



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, October 15, 2018
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BLVD

CANONSBURG, PA 15317

Re: Permit Modification Approval for HEAVEN HILL 3N-10HU
47-051-02016-00-00

Modified for Lateral Extension

TUG HILL OPERATING, LLC

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

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

James A. Martin
Chief

Operator's Well Number: HEAVEN HILL 3N-10HU
Farm Name: RICKY L. WHITLATCH
U.S. WELL NUMBER: 47-051-02016-00-00
Horizontal 6A New Drill
Date Modification Issued: October 15, 2018

Promoting a healthy environment.



west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street SE, Charleston, WV 25304
304-926-0499 Ext 1274

Barry K. Lay, Chairman
dep.wv.gov

October 8, 2018

Department of Environmental Protection
Office of Oil and Gas
Charleston, WV 25304

RE: Application for Deep Well Permit – API #47-051-02016

COMPANY: Tug Hill Operating, LLC

FARM: Tug Hill Operating, LLC Heaven Hill 3N-10HU

COUNTY: Marshall DISTRICT: Meade QUAD: Glen Easton 7.5'

The deep well review of the application for the above company is Approved to drill to Trenton for Point Pleasant completion.

The applicant has complied with the provision of Chapter 22C-9, of the Code of West Virginia, nineteen hundred and thirty-one (1931), as amended, Oil and Gas Conservation Commission as follows:

1. Comments to Notice of Deviation filed? No.
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: 47-051-01960, 47-051-01961, 47-051-01967, 47-051-1968, 47-051-01969, 47-051-01910, 47-051-01911, 47-051-01912, 47-051-01952, and 47-051-01957
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

A handwritten signature in blue ink that reads 'Susan Rose'. The signature is fluid and cursive, with the first name 'Susan' being more prominent than the last name 'Rose'.

Susan Rose
Administrator

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 Meade Glen Easton 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Heaven Hill 3N-10HU Well Pad Name: Heaven Hill 3

3) Farm Name/Surface Owner: Ricky L. Whitlatch Public Road Access: Yeater Land CR 21/11

4) Elevation, current ground: 1339' Elevation, proposed post-construction: 1326'

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

Handwritten signature and date: 7/8/18

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant is the target formation at a depth of 11,620' - 11,748' thickness of 128' and anticipated pressure of approx. 7500 psi

8) Proposed Total Vertical Depth: 11,898'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 19,203'

11) Proposed Horizontal Leg Length: 6,549'

12) Approximate Fresh Water Strata Depths: 70', 1038'

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: Sewickly Coal - 946' and Pittsburgh Coal - 1031'

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

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

(a) If Yes, provide Mine Info: Name: Marshall County Coal Co. / Marshall County Mine
Depth: 1031' TVD and 308' subsea level
Seam: Pittsburgh #8
Owner: Murray Energy / Consolidated Coal Co.

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#	1,120'	1,120'	1794ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2,875'	2,875'	2033ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	47#	10,516'	10,516'	3436ft^3(CTS)
Production	5 1/2"	NEW	P110	23#	19,203'	19,203'	4578ft^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		12,063'	
Liners							

Handwritten signature and date: 7/5/18

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 3/8"			14,530	11,624		
Liners							

PACKERS

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

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JW
3/6/18

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. 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 16,372,500 lb proppant and 253,131 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 18.43

22) Area to be disturbed for well pad only, less access road (acres): 7.15

23) Describe centralizer placement for each casing string:

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

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

*See Attachment

25) Proposed borehole conditioning procedures:

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

*Note: Attach additional sheets as needed.

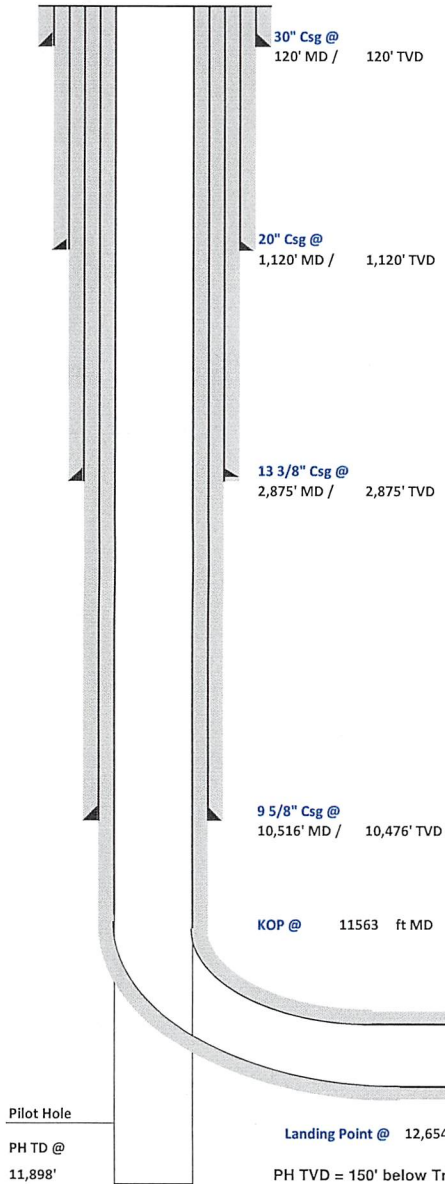


WELL NAME: **Heaven Hill 3N-10HU**
 STATE: **West Virginia** COUNTY: **Marshall**
 DISTRICT: **Meade**
 DF Elev: **1,326'** GL Elev: **1,326'**
 TD: **19,203'**
 TH Latitude: **39.808664**
 TH Longitude: **-80.693348**
 BH Latitude: **39.817871**
 BH Longitude: **-80.708785**

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1,038'
Sewickley Coal	946'
Pittsburgh Coal	1,031'
Big Lime	2,196'
Berea	2,759'
Tully	6,697'
Marcellus	6,808'
Onondaga	6,859'
Salina	7,565'
Lockport	8,569'
Utica	11,358'
Point Pleasant	11,620'
Landing Depth	11,667'
Trenton	11,748'
Pilot Hole TD	11,898'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	26	20	1,120'	1,120'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,875'	2,875'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,516'	10,476'	47	HP110	Surface
Production	8 1/2	5 1/2	19,203'	11,553'	23	P110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,937	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,202	A	15	Air	1 Centralizer every other jt
Intermediate 2	2,796	A	14.5	Air	1 Centralizer every other jt
Production	3,935	A	15	Air / SOBM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



Handwritten signature and date: 7/15/18

Pilot Hole
 PH TD @ 11,898'
 Landing Point @ 12,654 MD / 11,667 TVD
 PH TVD = 150' below Trenton Top

Lateral TD @ 19,203' ft MD
 11,553' ft TVD

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51-020161000



Tug Hill Operating, LLC Casing and Cement Program

Heaven Hill 3N-10HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	1,120'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,875'	CTS
Intermediate 2	9 5/8"	HP110	12 1/4"	10,516'	CTS
Production	5 1/2"	P110	8 1/2"	19,203'	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

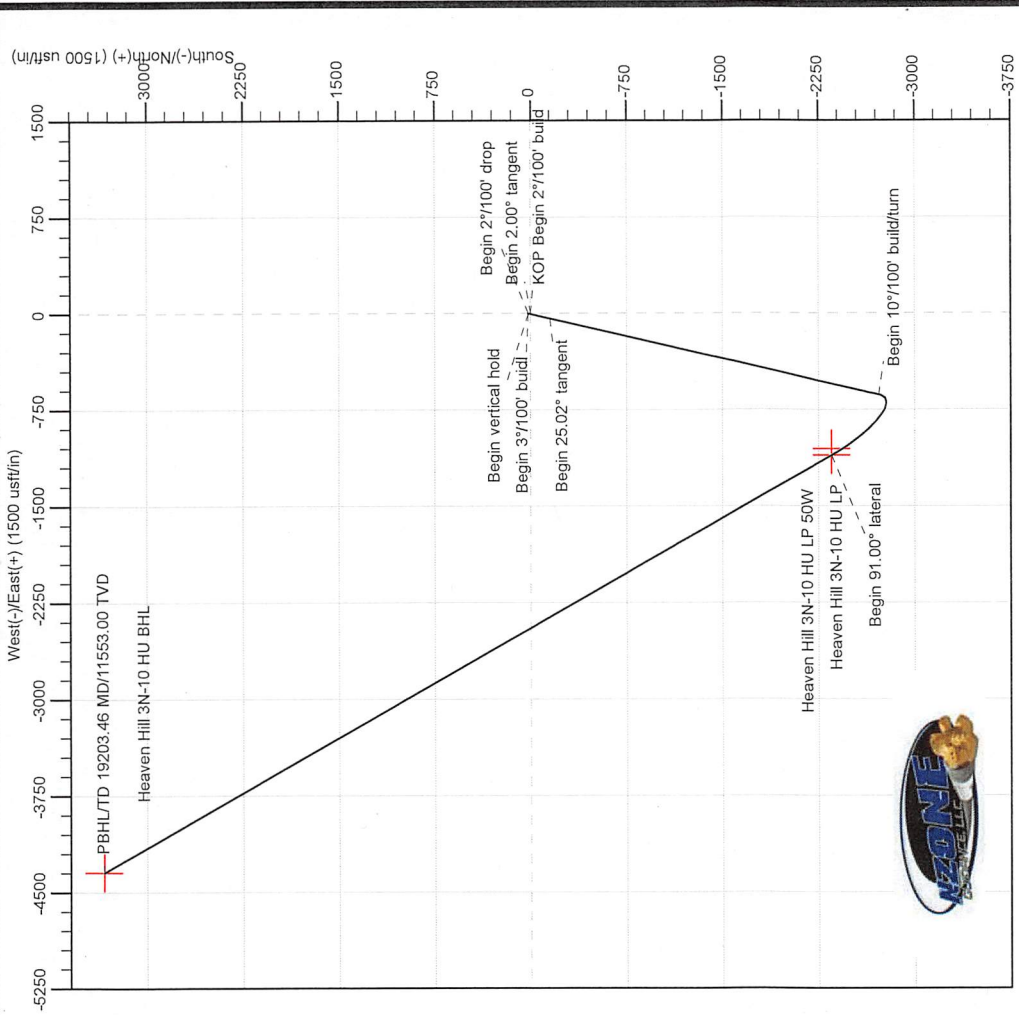
Production: 50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.18

