10	150.00	11,312.00	-1,004.14	3,547.90	8.00	7.51	3.02	24.02	
19,880.29	89.10	150.00	11,430.00	-7,503.26	7,300.15	0.00	0.00	0.00	0.00	Hillrock 1S-15HU BHI

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Hillrock 1S-15 HU (G)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1219.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1219.00ft
Site:	Hillrock/Simms	North Reference:	Grid
Well:	Hillrock 1S-15 HU (G)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned 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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Begin 2°/100' build									
3,200.00	2.00	95.00	3,199.98	-0.15	1.74	1.32	2.00	2.00	0.00
3,300.00	4.00	95.00	3,299.84	-0.61	6.95	5.28	2.00	2.00	0.00
3,400.00	6.00	95.00	3,399.45	-1.37	15.63	11.88	2.00	2.00	0.00
3,500.00	8.00	95.00	3,498.70	-2.43	27.77	21.11	2.00	2.00	0.00
3,600.00	10.00	95.00	3,597.47	-3.79	43.36	32.95	2.00	2.00	0.00
3,700.00	12.00	95.00	3,695.62	-5.46	62.36	47.40	2.00	2.00	0.00
3,800.00	14.00	95.00	3,793.06	-7.42	84.77	64.43	2.00	2.00	0.00
3,900.00	16.00	95.00	3,889.64	-9.67	110.55	84.03	2.00	2.00	0.00
4,000.00	18.00	95.00	3,985.27	-12.22	139.88	106.16	2.00	2.00	0.00
4,100.00	20.00	95.00	4,079.82	-15.06	172.11	130.81	2.00	2.00	0.00
4,200.00	22.00	95.00	4,173.17	-18.18	207.81	157.94	2.00	2.00	0.00
4,275.00	23.50	95.00	4,242.33	-20.71	236.70	179.90	2.00	2.00	0.00
Begin 23.50° tangent section									
4,300.00	23.50	95.00	4,265.26	-21.58	246.63	187.45	0.00	0.00	0.00
4,400.00	23.50	95.00	4,356.96	-25.05	286.36	217.64	0.00	0.00	0.00
4,500.00	23.50	95.00	4,448.67	-28.53	326.08	247.83	0.00	0.00	0.00
4,600.00	23.50	95.00	4,540.38	-32.00	365.80	278.03	0.00	0.00	0.00
4,700.00	23.50	95.00	4,632.08	-35.48	405.52	308.22	0.00	0.00	0.00
4,800.00	23.50	95.00	4,723.79	-38.95	445.25	338.41	0.00	0.00	0.00
4,900.00	23.50	95.00	4,815.49	-42.43	484.97	368.60	0.00	0.00	0.00

