

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

Monday, November 9, 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 ARMSTRONG N-13HU
47-051-02259-00-00

Modified Lateral Landing Point and Bottom Hole Location

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.

A handwritten signature in blue ink, appearing to read 'James A. Martin', is written over a light blue circular stamp. The signature is fluid and cursive.

James A. Martin
Chief

Operator's Well Number: ARMSTRONG N-13HU
Farm Name: CONSOL RCPC, LLC.
U.S. WELL NUMBER: 47-051-02259-00-00
Horizontal 6A New Drill
Date Modification Issued: November 09, 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 7
Operator ID County District Quadrangle

2) Operator's Well Number: Armstrong N-13HU Well Pad Name: Armstrong

3) Farm Name/Surface Owner: CONSOL RCPC, LLC Public Road Access: Burch Ridge Road - CR 29

4) Elevation, current ground: 1279.12' Elevation, proposed post-construction: 1279.12'

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

(b) If Gas Shallow _____ Deep x
Horizontal x

6) Existing Pad: Yes or No Yes

Ju
2/4/2020

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

Point Pleasant is the target formation at a depth of 11,087' - 11,207' - thickness of 120' and anticipated pressure of approx. 9500 psi.

8) Proposed Total Vertical Depth: 11,357'

9) Formation at Total Vertical Depth: Trenton, plug back to Reedsville

10) Proposed Total Measured Depth: 25,505'

11) Proposed Horizontal Leg Length: 13,743.37'

12) Approximate Fresh Water Strata Depths: 70' ; 870'

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 - 776' ; Pittsburgh Coal - 869'

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 x

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

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18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120' ✓	259FT^3(CTS) ✓
Fresh Water	20"	NEW	J55	106.5#	970'	970' ✓	1,568FT^3(CTS) ✓
Coal	13 3/8"	NEW	J55	54.5#	2701'	2701' ✓	1,906FT^3(CTS) ✓
Intermediate	9 5/8"	NEW	HPP110	47#	10,120'	10,120' ✓	3,306FT^3(CTS) ✓
Production	5 1/2"	NEW	P110	23#	25,505'	25,505' ✓	6,015FT^3(CTS) ✓
Tubing	2 7/8"	NEW	P110	6.5#		10,848' ✓	
Liners							

JM 9/23/2020

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
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"			11,624	11,385		
Liners							

PACKERS

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

4705102259 MOD

WW-6B
(10/14)

API NO. 47- 051 -
OPERATOR WELL NO. Armstrong N-13HU
Well Pad Name: Armstrong

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2/4/2020

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 (10,348'). 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 34,352,500 lb proppant and 531,115 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 12.64 acres

22) Area to be disturbed for well pad only, less access road (acres): 3.21 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:

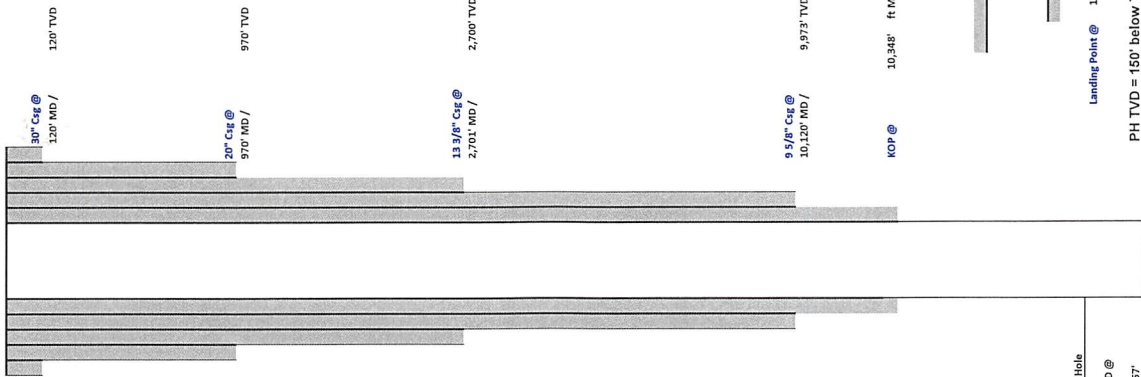
Will circulate a minimum of 3 hours at TD, short trip to curve, circulate bottoms up, check for flow, POOH

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*Note: Attach additional sheets as needed.



WELL NAME: Armstrong N-13HU
STATE: WV **COUNTY:** Marshall
DISTRICT: Franklin
DP Elev: 1,279' **GI Elev:** 1,279'
TD: 25,505'
TH Latitude: 39.75374748
TH Longitude: -80.8083956
BH Latitude: 39.78082499
BH Longitude: -80.84414599



Formation	Depth TVD
Deepest Fresh Water	870'
Sewickley Coal	776'
Pittsburgh Coal	869'
Big Lime	1,988'
Berea	2,530'
Tully	6,330'
Marcellus	6,389'
Onondaga	6,441'
Salina	7,133'
Lockport	8,162'
Utica	10,832'
Point Pleasant	11,087'
Landing Depth	11,137'
Trenton	11,207'
Pilot Hole TD	11,357'

CASING SUMMARY						
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Top of Cement
Conductor	36	30	120'	120'	BW	Surface
Surface	26	20	970'	970'	106.5	Surface
Intermediate 1	17 1/2	13 3/8	2,701'	2,700'	84.5	Surface
Intermediate 2	12 1/4	9 5/8	10,120'	9,973'	47	Surface
Production	8 1/2	5 1/2	25,505'	10,898'	23	Surface

CEMENT SUMMARY				DRILLING DETAILS	
Sacks	Class	Density	Fluid Type	Centralizer Notes	
388	A	15.6	Air	None	
1,691	A	15.6	Air	3 Centralizers at equal distance	
2,065	A	15	Air	1 Centralizer every other ft	
2,801	A	14.5	Air	1 Centralizer every other ft	
5,354	A	15	Air / SDBM	1 every other joint in lateral; 1 per joint in curve; 1 every other ft to sic	

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Landing Point @ 11,764' MD / 11,137' TVD
 PH TD @ 11,357'
 Lateral TD @ 25,505'
 PH TD = 150' below Trenton Top
 ft MD
 ft TVD



Tug Hill Operating, LLC Casing and Cement Program

Armstrong N-13HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	970'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,701'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,120'	CTS
Production	5 1/2"	HCP110	8 1/2"	25,505'	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

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TUG HILL
OPERATING

Well: Armstrong N-13 HU (slot J)
Site: Armstrong Pad
Project: Marshall County, West Virginia
Design: rev2

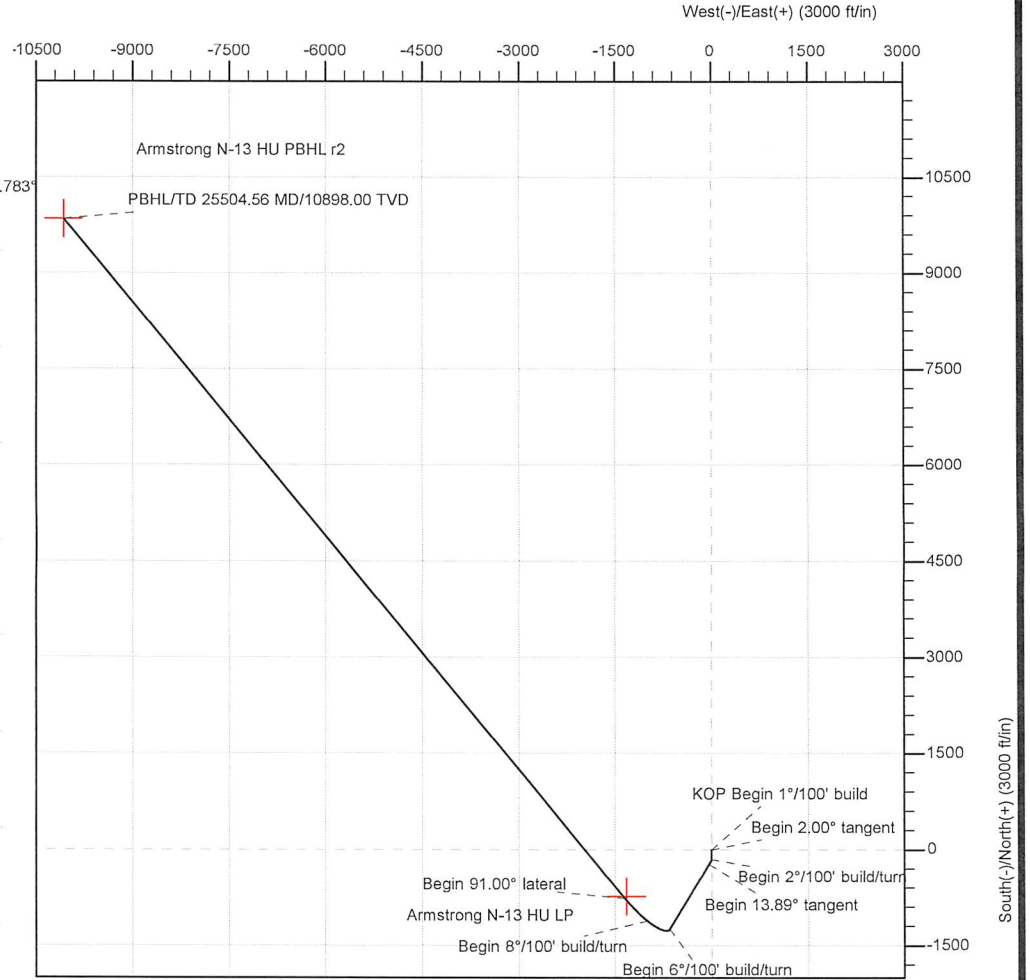
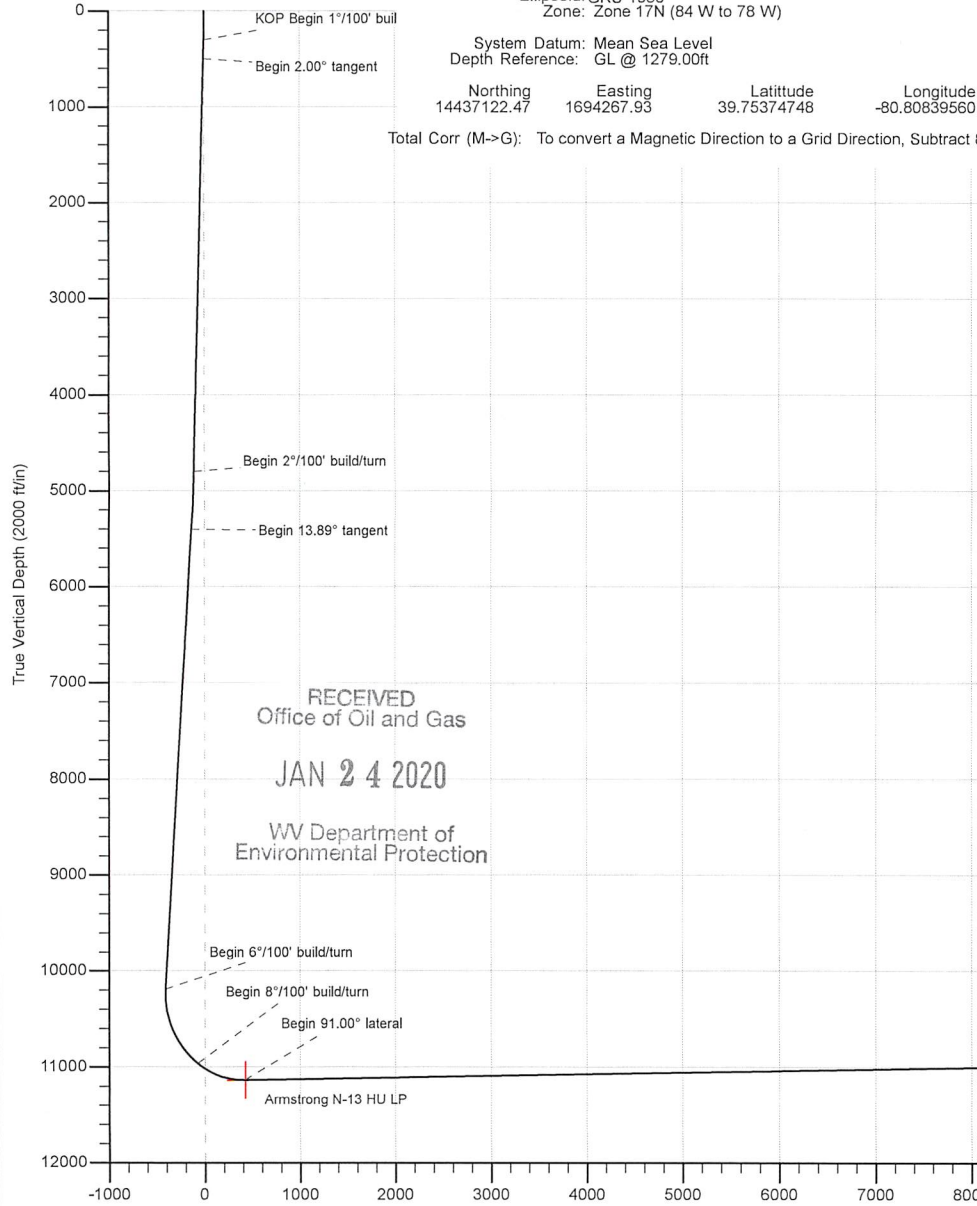
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.000	0.00	
2	300.00	0.00	0.000	300.00	0.00	0.00	0.00	0.000	0.00	KOP Begin 1°/100' build
3	500.00	2.00	180.000	499.96	-3.49	0.00	1.00	180.000	-2.44	Begin 2.00° tangent
4	4802.66	2.00	180.000	4800.00	-153.65	0.00	0.00	0.000	-107.41	Begin 2°/100' build/turn
5	5413.54	13.89	210.882	5404.05	-227.53	-37.78	2.00	35.612	-132.04	Begin 13.89° tangent
6	10347.63	13.89	210.882	10193.83	-1244.20	-645.81	0.00	0.000	-408.01	Begin 6°/100' build/turn
7	11231.10	50.00	307.840	10962.18	-1118.54	-992.57	6.00	107.819	-72.21	Begin 8°/100' build/turn
8	11763.78	91.00	320.569	11136.88	-771.54	-1338.95	8.00	18.990	418.05	Begin 91.00° lateral
9	25504.56	91.00	320.569	10898.00	9840.17	-10064.99	0.00	0.000	4075.97	PBHL/TD 25504.56 MD/10898.00 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 @ 1279.00ft
Northing 14437122.47 Easting 1694267.93 Latitude 39.75374748 Longitude -80.80839560

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.783°



Azimuths to Grid North
True North: -0.12°
Magnetic North: -8.78°

Magnetic Field
Strength: 51992.2snT
Dip Angle: 66.82°
Date: 12/25/2018
Model: IGRF2015



51-02259100



Planning Report - Geographic

51-02259 MOD

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Armstrong N-13 HU (slot J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1279.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1279.00ft
Site:	Armstrong Pad	North Reference:	Grid
Well:	Armstrong N-13 HU (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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	Armstrong Pad				
Site Position:		Northing:	14,437,151.34 usft	Latitude:	39.75382662
From:	Lat/Long	Easting:	1,694,289.43 usft	Longitude:	-80.80831890
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.123 °

Well	Armstrong N-13 HU (slot J)					
Well Position	+N/-S	0.00 ft	Northing:	14,437,122.48 usft	Latitude:	39.75374748
	+E/-W	0.00 ft	Easting:	1,694,267.93 usft	Longitude:	-80.80839560
Position Uncertainty	0.00 ft		Wellhead Elevation:		Ground Level:	1,279.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/25/2018	-8.660	66.817	51,992.22943945

Design	rev2				
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	314.353	

Plan Survey Tool Program	Date	12/20/2019			
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	25,504.56 rev2 (Original Hole)	MWD		
			MWD - Standard		

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Plan Sections										
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	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
300.00	0.00	0.000	300.00	0.00	0.00	0.00	0.00	0.00	0.000	
500.00	2.00	180.000	499.96	-3.49	0.00	1.00	1.00	0.00	180.000	
4,802.66	2.00	180.000	4,800.00	-153.65	0.00	0.00	0.00	0.00	0.000	
5,413.54	13.89	210.882	5,404.05	-227.53	-37.78	2.00	1.95	5.06	35.612	
10,347.63	13.89	210.882	10,193.83	-1,244.20	-645.81	0.00	0.00	0.00	0.000	
11,231.10	50.00	307.840	10,962.18	-1,118.54	-992.57	6.00	4.09	10.97	107.819	
11,763.78	91.00	320.569	11,136.88	-771.54	-1,338.95	8.00	7.70	2.39	18.990	
25,504.56	91.00	320.569	10,898.00	9,840.17	-10,064.99	0.00	0.00	0.00	0.000	Armstrong N-13 HU P

51-02259 MOD

Database: DB_Aug1919_v14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia
Site: Armstrong Pad
Well: Armstrong N-13 HU (slot J)
Wellbore: Original Hole
Design: rev2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well Armstrong N-13 HU (slot J)
 GL @ 1279.00ft
 GL @ 1279.00ft
 Grid
 Minimum Curvature