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51-02016 MD



Well: Heaven Hill 3N-10 HU (D)
Site: Heaven Hill 3
Project: Marshall County, West Virginia
Design: rev1



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	T-face	Vsect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2°/100' build
2	1500.00	2.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	Begin 2.00° tangent
3	1600.00	2.00	0.00	1599.98	1.75	0.00	2.00	0.00	1.06	Begin 2°/100' drop
4	2100.00	0.00	0.00	2099.68	19.19	0.00	0.00	0.00	11.69	Begin vertical hold
5	2200.00	0.00	0.00	2199.65	20.94	0.00	0.00	180.00	12.75	Begin 37°100' build
6	4500.35	0.00	0.00	4500.00	20.94	0.00	0.00	0.00	12.75	Begin 37°100' build
7	5334.44	25.02	193.00	5307.83	-153.73	-40.33	3.00	193.00	-61.65	Begin 25.02° tangent
8	11563.35	25.02	193.00	10952.09	-2720.87	-633.18	10.00	134.22	-555.14	Begin 107°100' build/turn
9	12654.13	91.00	330.36	11667.00	-2353.35	-1107.52	10.00	134.22	-555.14	Begin 91.00° lateral
10	19203.46	91.00	330.36	11553.00	3338.06	-4346.11	0.00	0.00	5480.08	PBH/UTD 19203.46 MD/11553.00 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)

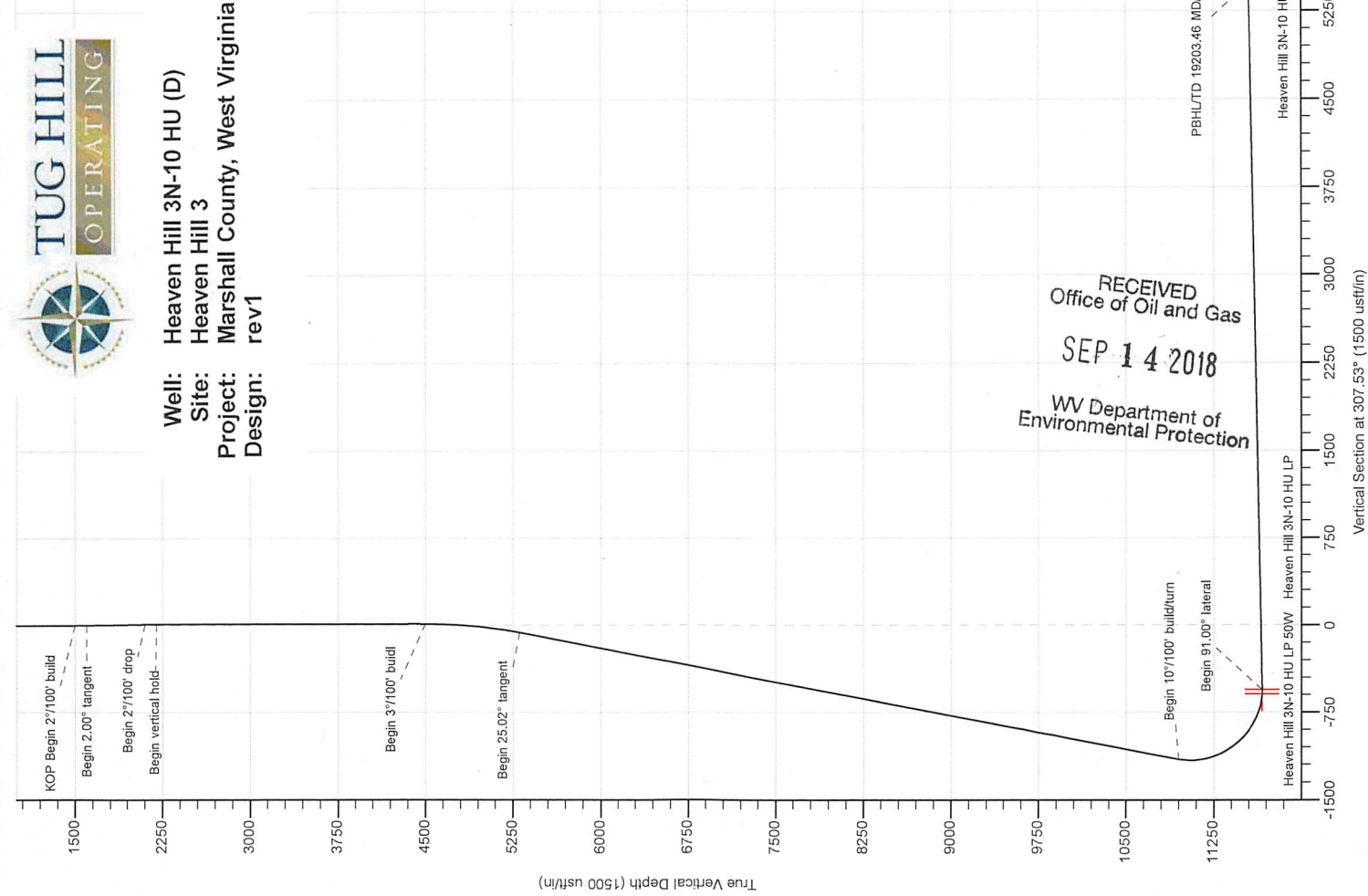
System Datum: Mean Sea Level
 Depth Reference: GL @ 1326.00usft

Northing: 14457209.00
 Easting: 1726534.14
 Latitude: 39.80866400
 Longitude: -80.69334800

Magnetic Field
 Strength: 52107.8enT
 Dip Angle: 66.92°
 Date: 2/9/2018
 Model: IGRF2015

Azimuths to Grid North
 True North: -0.20°
 Magnetic North: -8.92°

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.92°



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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-10 HU (D)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3N-10 HU (D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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

Site	Heaven Hill 3				
Site Position:		Northing:	14,457,178.77 usft	Latitude:	39.80858060
From:	Lat/Long	Easting:	1,726,571.98 usft	Longitude:	-80.69321360
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.20 °

Well	Heaven Hill 3N-10 HU (D)					
Well Position	+N/-S	0.00 usft	Northing:	14,457,209.01 usft	Latitude:	39.80866400
	+E/-W	0.00 usft	Easting:	1,726,534.14 usft	Longitude:	-80.69334800
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	1,326.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/9/2018	-8.72	66.92	52,107.76439202

Design	rev1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	307.53

Plan Survey Tool Program	Date	2/12/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	19,203.46 rev1 (Original Hole)	MWD MWD - Standard	



Planning Report - Geographic

51-02016 MOD

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-10 HU (D)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3N-10 HU (D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,600.00	2.00	0.01	1,599.98	1.75	0.00	2.00	2.00	0.00	0.01	
2,100.00	2.00	0.01	2,099.68	19.19	0.00	0.00	0.00	0.00	0.00	
2,200.00	0.00	0.01	2,199.65	20.94	0.00	2.00	-2.00	0.00	180.00	
4,500.35	0.00	0.01	4,500.00	20.94	0.00	0.00	0.00	0.00	0.01	
5,334.44	25.02	193.00	5,307.83	-153.73	-40.33	3.00	3.00	-20.02	193.00	
11,563.35	25.02	193.00	10,952.09	-2,720.87	-633.18	0.00	0.00	0.00	0.00	
12,654.13	91.00	330.36	11,667.00	-2,353.35	-1,107.52	10.00	6.05	12.59	134.22	Heaven Hill 3N-10 HL
19,203.46	91.00	330.36	11,553.00	3,338.06	-4,346.11	0.00	0.00	0.00	0.00	Heaven Hill 3N-10 HL

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Planning Report - Geographic