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Hillrock 1S-15 HU (G)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1219.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1219.00ft
Site:	Hillrock/Simms	North Reference:	Grid
Well:	Hillrock 1S-15 HU (G)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned 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)
5,000.00	23.50	95.00	4,907.20	-45.90	524.69	398.79	0.00	0.00	0.00
5,100.00	23.50	95.00	4,998.91	-49.38	564.42	428.98	0.00	0.00	0.00
5,200.00	23.50	95.00	5,090.61	-52.86	604.14	459.17	0.00	0.00	0.00
5,300.00	23.50	95.00	5,182.32	-56.33	643.86	489.37	0.00	0.00	0.00
5,400.00	23.50	95.00	5,274.02	-59.81	683.59	519.56	0.00	0.00	0.00
5,500.00	23.50	95.00	5,365.73	-63.28	723.31	549.75	0.00	0.00	0.00
5,600.00	23.50	95.00	5,457.44	-66.76	763.03	579.94	0.00	0.00	0.00
5,700.00	23.50	95.00	5,549.14	-70.23	802.76	610.13	0.00	0.00	0.00
5,800.00	23.50	95.00	5,640.85	-73.71	842.48	640.32	0.00	0.00	0.00
5,900.00	23.50	95.00	5,732.55	-77.18	882.20	670.51	0.00	0.00	0.00
6,000.00	23.50	95.00	5,824.26	-80.66	921.93	700.71	0.00	0.00	0.00
6,100.00	23.50	95.00	5,915.97	-84.13	961.65	730.90	0.00	0.00	0.00
6,200.00	23.50	95.00	6,007.67	-87.61	1,001.37	761.09	0.00	0.00	0.00
6,300.00	23.50	95.00	6,099.38	-91.08	1,041.10	791.28	0.00	0.00	0.00
6,400.00	23.50	95.00	6,191.08	-94.56	1,080.82	821.47	0.00	0.00	0.00
6,500.00	23.50	95.00	6,282.79	-98.03	1,120.54	851.66	0.00	0.00	0.00
6,600.00	23.50	95.00	6,374.50	-101.51	1,160.26	881.85	0.00	0.00	0.00
6,700.00	23.50	95.00	6,466.20	-104.99	1,199.99	912.05	0.00	0.00	0.00
6,775.00	23.50	95.00	6,534.98	-107.59	1,229.78	934.69	0.00	0.00	0.00
Begin 2°/100' build/turn									
6,800.00	23.47	96.25	6,557.91	-108.57	1,239.69	942.30	2.00	-0.12	5.01
6,896.76	23.44	101.11	6,646.68	-114.38	1,277.74	973.00	2.00	-0.03	5.03
Begin 23.44° tangent									
6,900.00	23.44	101.11	6,649.66	-114.63	1,279.00	974.06	0.00	0.00	0.00
7,000.00	23.44	101.11	6,741.40	-122.30	1,318.04	1,006.77	0.00	0.00	0.00
7,100.00	23.44	101.11	6,833.15	-129.96	1,357.07	1,039.49	0.00	0.00	0.00
7,200.00	23.44	101.11	6,924.90	-137.63	1,396.11	1,072.21	0.00	0.00	0.00
7,300.00	23.44	101.11	7,016.64	-145.30	1,435.15	1,104.93	0.00	0.00	0.00
7,400.00	23.44	101.11	7,108.39	-152.97	1,474.18	1,137.65	0.00	0.00	0.00
7,500.00	23.44	101.11	7,200.13	-160.64	1,513.22	1,170.37	0.00	0.00	0.00
7,600.00	23.44	101.11	7,291.88	-168.31	1,552.26	1,203.09	0.00	0.00	0.00
7,700.00	23.44	101.11	7,383.63	-175.98	1,591.29	1,235.80	0.00	0.00	0.00
7,800.00	23.44	101.11	7,475.37	-183.65	1,630.33	1,268.52	0.00	0.00	0.00
7,900.00	23.44	101.11	7,567.12	-191.32	1,669.37	1,301.24	0.00	0.00	0.00
8,000.00	23.44	101.11	7,658.86	-198.99	1,708.40	1,333.96	0.00	0.00	0.00
8,100.00	23.44	101.11	7,750.61	-206.66	1,747.44	1,366.68	0.00	0.00	0.00
8,200.00	23.44	101.11	7,842.36	-214.33	1,786.48	1,399.40	0.00	0.00	0.00
8,300.00	23.44	101.11	7,934.10	-222.00	1,825.51	1,432.12	0.00	0.00	0.00
8,400.00	23.44	101.11	8,025.85	-229.67	1,864.55	1,464.83	0.00	0.00	0.00
8,500.00	23.44	101.11	8,117.59	-237.33	1,903.59	1,497.55	0.00	0.00	0.00
8,600.00	23.44	101.11	8,209.34	-245.00	1,942.62	1,530.27	0.00	0.00	0.00
8,700.00	23.44	101.11	8,301.09	-252.67	1,981.66	1,562.99	0.00	0.00	0.00
8,800.00	23.44	101.11	8,392.83	-260.34	2,020.70	1,595.71	0.00	0.00	0.00
8,900.00	23.44	101.11	8,484.58	-268.01	2,059.73	1,628.43	0.00	0.00	0.00
9,000.00	23.44	101.11	8,576.32	-275.68	2,098.77	1,661.15	0.00	0.00	0.00
9,100.00	23.44	101.11	8,668.07	-283.35	2,137.81	1,693.87	0.00	0.00	0.00
9,200.00	23.44	101.11	8,759.82	-291.02	2,176.84	1,726.58	0.00	0.00	0.00
9,300.00	23.44	101.11	8,851.56	-298.69	2,215.88	1,759.30	0.00	0.00	0.00
9,400.00	23.44	101.11	8,943.31	-306.36	2,254.92	1,792.02	0.00	0.00	0.00
9,500.00	23.44	101.11	9,035.05	-314.03	2,293.95	1,824.74	0.00	0.00	0.00
9,600.00	23.44	101.11	9,126.80	-321.70	2,332.99	1,857.46	0.00	0.00	0.00
9,700.00	23.44	101.11	9,218.55	-329.37	2,372.03	1,890.18	0.00	0.00	0.00
9,800.00	23.44	101.11	9,310.29	-337.04	2,411.06	1,922.90	0.00	0.00	0.00
9,900.00	23.44	101.11	9,402.04	-344.70	2,450.10	1,955.61	0.00	0.00	0.00