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Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.000	0.00	0.00	0.00	14,437,122.48	1,694,267.93	39.75374748	-80.80839560
100.00	0.00	0.000	100.00	0.00	0.00	14,437,122.48	1,694,267.93	39.75374748	-80.80839560
200.00	0.00	0.000	200.00	0.00	0.00	14,437,122.48	1,694,267.93	39.75374748	-80.80839560
300.00	0.00	0.000	300.00	0.00	0.00	14,437,122.48	1,694,267.93	39.75374748	-80.80839560
KOP Begin 1°/100' build									
400.00	1.00	180.000	399.99	-0.87	0.00	14,437,121.60	1,694,267.93	39.75374509	-80.80839561
500.00	2.00	180.000	499.96	-3.49	0.00	14,437,118.99	1,694,267.93	39.75373790	-80.80839563
Begin 2.00° tangent									
600.00	2.00	180.000	599.90	-6.98	0.00	14,437,115.50	1,694,267.93	39.75372831	-80.80839565
700.00	2.00	180.000	699.84	-10.47	0.00	14,437,112.01	1,694,267.93	39.75371873	-80.80839568
800.00	2.00	180.000	799.78	-13.96	0.00	14,437,108.52	1,694,267.93	39.75370914	-80.80839571
900.00	2.00	180.000	899.72	-17.45	0.00	14,437,105.03	1,694,267.93	39.75369956	-80.80839573
1,000.00	2.00	180.000	999.65	-20.94	0.00	14,437,101.54	1,694,267.93	39.75368997	-80.80839576
1,100.00	2.00	180.000	1,099.59	-24.43	0.00	14,437,098.05	1,694,267.93	39.75368039	-80.80839579
1,200.00	2.00	180.000	1,199.53	-27.92	0.00	14,437,094.56	1,694,267.93	39.75367081	-80.80839581
1,300.00	2.00	180.000	1,299.47	-31.41	0.00	14,437,091.07	1,694,267.93	39.75366122	-80.80839584
1,400.00	2.00	180.000	1,399.41	-34.90	0.00	14,437,087.58	1,694,267.93	39.75365164	-80.80839587
1,500.00	2.00	180.000	1,499.35	-38.39	0.00	14,437,084.09	1,694,267.93	39.75364205	-80.80839589
1,600.00	2.00	180.000	1,599.29	-41.88	0.00	14,437,080.60	1,694,267.93	39.75363247	-80.80839592
1,700.00	2.00	180.000	1,699.23	-45.37	0.00	14,437,077.11	1,694,267.93	39.75362288	-80.80839595
1,800.00	2.00	180.000	1,799.17	-48.86	0.00	14,437,073.62	1,694,267.93	39.75361330	-80.80839597
1,900.00	2.00	180.000	1,899.11	-52.35	0.00	14,437,070.13	1,694,267.93	39.75360371	-80.80839600
2,000.00	2.00	180.000	1,999.05	-55.84	0.00	14,437,066.64	1,694,267.93	39.75359413	-80.80839603
2,100.00	2.00	180.000	2,098.98	-59.33	0.00	14,437,063.15	1,694,267.93	39.75358455	-80.80839605
2,200.00	2.00	180.000	2,198.92	-62.82	0.00	14,437,059.66	1,694,267.93	39.75357496	-80.80839608
2,300.00	2.00	180.000	2,298.86	-66.31	0.00	14,437,056.17	1,694,267.93	39.75356538	-80.80839611
2,400.00	2.00	180.000	2,398.80	-69.80	0.00	14,437,052.68	1,694,267.93	39.75355579	-80.80839613
2,500.00	2.00	180.000	2,498.74	-73.29	0.00	14,437,049.19	1,694,267.93	39.75354621	-80.80839616
2,600.00	2.00	180.000	2,598.68	-76.78	0.00	14,437,045.70	1,694,267.93	39.75353662	-80.80839619
2,700.00	2.00	180.000	2,698.62	-80.27	0.00	14,437,042.21	1,694,267.93	39.75352704	-80.80839621
2,800.00	2.00	180.000	2,798.56	-83.76	0.00	14,437,038.72	1,694,267.93	39.75351745	-80.80839624
2,900.00	2.00	180.000	2,898.50	-87.25	0.00	14,437,035.23	1,694,267.93	39.75350787	-80.80839626
3,000.00	2.00	180.000	2,998.44	-90.74	0.00	14,437,031.74	1,694,267.93	39.75349829	-80.80839629
3,100.00	2.00	180.000	3,098.38	-94.23	0.00	14,437,028.25	1,694,267.93	39.75348870	-80.80839632
3,200.00	2.00	180.000	3,198.31	-97.72	0.00	14,437,024.76	1,694,267.93	39.75347912	-80.80839634
3,300.00	2.00	180.000	3,298.25	-101.21	0.00	14,437,021.27	1,694,267.93	39.75346953	-80.80839637
3,400.00	2.00	180.000	3,398.19	-104.70	0.00	14,437,017.78	1,694,267.93	39.75345995	-80.80839640
3,500.00	2.00	180.000	3,498.13	-108.19	0.00	14,437,014.29	1,694,267.93	39.75345036	-80.80839642
3,600.00	2.00	180.000	3,598.07	-111.68	0.00	14,437,010.80	1,694,267.93	39.75344078	-80.80839645
3,700.00	2.00	180.000	3,698.01	-115.17	0.00	14,437,007.31	1,694,267.93	39.75343120	-80.80839648
3,800.00	2.00	180.000	3,797.95	-118.66	0.00	14,437,003.82	1,694,267.93	39.75342161	-80.80839650
3,900.00	2.00	180.000	3,897.89	-122.15	0.00	14,437,000.33	1,694,267.93	39.75341203	-80.80839653
4,000.00	2.00	180.000	3,997.83	-125.64	0.00	14,436,996.84	1,694,267.93	39.75340244	-80.80839656
4,100.00	2.00	180.000	4,097.77	-129.13	0.00	14,436,993.35	1,694,267.93	39.75339286	-80.80839658
4,200.00	2.00	180.000	4,197.71	-132.62	0.00	14,436,989.86	1,694,267.93	39.75338327	-80.80839661
4,300.00	2.00	180.000	4,297.64	-136.11	0.00	14,436,986.37	1,694,267.93	39.75337369	-80.80839664
4,400.00	2.00	180.000	4,397.58	-139.60	0.00	14,436,982.88	1,694,267.93	39.75336410	-80.80839666
4,500.00	2.00	180.000	4,497.52	-143.09	0.00	14,436,979.39	1,694,267.93	39.75335452	-80.80839669
4,600.00	2.00	180.000	4,597.46	-146.58	0.00	14,436,975.90	1,694,267.93	39.75334494	-80.80839672
4,700.00	2.00	180.000	4,697.40	-150.07	0.00	14,436,972.41	1,694,267.93	39.75333535	-80.80839674
4,800.00	2.00	180.000	4,797.34	-153.56	0.00	14,436,968.92	1,694,267.93	39.75332577	-80.80839677
4,802.66	2.00	180.000	4,800.00	-153.65	0.00	14,436,968.82	1,694,267.93	39.75332551	-80.80839677
Begin 2°/100' build/turn									
4,900.00	3.76	197.568	4,897.21	-158.39	-0.96	14,436,964.08	1,694,266.97	39.75331250	-80.80840023

51-02259 H01



Planning Report - Geographic

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Armstrong N-13 HU (slot J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1279.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1279.00ft
Site:	Armstrong Pad	North Reference:	Grid
Well:	Armstrong N-13 HU (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,000.00	5.69	203.831	4,996.87	-166.05	-3.96	14,436,956.42	1,694,263.97	39.75329148	-80.80841094	
5,100.00	7.66	206.905	5,096.19	-176.54	-8.98	14,436,945.94	1,694,258.95	39.75326272	-80.80842888	
5,200.00	9.64	208.725	5,195.04	-189.83	-16.02	14,436,932.65	1,694,251.91	39.75322626	-80.80845404	
5,300.00	11.63	209.928	5,293.32	-205.91	-25.07	14,436,916.57	1,694,242.86	39.75318215	-80.80848638	
5,400.00	13.62	210.784	5,390.90	-224.76	-36.13	14,436,897.71	1,694,231.80	39.75313043	-80.80852587	
5,413.54	13.89	210.882	5,404.05	-227.53	-37.78	14,436,894.95	1,694,230.15	39.75312285	-80.80853176	
Begin 13.89° tangent										
5,500.00	13.89	210.882	5,487.98	-245.34	-48.44	14,436,877.13	1,694,219.49	39.75307399	-80.80856980	
5,600.00	13.89	210.882	5,585.06	-265.95	-60.76	14,436,856.53	1,694,207.17	39.75301747	-80.80861381	
5,700.00	13.89	210.882	5,682.13	-286.55	-73.08	14,436,835.92	1,694,194.85	39.75296096	-80.80865781	
5,800.00	13.89	210.882	5,779.21	-307.16	-85.41	14,436,815.32	1,694,182.53	39.75290444	-80.80870181	
5,900.00	13.89	210.882	5,876.28	-327.76	-97.73	14,436,794.71	1,694,170.20	39.75284793	-80.80874581	
6,000.00	13.89	210.882	5,973.36	-348.37	-110.05	14,436,774.11	1,694,157.88	39.75279141	-80.80878981	
6,100.00	13.89	210.882	6,070.43	-368.97	-122.37	14,436,753.50	1,694,145.56	39.75273490	-80.80883381	
6,200.00	13.89	210.882	6,167.51	-389.58	-134.70	14,436,732.90	1,694,133.23	39.75267838	-80.80887781	
6,300.00	13.89	210.882	6,264.58	-410.18	-147.02	14,436,712.29	1,694,120.91	39.75262186	-80.80892181	
6,400.00	13.89	210.882	6,361.66	-430.79	-159.34	14,436,691.69	1,694,108.59	39.75256535	-80.80896581	
6,500.00	13.89	210.882	6,458.73	-451.39	-171.67	14,436,671.08	1,694,096.26	39.75250883	-80.80900981	
6,600.00	13.89	210.882	6,555.81	-472.00	-183.99	14,436,650.48	1,694,083.94	39.75245232	-80.80905381	
6,700.00	13.89	210.882	6,652.88	-492.60	-196.31	14,436,629.87	1,694,071.62	39.75239580	-80.80909782	
6,800.00	13.89	210.882	6,749.96	-513.21	-208.64	14,436,609.27	1,694,059.30	39.75233929	-80.80914182	
6,900.00	13.89	210.882	6,847.03	-533.81	-220.96	14,436,588.66	1,694,046.97	39.75228277	-80.80918582	
7,000.00	13.89	210.882	6,944.11	-554.42	-233.28	14,436,568.06	1,694,034.65	39.75222626	-80.80922982	
7,100.00	13.89	210.882	7,041.18	-575.02	-245.60	14,436,547.45	1,694,022.33	39.75216974	-80.80927382	
7,200.00	13.89	210.882	7,138.26	-595.63	-257.93	14,436,526.85	1,694,010.00	39.75211323	-80.80931782	
7,300.00	13.89	210.882	7,235.33	-616.23	-270.25	14,436,506.24	1,693,997.68	39.75205671	-80.80936182	
7,400.00	13.89	210.882	7,332.41	-636.84	-282.57	14,436,485.64	1,693,985.36	39.75200019	-80.80940582	
7,500.00	13.89	210.882	7,429.48	-657.44	-294.90	14,436,465.03	1,693,973.04	39.75194368	-80.80944982	
7,600.00	13.89	210.882	7,526.56	-678.05	-307.22	14,436,444.43	1,693,960.71	39.75188716	-80.80949382	
7,700.00	13.89	210.882	7,623.63	-698.65	-319.54	14,436,423.82	1,693,948.39	39.75183065	-80.80953782	
7,800.00	13.89	210.882	7,720.71	-719.26	-331.86	14,436,403.22	1,693,936.07	39.75177413	-80.80958182	
7,900.00	13.89	210.882	7,817.78	-739.86	-344.19	14,436,382.61	1,693,923.74	39.75171762	-80.80962582	
8,000.00	13.89	210.882	7,914.86	-760.47	-356.51	14,436,362.01	1,693,911.42	39.75166110	-80.80966982	
8,100.00	13.89	210.882	8,011.93	-781.07	-368.83	14,436,341.40	1,693,899.10	39.75160459	-80.80971382	
8,200.00	13.89	210.882	8,109.01	-801.68	-381.16	14,436,320.80	1,693,886.77	39.75154807	-80.80975781	
8,300.00	13.89	210.882	8,206.08	-822.28	-393.48	14,436,300.19	1,693,874.45	39.75149155	-80.80980181	
8,400.00	13.89	210.882	8,303.16	-842.89	-405.80	14,436,279.59	1,693,862.13	39.75143504	-80.80984581	
8,500.00	13.89	210.882	8,400.23	-863.49	-418.13	14,436,258.98	1,693,849.81	39.75137852	-80.80988981	
8,600.00	13.89	210.882	8,497.31	-884.10	-430.45	14,436,238.38	1,693,837.48	39.75132201	-80.80993381	
8,700.00	13.89	210.882	8,594.38	-904.70	-442.77	14,436,217.77	1,693,825.16	39.75126549	-80.80997781	
8,800.00	13.89	210.882	8,691.46	-925.31	-455.09	14,436,197.17	1,693,812.84	39.75120898	-80.81002181	
8,900.00	13.89	210.882	8,788.53	-945.91	-467.42	14,436,176.56	1,693,800.51	39.75115246	-80.81006581	
9,000.00	13.89	210.882	8,885.61	-966.52	-479.74	14,436,155.96	1,693,788.19	39.75109594	-80.81010981	
9,100.00	13.89	210.882	8,982.68	-987.12	-492.06	14,436,135.35	1,693,775.87	39.75103943	-80.81015381	
9,200.00	13.89	210.882	9,079.76	-1,007.73	-504.39	14,436,114.75	1,693,763.55	39.75098291	-80.81019781	
9,300.00	13.89	210.882	9,176.83	-1,028.33	-516.71	14,436,094.14	1,693,751.22	39.75092640	-80.81024180	
9,400.00	13.89	210.882	9,273.91	-1,048.94	-529.03	14,436,073.54	1,693,738.90	39.75086988	-80.81028580	
9,500.00	13.89	210.882	9,370.98	-1,069.54	-541.36	14,436,052.93	1,693,726.58	39.75081336	-80.81032980	
9,600.00	13.89	210.882	9,468.06	-1,090.15	-553.68	14,436,032.33	1,693,714.25	39.75075685	-80.81037380	
9,700.00	13.89	210.882	9,565.13	-1,110.75	-566.00	14,436,011.72	1,693,701.93	39.75070033	-80.81041780	
9,800.00	13.89	210.882	9,662.21	-1,131.36	-578.32	14,435,991.12	1,693,689.61	39.75064382	-80.81046180	
9,900.00	13.89	210.882	9,759.28	-1,151.96	-590.65	14,435,970.51	1,693,677.28	39.75058730	-80.81050580	
10,000.00	13.89	210.882	9,856.36	-1,172.57	-602.97	14,435,949.91	1,693,664.96	39.75053079	-80.81054979	
10,100.00	13.89	210.882	9,953.44	-1,193.18	-615.29	14,435,929.30	1,693,652.64	39.75047427	-80.81059379	



Planning Report - Geographic

SI-02259

Database: DB_Aug1919_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Armstrong Pad
 Well: Armstrong N-13 HU (slot J)
 Wellbore: Original Hole
 Design: rev2