51-02016 Map

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-10 HU (D)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3N-10 HU (D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
100.00	0.00	0.00	100.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
200.00	0.00	0.00	200.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
300.00	0.00	0.00	300.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
400.00	0.00	0.00	400.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
500.00	0.00	0.00	500.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
600.00	0.00	0.00	600.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
700.00	0.00	0.00	700.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
800.00	0.00	0.00	800.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
900.00	0.00	0.00	900.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
KOP Begin 2°/100' build										
1,600.00	2.00	0.01	1,599.98	1.75	0.00	14,457,210.75	1,726,534.14	39.80866879	-80.69334798	
Begin 2.00° tangent										
1,700.00	2.00	0.01	1,699.92	5.24	0.00	14,457,214.24	1,726,534.14	39.80867838	-80.69334793	
1,800.00	2.00	0.01	1,799.86	8.73	0.00	14,457,217.73	1,726,534.14	39.80868796	-80.69334789	
1,900.00	2.00	0.01	1,899.80	12.22	0.00	14,457,221.22	1,726,534.14	39.80869755	-80.69334785	
2,000.00	2.00	0.01	1,999.74	15.70	0.00	14,457,224.71	1,726,534.14	39.80870713	-80.69334780	
2,100.00	2.00	0.01	2,099.68	19.19	0.00	14,457,228.20	1,726,534.14	39.80871672	-80.69334776	
Begin 2°/100' drop										
2,200.00	0.00	0.01	2,199.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
Begin vertical hold										
2,300.00	0.00	0.01	2,299.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
2,400.00	0.00	0.01	2,399.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
2,500.00	0.00	0.01	2,499.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
2,600.00	0.00	0.01	2,599.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
2,700.00	0.00	0.01	2,699.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
2,800.00	0.00	0.01	2,799.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
2,900.00	0.00	0.01	2,899.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,000.00	0.00	0.01	2,999.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,100.00	0.00	0.01	3,099.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,200.00	0.00	0.01	3,199.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,300.00	0.00	0.01	3,299.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,400.00	0.00	0.01	3,399.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,500.00	0.00	0.01	3,499.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,600.00	0.00	0.01	3,599.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,700.00	0.00	0.01	3,699.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,800.00	0.00	0.01	3,799.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,900.00	0.00	0.01	3,899.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
4,000.00	0.00	0.01	3,999.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
4,100.00	0.00	0.01	4,099.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
4,200.00	0.00	0.01	4,199.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
4,300.00	0.00	0.01	4,299.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
4,400.00	0.00	0.01	4,399.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
4,500.00	0.00	0.01	4,499.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
4,500.35	0.00	0.01	4,500.00	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
Begin 3°/100' build										
4,600.00	2.99	193.00	4,599.61	18.41	-0.58	14,457,227.41	1,726,533.55	39.80871456	-80.69334985	
4,700.00	5.99	193.00	4,699.29	10.78	-2.34	14,457,219.79	1,726,531.79	39.80869363	-80.69335622	



Planning Report - Geographic

SI-02016 MOD

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-10 HU (D)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3N-10 HU (D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,800.00	8.99	193.00	4,798.43	-1.92	-5.28	14,457,207.09	1,726,528.86	39.80865878	-80.69336681
4,900.00	11.99	193.00	4,896.74	-19.65	-9.37	14,457,189.35	1,726,524.76	39.80861011	-80.69338162
5,000.00	14.99	193.00	4,993.97	-42.38	-14.62	14,457,166.62	1,726,519.51	39.80854775	-80.69340058
5,100.00	17.99	193.00	5,089.85	-70.03	-21.01	14,457,138.97	1,726,513.13	39.80847187	-80.69342366
5,200.00	20.99	193.00	5,184.11	-102.54	-28.51	14,457,106.47	1,726,505.62	39.80838267	-80.69345078
5,300.00	23.99	193.00	5,276.49	-139.80	-37.12	14,457,069.20	1,726,497.02	39.80828041	-80.69348188
5,334.44	25.02	193.00	5,307.83	-153.72	-40.33	14,457,055.28	1,726,493.80	39.80824222	-80.69349350
Begin 25.02° tangent									
5,400.00	25.02	193.00	5,367.24	-180.74	-46.57	14,457,028.26	1,726,487.56	39.80816807	-80.69351605
5,500.00	25.02	193.00	5,457.85	-221.96	-56.09	14,456,987.05	1,726,478.04	39.80805498	-80.69355044
5,600.00	25.02	193.00	5,548.47	-263.17	-65.61	14,456,945.84	1,726,468.53	39.80794189	-80.69358483
5,700.00	25.02	193.00	5,639.08	-304.38	-75.13	14,456,904.62	1,726,459.01	39.80782880	-80.69361922
5,800.00	25.02	193.00	5,729.69	-345.60	-84.64	14,456,863.41	1,726,449.49	39.80771570	-80.69365362
5,900.00	25.02	193.00	5,820.31	-386.81	-94.16	14,456,822.19	1,726,439.97	39.80760261	-80.69368801
6,000.00	25.02	193.00	5,910.92	-428.02	-103.68	14,456,780.98	1,726,430.46	39.80748952	-80.69372240
6,100.00	25.02	193.00	6,001.54	-469.24	-113.20	14,456,739.77	1,726,420.94	39.80737643	-80.69375679
6,200.00	25.02	193.00	6,092.15	-510.45	-122.72	14,456,698.55	1,726,411.42	39.80726333	-80.69379119
6,300.00	25.02	193.00	6,182.76	-551.66	-132.23	14,456,657.34	1,726,401.90	39.80715024	-80.69382558
6,400.00	25.02	193.00	6,273.38	-592.88	-141.75	14,456,616.13	1,726,392.38	39.80703715	-80.69385997
6,500.00	25.02	193.00	6,363.99	-634.09	-151.27	14,456,574.91	1,726,382.87	39.80692406	-80.69389436
6,600.00	25.02	193.00	6,454.60	-675.30	-160.79	14,456,533.70	1,726,373.35	39.80681096	-80.69392875
6,700.00	25.02	193.00	6,545.22	-716.52	-170.30	14,456,492.49	1,726,363.83	39.80669787	-80.69396314
6,800.00	25.02	193.00	6,635.83	-757.73	-179.82	14,456,451.27	1,726,354.31	39.80658478	-80.69399754
6,900.00	25.02	193.00	6,726.45	-798.94	-189.34	14,456,410.06	1,726,344.80	39.80647168	-80.69403193
7,000.00	25.02	193.00	6,817.06	-840.16	-198.86	14,456,368.85	1,726,335.28	39.80635859	-80.69406632
7,100.00	25.02	193.00	6,907.67	-881.37	-208.37	14,456,327.63	1,726,325.76	39.80624550	-80.69410071
7,200.00	25.02	193.00	6,998.29	-922.58	-217.89	14,456,286.42	1,726,316.24	39.80613241	-80.69413510
7,300.00	25.02	193.00	7,088.90	-963.80	-227.41	14,456,245.21	1,726,306.73	39.80601931	-80.69416949
7,400.00	25.02	193.00	7,179.52	-1,005.01	-236.93	14,456,203.99	1,726,297.21	39.80590622	-80.69420388
7,500.00	25.02	193.00	7,270.13	-1,046.22	-246.45	14,456,162.78	1,726,287.69	39.80579313	-80.69423827
7,600.00	25.02	193.00	7,360.74	-1,087.44	-255.96	14,456,121.57	1,726,278.17	39.80568004	-80.69427266
7,700.00	25.02	193.00	7,451.36	-1,128.65	-265.48	14,456,080.35	1,726,268.66	39.80556694	-80.69430705
7,800.00	25.02	193.00	7,541.97	-1,169.86	-275.00	14,456,039.14	1,726,259.14	39.80545385	-80.69434144
7,900.00	25.02	193.00	7,632.58	-1,211.08	-284.52	14,455,997.93	1,726,249.62	39.80534076	-80.69437583
8,000.00	25.02	193.00	7,723.20	-1,252.29	-294.03	14,455,956.71	1,726,240.10	39.80522766	-80.69441022
8,100.00	25.02	193.00	7,813.81	-1,293.50	-303.55	14,455,915.50	1,726,230.58	39.80511457	-80.69444461
8,200.00	25.02	193.00	7,904.43	-1,334.72	-313.07	14,455,874.29	1,726,221.07	39.80500148	-80.69447900
8,300.00	25.02	193.00	7,995.04	-1,375.93	-322.59	14,455,833.07	1,726,211.55	39.80488839	-80.69451339
8,400.00	25.02	193.00	8,085.65	-1,417.14	-332.10	14,455,791.86	1,726,202.03	39.80477529	-80.69454778
8,500.00	25.02	193.00	8,176.27	-1,458.36	-341.62	14,455,750.65	1,726,192.51	39.80466220	-80.69458217
8,600.00	25.02	193.00	8,266.88	-1,499.57	-351.14	14,455,709.43	1,726,183.00	39.80454911	-80.69461656
8,700.00	25.02	193.00	8,357.50	-1,540.79	-360.66	14,455,668.22	1,726,173.48	39.80443601	-80.69465095
8,800.00	25.02	193.00	8,448.11	-1,582.00	-370.17	14,455,627.01	1,726,163.96	39.80432292	-80.69468534
8,900.00	25.02	193.00	8,538.72	-1,623.21	-379.69	14,455,585.79	1,726,154.44	39.80420983	-80.69471973
9,000.00	25.02	193.00	8,629.34	-1,664.43	-389.21	14,455,544.58	1,726,144.93	39.80409673	-80.69475412
9,100.00	25.02	193.00	8,719.95	-1,705.64	-398.73	14,455,503.37	1,726,135.41	39.80398364	-80.69478851
9,200.00	25.02	193.00	8,810.56	-1,746.85	-408.25	14,455,462.15	1,726,125.89	39.80387055	-80.69482289
9,300.00	25.02	193.00	8,901.18	-1,788.07	-417.76	14,455,420.94	1,726,116.37	39.80375746	-80.69485728
9,400.00	25.02	193.00	8,991.79	-1,829.28	-427.28	14,455,379.73	1,726,106.85	39.80364436	-80.69489167
9,500.00	25.02	193.00	9,082.41	-1,870.49	-436.80	14,455,338.51	1,726,097.34	39.80353127	-80.69492606
9,600.00	25.02	193.00	9,173.02	-1,911.71	-446.32	14,455,297.30	1,726,087.82	39.80341818	-80.69496045
9,700.00	25.02	193.00	9,263.63	-1,952.92	-455.83	14,455,256.09	1,726,078.30	39.80330508	-80.69499484
9,800.00	25.02	193.00	9,354.25	-1,994.13	-465.35	14,455,214.87	1,726,068.78	39.80319199	-80.69502922
9,900.00	25.02	193.00	9,444.86	-2,035.35	-474.87	14,455,173.66	1,726,059.27	39.80307890	-80.69506361