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Hillrock 1S-15 HU (G)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1219.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1219.00ft
Site:	Hillrock/Simms	North Reference:	Grid
Well:	Hillrock 1S-15 HU (G)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,000.00	23.44	101.11	9,493.78	-352.37	2,489.14	1,988.33	0.00	0.00	0.00
10,100.00	23.44	101.11	9,585.53	-360.04	2,528.17	2,021.05	0.00	0.00	0.00
10,200.00	23.44	101.11	9,677.28	-367.71	2,567.21	2,053.77	0.00	0.00	0.00
10,300.00	23.44	101.11	9,769.02	-375.38	2,606.24	2,086.49	0.00	0.00	0.00
10,400.00	23.44	101.11	9,860.77	-383.05	2,645.28	2,119.21	0.00	0.00	0.00
10,500.00	23.44	101.11	9,952.51	-390.72	2,684.32	2,151.93	0.00	0.00	0.00
10,600.00	23.44	101.11	10,044.26	-398.39	2,723.35	2,184.64	0.00	0.00	0.00
10,700.00	23.44	101.11	10,136.01	-406.06	2,762.39	2,217.36	0.00	0.00	0.00
10,800.00	23.44	101.11	10,227.75	-413.73	2,801.43	2,250.08	0.00	0.00	0.00
10,900.00	23.44	101.11	10,319.50	-421.40	2,840.46	2,282.80	0.00	0.00	0.00
11,000.00	23.44	101.11	10,411.24	-429.07	2,879.50	2,315.52	0.00	0.00	0.00
11,100.00	23.44	101.11	10,502.99	-436.74	2,918.54	2,348.24	0.00	0.00	0.00
11,200.00	23.44	101.11	10,594.74	-444.41	2,957.57	2,380.96	0.00	0.00	0.00
11,300.00	23.44	101.11	10,686.48	-452.07	2,996.61	2,413.67	0.00	0.00	0.00
11,315.29	23.44	101.11	10,700.51	-453.25	3,002.58	2,418.68	0.00	0.00	0.00
Begin 6°/100' build/turn									
11,400.00	26.88	109.95	10,777.20	-463.04	3,037.14	2,449.79	6.00	4.06	10.43
11,500.00	31.48	117.88	10,864.52	-482.98	3,081.50	2,495.02	6.00	4.60	7.93
11,600.00	36.45	123.91	10,947.46	-511.79	3,129.27	2,548.98	6.00	4.97	6.03
11,700.00	41.66	128.65	11,025.10	-549.15	3,179.93	2,611.09	6.00	5.21	4.73
11,800.00	47.03	132.49	11,096.61	-594.66	3,232.91	2,680.65	6.00	5.37	3.84
11,854.53	50.00	134.31	11,132.73	-622.73	3,262.57	2,721.45	6.00	5.46	3.34
Begin 8°/100' build/turn									
11,900.00	53.34	136.16	11,160.93	-648.06	3,287.67	2,757.11	8.00	7.34	4.06
12,000.00	60.76	139.71	11,215.29	-710.37	3,343.76	2,840.89	8.00	7.43	3.55
12,100.00	68.27	142.78	11,258.30	-780.75	3,400.16	2,930.66	8.00	7.51	3.07
12,200.00	75.83	145.54	11,289.10	-857.83	3,455.78	3,024.69	8.00	7.56	2.76
12,300.00	83.41	148.12	11,307.11	-940.11	3,509.52	3,121.15	8.00	7.59	2.58
12,374.84	89.10	150.00	11,312.00	-1,004.14	3,547.90	3,193.80	8.00	7.60	2.51
Begin 89.10° lateral									
12,400.00	89.10	150.00	11,312.39	-1,025.93	3,560.48	3,218.18	0.00	0.00	0.00
12,500.00	89.10	150.00	11,313.97	-1,112.52	3,610.47	3,315.11	0.00	0.00	0.00
12,600.00	89.10	150.00	11,315.54	-1,199.11	3,660.46	3,412.04	0.00	0.00	0.00
12,700.00	89.10	150.00	11,317.11	-1,285.70	3,710.46	3,508.96	0.00	0.00	0.00
12,800.00	89.10	150.00	11,318.68	-1,372.29	3,760.45	3,605.89	0.00	0.00	0.00
12,900.00	89.10	150.00	11,320.25	-1,458.89	3,810.44	3,702.82	0.00	0.00	0.00
13,000.00	89.10	150.00	11,321.83	-1,545.48	3,860.44	3,799.74	0.00	0.00	0.00
13,100.00	89.10	150.00	11,323.40	-1,632.07	3,910.43	3,896.67	0.00	0.00	0.00
13,200.00	89.10	150.00	11,324.97	-1,718.66	3,960.43	3,993.60	0.00	0.00	0.00
13,300.00	89.10	150.00	11,326.54	-1,805.25	4,010.42	4,090.52	0.00	0.00	0.00
13,400.00	89.10	150.00	11,328.12	-1,891.85	4,060.41	4,187.45	0.00	0.00	0.00
13,500.00	89.10	150.00	11,329.69	-1,978.44	4,110.41	4,284.38	0.00	0.00	0.00
13,600.00	89.10	150.00	11,331.26	-2,065.03	4,160.40	4,381.30	0.00	0.00	0.00
13,700.00	89.10	150.00	11,332.83	-2,151.62	4,210.39	4,478.23	0.00	0.00	0.00
13,800.00	89.10	150.00	11,334.40	-2,238.21	4,260.39	4,575.16	0.00	0.00	0.00
13,900.00	89.10	150.00	11,335.98	-2,324.81	4,310.38	4,672.08	0.00	0.00	0.00
14,000.00	89.10	150.00	11,337.55	-2,411.40	4,360.37	4,769.01	0.00	0.00	0.00
14,100.00	89.10	150.00	11,339.12	-2,497.99	4,410.37	4,865.94	0.00	0.00	0.00
14,200.00	89.10	150.00	11,340.69	-2,584.58	4,460.36	4,962.86	0.00	0.00	0.00
14,300.00	89.10	150.00	11,342.27	-2,671.17	4,510.36	5,059.79	0.00	0.00	0.00
14,400.00	89.10	150.00	11,343.84	-2,757.77	4,560.35	5,156.72	0.00	0.00	0.00
14,500.00	89.10	150.00	11,345.41	-2,844.36	4,610.34	5,253.64	0.00	0.00	0.00
14,600.00	89.10	150.00	11,346.98	-2,930.95	4,660.34	5,350.57	0.00	0.00	0.00