Local Co-ordinate Reference: Well Armstrong N-13 HU (slot J)
 TVD Reference: GL @ 1279.00ft
 MD Reference: GL @ 1279.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
10,200.00	13.89	210.882	10,050.51	-1,213.78	-627.62	14,435,908.70	1,693,640.32	39.75041775	-80.81063779	
10,300.00	13.89	210.882	10,147.59	-1,234.39	-639.94	14,435,888.09	1,693,627.99	39.75036124	-80.81068179	
10,347.63	13.89	210.882	10,193.83	-1,244.20	-645.81	14,435,878.28	1,693,622.12	39.75033432	-80.81070275	
Begin 6°/100' build/turn										
10,400.00	13.27	224.026	10,244.74	-1,253.92	-653.21	14,435,868.56	1,693,614.72	39.75030767	-80.81072916	
10,500.00	14.05	249.428	10,342.00	-1,266.44	-672.57	14,435,856.04	1,693,595.37	39.75027339	-80.81079811	
10,600.00	17.01	269.087	10,438.40	-1,270.94	-698.58	14,435,851.53	1,693,569.35	39.75026117	-80.81089070	
10,700.00	21.27	282.098	10,532.90	-1,267.37	-730.97	14,435,855.10	1,693,536.96	39.75027117	-80.81100591	
10,800.00	26.19	290.683	10,624.45	-1,255.77	-769.38	14,435,866.71	1,693,498.55	39.75030326	-80.81114247	
10,900.00	31.46	296.638	10,712.04	-1,236.26	-813.39	14,435,886.22	1,693,454.54	39.75035710	-80.81129890	
11,000.00	36.94	301.006	10,794.73	-1,209.05	-862.51	14,435,913.42	1,693,405.42	39.75043209	-80.81147348	
11,100.00	42.54	304.377	10,871.61	-1,174.46	-916.22	14,435,948.02	1,693,351.72	39.75052742	-80.81166429	
11,200.00	48.22	307.094	10,941.82	-1,132.84	-973.91	14,435,989.64	1,693,294.02	39.75064204	-80.81186925	
11,231.10	50.00	307.840	10,962.18	-1,118.54	-992.57	14,436,003.94	1,693,275.36	39.75068142	-80.81193552	
Begin 8°/100' build/turn										
11,300.00	55.23	310.021	11,004.00	-1,084.12	-1,035.12	14,436,038.35	1,693,232.82	39.75077618	-80.81208664	
11,400.00	62.89	312.740	11,055.39	-1,027.41	-1,099.36	14,436,095.06	1,693,168.57	39.75093229	-80.81231480	
11,500.00	70.59	315.108	11,094.86	-963.70	-1,165.44	14,436,158.78	1,693,102.49	39.75110766	-80.81254941	
11,600.00	78.31	317.261	11,121.65	-894.22	-1,232.06	14,436,228.26	1,693,035.87	39.75129886	-80.81278592	
11,700.00	86.06	319.296	11,135.24	-820.32	-1,297.93	14,436,302.16	1,692,970.01	39.75150218	-80.81301972	
11,763.78	91.00	320.569	11,136.88	-771.54	-1,338.95	14,436,350.94	1,692,928.98	39.75163637	-80.81316533	
Begin 91.00° lateral										
11,800.00	91.00	320.569	11,136.25	-743.57	-1,361.95	14,436,378.91	1,692,905.98	39.75171332	-80.81324695	
11,900.00	91.00	320.569	11,134.51	-666.34	-1,425.46	14,436,456.14	1,692,842.47	39.75192577	-80.81347233	
12,000.00	91.00	320.569	11,132.77	-589.11	-1,488.96	14,436,533.36	1,692,778.97	39.75213823	-80.81369770	
12,100.00	91.00	320.569	11,131.03	-511.89	-1,552.47	14,436,610.59	1,692,715.47	39.75235068	-80.81392307	
12,200.00	91.00	320.569	11,129.29	-434.66	-1,615.97	14,436,687.82	1,692,651.96	39.75256313	-80.81414845	
12,300.00	91.00	320.569	11,127.56	-357.43	-1,679.48	14,436,765.05	1,692,588.46	39.75277558	-80.81437382	
12,400.00	91.00	320.569	11,125.82	-280.20	-1,742.98	14,436,842.27	1,692,524.95	39.75298803	-80.81459920	
12,500.00	91.00	320.569	11,124.08	-202.97	-1,806.49	14,436,919.50	1,692,461.45	39.75320049	-80.81482458	
12,600.00	91.00	320.569	11,122.34	-125.75	-1,869.99	14,436,996.73	1,692,397.94	39.75341294	-80.81504996	
12,700.00	91.00	320.569	11,120.60	-48.52	-1,933.50	14,437,073.96	1,692,334.44	39.75362539	-80.81527535	
12,800.00	91.00	320.569	11,118.86	28.71	-1,997.00	14,437,151.18	1,692,270.93	39.75383784	-80.81550073	
12,900.00	91.00	320.569	11,117.13	105.94	-2,060.51	14,437,228.41	1,692,207.43	39.75405028	-80.81572611	
13,000.00	91.00	320.569	11,115.39	183.16	-2,124.01	14,437,305.64	1,692,143.92	39.75426273	-80.81595150	
13,100.00	91.00	320.569	11,113.65	260.39	-2,187.51	14,437,382.87	1,692,080.42	39.75447518	-80.81617689	
13,200.00	91.00	320.569	11,111.91	337.62	-2,251.02	14,437,460.09	1,692,016.92	39.75468763	-80.81640228	
13,300.00	91.00	320.569	11,110.17	414.85	-2,314.52	14,437,537.32	1,691,953.41	39.75490008	-80.81662767	
13,400.00	91.00	320.569	11,108.43	492.08	-2,378.03	14,437,614.55	1,691,889.91	39.75511252	-80.81685306	
13,500.00	91.00	320.569	11,106.69	569.30	-2,441.53	14,437,691.78	1,691,826.40	39.75532497	-80.81707845	
13,600.00	91.00	320.569	11,104.96	646.53	-2,505.04	14,437,769.01	1,691,762.90	39.75553741	-80.81730385	
13,700.00	91.00	320.569	11,103.22	723.76	-2,568.54	14,437,846.23	1,691,699.39	39.75574986	-80.81752924	
13,800.00	91.00	320.569	11,101.48	800.99	-2,632.05	14,437,923.46	1,691,635.89	39.75596230	-80.81775464	
13,900.00	91.00	320.569	11,099.74	878.21	-2,695.55	14,438,000.69	1,691,572.38	39.75617475	-80.81798004	
14,000.00	91.00	320.569	11,098.00	955.44	-2,759.06	14,438,077.92	1,691,508.88	39.75638719	-80.81820544	
14,100.00	91.00	320.569	11,096.26	1,032.67	-2,822.56	14,438,155.14	1,691,445.38	39.75659964	-80.81843084	
14,200.00	91.00	320.569	11,094.53	1,109.90	-2,886.07	14,438,232.37	1,691,381.87	39.75681208	-80.81865625	
14,300.00	91.00	320.569	11,092.79	1,187.13	-2,949.57	14,438,309.60	1,691,318.37	39.75702452	-80.81888165	
14,400.00	91.00	320.569	11,091.05	1,264.35	-3,013.08	14,438,386.83	1,691,254.86	39.75723697	-80.81910706	
14,500.00	91.00	320.569	11,089.31	1,341.58	-3,076.58	14,438,464.05	1,691,191.36	39.75744941	-80.81933246	
14,600.00	91.00	320.569	11,087.57	1,418.81	-3,140.08	14,438,541.28	1,691,127.85	39.75766185	-80.81955787	
14,700.00	91.00	320.569	11,085.83	1,496.04	-3,203.59	14,438,618.51	1,691,064.35	39.75787429	-80.81978328	
14,800.00	91.00	320.569	11,084.09	1,573.27	-3,267.09	14,438,695.74	1,691,000.84	39.75808673	-80.82000869	
14,900.00	91.00	320.569	11,082.36	1,650.49	-3,330.60	14,438,772.97	1,690,937.34	39.75829917	-80.82023411	

61-02259



Planning Report - Geographic

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Armstrong N-13 HU (slot J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1279.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1279.00ft
Site:	Armstrong Pad	North Reference:	Grid
Well:	Armstrong N-13 HU (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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 West Virginia Department of Environmental Protection

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
15,000.00	91.00	320.569	11,080.62	1,727.72	-3,394.10	14,438,850.19	1,690,873.83	39.75851161	-80.82045952	
15,100.00	91.00	320.569	11,078.88	1,804.95	-3,457.61	14,438,927.42	1,690,810.33	39.75872405	-80.82068494	
15,200.00	91.00	320.569	11,077.14	1,882.18	-3,521.11	14,439,004.65	1,690,746.83	39.75893649	-80.82091035	
15,300.00	91.00	320.569	11,075.40	1,959.40	-3,584.62	14,439,081.88	1,690,683.32	39.75914893	-80.82113577	
15,400.00	91.00	320.569	11,073.66	2,036.63	-3,648.12	14,439,159.10	1,690,619.82	39.75936136	-80.82136119	
15,500.00	91.00	320.569	11,071.93	2,113.86	-3,711.63	14,439,236.33	1,690,556.31	39.75957380	-80.82158661	
15,600.00	91.00	320.569	11,070.19	2,191.09	-3,775.13	14,439,313.56	1,690,492.81	39.75978624	-80.82181203	
15,700.00	91.00	320.569	11,068.45	2,268.32	-3,838.64	14,439,390.79	1,690,429.30	39.75999868	-80.82203746	
15,800.00	91.00	320.569	11,066.71	2,345.54	-3,902.14	14,439,468.01	1,690,365.80	39.76021111	-80.82226288	
15,900.00	91.00	320.569	11,064.97	2,422.77	-3,965.65	14,439,545.24	1,690,302.29	39.76042355	-80.82248831	
16,000.00	91.00	320.569	11,063.23	2,500.00	-4,029.15	14,439,622.47	1,690,238.79	39.76063598	-80.82271374	
16,100.00	91.00	320.569	11,061.49	2,577.23	-4,092.65	14,439,699.70	1,690,175.28	39.76084842	-80.82293917	
16,200.00	91.00	320.569	11,059.76	2,654.45	-4,156.16	14,439,776.92	1,690,111.78	39.76106085	-80.82316460	
16,300.00	91.00	320.569	11,058.02	2,731.68	-4,219.66	14,439,854.15	1,690,048.28	39.76127329	-80.82339003	
16,400.00	91.00	320.569	11,056.28	2,808.91	-4,283.17	14,439,931.38	1,689,984.77	39.76148572	-80.82361546	
16,500.00	91.00	320.569	11,054.54	2,886.14	-4,346.67	14,440,008.61	1,689,921.27	39.76169815	-80.82384090	
16,600.00	91.00	320.569	11,052.80	2,963.37	-4,410.18	14,440,085.84	1,689,857.76	39.76191058	-80.82406633	
16,700.00	91.00	320.569	11,051.06	3,040.59	-4,473.68	14,440,163.06	1,689,794.26	39.76212302	-80.82429177	
16,800.00	91.00	320.569	11,049.33	3,117.82	-4,537.19	14,440,240.29	1,689,730.75	39.76233545	-80.82451721	
16,900.00	91.00	320.569	11,047.59	3,195.05	-4,600.69	14,440,317.52	1,689,667.25	39.76254788	-80.82474265	
17,000.00	91.00	320.569	11,045.85	3,272.28	-4,664.20	14,440,394.75	1,689,603.74	39.76276031	-80.82496809	
17,100.00	91.00	320.569	11,044.11	3,349.51	-4,727.70	14,440,471.97	1,689,540.24	39.76297274	-80.82519354	
17,200.00	91.00	320.569	11,042.37	3,426.73	-4,791.21	14,440,549.20	1,689,476.73	39.76318517	-80.82541898	
17,300.00	91.00	320.569	11,040.63	3,503.96	-4,854.71	14,440,626.43	1,689,413.23	39.76339760	-80.82564443	
17,400.00	91.00	320.569	11,038.89	3,581.19	-4,918.22	14,440,703.66	1,689,349.73	39.76361003	-80.82586987	
17,500.00	91.00	320.569	11,037.16	3,658.42	-4,981.72	14,440,780.88	1,689,286.22	39.76382246	-80.82609532	
17,600.00	91.00	320.569	11,035.42	3,735.64	-5,045.22	14,440,858.11	1,689,222.72	39.76403489	-80.82632077	
17,700.00	91.00	320.569	11,033.68	3,812.87	-5,108.73	14,440,935.34	1,689,159.21	39.76424731	-80.82654622	
17,800.00	91.00	320.569	11,031.94	3,890.10	-5,172.23	14,441,012.57	1,689,095.71	39.76445974	-80.82677168	
17,900.00	91.00	320.569	11,030.20	3,967.33	-5,235.74	14,441,089.80	1,689,032.20	39.76467217	-80.82699713	
18,000.00	91.00	320.569	11,028.46	4,044.56	-5,299.24	14,441,167.02	1,688,968.70	39.76488459	-80.82722259	
18,100.00	91.00	320.569	11,026.73	4,121.78	-5,362.75	14,441,244.25	1,688,905.19	39.76509702	-80.82744804	
18,200.00	91.00	320.569	11,024.99	4,199.01	-5,426.25	14,441,321.48	1,688,841.69	39.76530945	-80.82767350	
18,300.00	91.00	320.569	11,023.25	4,276.24	-5,489.76	14,441,398.71	1,688,778.18	39.76552187	-80.82789896	
18,400.00	91.00	320.569	11,021.51	4,353.47	-5,553.26	14,441,475.93	1,688,714.68	39.76573430	-80.82812442	
18,500.00	91.00	320.569	11,019.77	4,430.69	-5,616.77	14,441,553.16	1,688,651.18	39.76594672	-80.82834989	
18,600.00	91.00	320.569	11,018.03	4,507.92	-5,680.27	14,441,630.39	1,688,587.67	39.76615914	-80.82857535	
18,700.00	91.00	320.569	11,016.29	4,585.15	-5,743.78	14,441,707.62	1,688,524.17	39.76637157	-80.82880082	
18,800.00	91.00	320.569	11,014.56	4,662.38	-5,807.28	14,441,784.84	1,688,460.66	39.76658399	-80.82902628	
18,900.00	91.00	320.569	11,012.82	4,739.61	-5,870.78	14,441,862.07	1,688,397.16	39.76679641	-80.82925175	
19,000.00	91.00	320.569	11,011.08	4,816.83	-5,934.29	14,441,939.30	1,688,333.65	39.76700883	-80.82947722	
19,100.00	91.00	320.569	11,009.34	4,894.06	-5,997.79	14,442,016.53	1,688,270.15	39.76722126	-80.82970269	
19,200.00	91.00	320.569	11,007.60	4,971.29	-6,061.30	14,442,093.75	1,688,206.64	39.76743368	-80.82992816	
19,300.00	91.00	320.569	11,005.86	5,048.52	-6,124.80	14,442,170.98	1,688,143.14	39.76764610	-80.83015364	
19,400.00	91.00	320.569	11,004.13	5,125.75	-6,188.31	14,442,248.21	1,688,079.63	39.76785852	-80.83037911	
19,500.00	91.00	320.569	11,002.39	5,202.97	-6,251.81	14,442,325.44	1,688,016.13	39.76807094	-80.83060459	
19,600.00	91.00	320.569	11,000.65	5,280.20	-6,315.32	14,442,402.67	1,687,952.63	39.76828336	-80.83083007	
19,700.00	91.00	320.569	10,998.91	5,357.43	-6,378.82	14,442,479.89	1,687,889.12	39.76849578	-80.83105555	
19,800.00	91.00	320.569	10,997.17	5,434.66	-6,442.33	14,442,557.12	1,687,825.62	39.76870819	-80.83128103	
19,900.00	91.00	320.569	10,995.43	5,511.88	-6,505.83	14,442,634.35	1,687,762.11	39.76892061	-80.83150651	
20,000.00	91.00	320.569	10,993.69	5,589.11	-6,569.34	14,442,711.58	1,687,698.61	39.76913303	-80.83173199	
20,100.00	91.00	320.569	10,991.96	5,666.34	-6,632.84	14,442,788.80	1,687,635.10	39.76934545	-80.83195748	
20,200.00	91.00	320.569	10,990.22	5,743.57	-6,696.35	14,442,866.03	1,687,571.60	39.76955786	-80.83218296	
20,300.00	91.00	320.569	10,988.48	5,820.80	-6,759.85	14,442,943.26	1,687,508.09	39.76977028	-80.83240845	
20,400.00	91.00	320.569	10,986.74	5,898.02	-6,823.35	14,443,020.49	1,687,444.59	39.76998269	-80.83263394	



Planning Report - Geographic

51-02259

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Armstrong N-13 HU (slot J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1279.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1279.00ft
Site:	Armstrong Pad	North Reference:	Grid
Well:	Armstrong N-13 HU (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
20,500.00	91.00	320.569	10,985.00	5,975.25	-6,886.86	14,443,097.71	1,687,381.09	39.77019511	-80.83285943	
20,600.00	91.00	320.569	10,983.26	6,052.48	-6,950.36	14,443,174.94	1,687,317.58	39.77040752	-80.83308492	
20,700.00	91.00	320.569	10,981.53	6,129.71	-7,013.87	14,443,252.17	1,687,254.08	39.77061994	-80.83331041	
20,800.00	91.00	320.569	10,979.79	6,206.93	-7,077.37	14,443,329.40	1,687,190.57	39.77083235	-80.83353591	
20,900.00	91.00	320.569	10,978.05	6,284.16	-7,140.88	14,443,406.63	1,687,127.07	39.77104477	-80.83376140	
21,000.00	91.00	320.569	10,976.31	6,361.39	-7,204.38	14,443,483.85	1,687,063.56	39.77125718	-80.83398690	
21,100.00	91.00	320.569	10,974.57	6,438.62	-7,267.89	14,443,561.08	1,687,000.06	39.77146959	-80.83421240	
21,200.00	91.00	320.569	10,972.83	6,515.85	-7,331.39	14,443,638.31	1,686,936.55	39.77168200	-80.83443790	
21,300.00	91.00	320.569	10,971.09	6,593.07	-7,394.90	14,443,715.54	1,686,873.05	39.77189442	-80.83466340	
21,400.00	91.00	320.569	10,969.36	6,670.30	-7,458.40	14,443,792.76	1,686,809.54	39.77210683	-80.83488890	
21,500.00	91.00	320.569	10,967.62	6,747.53	-7,521.91	14,443,869.99	1,686,746.04	39.77231924	-80.83511441	
21,600.00	91.00	320.569	10,965.88	6,824.76	-7,585.41	14,443,947.22	1,686,682.54	39.77253165	-80.83533991	
21,700.00	91.00	320.569	10,964.14	6,901.98	-7,648.92	14,444,024.45	1,686,619.03	39.77274406	-80.83556542	
21,800.00	91.00	320.569	10,962.40	6,979.21	-7,712.42	14,444,101.67	1,686,555.53	39.77295647	-80.83579093	
21,900.00	91.00	320.569	10,960.66	7,056.44	-7,775.92	14,444,178.90	1,686,492.02	39.77316888	-80.83601644	
22,000.00	91.00	320.569	10,958.93	7,133.67	-7,839.43	14,444,256.13	1,686,428.52	39.77338129	-80.83624195	
22,100.00	91.00	320.569	10,957.19	7,210.90	-7,902.93	14,444,333.36	1,686,365.01	39.77359369	-80.83646746	
22,200.00	91.00	320.569	10,955.45	7,288.12	-7,966.44	14,444,410.58	1,686,301.51	39.77380610	-80.83669298	
22,300.00	91.00	320.569	10,953.71	7,365.35	-8,029.94	14,444,487.81	1,686,238.00	39.77401851	-80.83691849	
22,400.00	91.00	320.569	10,951.97	7,442.58	-8,093.45	14,444,565.04	1,686,174.50	39.77423092	-80.83714401	
22,500.00	91.00	320.569	10,950.23	7,519.81	-8,156.95	14,444,642.27	1,686,110.99	39.77444332	-80.83736953	
22,600.00	91.00	320.569	10,948.49	7,597.04	-8,220.46	14,444,719.50	1,686,047.49	39.77465573	-80.83759504	
22,700.00	91.00	320.569	10,946.76	7,674.26	-8,283.96	14,444,796.72	1,685,983.99	39.77486813	-80.83782057	
22,800.00	91.00	320.569	10,945.02	7,751.49	-8,347.47	14,444,873.95	1,685,920.48	39.77508054	-80.83804609	
22,900.00	91.00	320.569	10,943.28	7,828.72	-8,410.97	14,444,951.18	1,685,856.98	39.77529294	-80.83827161	
23,000.00	91.00	320.569	10,941.54	7,905.95	-8,474.48	14,445,028.41	1,685,793.47	39.77550535	-80.83849714	
23,100.00	91.00	320.569	10,939.80	7,983.17	-8,537.98	14,445,105.63	1,685,729.97	39.77571775	-80.83872266	
23,200.00	91.00	320.569	10,938.06	8,060.40	-8,601.49	14,445,182.86	1,685,666.46	39.77593016	-80.83894819	
23,300.00	91.00	320.569	10,936.33	8,137.63	-8,664.99	14,445,260.09	1,685,602.96	39.77614256	-80.83917372	
23,400.00	91.00	320.569	10,934.59	8,214.86	-8,728.49	14,445,337.32	1,685,539.45	39.77635496	-80.83939925	
23,500.00	91.00	320.569	10,932.85	8,292.09	-8,792.00	14,445,414.54	1,685,475.95	39.77656736	-80.83962478	
23,600.00	91.00	320.569	10,931.11	8,369.31	-8,855.50	14,445,491.77	1,685,412.44	39.77677977	-80.83985031	
23,700.00	91.00	320.569	10,929.37	8,446.54	-8,919.01	14,445,569.00	1,685,348.94	39.77699217	-80.84007585	
23,800.00	91.00	320.569	10,927.63	8,523.77	-8,982.51	14,445,646.23	1,685,285.44	39.77720457	-80.84030139	
23,900.00	91.00	320.569	10,925.89	8,601.00	-9,046.02	14,445,723.46	1,685,221.93	39.77741697	-80.84052692	
24,000.00	91.00	320.569	10,924.16	8,678.22	-9,109.52	14,445,800.68	1,685,158.43	39.77762937	-80.84075246	
24,100.00	91.00	320.569	10,922.42	8,755.45	-9,173.03	14,445,877.91	1,685,094.92	39.77784177	-80.84097800	
24,200.00	91.00	320.569	10,920.68	8,832.68	-9,236.53	14,445,955.14	1,685,031.42	39.77805417	-80.84120354	
24,300.00	91.00	320.569	10,918.94	8,909.91	-9,300.04	14,446,032.37	1,684,967.91	39.77826656	-80.84142909	
24,400.00	91.00	320.569	10,917.20	8,987.14	-9,363.54	14,446,109.59	1,684,904.41	39.77847896	-80.84165463	
24,500.00	91.00	320.569	10,915.46	9,064.36	-9,427.05	14,446,186.82	1,684,840.90	39.77869136	-80.84188018	
24,600.00	91.00	320.569	10,913.73	9,141.59	-9,490.55	14,446,264.05	1,684,777.40	39.77890376	-80.84210572	
24,700.00	91.00	320.569	10,911.99	9,218.82	-9,554.06	14,446,341.28	1,684,713.89	39.77911615	-80.84233127	
24,800.00	91.00	320.569	10,910.25	9,296.05	-9,617.56	14,446,418.50	1,684,650.39	39.77932855	-80.84255682	
24,900.00	91.00	320.569	10,908.51	9,373.28	-9,681.06	14,446,495.73	1,684,586.89	39.77954095	-80.84278237	
25,000.00	91.00	320.569	10,906.77	9,450.50	-9,744.57	14,446,572.96	1,684,523.38	39.77975334	-80.84300793	
25,100.00	91.00	320.569	10,905.03	9,527.73	-9,808.07	14,446,650.19	1,684,459.88	39.77996574	-80.84323348	
25,200.00	91.00	320.569	10,903.29	9,604.96	-9,871.58	14,446,727.42	1,684,396.37	39.78017813	-80.84345904	
25,300.00	91.00	320.569	10,901.56	9,682.19	-9,935.08	14,446,804.64	1,684,332.87	39.78039052	-80.84368459	
25,400.00	91.00	320.569	10,899.82	9,759.41	-9,998.59	14,446,881.87	1,684,269.36	39.78060292	-80.84391015	
25,500.00	91.00	320.569	10,898.08	9,836.64	-10,062.09	14,446,959.10	1,684,205.86	39.78081531	-80.84413571	
25,504.56	91.00	320.569	10,898.00	9,840.16	-10,064.99	14,446,962.62	1,684,202.96	39.78082500	-80.84414600	