5102016.MOV



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-10 HU (D)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3N-10 HU (D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
10,000.00	25.02	193.00	9,535.48	-2,076.56	-484.39	14,455,132.45	1,726,049.75	39.80296580	-80.69509800	
10,100.00	25.02	193.00	9,626.09	-2,117.77	-493.90	14,455,091.23	1,726,040.23	39.80285271	-80.69513239	
10,200.00	25.02	193.00	9,716.70	-2,158.99	-503.42	14,455,050.02	1,726,030.71	39.80273962	-80.69516677	
10,300.00	25.02	193.00	9,807.32	-2,200.20	-512.94	14,455,008.81	1,726,021.20	39.80262652	-80.69520116	
10,400.00	25.02	193.00	9,897.93	-2,241.41	-522.46	14,454,967.59	1,726,011.68	39.80251343	-80.69523555	
10,500.00	25.02	193.00	9,988.54	-2,282.63	-531.97	14,454,926.38	1,726,002.16	39.80240034	-80.69526994	
10,600.00	25.02	193.00	10,079.16	-2,323.84	-541.49	14,454,885.17	1,725,992.64	39.80228724	-80.69530432	
10,700.00	25.02	193.00	10,169.77	-2,365.05	-551.01	14,454,843.95	1,725,983.13	39.80217415	-80.69533871	
10,800.00	25.02	193.00	10,260.39	-2,406.27	-560.53	14,454,802.74	1,725,973.61	39.80206106	-80.69537310	
10,900.00	25.02	193.00	10,351.00	-2,447.48	-570.05	14,454,761.53	1,725,964.09	39.80194797	-80.69540748	
11,000.00	25.02	193.00	10,441.61	-2,488.69	-579.56	14,454,720.31	1,725,954.57	39.80183487	-80.69544187	
11,100.00	25.02	193.00	10,532.23	-2,529.91	-589.08	14,454,679.10	1,725,945.05	39.80172178	-80.69547626	
11,200.00	25.02	193.00	10,622.84	-2,571.12	-598.60	14,454,637.89	1,725,935.54	39.80160869	-80.69551064	
11,300.00	25.02	193.00	10,713.46	-2,612.33	-608.12	14,454,596.67	1,725,926.02	39.80149559	-80.69554503	
11,400.00	25.02	193.00	10,804.07	-2,653.55	-617.63	14,454,555.46	1,725,916.50	39.80138250	-80.69557942	
11,500.00	25.02	193.00	10,894.68	-2,694.76	-627.15	14,454,514.25	1,725,906.98	39.80126941	-80.69561380	
11,563.35	25.02	193.00	10,952.09	-2,720.87	-633.18	14,454,488.14	1,725,900.95	39.80119776	-80.69563558	
Begin 10°/100' build/turn										
11,600.00	22.61	199.85	10,985.62	-2,735.05	-637.32	14,454,473.95	1,725,896.82	39.80115885	-80.69565049	
11,700.00	18.16	225.90	11,079.52	-2,764.05	-655.08	14,454,444.95	1,725,879.05	39.80107937	-80.69571409	
11,800.00	18.50	258.06	11,174.69	-2,778.22	-681.86	14,454,430.79	1,725,852.27	39.80104072	-80.69580961	
11,900.00	23.41	282.75	11,268.23	-2,777.11	-716.85	14,454,431.90	1,725,817.29	39.80104409	-80.69593416	
12,000.00	30.78	297.76	11,357.30	-2,760.77	-758.97	14,454,448.24	1,725,775.16	39.80108936	-80.69608394	
12,100.00	39.24	307.12	11,439.19	-2,729.69	-806.96	14,454,479.32	1,725,727.18	39.80117516	-80.69625441	
12,200.00	48.21	313.52	11,511.42	-2,684.81	-859.34	14,454,524.19	1,725,674.79	39.80129889	-80.69644038	
12,300.00	57.46	318.33	11,571.78	-2,627.51	-914.54	14,454,581.50	1,725,619.60	39.80145678	-80.69663621	
12,400.00	66.85	322.22	11,618.46	-2,559.51	-970.87	14,454,649.49	1,725,563.27	39.80164403	-80.69683595	
12,500.00	76.32	325.60	11,650.02	-2,482.89	-1,026.62	14,454,726.11	1,725,507.52	39.80185496	-80.69703352	
12,600.00	85.84	328.72	11,665.51	-2,399.98	-1,080.10	14,454,809.03	1,725,454.04	39.80208316	-80.69722293	
12,654.13	91.00	330.36	11,667.00	-2,353.36	-1,107.52	14,454,855.65	1,725,426.62	39.80221146	-80.69732000	
Begin 91.00° lateral										
12,700.00	91.00	330.36	11,666.20	-2,313.50	-1,130.20	14,454,895.51	1,725,403.93	39.80232114	-80.69740028	
12,800.00	91.00	330.36	11,664.46	-2,226.59	-1,179.65	14,454,982.41	1,725,354.49	39.80256025	-80.69757530	
12,900.00	91.00	330.36	11,662.72	-2,139.69	-1,229.10	14,455,069.31	1,725,305.04	39.80279936	-80.69775032	
13,000.00	91.00	330.36	11,660.98	-2,052.79	-1,278.55	14,455,156.21	1,725,255.59	39.80303847	-80.69792534	
13,100.00	91.00	330.36	11,659.24	-1,965.89	-1,328.00	14,455,243.11	1,725,206.14	39.80327758	-80.69810036	
13,200.00	91.00	330.36	11,657.50	-1,878.99	-1,377.45	14,455,330.01	1,725,156.69	39.80351669	-80.69827538	
13,300.00	91.00	330.36	11,655.76	-1,792.09	-1,426.90	14,455,416.91	1,725,107.24	39.80375579	-80.69845041	
13,400.00	91.00	330.36	11,654.02	-1,705.19	-1,476.35	14,455,503.82	1,725,057.79	39.80399490	-80.69862543	
13,500.00	91.00	330.36	11,652.28	-1,618.29	-1,525.79	14,455,590.72	1,725,008.34	39.80423401	-80.69880046	
13,600.00	91.00	330.36	11,650.54	-1,531.39	-1,575.24	14,455,677.62	1,724,958.89	39.80447312	-80.69897549	
13,700.00	91.00	330.36	11,648.80	-1,444.49	-1,624.69	14,455,764.52	1,724,909.44	39.80471223	-80.69915051	
13,800.00	91.00	330.36	11,647.05	-1,357.59	-1,674.14	14,455,851.42	1,724,859.99	39.80495133	-80.69932554	
13,900.00	91.00	330.36	11,645.31	-1,270.69	-1,723.59	14,455,938.32	1,724,810.54	39.80519044	-80.69950057	
14,000.00	91.00	330.36	11,643.57	-1,183.79	-1,773.04	14,456,025.22	1,724,761.09	39.80542955	-80.69967561	
14,100.00	91.00	330.36	11,641.83	-1,096.88	-1,822.49	14,456,112.12	1,724,711.65	39.80566865	-80.69985064	
14,200.00	91.00	330.36	11,640.09	-1,009.98	-1,871.94	14,456,199.02	1,724,662.20	39.80590776	-80.70002567	
14,300.00	91.00	330.36	11,638.35	-923.08	-1,921.39	14,456,285.92	1,724,612.75	39.80614687	-80.70020071	
14,400.00	91.00	330.36	11,636.61	-836.18	-1,970.84	14,456,372.82	1,724,563.30	39.80638597	-80.70037575	
14,500.00	91.00	330.36	11,634.87	-749.28	-2,020.29	14,456,459.72	1,724,513.85	39.80662508	-80.70055079	
14,600.00	91.00	330.36	11,633.13	-662.38	-2,069.74	14,456,546.62	1,724,464.40	39.80686418	-80.70072583	
14,700.00	91.00	330.36	11,631.39	-575.48	-2,119.19	14,456,633.53	1,724,414.95	39.80710329	-80.70090087	
14,800.00	91.00	330.36	11,629.65	-488.58	-2,168.63	14,456,720.43	1,724,365.50	39.80734239	-80.70107591	
14,900.00	91.00	330.36	11,627.91	-401.68	-2,218.08	14,456,807.33	1,724,316.05	39.80758150	-80.70125095	