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Hillrock 1S-15 HU (G)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1219.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1219.00ft
Site:	Hillrock/Simms	North Reference:	Grid
Well:	Hillrock 1S-15 HU (G)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
14,700.00	89.10	150.00	11,348.55	-3,017.54	4,710.33	5,447.49	0.00	0.00	0.00
14,800.00	89.10	150.00	11,350.13	-3,104.13	4,760.32	5,544.42	0.00	0.00	0.00
14,900.00	89.10	150.00	11,351.70	-3,190.73	4,810.32	5,641.35	0.00	0.00	0.00
15,000.00	89.10	150.00	11,353.27	-3,277.32	4,860.31	5,738.27	0.00	0.00	0.00
15,100.00	89.10	150.00	11,354.84	-3,363.91	4,910.31	5,835.20	0.00	0.00	0.00
15,200.00	89.10	150.00	11,356.42	-3,450.50	4,960.30	5,932.13	0.00	0.00	0.00
15,300.00	89.10	150.00	11,357.99	-3,537.09	5,010.29	6,029.05	0.00	0.00	0.00
15,400.00	89.10	150.00	11,359.56	-3,623.69	5,060.29	6,125.98	0.00	0.00	0.00
15,500.00	89.10	150.00	11,361.13	-3,710.28	5,110.28	6,222.91	0.00	0.00	0.00
15,600.00	89.10	150.00	11,362.70	-3,796.87	5,160.27	6,319.83	0.00	0.00	0.00
15,700.00	89.10	150.00	11,364.28	-3,883.46	5,210.27	6,416.76	0.00	0.00	0.00
15,800.00	89.10	150.00	11,365.85	-3,970.05	5,260.26	6,513.69	0.00	0.00	0.00
15,900.00	89.10	150.00	11,367.42	-4,056.64	5,310.25	6,610.61	0.00	0.00	0.00
16,000.00	89.10	150.00	11,368.99	-4,143.24	5,360.25	6,707.54	0.00	0.00	0.00
16,100.00	89.10	150.00	11,370.57	-4,229.83	5,410.24	6,804.47	0.00	0.00	0.00
16,200.00	89.10	150.00	11,372.14	-4,316.42	5,460.24	6,901.39	0.00	0.00	0.00
16,300.00	89.10	150.00	11,373.71	-4,403.01	5,510.23	6,998.32	0.00	-0.00	0.00
16,400.00	89.10	150.00	11,375.28	-4,489.60	5,560.22	7,095.25	0.00	0.00	0.00
16,500.00	89.10	150.00	11,376.85	-4,576.20	5,610.22	7,192.17	0.00	0.00	0.00
16,600.00	89.10	150.00	11,378.43	-4,662.79	5,660.21	7,289.10	0.00	0.00	0.00
16,700.00	89.10	150.00	11,380.00	-4,749.38	5,710.20	7,386.03	0.00	0.00	0.00
16,800.00	89.10	150.00	11,381.57	-4,835.97	5,760.20	7,482.95	0.00	0.00	0.00
16,900.00	89.10	150.00	11,383.14	-4,922.56	5,810.19	7,579.88	0.00	0.00	0.00
17,000.00	89.10	150.00	11,384.72	-5,009.16	5,860.18	7,676.81	0.00	0.00	0.00
17,100.00	89.10	150.00	11,386.29	-5,095.75	5,910.18	7,773.73	0.00	0.00	0.00
17,200.00	89.10	150.00	11,387.86	-5,182.34	5,960.17	7,870.66	0.00	0.00	0.00
17,300.00	89.10	150.00	11,389.43	-5,268.93	6,010.17	7,967.59	0.00	0.00	0.00
17,400.00	89.10	150.00	11,391.00	-5,355.52	6,060.16	8,064.51	0.00	0.00	0.00
17,500.00	89.10	150.00	11,392.58	-5,442.12	6,110.15	8,161.44	0.00	0.00	0.00
17,600.00	89.10	150.00	11,394.15	-5,528.71	6,160.15	8,258.36	0.00	0.00	0.00
17,700.00	89.10	150.00	11,395.72	-5,615.30	6,210.14	8,355.29	0.00	0.00	0.00
17,800.00	89.10	150.00	11,397.29	-5,701.89	6,260.13	8,452.22	0.00	0.00	0.00
17,900.00	89.10	150.00	11,398.87	-5,788.48	6,310.13	8,549.14	0.00	0.00	0.00
18,000.00	89.10	150.00	11,400.44	-5,875.08	6,360.12	8,646.07	0.00	0.00	0.00
18,100.00	89.10	150.00	11,402.01	-5,961.67	6,410.11	8,743.00	0.00	0.00	0.00
18,200.00	89.10	150.00	11,403.58	-6,048.26	6,460.11	8,839.92	0.00	0.00	0.00
18,300.00	89.10	150.00	11,405.15	-6,134.85	6,510.10	8,936.85	0.00	0.00	0.00
18,400.00	89.10	150.00	11,406.73	-6,221.44	6,560.10	9,033.78	0.00	0.00	0.00
18,500.00	89.10	150.00	11,408.30	-6,308.04	6,610.09	9,130.70	0.00	0.00	0.00
18,600.00	89.10	150.00	11,409.87	-6,394.63	6,660.08	9,227.63	0.00	0.00	0.00
18,700.00	89.10	150.00	11,411.44	-6,481.22	6,710.08	9,324.56	0.00	0.00	0.00
18,800.00	89.10	150.00	11,413.02	-6,567.81	6,760.07	9,421.48	0.00	0.00	0.00
18,900.00	89.10	150.00	11,414.59	-6,654.40	6,810.06	9,518.41	0.00	0.00	0.00
19,000.00	89.10	150.00	11,416.16	-6,740.99	6,860.06	9,615.34	0.00	0.00	0.00
19,100.00	89.10	150.00	11,417.73	-6,827.59	6,910.05	9,712.26	0.00	0.00	0.00
19,200.00	89.10	150.00	11,419.30	-6,914.18	6,960.04	9,809.19	0.00	0.00	0.00
19,300.00	89.10	150.00	11,420.88	-7,000.77	7,010.04	9,906.12	0.00	0.00	0.00
19,400.00	89.10	150.00	11,422.45	-7,087.36	7,060.03	10,003.04	0.00	0.00	0.00
19,500.00	89.10	150.00	11,424.02	-7,173.95	7,110.03	10,099.97	0.00	0.00	0.00
19,600.00	89.10	150.00	11,425.59	-7,260.55	7,160.02	10,196.90	0.00	0.00	0.00
19,700.00	89.10	150.00	11,427.17	-7,347.14	7,210.01	10,293.82	0.00	0.00	0.00
19,800.00	89.10	150.00	11,428.74	-7,433.73	7,260.01	10,390.75	0.00	0.00	0.00
19,880.29	89.10	150.00	11,430.00	-7,503.25	7,300.15	10,468.57	0.00	0.00	0.00