PBHL/TD 25504.56 MD/10898.00 TVD



Planning Report - Geographic

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Armstrong N-13 HU (slot J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1279.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1279.00ft
Site:	Armstrong Pad	North Reference:	Grid
Well:	Armstrong N-13 HU (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
- Shape									
Armstrong N-13 HU PBT - plan hits target center - Point	0.00	0.000	10,898.00	9,840.17	-10,064.99	14,446,962.62	1,684,202.96	39.78082500	-80.84414600
Armstrong N-13 HU LP - plan misses target center by 39.41ft at 11775.50ft MD (11136.67 TVD, -762.49 N, -1346.39 E) - Point	0.00	0.000	11,138.00	-737.46	-1,315.99	14,436,385.02	1,692,951.95	39.75172984	-80.81308336

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S	+E/-W		
		(ft)	(ft)		
300.00	300.00	0.00	0.00	KOP Begin 1°/100' build	
500.00	499.96	-3.49	0.00	Begin 2.00° tangent	
4,802.66	4,800.00	-153.65	0.00	Begin 2°/100' build/turn	
5,413.54	5,404.05	-227.53	-37.78	Begin 13.89° tangent	
10,347.63	10,193.83	-1,244.20	-645.81	Begin 6°/100' build/turn	
11,231.10	10,962.18	-1,118.54	-992.57	Begin 8°/100' build/turn	
11,763.78	11,136.88	-771.54	-1,338.95	Begin 91.00° lateral	
25,504.56	10,898.00	9,840.16	-10,064.99	PBHL/TD 25504.56 MD/10898.00 TVD	

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ARMSTRONG LEASE WELL 1N-13HU 631.3104± ACRES

(+) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

DETAIL SKETCH "A" (01619) Armstrong 8H
SCALE 1"=200'

(01620) Armstrong 9H
(01619) Armstrong 8H
Armstrong 7H (01618)
(01617) Armstrong 6H
(01621) Armstrong 5H
(01616) Armstrong 4H
(01615) Armstrong 3H
(01614) Armstrong 2H
(01613) Armstrong 1H

(02258) S-12HU
(02257) S-11HU
(02256) S-10HU
(02260) S-14HU
(02259) S-13HU

TOP HOLE LATITUDE: 39°47'30"
BOTTOM HOLE LATITUDE: 39°47'30"

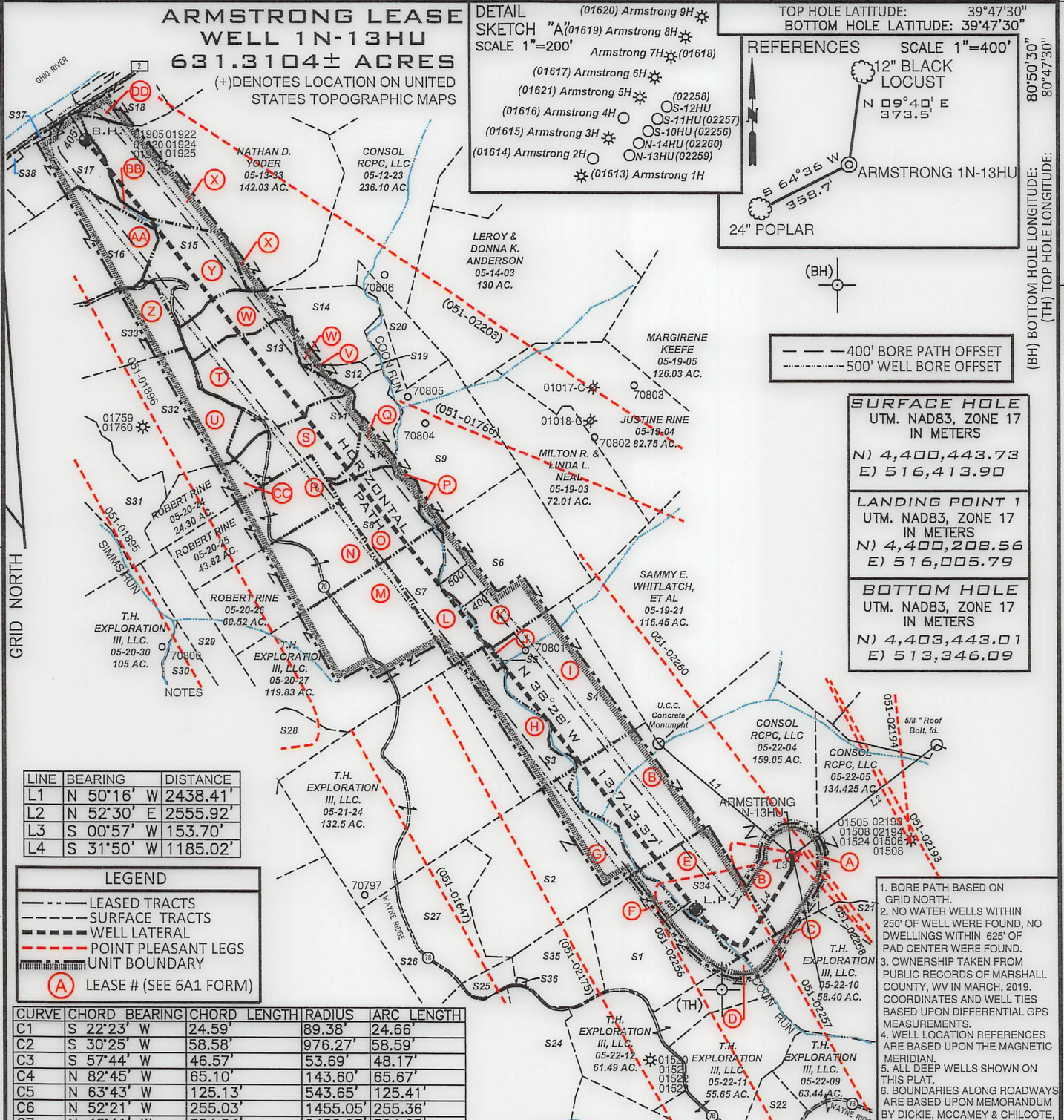
REFERENCES SCALE 1"=400'

12" BLACK LOCUST
N 09°40' E 373.5'

24" POPLAR
S 64°36' W 358.7'

(BH) 3,095'
(TH) 750'

(BH) BOTTOM HOLE LONGITUDE: 80°50'30"
(TH) TOP HOLE LONGITUDE: 80°47'30"



LINE	BEARING	DISTANCE
L1	N 50°16' W	2438.41'
L2	N 52°30' E	2555.92'
L3	S 00°57' W	153.70'
L4	S 31°50' W	1185.02'

LEGEND

- LEASED TRACTS
- SURFACE TRACTS
- WELL LATERAL
- POINT PLEASANT LEGS
- UNIT BOUNDARY

(A) LEASE # (SEE 6A1 FORM)

CURVE	CHORD BEARING	CHORD LENGTH	RADIUS	ARC LENGTH
C1	S 22°23' W	24.59'	89.38'	24.66'
C2	S 30°25' W	58.58'	976.27'	58.59'
C3	S 57°44' W	46.57'	53.69'	48.17'
C4	N 82°45' W	65.10'	143.60'	65.67'
C5	N 63°43' W	125.13'	543.65'	125.41'
C6	N 52°21' W	255.03'	1455.05'	255.36'
C7	N 42°41' W	394.24'	2482.95'	394.65'

SURFACE HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,400,443.73
E) 516,413.90

LANDING POINT 1
UTM. NAD83, ZONE 17
IN METERS
N) 4,400,208.56
E) 516,005.79

BOTTOM HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,403,443.01
E) 513,346.09

- BORE PATH BASED ON GRID NORTH.
- NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
- OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2019. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
- WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
- ALL DEEP WELLS SHOWN ON THIS PLAT.
- BOUNDARIES ALONG ROADWAYS ARE BASED UPON MEMORANDUM BY DICKIE, MCCAMEY & CHILCOTE, P.C. FILE 0058304.0401147

FILE NUMBER _____

DRAWING NUMBER: ARMSTRONG_1N-13HU_REV 2

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

P.S. 708 *David L Jackson*



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



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

DATE: JULY 24, 2019
REVISED DATE: JANUARY 22, 2020
OPERATORS WELL NO. Armstrong 1N-13HU
API WELL NO. 47-051-02259 HGA
STATE COUNTY PERMIT MOD

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP X SHALLOW ___

LOCATION ELEVATION 1279.12' WATERSHED (HUC 10) FRENCH CREEK - OHIO RIVER
DISTRICT FRANKLIN COUNTY MARSHALL
QUADRANGLE POWHATAN POINT 7.5' LEASE NUMBER SEE WW-6A1 Form

SURFACE OWNER CONSOL RCPC, LLC. ACREAGE 159.05
OIL & GAS ROYALTY OWNER CONSOL RCPC, LLC. LEASE ACREAGE 159.05
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: 11,357' TMD: 25,505'
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

ARMSTRONG LEASE WELL IN-13HU 631.3104± ACRES

(-) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

DETAIL SKETCH "A" (01014) Armstrong 8H
SCALE 1" = 200'

(01014) Armstrong 1H
SCALE 1" = 200'

(01017) Armstrong 6H
SCALE 1" = 200'

(01018) Armstrong 7H
SCALE 1" = 200'

(01020) Armstrong 8H
SCALE 1" = 200'

REFERENCES
SCALE 1" = 400'

12" BLACK LOCUST
N 09.4° E
32.4 ±

24" POPLAR
S 64.8° W
35.7 ±

ARMSTRONG IN-13HU

(LH) TOP HOLE TO WELLS:
200' WELL BORE OFFSET

(RH) BOLLOW HOLE TO WELLS:
400' BORE PATH OFFSET

SURFACE HOLE
UTM. NAD83, ZONE 17
IN METERS
(N) 4,400,443.23
(E) 216,413.90

LANDING POINT 1
UTM. NAD83, ZONE 17
IN METERS
(N) 4,400,208.56
(E) 216,002.79

BOTTOM HOLE
UTM. NAD83, ZONE 17
IN METERS
(N) 4,403,443.01
(E) 213,46.09

LINE	BEARING	DISTANCE
L1	N 50.16° W	243.84'
L2	N 52.30° E	255.92'
L3	S 00.57° W	153.70'
L4	S 31.50° W	118.02'

LEGEND

- LEASSED TRACTS
- SURFACE TRACTS
- WELL LATERAL
- POINT PLEASANT LEGS
- UNIT BOUNDARY
- LEASE # (SEE 6A1 FORM)

CURVE	CHORD BEARING	CHORD LENGTH	RADIUS	ARC LENGTH
C1	S 22.23° W	24.50'	80.38'	24.66'
C2	S 30.25° W	58.58'	97.27'	58.59'
C3	S 27.44° W	46.57'	53.69'	48.17'
C4	N 82.45° W	65.10'	143.60'	65.67'
C5	N 63.43° W	125.13'	243.65'	125.41'
C6	N 52.21° W	255.03'	1458.05'	255.36'
C7	N 42.41° W	304.24'	2482.95'	304.65'

1. BORE PATH BASED ON GRID NORTH.
2. NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
3. OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2019.
4. COORDINATES AND WELL LEGS BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
5. WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
6. BOUNDARIES ALONG ROADWAYS ARE BASED UPON MEMORANDUM BY DICKIE, MCGRAWY & CHILCOTE, P.C. FILE 00288904.0401.143
7. ALL DEEP WELLS SHOWN ON THIS PLAN.
8. BOUNDARIES ALONG ROADWAYS ARE BASED UPON MEMORANDUM BY DICKIE, MCGRAWY & CHILCOTE, P.C. FILE 00288904.0401.143

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN 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 Jackson
JACKSON SURVEYING INC.
P.O. Box 1480
Clarksburg, WV 26302
304-853-8881

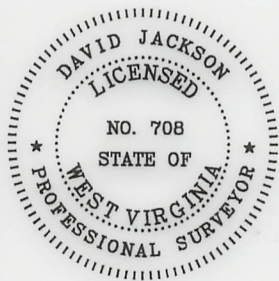
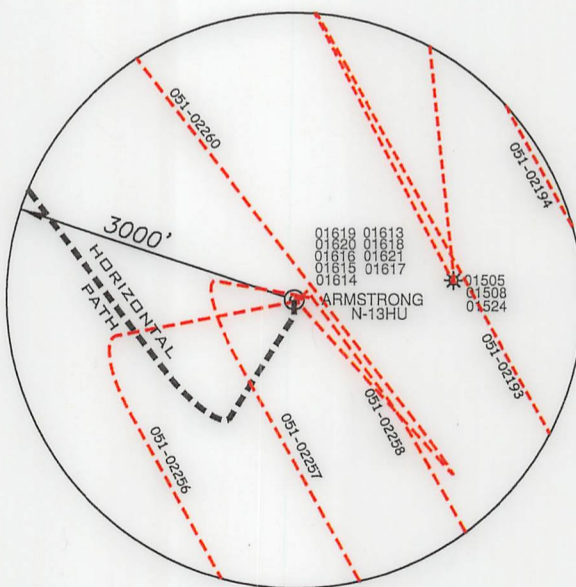


FILE NUMBER: _____
DRAWING NUMBER: ARMSTRONG IN-13HU REV 2
SCALE: 1" = 200'
OF ACCURACY: 1/200 MINIMUM DEGREE
PROVEN SOURCE: GRADE GPS
OF ELEVATION: SUBMETER MAPPING

DATE: JULY 24, 2019
REVISED DATE: JANUARY 22, 2020
OPERATORS WELL NO. ARMSTRONG IN-13HU
API WELL NO. _____
WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP X SHALLOW ___
LOCATION ELEVATION 1279.12', WATERSHED (HUC) 10 FRENCH CREEK - OHIO RIVER
DISTRICT FRANKLIN COUNTY MARSHALL
QUADRANGLE POWHATAN POINT 7.5, LEASE NUMBER SEE WW-6A1 Form
SURFACE OWNER CONSOL RPC, LLC., ACREAGE 150.05
OIL & GAS ROYALTY OWNER CONSOL RPC, LLC., LEASE ACREAGE 150.05
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
WELL OPERATOR TUG HILL OPERATING, LLC, ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107
DESIGNATED AGENT DIANNA STAMPER, ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313
CT CORPORATION SYSTEM
ESTIMATED DEPTH TVD: 11,357', TMD: 25,505'
PLUG & ABANDON ___ CLEAN OUT & REPLUG ___
PERMIT W02 STATE COUNTY _____
PERMITS 47-051 - 02259 HUC