Planning Report - Geographic

51-02016MD

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-10 HU (D)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3N-10 HU (D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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Planned Survey

WV Department of
Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,000.00	91.00	330.36	11,626.17	-314.78	-2,267.53	14,456,894.23	1,724,266.60	39.80782060	-80.70142600
15,100.00	91.00	330.36	11,624.43	-227.88	-2,316.98	14,456,981.13	1,724,217.15	39.80805971	-80.70160104
15,200.00	91.00	330.36	11,622.69	-140.98	-2,366.43	14,457,068.03	1,724,167.70	39.80829881	-80.70177609
15,300.00	91.00	330.36	11,620.95	-54.08	-2,415.88	14,457,154.93	1,724,118.25	39.80853791	-80.70195114
15,400.00	91.00	330.36	11,619.20	32.83	-2,465.33	14,457,241.83	1,724,068.81	39.80877702	-80.70212618
15,500.00	91.00	330.36	11,617.46	119.73	-2,514.78	14,457,328.73	1,724,019.36	39.80901612	-80.70230123
15,600.00	91.00	330.36	11,615.72	206.63	-2,564.23	14,457,415.63	1,723,969.91	39.80925522	-80.70247629
15,700.00	91.00	330.36	11,613.98	293.53	-2,613.68	14,457,502.53	1,723,920.46	39.80949432	-80.70265134
15,800.00	91.00	330.36	11,612.24	380.43	-2,663.13	14,457,589.43	1,723,871.01	39.80973343	-80.70282639
15,900.00	91.00	330.36	11,610.50	467.33	-2,712.58	14,457,676.33	1,723,821.56	39.80997253	-80.70300145
16,000.00	91.00	330.36	11,608.76	554.23	-2,762.03	14,457,763.24	1,723,772.11	39.81021163	-80.70317650
16,100.00	91.00	330.36	11,607.02	641.13	-2,811.47	14,457,850.14	1,723,722.66	39.81045073	-80.70335156
16,200.00	91.00	330.36	11,605.28	728.03	-2,860.92	14,457,937.04	1,723,673.21	39.81068983	-80.70352662
16,300.00	91.00	330.36	11,603.54	814.93	-2,910.37	14,458,023.94	1,723,623.76	39.81092893	-80.70370168
16,400.00	91.00	330.36	11,601.80	901.83	-2,959.82	14,458,110.84	1,723,574.31	39.81116803	-80.70387674
16,500.00	91.00	330.36	11,600.06	988.73	-3,009.27	14,458,197.74	1,723,524.86	39.81140713	-80.70405180
16,600.00	91.00	330.36	11,598.32	1,075.63	-3,058.72	14,458,284.64	1,723,475.42	39.81164623	-80.70422687
16,700.00	91.00	330.36	11,596.58	1,162.54	-3,108.17	14,458,371.54	1,723,425.97	39.81188533	-80.70440193
16,800.00	91.00	330.36	11,594.84	1,249.44	-3,157.62	14,458,458.44	1,723,376.52	39.81212443	-80.70457700
16,900.00	91.00	330.36	11,593.10	1,336.34	-3,207.07	14,458,545.34	1,723,327.07	39.81236353	-80.70475207
17,000.00	91.00	330.36	11,591.35	1,423.24	-3,256.52	14,458,632.24	1,723,277.62	39.81260263	-80.70492713
17,100.00	91.00	330.36	11,589.61	1,510.14	-3,305.97	14,458,719.14	1,723,228.17	39.81284173	-80.70510220
17,200.00	91.00	330.36	11,587.87	1,597.04	-3,355.42	14,458,806.04	1,723,178.72	39.81308083	-80.70527728
17,300.00	91.00	330.36	11,586.13	1,683.94	-3,404.86	14,458,892.95	1,723,129.27	39.81331992	-80.70545235
17,400.00	91.00	330.36	11,584.39	1,770.84	-3,454.31	14,458,979.85	1,723,079.82	39.81355902	-80.70562742
17,500.00	91.00	330.36	11,582.65	1,857.74	-3,503.76	14,459,066.75	1,723,030.37	39.81379812	-80.70580250
17,600.00	91.00	330.36	11,580.91	1,944.64	-3,553.21	14,459,153.65	1,722,980.92	39.81403722	-80.70597757
17,700.00	91.00	330.36	11,579.17	2,031.54	-3,602.66	14,459,240.55	1,722,931.47	39.81427631	-80.70615265
17,800.00	91.00	330.36	11,577.43	2,118.44	-3,652.11	14,459,327.45	1,722,882.02	39.81451541	-80.70632773
17,900.00	91.00	330.36	11,575.69	2,205.34	-3,701.56	14,459,414.35	1,722,832.58	39.81475451	-80.70650281
18,000.00	91.00	330.36	11,573.95	2,292.25	-3,751.01	14,459,501.25	1,722,783.13	39.81499360	-80.70667789
18,100.00	91.00	330.36	11,572.21	2,379.15	-3,800.46	14,459,588.15	1,722,733.68	39.81523270	-80.70685297
18,200.00	91.00	330.36	11,570.47	2,466.05	-3,849.91	14,459,675.05	1,722,684.23	39.81547179	-80.70702805
18,300.00	91.00	330.36	11,568.73	2,552.95	-3,899.36	14,459,761.95	1,722,634.78	39.81571089	-80.70720313
18,400.00	91.00	330.36	11,566.99	2,639.85	-3,948.81	14,459,848.85	1,722,585.33	39.81594999	-80.70737822
18,500.00	91.00	330.36	11,565.24	2,726.75	-3,998.26	14,459,935.75	1,722,535.88	39.81618908	-80.70755331
18,600.00	91.00	330.36	11,563.50	2,813.65	-4,047.70	14,460,022.66	1,722,486.43	39.81642817	-80.70772839
18,700.00	91.00	330.36	11,561.76	2,900.55	-4,097.15	14,460,109.56	1,722,436.98	39.81666727	-80.70790348
18,800.00	91.00	330.36	11,560.02	2,987.45	-4,146.60	14,460,196.46	1,722,387.53	39.81690636	-80.70807857
18,900.00	91.00	330.36	11,558.28	3,074.35	-4,196.05	14,460,283.36	1,722,338.08	39.81714546	-80.70825367
19,000.00	91.00	330.36	11,556.54	3,161.25	-4,245.50	14,460,370.26	1,722,288.63	39.81738455	-80.70842876
19,100.00	91.00	330.36	11,554.80	3,248.15	-4,294.95	14,460,457.16	1,722,239.18	39.81762364	-80.70860385
19,200.00	91.00	330.36	11,553.06	3,335.06	-4,344.40	14,460,544.06	1,722,189.74	39.81786274	-80.70877895
19,203.46	91.00	330.36	11,553.00	3,338.06	-4,346.11	14,460,547.06	1,722,188.03	39.81787100	-80.70878500

PBHL/TD 19203.46 MD/11553.00 TVD



Planning Report - Geographic

51-02016 Mon

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-10 HU (D)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3N-10 HU (D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
Heaven Hill 3N-10 HU B - plan hits target center - Point	0.00	0.00	11,553.00	3,338.06	-4,346.11	14,460,547.06	1,722,188.03	39.81787100	-80.70878500
Heaven Hill 3N-10 HU LI - plan misses target center by 43.30usft at 12628.76usft MD (11666.91 TVD, -2375.32 N, -1094.82 E) - Point	0.00	0.00	11,666.00	-2,353.35	-1,057.52	14,454,855.65	1,725,476.61	39.80221100	-80.69714200
Heaven Hill 3N-10 HU LI - plan hits target center - Point	0.00	0.00	11,667.00	-2,353.35	-1,107.52	14,454,855.65	1,725,426.62	39.80221147	-80.69732001

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
1,500.00	1,500.00	0.00	0.00	KOP Begin 2°/100' build
1,600.00	1,599.98	1.75	0.00	Begin 2.00° tangent
2,100.00	2,099.68	19.19	0.00	Begin 2°/100' drop
2,200.00	2,199.65	20.94	0.00	Begin vertical hold
4,500.35	4,500.00	20.94	0.00	Begin 3°/100' build
5,334.44	5,307.83	-153.72	-40.33	Begin 25.02° tangent
11,563.35	10,952.09	-2,720.87	-633.18	Begin 10°/100' build/turn
12,654.13	11,667.00	-2,353.36	-1,107.52	Begin 91.00° lateral
19,203.46	11,553.00	3,338.06	-4,346.11	PBHL/TD 19203.46 MD/11553.00 TVD

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WV Department of
Environmental Protection

4705140022

51-02-016 Mead

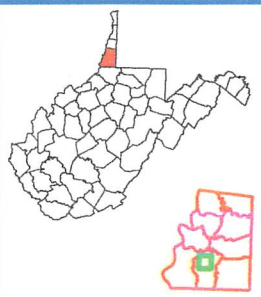
CR 2/1

MARSHALL MEADE

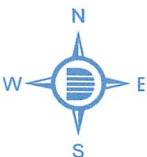
CR 2/1

Legend

- Well Locations (ims.wvgs.wvnet.edu)
- WVDEP O & G Permits (tagis.dep.wv.gov)
- Major Highways
- Major Roads
- Heaven Hill 3N - 10HU
- 500 Ft. Buffer
- Counties
- Districts



Heaven Hill 3N-10HU Meade District Marshall County, WV



Map Created: February 13, 2018
Map Current As Of: February 13, 2018

Notes:
All locations are approximate and are for visualization purposes only.