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Hillrock 1S-15 HU (G)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1219.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1219.00ft
Site:	Hillrock/Simms	North Reference:	Grid
Well:	Hillrock 1S-15 HU (G)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned 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)
PBHL/TD 19880.29 MD/11430.00 TVD									

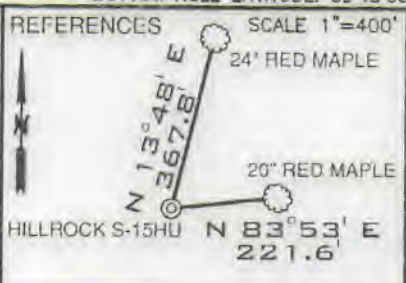
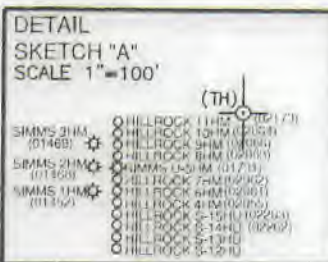
Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Hillrock 1S-15HU LP - hit/miss target - Shape - Point	0.00	0.00	11,312.00	-1,004.14	3,547.88	14,433,263.16	1,708,540.61	39.74305375	-80.75765051
- plan misses target center by 0.02ft at 12374.83ft MD (11312.00 TVD, -1004.13 N, 3547.89 E)									
Hillrock 1S-15HU BHL r1 - plan hits target center - Point	0.00	0.00	11,430.00	-7,503.26	7,300.15	14,426,764.06	1,712,292.87	39.72517668	-80.74436797