**ARMSTRONG LEASE
WELL 1N-13HU
631.3104± ACRES**

Number	TAX MAP-PARCEL	SURFACE OWNER	ACRES
S1	F 05-22-16	Edward R. Yoho, Jr.	57.0
S2	G 05-22-18	Edward R. Yoho, Jr.	77.13
S3	H 05-22-2	T.H. Exploration III, LLC.	30.0
S4	I 05-22-3	Consol RCPC, LLC	79.74
S5	J 05-22-1	Mary P. Mason, Est.	2.0
S6	K 05-19-22	George A. Knuth & Kelly A. Knuth	71.0
S7	L 05-19-23	WSD Properties, LLC	28.4
S8	O 05-19-1	Robert Rine	30.8
S9	P 05-19-2	Milton R. Neal & Linda L. Neal	63.1
S10	Q 05-13-41A	Rodney Jackson & Rhonda Jackson	17.05
S11	S 05-13-40	Robert Rine	29.76
S12	V 05-13-41B	Larry Darrah & Judy Darrah	2.5
S13	T 05-13-39	Thomas Bowman & Victoria Bowman	46.0
S14	W 05-13-42	Thomas Bowman & Victoria Bowman	45.0
S15	Y 05-13-34	David J. Mast	40.0
S16	AA 05-13-23	David J. Mast	69.59
S17	BB 05-13-25	Aaron Paul Holdren, Et Ux	30.0
S18	DD 05-13-27	Aaron Paul Holdren, Et Ux	25.0
S19	05-13-41C	Hrs. of Benton Darrah, Lillie May Dugan, Alma Bitzer, Alberta Palmer & Audrey Howard	1.0
S20	05-14-2	John B. Williams, Et Al	20.17
S21	05-22-6	Consol RCPC, LLC	64.70
S22	05-28-4	T.H. Exploration III, LLC.	48.44
S23	05-28-3	T.H. Exploration III, LLC.	53.44
S24	05-22-13	John M. Moore, Teresa R. Moore, & Andrea S. Moore	40.57
S25	05-21-21	Consol RCPC, LLC	4.0
S26	05-21-22	Peggy Lee Bowan Brown, Et Al	18.29
S27	05-21-23	Peggy Lee Bowan Brown, Et Al	42.62
S28	05-20-28	T.H. Exploration III, LLC.	15.34
S29	05-20-29	T.H. Exploration III, LLC.	30.08
S30	05-20-32	T.H. Exploration III, LLC.	28.8
S31	05-13-37	T.H. Exploration III, LLC.	51.21
S32	U 05-13-38	Thomas Bowman & Victoria Bowman	61.0
S33	Z 05-33-35	David J. Mast	24.90
S34	E 05-22-17	CONSOL RCPC, LLC	37.5
S35	05-22-15	Edward R. Yoho, Jr.	25.5
S36	05-22-14	CONSOL RCPC, LLC	0.3
S37	05-13-26.1	Aaron Paul Holdren, Et Ux	0.61
S38	05-13-26	Aaron Paul Holdren, Et Ux	0.16



P.S. 708

David L Jackson

47-051-02259 H6A MOD



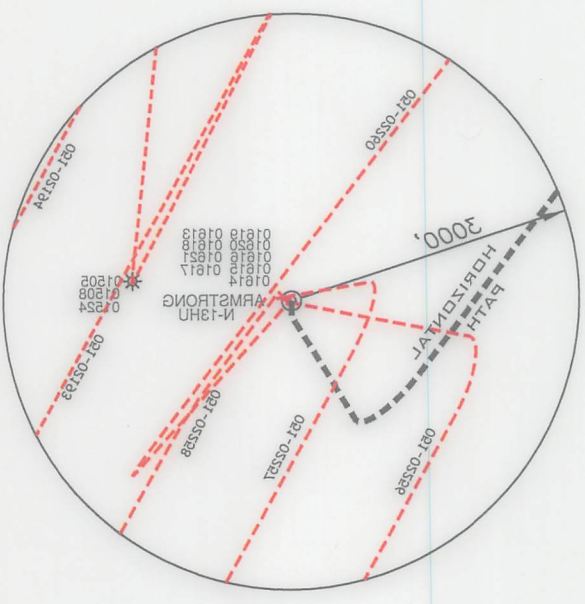
**TUG HILL
OPERATING**

OPERATOR'S
WELL #: Armstrong 1N-13HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV
API: 047-051-02259 H6A

WELL PLAT
PAGE 2 OF 4
DATE: 07/24/2019
REVISED DATE:
01/22/2020

ARMSTRONG LEASE
WELL 1N-13HU
631.3104± ACRES

Number	TAX MAP-PARCEL	SURFACE OWNER	ACRES
238	05-13-26	Aaron Paul Holden, Ef Ux	0.16
237	05-13-26.1	Aaron Paul Holden, Ef Ux	0.61
236	05-22-14	CONSOL RCPG, LLC	0.3
235	05-22-15	Edward R. Yoho, Jr.	25.5
234 E	05-22-17	CONSOL RCPG, LLC	37.5
233 Z	05-33-35	David J. Mast	24.90
232 U	05-13-38	Thomas Bowman & Victoria Bowman	61.0
231	05-13-37	T.H. Exploration III, LLC	61.21
230	05-20-32	T.H. Exploration III, LLC	28.8
229	05-20-29	T.H. Exploration III, LLC	30.08
228	05-20-28	T.H. Exploration III, LLC	15.34
227	05-21-23	Peggy Lee Bowman Brown, Ef AI	42.62
226	05-21-22	Peggy Lee Bowman Brown, Ef AI	18.29
225	05-21-21	CONSOL RCPG, LLC	4.0
224	05-22-13	John M. Moore, Teresa R. Moore, & Andrea S. Moore	40.57
223	05-28-3	T.H. Exploration III, LLC	53.44
222	05-28-4	T.H. Exploration III, LLC	48.44
221	05-22-6	CONSOL RCPG, LLC	64.70
220	05-14-2	John B. Williams, Ef AI	20.17
219	05-13-41C	Hrs. of Benton Dorch, Lillie May Dugan, Alma Bifert, Alberta Palmer & Audrey Howard	1.0
218D	05-13-27	Aaron Paul Holden, Ef Ux	25.0
217BB	05-13-25	Aaron Paul Holden, Ef Ux	30.0
216AA	05-13-23	David J. Mast	69.59
215 Y	05-13-34	David J. Mast	40.0
214 W	05-13-42	Thomas Bowman & Victoria Bowman	45.0
213 T	05-13-39	Thomas Bowman & Victoria Bowman	46.0
212 V	05-13-41B	Larry Dorch & Judy Dorch	2.5
211 S	05-13-40	Robert Rine	29.76
210 Q	05-13-41A	Rodney Jackson & Rhonda Jackson	17.05
209 P	05-19-2	Milton R. Neal & Linda L. Neal	63.1
208 O	05-19-1	Robert Rine	30.8
207 L	05-19-23	WSD Properties, LLC	28.4
206 K	05-19-22	George A. Knuth & Kelly A. Knuth	71.0
205 J	05-22-1	Mary P. Mason, Est.	2.0
204 I	05-22-3	CONSOL RCPG, LLC	29.74
203 H	05-22-2	T.H. Exploration III, LLC	30.0
202 G	05-22-18	Edward R. Yoho, Jr.	77.13
201 F	05-22-16	Edward R. Yoho, Jr.	57.0



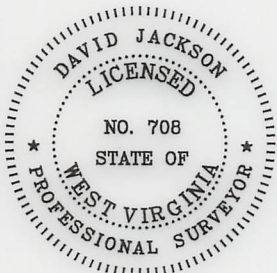
David Jackson
P.S. 708
H 7-021-0292 H & A WOD

WELL PLAT PAGE 2 OF 4 DATE: 07/24/2019 REVISED DATE: 01/23/2020	OPERATOR'S WELL #1 Armstrong 1N-13HU	
	DISTRICT: Franklin	
	COUNTY: Marshall	
	STATE: WV	
	API: 047-021-02259 H & A	

form ww6

**ARMSTRONG LEASE
WELL 1N-13HU
631.3104± ACRES**

Lease No.	Tags	Parcel	Grantor	Book	Page
10*19529	A	5-22-5	CNX GAS COMPANY LLC	733	500
10*14033	B	5-22-4	LAMOYNE BAKER	665	554
10*14034	B	5-22-4	LAWRENCE C AND LORRAINE J MCWHORTER	665	391
10*14035	B	5-22-4	PEGGY MAE WHITE	695	446
10*14036	B	5-22-4	WILDA WINTERS	701	579
10*14037	B	5-22-4	JUDITH L CHAMBERS	701	577
10*14039	B	5-22-4	CHESTNUT HOLDINGS LLC	827	554
10*14418	C	5-22-10	PPG INDUSTRIES, INC.	878	610
10*14418	D	5-22-12	PPG INDUSTRIES, INC.	878	610
10*14507	E	5-22-17	MARY THERESA SOLEAU AND THOMAS SOLEAU	749	524
10*14508	E	5-22-17	JEAN W FOSTER	752	200
10*14509	E	5-22-17	JAMES ROBERT WELLS	752	202
10*14510	E	5-22-17	MARY AGNES CARROLL	749	528
10*14511	E	5-22-17	ELIZABETH JANE KELLER	754	242
10*14513	E	5-22-17	CAROLYN LYNN PORTER	767	256
10*14514	E	5-22-17	CHARLES ARTHUR WELLS	768	494
10*14515	E	5-22-17	JERRY TODD WELLS	773	572
10*14516	E	5-22-17	JAMES NESBITT WELLS BY JOANIE WELLS AIF	773	570
10*14517	E	5-22-17	CARL W BACH JR	852	250
10*14518	E	5-22-17	RAE ELLEN FLOYD AND KENNETH FLOYD	854	599
10*14519	E	5-22-17	DOUGLAS M BACH	854	597
10*16471	E	5-22-17	CNX GAS COMPANY LLC	905	155
10*16652	E	5-22-17	MARY JUDITH BRANSON AND MICHAEL L BRANSON	942	35
10*16674	E	5-22-17	CHARLOTTE A KASTELIC	942	37
10*26910	E	5-22-17	BRIDGET S AND DARRELL T GATES	1045	419
10*26940	E	5-22-17	PATRICK N WELLS	1045	413
10*14457	F	5-22-16	HARRY LEE GOUDY	731	140
10*14457	G	5-22-18	HARRY LEE GOUDY	731	140
10*14418	H	5-22-2	PPG INDUSTRIES, INC.	878	610
10*14608	I	5-22-3	CHESTNUT HOLDINGS INC	827	560
10*14520	J	5-22-1	BONNIE GRISELL	756	81
10*14521	J	5-22-1	ANITA MAE MASON	752	218
10*14581	K	5-19-22	CAROL BORDNER	693	609
10*14582	K	5-19-22	DALE F MCINTIRE	694	104
10*14583	K	5-19-22	BRADLEY DEMENT AKA BRADLEY F DEMENT	694	79
10*14584	K	5-19-22	RAY F MCINTIRE AKA FRANCIS RAY MCINTIRE	693	620
10*14585	K	5-19-22	WILBUR L BLAND	694	543
10*14586	K	5-19-22	CAROLYN MCINTIRE HICKERSON	694	546
10*14587	K	5-19-22	CHERYL FIDLER	694	550
10*14588	K	5-19-22	LLOYD E MCINTYRE II	694	565
10*14589	K	5-19-22	BETTY JEAN HARBOUR	694	569
10*14590	K	5-19-22	CHARLES HARBOUR AND CAROL J HARBOUR	694	540
10*14591	K	5-19-22	JUDY L MCINTIRE	694	553
10*14592	K	5-19-22	NORA JEAN TRUAX	696	639
10*14593	K	5-19-22	KEITH MCINTYRE AND TAMMY MCINTYRE	696	17
10*14594	K	5-19-22	KAREN M ECKELBERRY	696	13
10*14595	K	5-19-22	JUDY A ADAMS	696	643
10*14596	K	5-19-22	MARY LEE LOWE	696	9
10*14597	K	5-19-22	JACKIE MCINTIRE STEPHANIE A CRISS, POA	702	218
10*14598	K	5-19-22	GEORGE A KNUTH AND KELLY A KNUTH	741	523
10*14599	K	5-19-22	ESTATE OF KATHRYN G NOFFSINGER MICHAEL E MCINTIRE, GUARDIAN	839	522
10*14600	K	5-19-22	PAMELA HARTZLER	839	525
10*14601	K	5-19-22	TERRY MCINTIRE	840	158
10*14459	L	5-19-23	HELEN CROSKY & WILLIAM DENOON CO-TRUSTEES, JANIE L DENOON TRUST	731	145
10*14307	M	5-20-27	SALLY CYNTHIA HOPKINS	777	572
10*14308	M	5-20-27	MARY E BASSETT	779	492
10*14309	M	5-20-27	ROBERT B THOMAS	779	484
10*14310	M	5-20-27	JEAN C THOMAS	781	614
10*14324	M	5-20-27	RUTH E BASSETT MEADOWS	792	100
10*14325	M	5-20-27	ELIZABETH ANN STRAUSBAUGH	792	104
10*14326	M	5-20-27	JANET LEA BLANKENSHIP	792	580
10*14418	M	5-20-27	PPG INDUSTRIES, INC.	878	610
10*14616	N	5-20-26	ROBERT E RINE & DONNA M RINE	708	250
10*14614	O	5-19-1	ROBERT RINE	708	252
10*14040	P	5-19-2	MILTON R NEAL AND LINDA L NEAL	665	498
10*14041	P	5-19-2	SHIBEN ESTATES INC	718	496
10*14461	Q	5-13-41A	RODNEY & RHONDA JACKSON	739	411
10*14685	R	5-20-25	ROBERT E. RINE AND DONNA M. RINE	708	253
10*17099	R	5-20-25	ROBERT RINE	852	564
10*14502	S	5-13-40	ROBERT E RINE & DONNA M RINE	752	206
10*14529	S	5-13-40	HELEN BOWMAN	790	523
10*14530	S	5-13-40	NANCY L. VENSOSKE	790	521
10*14531	S	5-13-40	CORA A. WEST	791	641
10*14532	S	5-13-40	JOAN E MENKEMELLER	791	639
10*14533	S	5-13-40	NANCY L FEISZU	792	644
10*14535	S	5-13-40	RALPH W CONNER	794	513
10*14549	S	5-13-40	REBECCA PAUKNER	829	603
10*14550	S	5-13-40	CARRIE C WARREN	840	156
10*14551	S	5-13-40	SHARON S ANTALIS	842	392
10*14552	S	5-13-40	GLORIA J SILVERIO	844	81
10*14878	S	5-13-40	ARTHUR BRUCE COULTER	839	519
10*17099	S	5-13-40	ROBERT RINE	852	564



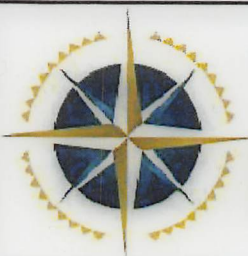
P.S. 708

David L Jackson

MOD

OPERATOR'S
WELL #: Armstrong 1N-13HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV
API: 047-051-02259 *MOD*

WELL PLAT
PAGE 3 OF 4
DATE: 07/24/2019
REVISED DATE:
01/22/2020



**TUG HILL
OPERATING**

ARMSTRONG LEASE
WELL IN-13HU
631.3104± ACRES

Page	Book	Grantor	Parcel	Tract	Area No.
200	733	CINX GAS COMPANY LLC	2-23-2	A	10*142525
254	662	LAMOYNE BAKER	2-23-4	B	10*14033
393	662	LAWRENCE C AND LORRAINE J MCWHORTER	2-23-4	B	10*14034
446	692	PEGGY MAE WHITE	2-23-4	B	10*14035
279	701	WILDA WINTERS	2-23-4	B	10*14036
277	701	JUDITH L CHAMBERS	2-23-4	B	10*14037
254	877	CHESTNUT HOLDINGS LLC	2-23-4	B	10*14039
670	878	PPG INDUSTRIES, INC	2-23-10	C	10*14418
670	878	PPG INDUSTRIES, INC	2-23-12	D	10*14418
254	749	MARY THERESA SOLEAU AND THOMAS SOLEAU	2-23-17	E	10*14207
700	723	JEAN W FOSTER	2-23-17	E	10*14208
702	723	JAMES ROBERT WELLS	2-23-17	E	10*14209
258	749	MARY AGNES CARROLL	2-23-17	E	10*14210
242	724	ELIZABETH JANE KELLER	2-23-17	E	10*14211
256	767	CAROLYN LYNN PORTER	2-23-17	E	10*14213
494	768	CHARLES ARTHUR WELLS	2-23-17	E	10*14214
273	773	JERRY TODD WELLS	2-23-17	E	10*14215
270	773	JAMES NESBITT WELLS BY JOANIE WELLS AIF	2-23-17	E	10*14216
250	823	CARL W BACH JR	2-23-17	E	10*14217
299	824	RAE ELLEN FLOYD AND KENNETH FLOYD	2-23-17	E	10*14218
297	824	DOUGLAS M BACH	2-23-17	E	10*14219
722	802	CINX GAS COMPANY LLC	2-23-17	E	10*14271
32	942	MARY JUDITH BRANSON AND MICHAEL J BRANSON	2-23-17	E	10*16222
37	942	CHARLOTTE A KASTELC	2-23-17	E	10*16274
479	1042	BRIDGET S AND DARRELL T GATEZ	2-23-17	E	10*28910
473	1042	PATRICK N WELLS	2-23-17	E	10*28940
140	737	HARRY LEE GONDY	2-23-18	F	10*14427
140	737	HARRY LEE GONDY	2-23-18	G	10*14427
670	878	PPG INDUSTRIES, INC	2-23-2	H	10*14418
260	823	CHESTNUT HOLDINGS INC	2-23-3	I	10*14608
81	726	BOINIE GRISSELL	2-23-1	J	10*14250
278	723	ANITA MAE MASON	2-23-1	L	10*14271
609	609	CAROL BORDNER	2-19-23	K	10*14281
704	604	DALE F MCINTIRE	2-19-23	K	10*14283
79	604	BRODLEY DEMENT AKA BRADLEY F DEMENT	2-19-23	K	10*14283
670	609	RAY F MCINTIRE AKA FRANCIS RAY MCINTIRE	2-19-23	K	10*14284
243	604	WILBUR L BRAND	2-19-23	K	10*14285
246	604	CAROLYN MCINTIRE HICKERSON	2-19-23	K	10*14286
250	604	CHEVAL FIDLER	2-19-23	K	10*14287
282	604	LLOYD E MCINTYRE II	2-19-23	K	10*14288
269	604	BETTY JEAN HARBOUR	2-19-23	K	10*14289
240	604	CHARLES HARBOUR AND CAROL J HARBOUR	2-19-23	K	10*14290
223	604	JUDY J MCINTIRE	2-19-23	K	10*14291
639	606	INDIA JEAN TRUBK	2-19-23	K	10*14292
17	606	KEITH MCINTYRE AND TAMMY MCINTYRE	2-19-23	K	10*14293
13	606	KAREN M ECKELBERRY	2-19-23	K	10*14294
643	606	JUDY A ADAMS	2-19-23	K	10*14295
9	606	MARY LEE LOWE	2-19-23	K	10*14296
218	702	JACKIE MCINTIRE STEPHANIE A CRISS POA	2-19-23	K	10*14297
233	747	GEORGE A KNUTH AND KELLY A KNUTH	2-19-23	K	10*14298
232	839	ESTATE OF KATHRYN G NOEFZINGER MICHAEL E MCINTIRE GUARDIAN	2-19-23	K	10*14299
252	839	PAMELA HARTLER	2-19-23	K	10*14600
728	840	TERRY MCINTIRE	2-19-23	K	10*14601
142	737	HELEN CROSEY & WILLIAM DENON CO-TRUSTEES, JAMIE L DENON TRUST	2-19-23	L	10*14429
272	777	SALLY GYNTHIA HOKKINS	2-20-23	M	10*14307
492	779	MARY E BASSETT	2-20-23	M	10*14308
484	779	ROBERT B THOMAS	2-20-23	M	10*14309
614	787	JEAN C THOMAS	2-20-23	M	10*14310
700	792	RUTH E BASSETT MEADOWS	2-20-23	M	10*14324
704	792	ELIZABETH ANN STRAUSSBAUGH	2-20-23	M	10*14325
280	792	JANET LEB BLANKENSHIP	2-20-23	M	10*14326
670	878	PPG INDUSTRIES, INC	2-20-23	M	10*14418
250	708	ROBERT E RINE & DONNA M RINE	2-20-26	N	10*14616
223	708	ROBERT RINE	2-19-1	O	10*14614
498	602	MILTON R NEAL AND LINDY L NEAL	2-19-2	P	10*14040
496	718	SHIBEN ESTATES INC	2-19-2	P	10*14041
417	739	RODNEY & RHONDA JACKSON	2-13-41A	Q	10*14461
229	708	ROBERT E RINE AND DONNA M RINE	2-20-26	R	10*14622
264	823	ROBERT RINE	2-20-26	R	10*17099
206	792	ROBERT E RINE & DONNA M RINE	2-13-40	S	10*14205
232	790	HELEN BOWMAN	2-13-40	S	10*14239
227	790	NANCY L VENSKOSKE	2-13-40	S	10*14230
647	797	CORA A WEST	2-13-40	S	10*14231
639	797	JOAN E MENKEMEYER	2-13-40	S	10*14232
644	792	NANCY J FEISLI	2-13-40	S	10*14233
273	794	RALPH W CONNER	2-13-40	S	10*14235
603	839	REBECCA PARKNER	2-13-40	S	10*14249
726	840	CARRIE C WARREN	2-13-40	S	10*14250
392	842	SHARON S ANTALUS	2-13-40	S	10*14251
87	844	GLORIA J SILVERIO	2-13-40	S	10*14252
279	839	ARTHUR BRUCE COUTER	2-13-40	S	10*14278
264	823	ROBERT RINE	2-13-40	S	10*17099