Permit well - Heaven Hill 3N-10HU

Wells within 500' Buffer

Note: Well spots depicted on Area of Review map (page 3) are derived from State held coordinates. The spots may differ from those depicted on the Well Plat because the Plat locations represent actual field surveyed locations. Please refer to the Plat for surveyed well spots

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705101935	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101962	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101963	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101947	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101948	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled

Area of Review**Sources of information to Support 35CSR8 - 5.11: 9.3 et seq.**

Description of process to identify potential pathways for well communication during hydraulic fracturing activities.

Data Sources Reviewed:

1. IHS Well Data service: Public nationwide data service that pulls directly from State agency Oil and Gas databases
2. Farm Maps
3. Topo Maps: Recent and older (contact WVGES)
4. Check with DPS

Contacted Devin Ducoeur 724-705-0444, dducoeur@dpslandservices.com DPS GIS (12/19/2016) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

Request maps for:

1. Wellbore with IHS All Wells Layer
2. Map with Farm lines overlain and any well spots identified on Farm Maps
3. More recent (1970s vintage) topos and older topos

Discussion with Phil Dinterman WVGES GIS Department (7/15/2016)

- WVGES has plotted every well spot they have access to and are aware of with that contains a coordinate. 30000, 70000, and 90000 series wells are available via the WVGES online map. Some locations aren't great due to vintage and manipulation of maps through time
- 30000 series – any well drilled prior to 1929 – APIs were not assigned to original wells
- 70000 series – Well spots pulled from old Farm line maps that the WVGES has access to
- 90000 series – Any sources that the WVGES has access that shows a well spot but has no additional supporting information. DEP does not have 90000 series on their maps.
- There can be duplication between wells in the 3 series
- Phil indicated that other Operators are providing a screenshot of the WVGES map with their planned well and using that for permits



Well Site Safety Plan
Tug Hill Operating, LLC

JW
2/14/18

Well Name: Heaven Hill 3N-10HU

Pad Location: Heaven Hill Unit 3

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

NORTHING -4,406,566.12

EASTING -526,248.66

February 2018

51-02016

WW-6A1
(5/13)

Operator's Well No. Heaven Hill 3N-10HU

**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
----------------------	-----------------------	-----------------------	---------	-----------

*See attached pages

**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

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Environmental Protection

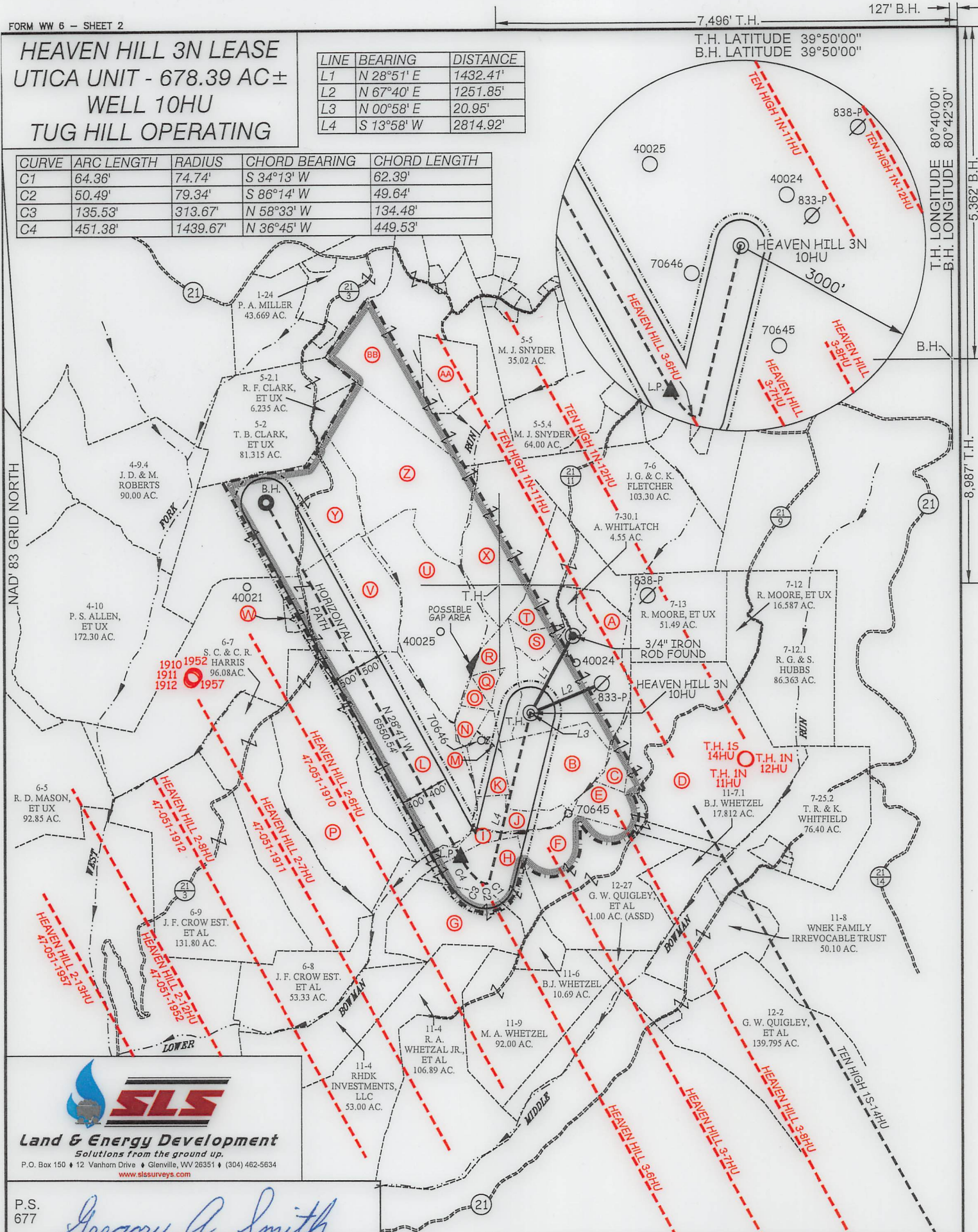
The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity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

Well Operator: Tug Hill Operating, LLC
 By: Amy L. Miller *Amy Miller*
 Its: Permitting Specialist

**HEAVEN HILL 3N LEASE
UTICA UNIT - 678.39 AC ±
WELL 10HU
TUG HILL OPERATING**

LINE	BEARING	DISTANCE
L1	N 28°51' E	1432.41'
L2	N 67°40' E	1251.85'
L3	N 00°58' E	20.95'
L4	S 13°58' W	2814.92'

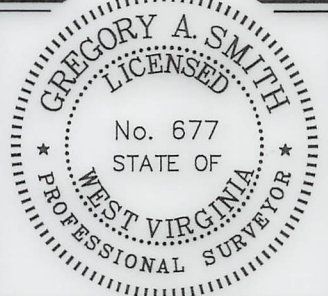
CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	64.36'	74.74'	S 34°13' W	62.39'
C2	50.49'	79.34'	S 86°14' W	49.64'
C3	135.53'	313.67'	N 58°33' W	134.48'
C4	451.38'	1439.67'	N 36°45' W	449.53'



SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5634
www.slsurveys.com

P.S. 677
Gregory A. Smith

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)		
NAD'83 S.P.C.(FT)	N. 478,883.22	E. 1,633,264.78
NAD'83 GEO.	LAT-(N) 39.808664	LONG-(W) 80.693348
NAD'83 UTM (M)	N. 4,406,566.12	E. 526,248.66
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 476,547.9	E. 1,632,117.7
NAD'83 GEO.	LAT-(N) 39.802211	LONG-(W) 80.697320
NAD'83 UTM (M)	N. 4,405,848.8	E. 525,911.1
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 482,294.6	E. 1,628,973.6
NAD'83 GEO.	LAT-(N) 39.817871	LONG-(W) 80.708785
NAD'83 UTM (M)	N. 4,407,583.6	E. 524,924.0