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
3,100.00	3,100.00	0.00	0.00	KOP Begin 2°/100' build	
4,275.00	4,242.33	-20.71	236.70	Begin 23.50° tangent section	
6,775.00	6,534.98	-107.59	1,229.78	Begin 2°/100' build/turn	
6,896.76	6,646.68	-114.38	1,277.74	Begin 23.44° tangent	
11,315.29	10,700.51	-453.25	3,002.58	Begin 6°/100' build/turn	
11,854.53	11,132.73	-622.73	3,262.57	Begin 8°/100' build/turn	
12,374.84	11,312.00	-1,004.14	3,547.90	Begin 89.10° lateral	
19,880.29	11,430.00	-7,503.25	7,300.15	PBHL/TD 19880.29 MD/11430.00 TVD	

HILLROCK LEASE WELL S-15HU 635.5719± ACRES

TOP HOLE LATITUDE: 39°45'00"

BOTTOM HOLE LATITUDE: 39°45'00"



GRID NORTH

NOTES

- BORE PATH BASED ON GRID NORTH
- NO WELL OR WELLS WITHIN 250' OF WELL WERE FOUND; NO LATERALS WITHIN 625' OF PAD CENTER UNLESS OTHERWISE TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH 2019. COORDINATE SYSTEM WITH THIS PLAT IS BASED UPON THE NATIONAL GRID AS SHOWN ON THIS PLAT.
- WELL LOCATION REFERENCE ARE BASED UPON THE MAGNETIC MERIDIAN.
- ALL DEEP WELLS SHOWN ON THIS PLAT.

LINE	BEARING	DISTANCE
L1	N 32°48' W	2088.64'
L2	S 33°04' E	1890.22'
L3	S 84°03' E	1234.89'
L4	S 77°56' E	1758.41'

LEGEND

- LEASE TRACTS
- SURFACE TRACTS
- WELL LATERAL
- POINT PLEASANT LEGS
- UNIT BOUNDARY
- (A) LEASE # (SEE 6A1 FORM)
- 400' BORE PATH OFFSET
- 500' WELL BORE OFFSET

CURVE	CHORD BEARING	CHORD LENGTH	RADIUS	ARC LENGTH
C1	S 81°00' E	48.45'	448.88'	48.47'
C2	S 68°24' E	84.37'	289.28'	84.67'
C3	S 53°51' E	152.61'	677.36'	152.93'
C4	S 41°48' E	285.87'	1285.05'	286.46'
C5	S 32°31' E	267.91'	2124.03'	268.09'

(*) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

SURFACE HOLE
UTM, NAD83, ZONE 17
IN METERS
N) 4,399,573.47
E) 519,682.83

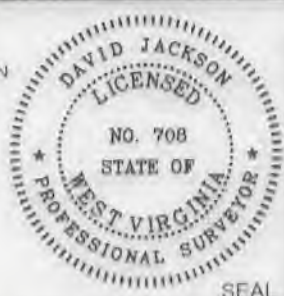
LANDING POINT 1
UTM, NAD83, ZONE 17
IN METERS
N) 4,399,267.41
E) 520,764.23

BOTTOM HOLE
UTM, NAD83, ZONE 17
IN METERS
N) 4,397,286.48
E) 521,907.91

FILE NUMBER _____
DRAWING NUMBER: HILLROCK_S-15HU_REV 1
SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING
GRADE GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

David L Jackson



JACKSON SURVEYING INC.
P.O. Box 1460
Charleston, WV 26302
304-623-5851

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET, SE
CHARLESTON, WV 25304

DATE: AUGUST 07, 2019
REVISED DATE: SEPTEMBER 14, 2020
OPERATORS WELL NO. HILLROCK S-15HU
API WELL NO. 47-051-02263 MOD
STATE WV COUNTY MARSHALL PERMIT _____

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP X SHALLOW ___
LOCATION ELEVATION 1219.5' WATERSHED (HUC 10) FISH CREEK
DISTRICT FRANKLIN COUNTY MARSHALL
QUADRANGLE NEW MARTINSVILLE 7.5' LEASE NUMBER SEE WW-6A1 Form

SURFACE OWNER TERRY E. & DEBORAH SIMMS ACREAGE 123.09
OIL & GAS ROYALTY OWNER TERRY E. & DEBORAH L. SIMMS, ET AL LEASE ACREAGE 123.09
PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___
PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) _____
TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD: 11,527' TMD: 19,880'
WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD
FORT WORTH, TX 76107 CHARLESTON, WV 25313