David Jackson
Surveyor

OPERATING
TUG HILL

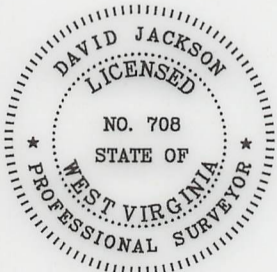


API: 047-081-02258
STATE: WV
COUNTY: Marshall
DISTRICT: Franklin
WELL # 1 Armstrong IN-13HU
OPERATOR'S

WELL PLAT
PAGE 3 OF 4
DATE: 07/24/2019
REVISED DATE: 01/22/2020

**ARMSTRONG LEASE
WELL 1N-13HU
631.3104± ACRES**

Lease No.	Tags	Parcel	Grantor	Book	Page
10*14526	T	5-13-39	THOMAS WILLIAM BOWMAN	761	432
10*14527	T	5-13-39	VICTORIA BOWMAN	761	434
10*14529	T	5-13-39	HELEN BOWMAN	790	523
10*14530	T	5-13-39	NANCY L. VENSOSKE	790	521
10*14531	T	5-13-39	CORA A. WEST	791	641
10*14532	T	5-13-39	JOAN E MENKEMELLER	791	639
10*14533	T	5-13-39	NANCY L FEISZLI	792	644
10*14535	T	5-13-39	RALPH W CONNER	794	513
10*14549	T	5-13-39	REBECCA PAUKNER	829	603
10*14550	T	5-13-39	CARRIE C WARREN	840	156
10*14551	T	5-13-39	SHARON S ANTALIS	842	392
10*14552	T	5-13-39	GLORIA J SILVERIO	844	81
10*14878	T	5-13-39	ARTHUR BRUCE COULTER	839	519
10*17108	T	5-13-39	THOMAS WILLIAM BOWMAN	850	263
10*17109	T	5-13-39	VICTORIA BOWMAN	850	260
10*14526	U	5-13-38	THOMAS WILLIAM BOWMAN	761	432
10*14527	U	5-13-38	VICTORIA BOWMAN	761	434
10*16854	V	5-13-41B	LARRY DARRAH AND JUDY DARRAH	915	484
10*14526	W	5-13-42	THOMAS WILLIAM BOWMAN	761	432
10*14527	W	5-13-42	VICTORIA BOWMAN	761	434
10*14701	X	5-13-33	ROSEITA M THORNTON	885	600
10*14702	X	5-13-33	NATHAN D YODER	708	71
10*17627	X	5-13-33	NATHAN D YODER	917	62
10*18191	Y	5-13-34	DAVID J AND MIRIAM MAST	952	183
10*14618	Z	5-13-35	DAVID J AND MIRIAM MAST	707	645
10*14701	Z	5-13-35	ROSEITA M THORNTON	885	600
10*14700	AA	5-13-23	DAVID J AND MIRIAM MAST	708	239
10*14701	AA	5-13-23	ROSEITA M THORNTON	885	600
10*14549	BB	5-13-25	REBECCA PAUKNER	829	603
10*14748	BB	5-13-25	MARJORIE NIGHTENGALE	790	541
10*14749	BB	5-13-25	JANICE E FUTEY	792	116
10*14750	BB	5-13-25	MARY SUE ANTHONY	792	114
10*14751	BB	5-13-25	GRACE E LUIKART	792	642
10*14752	BB	5-13-25	CHARLES BOWEN	792	648
10*14753	BB	5-13-25	JERRY SMOYER	794	474
10*14754	BB	5-13-25	BERNARD KNOLLINGER	794	472
10*14755	BB	5-13-25	JUDITH A MCGRILL	794	517
10*14756	BB	5-13-25	WOODROW J. KNOLLINGER	794	515
10*14757	BB	5-13-25	DOUGLAS W. KNOLLINGER	794	487
10*14758	BB	5-13-25	GARY R KNOLLINGER	795	154
10*14759	BB	5-13-25	GLORIA J. LUIKART DECEASED BY MARK LUIKART AIF	804	245
10*14760	BB	5-13-25	JEFFREY M BROWN	809	535
10*14761	BB	5-13-25	RONALD E CLARK	809	571
10*14762	BB	5-13-25	WILLIAM CARL KNOLLINGER	815	238
10*14763	BB	5-13-25	BETTY J MCKINLEY	815	240
10*14764	BB	5-13-25	MARY B KNOLLINGER	821	40
10*14765	BB	5-13-25	RUTH A KINNEY	821	42
10*14766	BB	5-13-25	JANICE M SANDERS	827	527
10*14767	BB	5-13-25	WILLIAM J SMOYER	829	332
10*14768	BB	5-13-25	BONNIE DGINTO	844	77
10*14769	BB	5-13-25	JAYNE S KISSEL	844	79
10*14770	BB	5-13-25	MARY M HALL	846	413
10*14771	BB	5-13-25	ERIC W THORNGATE	846	464
10*14772	BB	5-13-25	GREG E THORNGATE	846	436
10*14773	BB	5-13-25	JUSTIN J ANTHONY	846	438
10*14774	BB	5-13-25	THOMAS R KNOLLINGER	846	406
10*14775	BB	5-13-25	TODD HANNIG	849	522
10*14776	BB	5-13-25	KAREN M SMOYER	876	457
10*17590	BB	5-13-25	ROBIN L KNOLLINGER	951	557
10*17591	BB	5-13-25	SHARON M MAIMONE AND ROBERT A MAIMONE	951	554
10*18219	BB	5-13-25	EUZABETH S STANFORD	929	76
10*18220	BB	5-13-25	WILLIAM S HANNIG AND BARBARA S HANNIG	929	74
10*18547	BB	5-13-25	SCOTT A HANNIG AND STACI C HANNIG	934	3
10*19847	BB	5-13-25	WILLIAM JOHN WAGNER UNKNOWN HEIRS MARY WAGNER MANN UNKNOWN HEIRS	943	450
10*26814	BB	5-13-25	EUZABETH S STANFORD	1045	422
10*26936	BB	5-13-25	WILLIAM S & BARBARA S HANNIG	1046	468
10*27060	BB	5-13-25	SCOTT A AND STACI C HANNIG	1051	240
10*27959	BB	5-13-25	STONE HILL MINERALS HOLDINGS LLC	1068	140
10*14615	CC	5-20-24	ROBERT RINE	708	251
10*16538	DD	5-13-27	AMP FUND III LP	915	187



P.S. David L Jackson
708



TUG HILL
OPERATING

OPERATOR'S
WELL #: Armstrong 1N-13HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV
API: 047-051-02259 HWA
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WELL PLAT
PAGE 4 OF 4
DATE: 07/26/2019
REVISED DATE:
01/22/2020

ARMSTRONG LEASE
WELL 1N-13HU
631.3104± ACRES

BWM 11101

Lease No.	Tract	Parcel	Grantor	Book	Page
10*14238	DD	2-13-23	CAMP FUND III LP	187	187
10*14412	CC	2-20-24	ROBERT RINE	208	221
10*27258	BB	2-13-22	STONE HILL MINERALS HOLDINGS LLC	1088	140
10*27060	BB	2-13-22	SCOTT A AND STACI C HANNIG	1021	240
10*25936	BB	2-13-22	WILLIAM S BARBARA S HANNIG	1046	468
10*28844	BB	2-13-22	ELIZABETH S STANFORD	1042	422
10*28843	BB	2-13-22	HERS	943	420
10*18247	BB	2-13-22	SCOTT A HANNIG AND STACI C HANNIG	934	3
10*18250	BB	2-13-22	WILLIAM S HANNIG AND BARBARA S HANNIG	929	74
10*18219	BB	2-13-22	ELIZABETH S STANFORD	929	76
10*17291	BB	2-13-22	SHARON M MAIMONE AND ROBERT A MAIMONE	921	224
10*17290	BB	2-13-22	ROBIN L KNOLLINGER	921	227
10*14276	BB	2-13-22	KAREN M SMOYER	876	427
10*14275	BB	2-13-22	TODD HANNIG	849	222
10*14274	BB	2-13-22	THOMAS R KNOLLINGER	846	406
10*14273	BB	2-13-22	JUSTIN J ANTHONY	846	438
10*14272	BB	2-13-22	ERIC W THORNGATE	846	464
10*14270	BB	2-13-22	MARY M HALL	846	413
10*14269	BB	2-13-22	WAYNE S KISSEL	844	79
10*14268	BB	2-13-22	BONNIE DGINTO	844	77
10*14267	BB	2-13-22	WILLIAM J SMOYER	829	322
10*14266	BB	2-13-22	JANICE M SANDERS	827	227
10*14265	BB	2-13-22	RUTH A KINNEY	821	42
10*14264	BB	2-13-22	MARY B KNOLLINGER	821	40
10*14263	BB	2-13-22	BETTY J MCKINLEY	812	240
10*14262	BB	2-13-22	WILLIAM CARL KNOLLINGER	812	238
10*14261	BB	2-13-22	RONALD E CLARK	809	271
10*14260	BB	2-13-22	JEFFREY M BROWN	809	232
10*14259	BB	2-13-22	GLORIA J LUKKART DECEASED BY MARK LUKKART JIF	804	242
10*14258	BB	2-13-22	GARY R KNOLLINGER	792	124
10*14257	BB	2-13-22	DOUGLAS W KNOLLINGER	794	487
10*14256	BB	2-13-22	WOODROW J KNOLLINGER	794	212
10*14255	BB	2-13-22	JUDITH A MCGRAIL	794	217
10*14254	BB	2-13-22	BERNARD KNOLLINGER	794	422
10*14253	BB	2-13-22	HEERY SMOYER	794	474
10*14252	BB	2-13-22	CHARLES BOWEN	792	648
10*14251	BB	2-13-22	GRACE E LUKKART	792	642
10*14250	BB	2-13-22	MARY SUE ANTHONY	792	114
10*14249	BB	2-13-22	JANICE E FLUTEY	792	116
10*14248	BB	2-13-22	MARJORIE INGHENGLIE	790	241
10*14249	BB	2-13-22	REBECCA PARKNER	829	603
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10*14200	AA	2-13-23	DAVID J AND MIRIAM MAST	708	239
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10*14201	X	2-13-23	ROSELT M THORNTON	882	600
10*14202	W	2-13-22	THOMAS WILLIAM BOWMAN	761	432
10*14201	W	2-13-22	VICTORIA BOWMAN	761	434
10*14202	V	2-13-21	LARRY DARRAH AND LUDY DARRAH	912	484
10*14203	U	2-13-28	VICTORIA BOWMAN	761	434
10*14202	U	2-13-28	THOMAS WILLIAM BOWMAN	761	432
10*14201	T	2-13-28	VICTORIA BOWMAN	820	260
10*14208	T	2-13-28	THOMAS WILLIAM BOWMAN	820	269
10*14878	T	2-13-28	ARTHUR BRUCE COULTER	839	219
10*14222	T	2-13-28	GLORIA J SILVERIO	844	81
10*14221	T	2-13-28	SHARON S ANTALIS	842	232
10*14220	T	2-13-28	CARRIE C WARREN	840	126
10*14249	T	2-13-29	REBECCA PARKNER	829	603
10*14252	T	2-13-29	RALPH W CONNER	794	213
10*14233	T	2-13-29	NANCY J FEISLI	792	644
10*14232	T	2-13-29	JOAN E MENKEMUELLER	791	639
10*14231	T	2-13-29	CORA A WEST	791	641
10*14230	T	2-13-29	NANCY J VEKOSKOE	790	221
10*14229	T	2-13-29	HELEN BOWMAN	790	223
10*14227	T	2-13-29	VICTORIA BOWMAN	791	434
10*14226	T	2-13-29	THOMAS WILLIAM BOWMAN	791	432



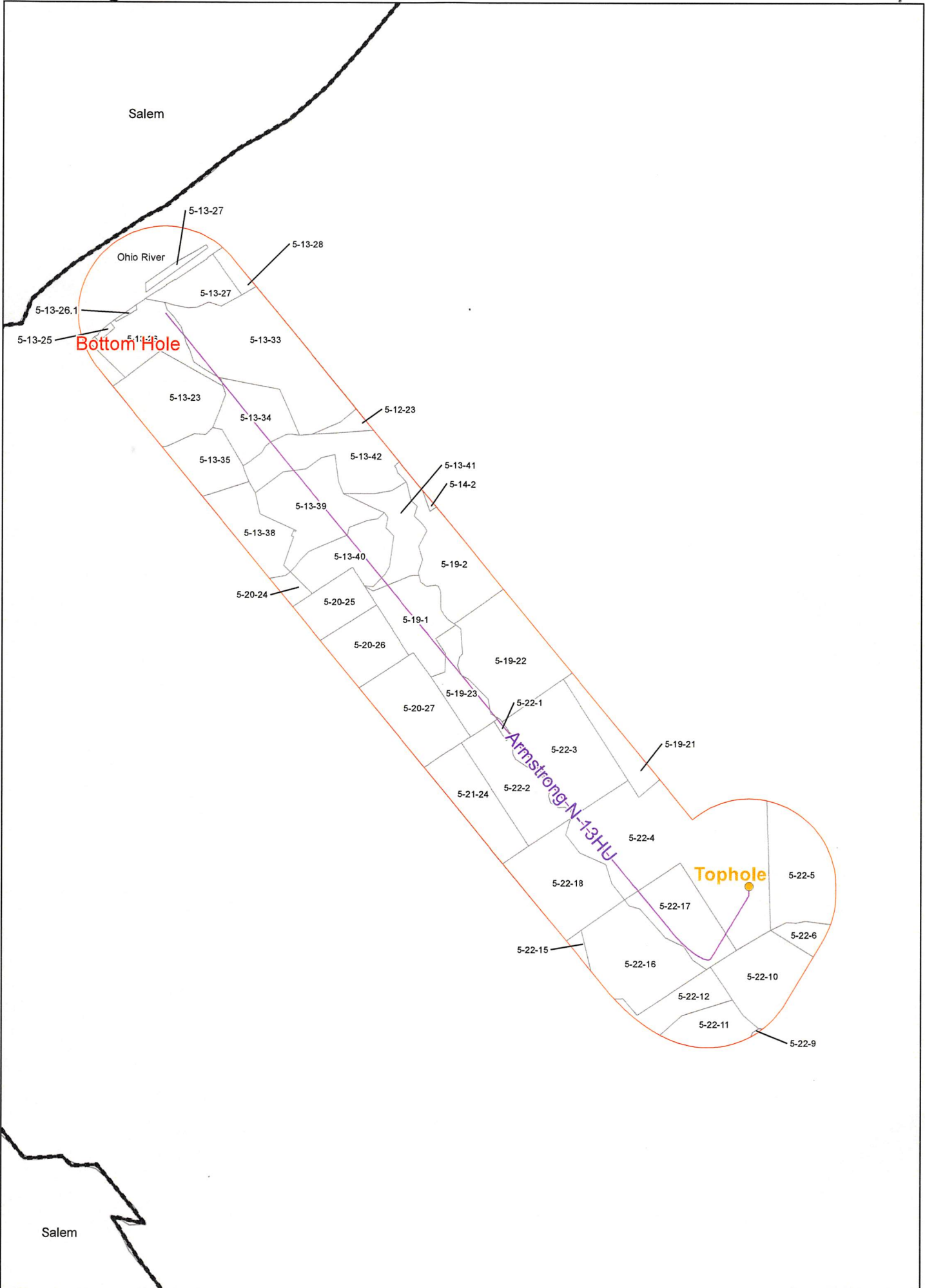
David Jackson
P.S. 708



TUG HILL
OPERATING

API: 047-051-02259 H 104
STATE: WV
COUNTY: Marshall
DISTRICT: Franklin
WELL #1: Armstrong 1N-13HU
OPERATOR'S: WOPD