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

LEGEND

UNIT BOUNDARY	
LEASED TRACTS INSIDE UNIT BOUNDARY	
SURFACE LINE	
PROPOSED UTICA	
WELL LATERAL	
400' OFFSET LINE	
500' OFFSET LINE	
TIE LINE	
CREEK	
ROAD	
COUNTY ROUTE	
PROPOSED WELL	
EXISTING WELL	
PERMITTED WELL	
SURFACE OWNER (SEE TABLE)	
LEASE # (SEE ADDITIONAL SHEETS)	

SCALE 1" = 2000' FILE NO. 8654P10HUR5.dwg
DATE FEBRUARY 20, 20 18
REVISED 03-26-18, 07-05-18, 09-13-18
OPERATORS WELL NO. HEAVEN HILL 3N-10HU
API WELL NO. 47-051-020116 MOD
STATE COUNTY PERMIT #671

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL OPERATOR TUG HILL OPERATING, LLC ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107	DESIGNATED AGENT DIANNA STAMPER ADDRESS CT CORPORATION SYSTEM 5400 D BIG TYLER ROAD CHARLESTON, WV 25313
---	---

**HEAVEN HILL 3N LEASE
UTICA UNIT - 678.39 AC±
WELL 10HU
TUG HILL OPERATING**

T.H. LATITUDE 39°50'00"
B.H. LATITUDE 39°50'00"

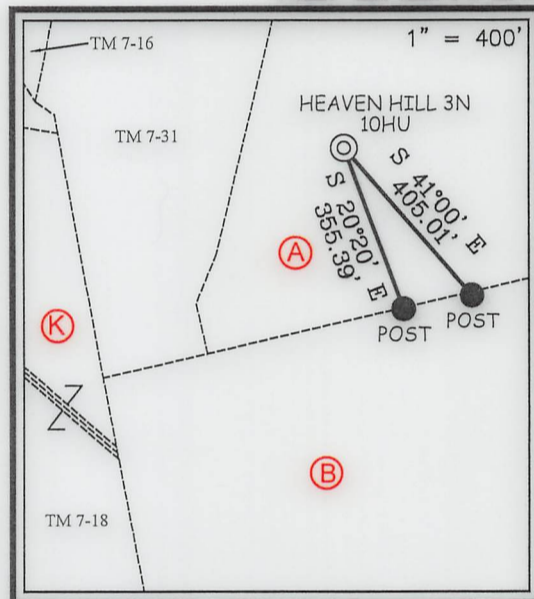
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
 NAD'83 S.P.C.(FT) N. 478,883.22 E. 1,633,264.78
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LANDING POINT
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 NAD'83 UTM (M) N. 4,405,848.8 E. 525,911.1
BOTTOM HOLE
 NAD'83 S.P.C.(FT) N. 482,294.6 E. 1,628,973.6
 NAD'83 GEO. LAT-(N) 39.817871 LONG-(W) 80.708785
 NAD'83 UTM (M) N. 4,407,583.6 E. 524,924.0

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°42'30"
5,362' B.H.
8,987' T.H.

TAG	SURFACE OWNER	PARCEL	ACRES
A	RICKY L. WHITLATCH	9-7-30	72.82
B	RICKY L. WHITLATCH	9-7-21	42.22
C	LAWRENCE & SHIRLEY CONKLE ESTS.	9-7-22	12.00
D	LAWRENCE & SHIRLEY CONKLE ESTS.	9-7-24	139.79
E	LARRY J. WHETZEL, ET UX	9-7-23	36.00
F	BRENDA J. WHETZEL	9-11-7	82.858
G	WILLIAM F. & JULIA A. KERNS	9-11-6.2	46.47
H	BRENDA J. WHETZEL	9-11-6.1	30.24
I	KEVIN E. MCGILTON	9-7-19	23.00
J	KEVIN E. MCGILTON	9-7-20	13.39
K	KEVIN E. MCGILTON	9-7-18	14.00
L	CONSOL MINING COMPANY LLC	9-7-2	116.12
M	RICKY L. WHITLATCH	NOT ASSD.	16' X 32P
N	KEVIN E. MCGILTON	9-7-17	5.12
O	RICKY L. WHITLATCH	NOT ASSD.	2.75
P	MICHAEL PINE, ET UX	9-7-1	107.46
Q	KEVIN E. MCGILTON	9-7-16	8.00
R	RICKY L. WHITLATCH	9-7-31	16.53
S	RICKY L. WHITLATCH	9-7-15	7.54
T	ARNIE GOODNIGHT, ET UX	9-7-14	39.55
U	HELEN ROBERTSON PAYNE	9-7-4	78.95
V	CHARLES R. JR. & ANNA MARIE HAGEDORN	9-7-3	203.074
W	CHARLES R. JR. & ANNA MARIE HAGEDORN	9-7-3.1	4.579
X	ARNIE GOODNIGHT, ET UX	9-7-5	62.18
Y	TERRI L. & HARIKIA SAMPSON	9-5-1	111.71
Z	HELEN ROBERTSON PAYNE	9-5-3	85.26
AA	CONSOLIDATION COAL COMPANY	9-5-4.1	22.775
BB	ELMER L. ASTON	9-5-4	108.225

T.H.

REFERENCES



NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'
- PROPOSED LATERAL OR TOP HOLE OF HEAVEN HILL 3-10HU IS WITHIN 3000' OF THE TOP HOLES OR LATERALS OF API'S 47-051-1910, 47-051-1911, 47-051-1912, 47-051-1952, 47-051-1957 AND PROPOSED WELLS HEAVEN HILL 3-6HU, HEAVEN HILL 3-7HU, HEAVEN HILL 3-8HU, TEN HIGH 1S-14HU, TEN HIGH 1N-11HU, AND TEN HIGH 1N-12HU.



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 REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S.
677

Gregory A. Smith



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE FEBRUARY 20, 20 18

REVISED 03-26-18, 07-05-18, 09-13-18

OPERATORS WELL NO. HEAVEN HILL 3N-10HU
API WELL NO. 47 - 051 - 02016 MOD
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8654P10HUR5.dwg
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS



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

LOCATION: GROUND = 1,336.70' ELEVATION PROPOSED = 1,326.35' WATERSHED LOWER BOWMAN RUN OF FISH CREEK (HUC 10)
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER RICKY L. WHITLATCH ACREAGE 72.82±
ROYALTY OWNER RICKY L. WHITLATCH, ET AL - SEE ADDITIONAL SHEETS ACREAGE 72.82±

PROPOSED WORK: LEASE NO. SEE ADDITIONAL SHEETS
DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD: 11,898' / TMD: 19,203'