COUNTY NAME
PERMIT

**HILLROCK LEASE
WELL S-15HU
635.5719± ACRES**

Number	TAX MAP-PARCEL	SURFACE OWNER	ACRES
S1	05-24-5.4	Thomas V. Tuttle, et ux	38.224
S2	05-24-5.3	Thomas V. Tuttle, et ux	8.543
S3	05-25-01	Michael L. Mason	35.43
S4	05-25-13	William M. Ferda, Jr. & Stephanie Palicka	16.014
S5	05-25-13.2	David A. Klug	5.89
S6	05-25-12.1	Kent & Betty Mason	15.0
S7	05-25-12	Marion Parsons Jr., et al	85.16
S8	05-25-11.4	Edward W. Klug, et ux	32.787
S9	05-25-11.2	James W. Klug	114.305
S10	05-25-11.1	Edward W. Klug & Dianna Klug	2.343
S11	12-03-44	James A. & Jo C. Estep	1.10
S12	12-03-47	Wetzal County Emergency Ambulance	0.50
S13	12-03-43	Adam W. Ferrell & Brittany M. Loy	1.97
S14	12-03-42	J. M. Klug	2.617
S15	05-23-06	James A. Channing, et al	48.0
S16	05-18-21	Curtis E. & Michelle J. Hall	43.119
S17	05-18-20	Wayne E. Channing, et al	75.60
S18	05-18-31	Kenneth E. Rastall	6.94
S19	05-18-32	Kenneth E. Rastall	5.335
S20	05-17-12	James A. & Jill C. Corley	3.33
S21	05-17-12.1	Williams Ohio Valley Midstream, LLC	1.67
S22	05-17-10	James A. Corley, et al	92.61
S23	05-17-9.3	James A. Corley, et ux	12.478
S24	05-17-9.4	Vicki L. Bowen	60.3
S25	05-24-1	Linda L. Hendrickson & Donald Ray Pickering	175.0
S26	05-24-5.2	James D. Watkins, et ux	3.151
S27	05-24-5.1	James D. Watkins, et ux	4.60
S28	05-23-7.1	Lisa Ann Nelson	0.549
S29	05-23-7.2	Lisa Ann Nelson	6.354
S30	05-24-5.5	Linda Lou Tagg	17.194
S31	05-24-5	Robert C. Francis et ux (Life)	145.788
S32	05-24-3.2	T.H. Exploration II, LLC	49.0
S33	05-24-3.1	T.H. Exploration II, LLC	5.50
S34	05-25-2.2	John G. Klug, Sr. et ux	10.0
S35	05-25-2	James W. Klug	122.3
S36	05-25-2.1	Nancy Jackson	1.0
S37	05-25-3	S.D. Fertitta, et ux	181.548
S38	05-25-3.1	S.D. Fertitta, et ux	3.022
S39	05-25-14.1	Judith L. Weigand	65.0
S40	05-24-04	Terry E. Simms, et ux	84.05
S41	05-25-1.4	Samantha J. & Philip A. Namluk	24.44
S42	05-25-1.3	Michael E. & Annie A. Chapman	26.2
S43	05-25-1.2	William Jr. & Andrea J. Dubiel	20.10
S44	05-25-1.1	Ryan A. & Jacqueline E. Layman	9.79
S45	05-25-13.3	William M. Sr. & Cynthia A. Ferda	17.21

Number	TAX MAP-PARCEL	SURFACE OWNER	ACRES
S46	05-25-1.5	Ryan J. Bratton	21.35
S47	05-25-10	Terry L. & Tammy J. Kirkland as Trustees of the Terry L. & Tammy J. Kirkland Living Trust	18.75
S48	05-25-10.1	Terry L. & Tammy J. Kirkland (Life)	5.250
S49	12-03-41	Carl L. Kirkland	4.102
S50	12-03-41.1	Terry L. & Tammy J. Kirkland as Trustees of the Terry L. & Tammy J. Kirkland Living Trust	74.138
S51	12-03-04	Albert L. & Mary Hohman et al	85.0
S52	12-03-02	Robert Lee & Diana G. Smith	2.48
S53	12-03-4.3	Joseph P. & Barbara A. Cain	3.619
S54	12-03-4.6	Steven P. Wayman	1.009
S55	12-03-4.5	Hazel M. Blair	0.451
S56	12-03-01	James W. Klug	0.375
S57	12-03-4.7	Joseph P. & Barbara A. Cain	67.3
S58	12-02-14	David L. Cunningham	56.23
S59	12-02-14.2	John G. Jr. & Geraldine M. Rogers	25.1
S60	12-02-14.1	Sammy J. Greathouse, Jr. Sammy J. Greathouse, Sr. (L/E)	18.67
S61	05-25-16.1	David L. Cunningham	6.34
S62	05-25-16.2	Rodney J. Loy	1.087
S63	05-25-13.4	Parsons Cemetery	0.38
S64	05-25-14	Roy F. Yoho	23.0
S65	05-25-16	Craig R. & Ashley Ferrell	23.5
S66	05-25-17	Craig R. & Ashley Ferrell	22.790
S67	05-25-18	Joseph Johnson, et ux (Life)	37.746
S68	05-25-19	Joseph Johnson, et ux (Life)	1.973
S69	05-25-20.3	James A. & Jo C. Estep	4.49
S70	05-25-20.2	James M. Zombotti	1.347
S71	05-25-20.1	James M. Zombotti	2.746
S72	05-23-11	Roy F. Yoho	9.475
S73	05-23-11.7	Bryan L. Huggins	1.835
S74	05-23-11.5	Roy F. Yoho	2.25
S75	05-23-11.3	Colin R. Yoho	11.29
S76	05-23-11.6	T.H. Exploration II, LLC & Atinum Marcellus I, LLC	0.094
S77	05-23-11.2	Evelyn Hudson	1.154
S78	05-23-11.4	Evelyn Hudson	10.879
S79	05-23-11.1	John H. & Sonya D. Holliday	46.482
S80	05-23-13.1	James R. & Pamela J. Ferrell	0.7625
S81	05-23-12	Mark A. Yoho	3.05
S82	05-23-13	Linda D. Greathouse	14.24
S83	05-23-9.1	John W. Van Orden et ux	23.376
S84	05-23-9.2	Linda D. Greathouse	25.58
S85	05-23-9.4	Jackson R. Sr. & Deanna L. Davis	2.087
S86	05-23-9.3	Linda D. Greathouse	17.5
S87	05-23-14	Dominion Transmission, Inc.	59.5
S88	05-23-08	Carl David & Suzanne L. Guseman	29.5
S89	05-23-8.1	William & Virginia Roupe	34.0
S90	05-23-11.8	Zachary R. Stevey	7.0