REVISID DATE: 01/22/2020
DATE: 07/26/2019
PAGE 4 OF 4
WELL PLAT



Coordinate System: NAD 1983 UTM Zone 17N
 Projection: Transverse Mercator
 Datum: North American 1983
 Spheroid: GRS 1980
 False easting: 1640,416,6667
 False northing: 0.0000
 Central meridian: -81.0000
 Scale factor: 0.9999
 False of origin: 0.0000
 Units: Foot US

CONFIDENTIAL



— Utica Well
 □ 1500 Foot Buffer

Armstrong N-13HU
 Operators within 1500 Feet of Well Borehole



47-051-022591001

WW-6A1
(5/13)

Operator's Well No. Armstrong N-13HU

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
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*See attached pages

***Co-tenancy utilization – At least 7 mineral owners in tract. At least 75% of the royalty owners have executed a lease on the tract. The interests of the remaining co-tenants were acquired pursuant to the Co-tenancy Modernization and Majority Protection Act.**

**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Tug Hill Operating, LLC
 By: Amy L. Morris *Amy L Morris*
 Its: Permitting Specialist - Appalachia Region

S-02259 MON

WW-6A1 (Wellbore Tracts)

Operator's Well No. Armstrong N - 13HU

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Page	Assignment	Assignment	Assignment	Assignment
10*19529	A	5-22-5	CNX GAS COMPANY LLC	TH EXPLORATION, LLC	1/8+	733	500	NA	NA	NA	NA
10*14033	B	5-22-4	LAMOYNE BAKER	GASTAR EXPLORATION USA INC	1/8+	665	554	NA	23/353 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14034	B	5-22-4	LAWRENCE C AND LORRAINE J MCWHORTER	GASTAR EXPLORATION USA INC	1/8+	665	391	NA	23/353 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14035	B	5-22-4	PEGGY MAE WHITE	GASTAR EXPLORATION USA INC	1/8+	695	446	NA	23/353 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14036	B	5-22-4	WILDA WINTERS	GASTAR EXPLORATION USA INC	1/8+	701	579	NA	23/353 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14037	B	5-22-4	JUDITH L CHAMBERS	GASTAR EXPLORATION USA INC	1/8+	701	577	NA	23/353 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14039	B	5-22-4	CHESTNUT HOLDINGS LLC	GASTAR EXPLORATION INC	1/8+	827	554	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14418	C	5-22-10	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14418	D	5-22-12	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14507	E	5-22-17	MARY THERESA SOLEAU AND THOMAS SOLEAU	GASTAR EXPLORATION USA INC	1/8+	749	524	NA	26/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14508	E	5-22-17	JEAN W FOSTER	GASTAR EXPLORATION USA INC	1/8+	752	200	NA	26/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14509	E	5-22-17	JAMES ROBERT WELLS	GASTAR EXPLORATION USA INC	1/8+	752	202	NA	26/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14510	E	5-22-17	MARY AGNES CARROLL	GASTAR EXPLORATION USA INC	1/8+	749	528	NA	26/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14511	E	5-22-17	ELIZABETH JANE KELLER	GASTAR EXPLORATION USA INC	1/8+	754	242	NA	26/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14513	E	5-22-17	CAROLYN LYNN PORTER	GASTAR EXPLORATION USA INC	1/8+	767	256	NA	26/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14514	E	5-22-17	CHARLES ARTHUR WELLS	GASTAR EXPLORATION USA INC	1/8+	768	494	NA	26/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC

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10*14515	E	5-22-17	JERRY TODD WELLS	GASTAR EXPLORATION USA INC	1/8+	773	572	NA	26/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14516	E	5-22-17	JAMES NESBITT WELLS BY JOANIE WELLS AIF	GASTAR EXPLORATION USA INC	1/8+	773	570	NA	26/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14517	E	5-22-17	CARL W BACH JR	GASTAR EXPLORATION INC	1/8+	852	250	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14518	E	5-22-17	RAE ELLEN FLOYD AND KENNETH FLOYD	GASTAR EXPLORATION INC	1/8+	854	599	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14519	E	5-22-17	DOUGLAS M BACH	GASTAR EXPLORATION INC	1/8+	854	597	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*16471	E	5-22-17	CNX GAS COMPANY LLC	TH EXPLORATION, LLC	1/8+	905	155	NA	NA	NA	NA
10*16652	E	5-22-17	MARY JUDITH BRANSON AND MICHAEL L BRANSON	TH EXPLORATION, LLC	1/8+	942	35	NA	NA	NA	NA
10*16674	E	5-22-17	CHARLOTTE A KASTELIC	TH EXPLORATION, LLC	1/8+	942	37	NA	NA	NA	NA
10*26910	E	5-22-17	BRIDGET S AND DARRELL T GATES *	TH EXPLORATION, LLC	1/8+	1045	419	NA	NA	NA	NA
10*26940	E	5-22-17	PATRICK N WELLS *	TH EXPLORATION, LLC	1/8+	1045	413	NA	NA	NA	NA
10*14457	F	5-22-16	HARRY LEE GOUDY	GASTAR EXPLORATION USA INC	1/8+	731	140	NA	735/263 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14457	G	5-22-18	HARRY LEE GOUDY	GASTAR EXPLORATION USA INC	1/8+	731	140	NA	735/263 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14418	H	5-22-2	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14608	I	5-22-3	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	827	560	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14520	J	5-22-1	BONNIE GRISELL	GASTAR EXPLORATION USA INC	1/8+	756	81	NA	26/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC

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10*14521	J	5-22-1	ANITA MAE MASON	GASTAR EXPLORATION USA INC	1/8+	752	218	NA	26/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14581	K	5-19-22	CAROL BORDNER	CHESAPEAKE APPALACHIA LLC	1/8+	693	609	NA	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14582	K	5-19-22	DALE F MCINTIRE	CHESAPEAKE APPALACHIA LLC	1/8+	694	104	NA	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14583	K	5-19-22	BRADLEY DEMENT AKA BRADLEY F DEMENT	CHESAPEAKE APPALACHIA LLC	1/8+	694	79	24/338 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14584	K	5-19-22	RAY F MCINTIRE AKA FRANCIS RAY MCINTIRE	CHESAPEAKE APPALACHIA LLC	1/8+	693	620	NA	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14585	K	5-19-22	WILBUR L BLAND	CHESAPEAKE APPALACHIA LLC	1/8+	694	543	23/479 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14586	K	5-19-22	CAROLYN MCINTIRE HICKERSON	CHESAPEAKE APPALACHIA LLC	1/8+	694	546	23/479 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14587	K	5-19-22	CHERYL FIDLER	CHESAPEAKE APPALACHIA LLC	1/8+	694	550	23/479 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC

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10*14588	K	5-19-22	LLOYD E MCINTYRE II	CHESAPEAKE APPALACHIA LLC	1/8+	694	565	NA	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14589	K	5-19-22	BETTY JEAN HARBOUR	CHESAPEAKE APPALACHIA LLC	1/8+	694	569	23/479 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14590	K	5-19-22	CHARLES HARBOUR AND CAROL J HARBOUR	CHESAPEAKE APPALACHIA LLC	1/8+	694	540	23/479 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14591	K	5-19-22	JUDY L MCINTIRE	CHESAPEAKE APPALACHIA LLC	1/8+	694	553	NA	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14592	K	5-19-22	NORA JEAN TRUEX	CHESAPEAKE APPALACHIA LLC	1/8+	696	639	23/512 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14593	K	5-19-22	KEITH MCINTYRE AND TAMMY MCINTYRE	CHESAPEAKE APPALACHIA LLC	1/8+	696	17	23/479 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14594	K	5-19-22	KAREN M ECKELBERRY	CHESAPEAKE APPALACHIA LLC	1/8+	696	13	23/512 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC

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10*14595	K	5-19-22	JUDY A ADAMS	CHESAPEAKE APPALACHIA LLC	1/8+	696	643	23/512 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14596	K	5-19-22	MARY LEE LOWE	CHESAPEAKE APPALACHIA LLC	1/8+	696	9	23/512 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14597	K	5-19-22	JACKIE MCINTIRE STEPHANIE A CRISS, POA	CHESAPEAKE APPALACHIA LLC	1/8+	702	218	NA	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties Inc to Gastar	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14598	K	5-19-22	GEORGE A KNUTH AND KELLY A KNUTH	GASTAR EXPLORATION USA INC	1/8+	741	523	NA	26/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14599	K	5-19-22	ESTATE OF KATHRYN G NOFFSINGER MICHAEL E MCINTIRE, GUARDIAN	GASTAR EXPLORATION INC	1/8+	839	522	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14600	K	5-19-22	PAMELA HARTZLER	GASTAR EXPLORATION INC	1/8+	839	525	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14601	K	5-19-22	TERRY MCINTIRE	GASTAR EXPLORATION INC	1/8+	840	158	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14459	L	5-19-23	HELEN CROSKEY & WILLIAM DENOON CO-TRUSTEES, JANIE L DENOON TRUST	GASTAR EXPLORATION USA INC	1/8+	731	145	NA	735/263 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14307	M	5-20-27	SALLY CYNTHIA HOPKINS	GASTAR EXPLORATION USA INC	1/8+	777	572	NA	24/332 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14308	M	5-20-27	MARY E BASSETT	GASTAR EXPLORATION USA INC	1/8+	779	492	NA	24/332 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14309	M	5-20-27	ROBERT B THOMAS	GASTAR EXPLORATION USA INC	1/8+	779	484	NA	24/332 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14310	M	5-20-27	JEAN C THOMAS	GASTAR EXPLORATION USA INC	1/8+	781	614	NA	24/332 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14324	M	5-20-27	RUTH E BASSETT MEADOWS	GASTAR EXPLORATION USA INC	1/8+	792	100	NA	29/157 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC

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10*14325	M	5-20-27	ELIZABETH ANN STRAUSBAUGH	GASTAR EXPLORATION USA INC	1/8+	792	104	NA	29/157 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14326	M	5-20-27	JANET LEA BLANKENSHIP	GASTAR EXPLORATION USA INC	1/8+	792	580	NA	30/136 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14418	M	5-20-27	PPG INDUSTRIES, INC.	GASTAR EXPLORATION INC	1/8+	878	610	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14616	N	5-20-26	ROBERT E RINE & DONNA M RINE	CHESAPEAKE APPALACHIA LLC	1/8+	708	250	NA	27/321 Chesapeake Appalachia LLC and Statoil Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14614	O	5-19-1	ROBERT RINE	CHESAPEAKE APPALACHIA LLC	1/8+	708	252	NA	27/321 Chesapeake Appalachia LLC and Statoil Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14040	P	5-19-2	MILTON R NEAL AND LINDA L NEAL	GASTAR EXPLORATION USA INC	1/8+	665	498	NA	23/353 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14041	P	5-19-2	SHIBEN ESTATES INC	GASTAR EXPLORATION USA INC	1/8+	718	496	NA	735/263 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14685	R	5-20-25	ROBERT E. RINE AND DONNA M. RINE	CHESAPEAKE APPALACHIA LLC	1/8+	708	253	NA	27/321 Chesapeake Appalachia LLC and Statoil Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*17099	R	5-20-25	ROBERT RINE	GASTAR EXPLORATION INC	1/8+	852	564	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14502	S	5-13-40	ROBERT E RINE & DONNA M RINE	GASTAR EXPLORATION USA INC	1/8+	752	206	NA	26/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14529	S	5-13-40	HELEN BOWMAN	GASTAR EXPLORATION USA INC	1/8+	790	523	NA	29/157 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14530	S	5-13-40	NANCY L. VENSOSKE	GASTAR EXPLORATION USA INC	1/8+	790	521	NA	29/157 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14531	S	5-13-40	CORA A. WEST	GASTAR EXPLORATION USA INC	1/8+	791	641	NA	29/157 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC

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10*14532	S	5-13-40	JOAN E MENKEMELLER	GASTAR EXPLORATION USA INC	1/8+	791	639	NA	29/157 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14533	S	5-13-40	NANCY L FEISZLI	GASTAR EXPLORATION USA INC	1/8+	792	644	NA	806/1 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14535	S	5-13-40	RALPH W CONNER	GASTAR EXPLORATION USA INC	1/8+	794	513	NA	806/1 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14549	S	5-13-40	REBECCA PAUKNER	GASTAR EXPLORATION USA INC	1/8+	829	603	NA	32/428 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14550	S	5-13-40	CARRIE C WARREN	GASTAR EXPLORATION INC	1/8+	840	156	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14551	S	5-13-40	SHARON S ANTALIS	GASTAR EXPLORATION INC	1/8+	842	392	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14552	S	5-13-40	GLORIA J SILVERIO	GASTAR EXPLORATION INC	1/8+	844	81	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14878	S	5-13-40	ARTHUR BRUCE COULTER	GASTAR EXPLORATION INC	1/8+	839	519	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*17099	S	5-13-40	ROBERT RINE	GASTAR EXPLORATION INC	1/8+	852	564	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14526	T	5-13-39	THOMAS WILLIAM BOWMAN	GASTAR EXPLORATION USA INC	1/8+	761	432	NA	27/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14527	T	5-13-39	VICTORIA BOWMAN	GASTAR EXPLORATION USA INC	1/8+	761	434	NA	27/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14529	T	5-13-39	HELEN BOWMAN	GASTAR EXPLORATION USA INC	1/8+	790	523	NA	29/157 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14530	T	5-13-39	NANCY L. VENSOSKE	GASTAR EXPLORATION USA INC	1/8+	790	521	NA	29/157 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14531	T	5-13-39	CORA A. WEST	GASTAR EXPLORATION USA INC	1/8+	791	641	NA	29/157 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14532	T	5-13-39	JOAN E MENKEMELLER	GASTAR EXPLORATION USA INC	1/8+	791	639	NA	29/157 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14533	T	5-13-39	NANCY L FEISZLI	GASTAR EXPLORATION USA INC	1/8+	792	644	NA	806/1 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14535	T	5-13-39	RALPH W CONNER	GASTAR EXPLORATION USA INC	1/8+	794	513	NA	806/1 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC

51-09259 May

WW-6A1 (Wellbore Tracts)

Operator's Well No. Armstrong N - 13HU

10*14549	T	5-13-39	REBECCA PAUKNER	GASTAR EXPLORATION USA INC	1/8+	829	603	NA	32/428 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC	
10*14550	T	5-13-39	CARRIE C WARREN	GASTAR EXPLORATION INC	1/8+	840	156	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC	
10*14551	T	5-13-39	SHARON S ANTALIS	GASTAR EXPLORATION INC	1/8+	842	392	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC	
10*14552	T	5-13-39	GLORIA J SILVERIO	GASTAR EXPLORATION INC	1/8+	844	81	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC	
10*14878	T	5-13-39	ARTHUR BRUCE COULTER	GASTAR EXPLORATION INC	1/8+	839	519	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC	
10*17108	T	5-13-39	THOMAS WILLIAM BOWMAN	GASTAR EXPLORATION INC	1/8+	850	263	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC	
10*17109	T	5-13-39	VICTORIA BOWMAN	GASTAR EXPLORATION INC	1/8+	850	260	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC	
10*14526	U	5-13-38	THOMAS WILLIAM BOWMAN	GASTAR EXPLORATION USA INC	1/8+	761	432	NA	27/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC	
10*14527	U	5-13-38	VICTORIA BOWMAN	GASTAR EXPLORATION USA INC	1/8+	761	434	NA	27/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC	
10*14526	W	5-13-42	THOMAS WILLIAM BOWMAN	GASTAR EXPLORATION USA INC	1/8+	761	432	NA	27/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC	
10*14527	W	5-13-42	VICTORIA BOWMAN	GASTAR EXPLORATION USA INC	1/8+	761	434	NA	27/639 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC	
10*14701	X	5-13-33	ROSEITA M THORNTON	GASTAR EXPLORATION INC	1/8+	885	600	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC	
10*14702	X	5-13-33	NATHAN D YODER	CHESAPEAKE APPALACHIA LLC	1/8+	708	71		27/321 Chesapeake Appalachia LLC and Statoil Onshore Properties Inc to	35/575 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*17627	X	5-13-33	NATHAN D YODER	TH EXPLORATION, LLC	1/8+	917	62	NA	NA	NA	NA	
10*18191	Y	5-13-34	DAVID J AND MIRIAM MAST	TH EXPLORATION, LLC	1/8+	952	183	NA	NA	NA	NA	

61-02259 MW

WW-6A1 (Wellbore Tracts)

Operator's Well No. Armstrong N - 13HU

10*14618	Z	5-13-35	DAVID J AND MIRIAM MAST	CHESAPEAKE APPALACHIA LLC	1/8+	707	645	NA	27/321 Chesapeake Appalachia LLC and Statoil Onshore Properties Inc to Gastar	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14701	Z	5-13-35	ROSEITA M THORNTON	GASTAR EXPLORATION USA INC	1/8+	885	600	NA	35/575 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14700	AA	5-13-23	DAVID J AND MIRIAM MAST	CHESAPEAKE APPALACHIA LLC	1/8+	708	239	NA	27/321 Chesapeake Appalachia LLC and Statoil Onshore Properties Inc to Gastar	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14701	AA	5-13-23	ROSEITA M THORNTON	GASTAR EXPLORATION INC	1/8+	885	600	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*14615	CC	5-20-24	ROBERT RINE	CHESAPEAKE APPALACHIA LLC	1/8+	708	251	NA	27/321 Chesapeake Appalachia LLC and Statoil Onshore Properties Inc to Gastar Exploration USA Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II LLC
10*16538	DD	5-13-27	AMP FUND III LP	TH EXPLORATION, LLC	1/8+	915	187	NA	NA	NA	NA
<p>*Co-tenancy utilization – At least 7 mineral owners in tract. At least 75% of the royalty owners have executed a lease on the tract. The interests of the remaining co-tenants were acquired pursuant to the Co-tenancy Modernization and</p>											

51-02259 MOD

MAR 1 1 2016
MARSHALL County 01:22:38 PM
Instrument No 1403489
Date Recorded 04/27/2016
Document Type ASN
Pages Recorded 77
Book-Page 36-9
Recording Fee \$77.00
Additional \$13.00

WHEN RECORDED RETURN TO:
TH Exploration II, LLC
1320 South University Drive, Suite 500
Fort Worth, Texas 76107
Attn: David Kalish

Execution Version

ASSIGNMENT AND BILL OF SALE

STATE OF WV §
 § KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF MARSHALL §

THIS ASSIGNMENT AND BILL OF SALE (this "Assignment"), dated April 7, 2016, but effective as of 7:00 A.M. Houston time on January 1, 2016 (the "Effective Time"), is between Gatar Exploration Inc., a Delaware corporation, whose address is 1331 Lamar Street, Suite 650 Houston, Texas 77010 ("Assignor"), and TH Exploration II, LLC, a Texas limited liability company, whose address is 1320 South University Drive, Suite 500, Fort Worth, Texas 76107 ("Assignee"). Assignor and Assignee are each, individually, referred to herein as a "Party" and, collectively, as the "Parties".

Capitalized terms used but not defined herein shall have the respective meanings set forth in that certain Purchase and Sale Agreement (the "Purchase Agreement"), dated as of February 19, 2016, by and between Assignor and Assignee (as successor-in-interest).

Section 1. Assignment. The conveyance and assignment herein shall be deemed effective as of the Effective Time.

For Ten Dollars (\$10.00) and other good and valuable consideration (the receipt and sufficiency of which are hereby acknowledged), Assignor does hereby forever GRANT, BARGAIN, SELL, CONVEY, ASSIGN, TRANSFER, SET OVER AND DELIVER unto Assignee, all of Assignor's right, title and interest in and to the following interests and properties (such right, title and interest described in subsections (a) through (k) of this Section 1, less and except the Excluded Assets, collectively, the "Conveyed Interests"):

(a) all oil, gas and/or mineral leases of Assignor, together with any and all other right, title and interest of Assignor in and to the leasehold estates created thereby, including subleases, royalties, overriding royalties, net profits interest, carried interests or similar rights or interests in such leases, and together with all rights, privileges, benefits and powers conferred upon Assignor with respect to the use and occupation of the lands covered thereby that may be necessary, convenient or incidental to the possession and enjoyment of such leases, located in Marshall, Wetzel, Doddridge, Harrison, Lewis, Marion, and Monongalia Counties, West Virginia and Greene, Butler, Fayette, Somerset, and Clearfield Counties, Pennsylvania, including those described on Exhibit A—Part 1 attached hereto (subject to any reservations, limitations or depth restrictions described on Exhibit A—Part 1), (Assignor's interest in such leases and other right, title and interest as so limited, the "Leases");

(b) all rights and interests in, under or derived from all unitization agreements in effect with respect to any of the Leases and the units created thereby, including those described

RECEIVED
Office of Oil and Gas

JAN 24 2020

WV Department of
Environmental Protection

51-02259MOD

DPS LAND SERVICES CORP
6000 TOWN CENTER BOULEVARD, SUITE 145
CANNONSBURG PA 15317-5841

BOOK 1029 PAGE 0478

CERTIFICATE OF CONSENT AND EASEMENT

We, the undersigned, for valuable consideration, the receipt and sufficiency of which is hereby acknowledged, being all the owners of the surface of that certain lot, tract or parcel of land located in Franklin District, Marshall County, State of West Virginia, shown on the attached plat or survey, hereby consents and grants an easement, pursuant to West Virginia Code, Section 22C-9-7(b)(4) and Operating Rule 4.4 of the Rules and Regulations of the West Virginia Oil and Gas Conservation Commission, to TH Exploration, LLC, its successors or assigns, for the drilling and operation of a deep well for the production of oil or gas at the location shown on the attached plat or survey.

Executed this 30th day of January, 2019.

CONSOL RCPC LLC

Anthony M. DeBenedictis
BY: Anthony M. DeBenedictis
ITS: Assistant Vice President

Marshall County
Jan Pest, Clerk
Instrument 1450431
02/08/2019 @ 12:48:36 PM
RIGHT OF WAY W/O CONSIDERATION
Book 1029 @ Page 478
Pages Recorded 2
Recording Cost \$ 11.00

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF WASHINGTON

SS:

On this the 30th day of January, 2019, before me, a notary public, the undersigned authority, personally appeared Anthony M. DeBenedictis who acknowledged his self to be the Assistant Vice President of CONSOL RCPC LLC, a limited liability company, and that he as such Assistant Vice President being authorized to do so, executed the foregoing instrument for the purposed therein contained by signing the name of the limited liability company by his self as Assistant Vice President.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission Expires: Feb 18, 2020
Signature/Notary Public: Eugene T. Capp Jr.
Name/Notary Public (print): Eugene T. Capp Jr.

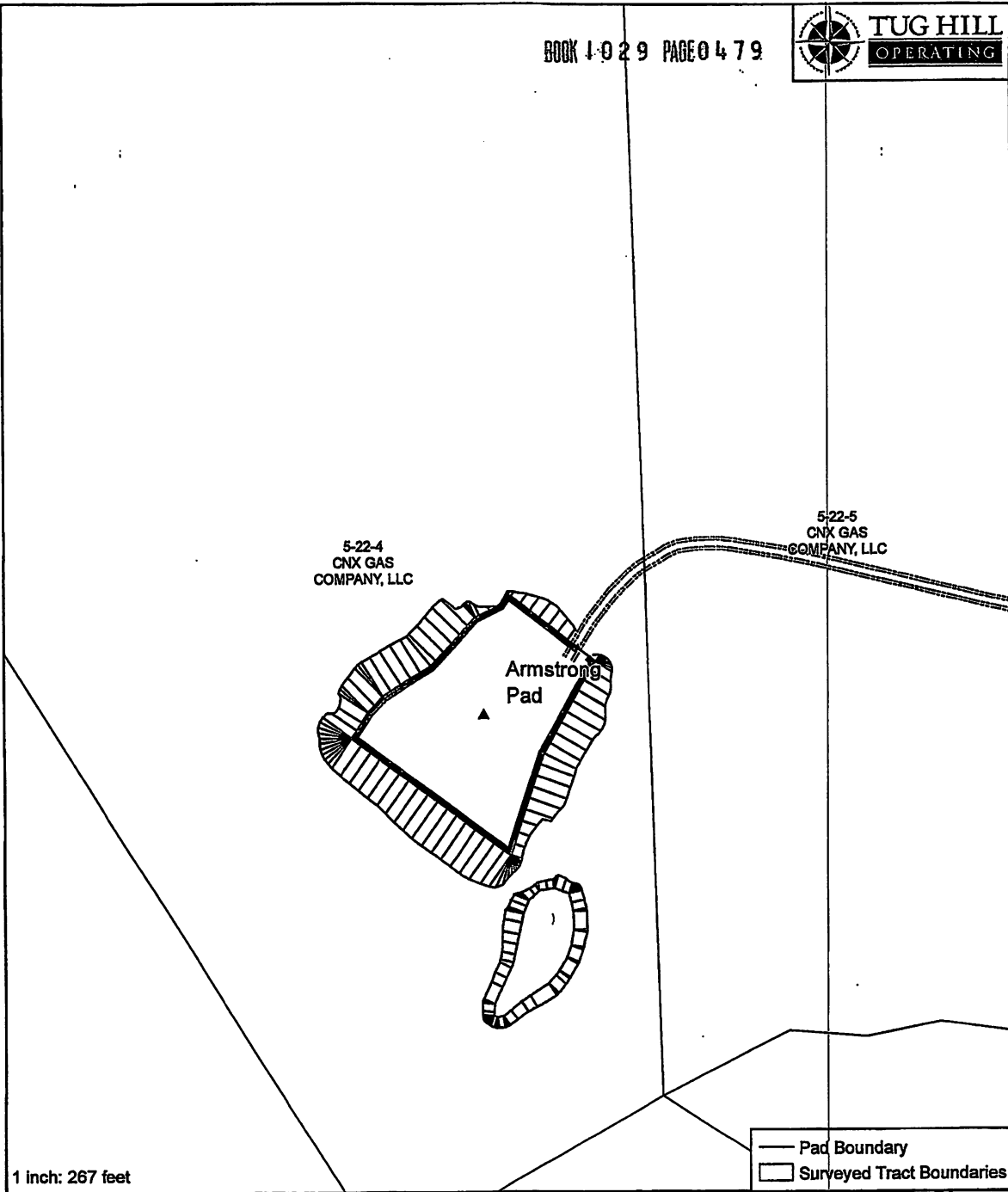
This instrument prepared by:
WV Oil and Gas Conservation Commission
601 57th Street
Charleston, WV 25304

4838-2618-8605v2

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Eugene T. Capp Jr., Notary Public
Moon Twp., Allegheny County
My Commission Expires Feb. 18, 2020
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

RECEIVED
Office of Oil and Gas
JUL 26 2019
WV Department of
Environmental Protection

51-02259 MON



1 inch: 267 feet

0 75 150 300 Feet

N

NOTE: THE APPROXIMATE LOCATIONS FOR THE SURFACE USE, ACCESS ROAD, TOWER OPERATING THE LOCATION OF THIS PROPERTY TO THE HORIZONTAL AS SHOWN BY THESE PADDED LINES, INDICATE THEIR ACTUAL LOCATIONS NOT NEAR AS THIS EXCEPT BY THE EXACT REPRESENTATION. THE ACTUAL PROPERTY TO BE BOUND BY THESE PADDED LINES IS SHOWN BY THE ACTUAL BOUNDARIES AND THE APPROXIMATE LOCATIONS OF THE SURFACE USE, ACCESS ROAD AND TOWER OPERATING ARE SHOWN BY THE DOTTED LINES AS ACTUALLY CONSTRUCTED.

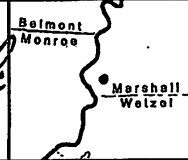
"Plat"

CNX GAS COMPANY, LLC
Marshall County, WV

Date: 2/1/19

Name: Anthony M. Murray

Name: Anthony M. Mordak



STATE OF WEST VIRGINIA, MARSHALL COUNTY, SCT.:

I, JAN PEST, Clerk of the County Commission of said County, do hereby certify that the annexed writing, bearing date on the 30th day of January, 2019, was presented for and by me, admitted to record in my office upon the above certificate as to the parties therein named this 8th day of February, 2019 at 12:48 o'clock P. M.

TESTE: Jan Pest Clerk



west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street SE, Charleston, WV 25304
304-414-1239

Randall M. Albert, Chairman
dep.wv.gov

January 30, 2020

TH Exploration, LLC
1320 S. University Dr Ste 500
Ft Worth TX 76107

9489 0090 0027 6201 4281 20

RE: Intentional Deviation of New Deep Well
Tug Hill Operating, LLC – Armstrong 1N-13HU

Dear Sir:

Please be advised that Tug Hill Operating, LLC, has applied to the Oil and Gas Conservation Commission for approval to intentionally deviate a new deep well. The Code of State Regulations Title 39 Section 1.4.10 requires that the Commission notify the offset operators of the applicants' intent to deviate the proposed well. You are receiving this notice because you are listed as an offset operator (unleased mineral owner is also an "offset operator") to the proposed well. Any offset operator has ten days to object to the Commission's granting approval to the proposed deviation. If you file an objection, the Commission will schedule a hearing and you will be notified of the date and time to attend.

A copy of the location plat is enclosed for your review. If no objection(s) are received within ten 10 days from the date of delivery, the application will be processed in the normal manner.

If you have any questions please call me at (304) 926-0499, extension 1274.

Sincerely,

Susan Rose
Administrator

encl:



February 5, 2020

Dear Susan Rose:

The following is in response to your request for proof of delivery on your item with the tracking number:
9489 0090 0027 6201 4281 20.

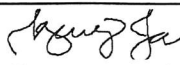
Item Details

Status: Delivered, Front Desk/Reception/Mail Room
Status Date / Time: February 3, 2020, 3:40 pm
Location: FORT WORTH, TX 76107
Postal Product: First-Class Mail®
Extra Services: Certified Mail™
Return Receipt Electronic

Shipment Details

Weight: 3lb, 3.6oz

Recipient Signature

Signature of Recipient:	 SAURNEY JAMES
Address of Recipient:	1320 S University 76107 #500

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Thank you for selecting the United States Postal Service® for your mailing needs. If you require additional assistance, please contact your local Post Office™ or a Postal representative at 1-800-222-1811.

Sincerely,
United States Postal Service®
475 L'Enfant Plaza SW
Washington, D.C. 20260-0004



west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street SE, Charleston, WV 25304
304-414-1239

Randall M. Albert, Chairman
dep.wv.gov

January 30, 2020

Atinum Marcellus I, LLC
1 Riverway Ste 710
Houston TX 77056

9489 0090 0027 6201 4281 37

RE: Intentional Deviation of New Deep Well
Tug Hill Operating, LLC – Armstrong 1N-13HU

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Sincerely,

A handwritten signature in cursive script that reads "Susan Rose". The signature is written in black ink and is positioned above the printed name and title.

Susan Rose
Administrator

encl:



February 5, 2020

Dear Susan Rose:

The following is in response to your request for proof of delivery on your item with the tracking number: **9489 0090 0027 6201 4281 37**.


Item Details

Status:	Delivered, Left with Individual
Status Date / Time:	February 3, 2020, 3:19 pm
Location:	HOUSTON, TX 77056
Postal Product:	First-Class Mail®
Extra Services:	Certified Mail™ Return Receipt Electronic

Shipment Details

Weight:	3lb, 1.2oz
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Recipient Signature

Signature of Recipient:	
Address of Recipient:	KR 1 RIVER 710

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Sincerely,
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475 L'Enfant Plaza SW
Washington, D.C. 20260-0004



west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street SE, Charleston, WV 25304
304-414-1239

Randall M. Albert, Chairman
dep.wv.gov

January 30, 2020

West Virginia Division of Natural Resources
Office of Land & Streams
324 4th Ave Room 200
South Charleston WV 25303

9489 0090 0027 6201 4281 44

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Tug Hill Operating, LLC – Armstrong 1N-13HU

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Sincerely,

Susan Rose
Administrator

encl:



February 5, 2020

Dear Susan Rose:

The following is in response to your request for proof of delivery on your item with the tracking number:
9489 0090 0027 6201 4281 44.

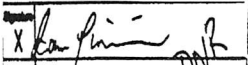
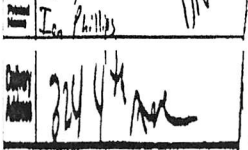
Item Details

Status: Delivered, Left with Individual
Status Date / Time: February 1, 2020, 9:04 am
Location: SOUTH CHARLESTON, WV 25303
Postal Product: First-Class Mail®
Extra Services: Certified Mail™
Return Receipt Electronic

Shipment Details

Weight: 3lb, 2.9oz

Recipient Signature

Signature of Recipient:	
Address of Recipient:	

Note: Scanned image may reflect a different destination address due to Intended Recipient's delivery instructions on file.

Thank you for selecting the United States Postal Service® for your mailing needs. If you require additional assistance, please contact your local Post Office™ or a Postal representative at 1-800-222-1811.

Sincerely,
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475 L'Enfant Plaza SW
Washington, D.C. 20260-0004



west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street SE, Charleston, WV 25304
304-414-1239

Randall M. Albert, Chairman
dep.wv.gov

January 30, 2020

Larry George
Counsel for WVDNR
10 Hale St #205
Charleston WV 25301

9489 0090 0027 6201 4281 51

RE: Intentional Deviation of New Deep Well
Tug Hill Operating, LLC – Armstrong 1N-13HU

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If you have any questions please call me at (304) 926-0499, extension 1274.

Sincerely,

A handwritten signature in cursive script that reads "Susan Rose". The signature is written in black ink and is positioned above the printed name and title.

Susan Rose
Administrator

encl:



February 5, 2020

Dear Susan Rose:

The following is in response to your request for proof of delivery on your item with the tracking number:
9489 0090 0027 6201 4281 51.

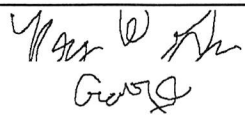

Item Details

Status:	Delivered, Left with Individual
Status Date / Time:	February 4, 2020, 1:18 pm
Location:	CHARLESTON, WV 25301
Postal Product:	First-Class Mail®
Extra Services:	Certified Mail™ Return Receipt Electronic

Shipment Details

Weight:	3lb, 3.4oz
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Recipient Signature

Signature of Recipient:	
Address of Recipient:	

Note: Scanned image may reflect a different destination address due to Intended Recipient's delivery instructions on file.

Thank you for selecting the United States Postal Service® for your mailing needs. If you require additional assistance, please contact your local Post Office™ or a Postal representative at 1-800-222-1811.

Sincerely,
United States Postal Service®
475 L'Enfant Plaza SW
Washington, D.C. 20260-0004

Armstrong N-13HU Offset Operators

WELL	COUNTY	DISTRICT	PARCEL	OWNER	ADDRESS
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-12-23	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-12-23	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-23	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-23	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-25	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-25	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-26	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-26	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-26.1	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-26.1	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-27	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-27	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	Ohio River	WEST VIRGINIA	West Virginia Division of Natural Resources 324 Fourth Ave. South Charles, WV 25303
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-28	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-28	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-33	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-33	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-34	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-35	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-35	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-38	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-38	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-39	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-39	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-40	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-40	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-41	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-41	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-42	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-13-42	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-14-2	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-14-2	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-19-1	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-19-1	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056

Armstrong N-13HU Offset Operators

ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-22-3	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-22-3	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-22-4	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-22-4	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-22-5	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-22-5	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-22-6	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-22-6	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-22-9	TH EXPLORATION, LLC	1320 S. University Blvd. Suite 500 Fort Worth, TX 76107
ARMSTRONG N-13HU	MARSHALL	FRANKLIN	5-22-9	ATINUM MARCELLUS I LLC	1 Riverway Suite 710 Houston, TX 77056