P.S. 708 *David L Jackson*



OPERATOR'S
WELL #: HILLROCK S-15HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV
API: 047-051-02263 **MDD**
Deep Well

WELL PLAT
PAGE 2 OF 3
DATE: 08/07/2019
REVISED DATE:
9/14/2020

**HILLROCK LEASE
WELL S-15HU
635.5719± ACRES**

Lease ID	Tags	Parcel	Grantor, Lessor, Etc.	Deed Book	Page
10*14140	A	5-23-7	TERRY E SIMMS AND DEBORAH L SIMMS	666	529
10*14126	B	5-17-11	SHARON MIDCAP	697	152
10*14126	C	5-17-11.1	SHARON MIDCAP	697	152
10*14138	D	5-24-1	LINDA AND DONALD HENDRICKSON	666	528
10*14130	E	5-23-7.1	JANE ELLEN MARCUM ET AL	708	185
10*14797	F	5-24-5.1	ORVILLE YOUNG ET AL	800	598
10*14797	G	5-24-5.2	ORVILLE YOUNG ET AL	800	598
10*14130	H	5-23-7.2	JANE ELLEN MARCUM ET AL	708	185
10*14797	I	5-24-5.5	ORVILLE YOUNG ET AL	800	598
10*14797	J	5-24-5	ORVILLE YOUNG ET AL	800	598
10*14558	K	5-24-6	KLOVA ANN MORRIS ET AL	765	434
10*14462	L	5-24-4	JERRY ELDON RICHMOND ET AL	744	57
10*14786	M	5-25-20	TWILA O WHIPKEY EL AL	799	61
10*14728	N	5-25-1.4	IRIS K MOELLENDICK ET AL	839	509
10*14068	O	5-24-3.1	ROHN JEAN MARTIN ET AL	666	552
10*14525	P	5-25-2.2	IMA LEE YOHO	757	192
10*14728	Q	5-25-1.3	IRIS K MOELLENDICK ET AL	839	509
10*14661	R	5-25-1.2	ANDREA & WILLIAM DUBIEL JR ET AL	777	563
10*14728	S	5-25-1.1	IRIS K MOELLENDICK ET AL	839	509
10*14728	T	5-25-1	IRIS K MOELLENDICK ET AL	839	509
10*14728	U	5-25-13	IRIS K MOELLENDICK ET AL	839	509
10*14728	V	5-25-1.5	IRIS K MOELLENDICK ET AL	839	509
10*14664	W	5-25-13.3	CHRISTINA L MILLER ET AL	779	496
10*14525	X	5-25-2	IMA LEE YOHO	757	192
10*14525	Y	5-25-2.1	IMA LEE YOHO	757	192
10*14524	Z	5-25-3	IMA LEE YOHO	757	194
10*14926	AA	5-25-12	NILA JUNE MASON ET AL	842	394
10*18120	BB	5-25-12.1	KENT & BETTY MASON	927	75
10*22496	CC	5-25-11.2	JAMES W KLUG	923	543
10*22984	DD	12-3-47	WETZEL COUNTY EMERGENCY AMBULANCE AUTHORITY INC	209A	748
10*24576	EE	12-3-43	ADAM W FERRELL AND BRITTANY M FERRELL	218A	837
10*22496	FF	12-3-42	JAMES W KLUG	923	543



P.S. David L Jackson
708



TUG HILL
OPERATING

OPERATOR'S
WELL #: HILLROCK S-15HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV
API: 047-051-02263 MID
Deep Well

WELL PLAT
PAGE 3 OF 3
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