WELL OPERATOR TUG HILL OPERATING, LLC
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500
FORT WORTH, TX 76107

DESIGNATED AGENT DIANNA STAMPER
CT CORPORATION SYSTEM
ADDRESS 5400 D BIG TYLER ROAD
CHARLESTON, WV 25313

COUNTY NAME
PERMIT

HEAVEN HILL 3N LEASE
UTICA UNIT - 678.39 AC ±
WELL 10HU
TUG HILL OPERATING



No.	Lease Name or No.	Tag	Parcel	Oil & Gas Royalty Owners	Deed Book/Page
1	10*15557	A	9-7-20	RICKY L WHITLATCH ET AL	780 226
2	10*15557	A	9-7-20	RICKY L WHITLATCH ET AL	780 226
3	10*18514	C	9-7-22	JOHN R BERRY	933 569
4	10*15486	C	9-7-22	RICHARD NEAL NORRIS AND CAROL NORRIS	905 430
5	10*15487	C	9-7-22	WILLIAM C RUTAN	905 475
6	10*15489	C	9-7-22	DONALD T SNOODGRASS AND LILA F SNOODGRASS	915 189
7	10*15492	C	9-7-22	HEATHER WHORTON STILLION AND CHRISTOPHER STILLION	905 473
8	10*15610	C	9-7-22	KACHELLE W WHEELER	834 456
9	10*15611	C	9-7-22	SARAH STEVENS	834 437
10	10*15611	C	9-7-22	ROBERT S ZEHNDER	834 437
11	10*15612	C	9-7-22	VERA SHIRLENE & ARTHUR WORKMAN	837 361
12	10*15613	C	9-7-22	THOMAS L STEVENS	836 290
13	10*15614	C	9-7-22	DAVID F RINE	837 130
14	10*15615	C	9-7-22	PAUL WAYNE RINE	837 133
15	10*15616	C	9-7-22	PHILLIP C RINE	836 332
16	10*15617	C	9-7-22	GLADYS M RINE	836 329
17	10*15618	C	9-7-22	CHARLES A RINE	835 22
18	10*15619	C	9-7-22	SHARON M REYNOLDS	840 322
19	10*15620	C	9-7-22	GLADYS RUCKMAN	840 319
20	10*15621	C	9-7-22	KATHERINE A STALNAKER	840 325
21	10*15622	C	9-7-22	JAY LEROY RINE	840 351
22	10*15623	C	9-7-22	SUSAN JANE WHEELER	847 473
23	10*15624	C	9-7-22	RONALD A ZEHNDER	847 213
24	10*15625	C	9-7-22	LAWRENCE W STIRLING	852 384
25	10*15626	C	9-7-22	ROBERT J SEAVER	854 77
26	10*15627	C	9-7-22	PAUL R SEAVER	853 483
27	10*15628	C	9-7-22	JENNIFER SEAVER	853 272
28	10*15629	C	9-7-22	DANIEL L RINE	860 86
29	10*15630	C	9-7-22	JANE L HELFER	836 342
30	10*15631	C	9-7-22	DAVID HEINZERTH	836 219
31	10*15632	C	9-7-22	MARLAN D JONES	835 38
32	10*15633	C	9-7-22	ROGER W GATTS	835 35
33	10*15634	C	9-7-22	JAMES W DAYTON	847 567
34	10*15635	C	9-7-22	ELLEN L BETTINAZZI	847 496
35	10*15636	C	9-7-22	JOSEPH ASTON JR BY HIS ATTORNEY-IN-FACT MELVIN J. ASTON	848 280
36	10*15637	C	9-7-22	DONALD ASTON	848 274
37	10*15638	C	9-7-22	PAUL J ASTON A/K/A JACK ASTON	848 277
38	10*15639	C	9-7-22	DELLA M BURKEY A/K/A MAXINE ASTON	848 435
39	10*15640	C	9-7-22	EMMA JANE DAVIS A/K/A EMA ASTON	848 271
40	10*15641	C	9-7-22	HENRY W ASTON	847 138
41	10*15642	C	9-7-22	KENNETH L DAYTON	852 366
42	10*15643	C	9-7-22	NORMAN G JOHNSON	848 368
43	10*15644	C	9-7-22	RONALD BEN LAUGHTON	852 360
44	10*15645	C	9-7-22	KAREN K OLDFIELD	854 111
45	10*15646	C	9-7-22	LUDITH A CIRONE	848 428
46	10*15647	C	9-7-22	KENNETH WENDELL OLDFIELD	861 589
47	10*15648	C	9-7-22	MARTHA CRAWFORD	863 542
48	10*15649	C	9-7-22	MARY JANE DANIEL	858 28
49	10*15650	C	9-7-22	MARY GLADYS KUHN BY ATTORNEY IN FACT CONNIE LYONS	860 89
50	10*15651	C	9-7-22	THOMAS G ASTON	860 83
51	10*15652	C	9-7-22	ISAAC R ASTON A/K/A IKE ASTON	886 136
52	10*15653	C	9-7-22	EMLY M HENCEROTH	862 574
53	10*15654	C	9-7-22	GEORGE E HENNINGER	863 612
54	10*15655	C	9-7-22	ANNA EMERSON A/K/A ANNIE ASTON	864 603
55	10*15656	C	9-7-22	PATRY L MIERS	867 500
56	10*15657	C	9-7-22	MARY MARGARET ASTON	868 183
57	10*15658	C	9-7-22	GLEN MATTHEW LAUGHTON	873 324
58	10*15747	C	9-7-22	WILLIAM H BAKER	905 499
59	10*15659	C	9-7-22	WILLIAM E DAYTON BY HIS AIF	871 190
60	10*15660	C	9-7-22	DOUGLAS PAUL HENCEROTH BY HIS AIF	871 193
61	10*15673	C	9-7-22	DIANE B ASTON	864 595
62	10*15679	C	9-7-22	CARA BONAR FREESE AND GEORGE H FREESE	905 481
63	10*15680	C	9-7-22	ROBERTA JANE CLAYTON	905 485
64	10*15688	C	9-7-22	JOSH GARY AND CHRISTINA M GARY	905 487
65	10*15689	C	9-7-22	JOHN LEROY BAKER AND CYNTHIA A BAKER	905 491
66	10*15690	C	9-7-22	ROBERT WHORTON AND LINDSAY WHORTON	905 489
67	10*15728	C	9-7-22	MARY LOU KITTELBERGER AND FREDERICK W KITTELBERGER	905 483
68	10*15729	C	9-7-22	DONNA KAY ALLEN AND ROGER ALLEN	905 493
69	10*15748	C	9-7-22	CAROLYN LEE FUREY AND MARTIN J FUREY	905 495
70	10*15749	C	9-7-22	DIANA SMITH KNIGHT	905 497
71	10*16019	C	9-7-22	ROGER E GALLAGHER AND CONIE M GALLAGHER	905 503
72	10*16295	C	9-7-22	DONALD H SNYDER JR AND KAREN S SNYDER	903 183
73	10*16029	C	9-7-22	MARTHA ASHWORTH KNIGHT	905 505
74	10*16049	C	9-7-22	DANNY SHAWN KERNS AND AMY LYNN KERNS	905 518
75	10*16050	C	9-7-22	WILLIAM L GALLAGHER	905 512
76	10*16114	C	9-7-22	ROBERT SANDFORD BLACK AND JOAN BLACK	905 510
77	10*16123	C	9-7-22	PHYLLIS R GATTO	905 520
78	10*16177	C	9-7-22	JOSEPHINE BROWN	905 530
79	10*16179	C	9-7-22	DANA BERRY COPELAND	905 532
80	10*16287	C	9-7-22	CHARLINE M ENGLE AND KEVIN E ENGLE	905 534
81	10*16384	C	9-7-22	DANIELLE BONAR OSTER AND LOUIS MICHAEL OSTER	905 501
82	10*16389	C	9-7-22	CHARLES BERRY	905 508
83	10*16423	C	9-7-22	GALL VAUGHIN AND LARRY VAUGHIN	905 536
84	10*16426	C	9-7-22	RENE J RUTAN	905 538
85	10*16571	C	9-7-22	GRACE LAURA BONAR	907 411
86	10*16588	C	9-7-22	EDWIN M KNABENSHUE ADMINISTRATOR OF THE ESTATE OF SARAH J KNABENSHUE, DECEASED	907 408
87	10*16440	C	9-7-22	MELANIE C WILKINS AND ROBERT WILKINS	927 462
88	10*16501	C	9-7-22	LOYD DOYLE MOORE AND GWENDOLYN K MOORE	907 392
89	10*16513	C	9-7-22	LOWELL D AND JANICE L KNIGHT	927 458
90	10*16546	C	9-7-22	WALTER C RINE AND CHERYL A RINE	927 456
91	10*16553	C	9-7-22	MARK EDWARD AND KARRIE A GOODMAN	909 81
92	10*16558	C	9-7-22	PAUL BONAR KNIGHT AND SUZANNE L HOPKINS-KNIGHT	927 460
93	10*16595	C	9-7-22	DALE BRIAN GOODMAN	909 506
94	10*16589	C	9-7-22	MARY L WHITTINGTON	907 400
95	10*16719	C	9-7-22	HOWARD T CONNER AND NANETTE CONNER	912 37
96	10*16820	C	9-7-22	ROBERTA ANN AND DAVID S GIBB	919 237
97	10*16844	C	9-7-22	HOLLY A LONGFELLOW	927 454
98	10*16845	C	9-7-22	TRACY L AND KETH W BARNBY	927 452
99	10*18321	C	9-7-22	PAULA RINE AND DEBRA A RINE	931 238
100	10*16896	C	9-7-22	MARTHA J BLACK	927 450
101	10*17296	C	9-7-22	DANIEL W HEINZERTH AND KATHLEEN E HEINZERTH	941 528
102	10*17865	C	9-7-22	MSTI JOANNE GOODMAN	905 455
103	10*17370	C	9-7-22	KELLY LUNE GOODMAN	927 470
104	10*17497	C	9-7-22	SUZANNA DOOLING AND MICHAEL DOOLING	927 464
105	10*17594	C	9-7-22	WILLIAM THOMAS BONAR AND MONICA BONAR	927 466
106	10*17625	C	9-7-22	CHARLES E BROWN	929 624
107	10*18256	C	9-7-22	JEFFREY STEPHEN GOODMAN	929 1
108	10*18415	C	9-7-22	CHAD LONGFELLOW	932 575
109	10*18522	C	9-7-22	MARTIN REED BROWN AND DOLORES BROWN	933 558
110	10*19301	C	9-7-22	JEFF BERRY AND AMY BERRY	940 340
111	10*19406	C	9-7-22	WILLIAM KENT BROWN AND KAYLEEN BROWN	939 289
112	10*19568	C	9-7-22	BERNIE TWIGG, GENERAL RECEIVER	946 85
113	10*47051.295.10	C	9-7-22	DEENA J PALOMO	905 470
114	10*47051.295.11	C	9-7-22	REGINA D FIGUEROA AND DAVID FIGUEROA	905 432
115	10*47051.295.12	C	9-7-22	EARL D WELLMAN	905 432
116	10*47051.295.13	C	9-7-22	THE DOLLY F WOOD REVOCABLE TRUST BY NICHOLAS CHARLES WOOD AS TRUSTEE	904 641
117	10*47051.295.3	C	9-7-22	HAZEL ARIZONA MOORE REYNOLDS	904 632
118	10*47051.295.4	C	9-7-22	LOYD D MOORE	904 659
119	10*47051.295.5	C	9-7-22	DALE R MOORE	904 635
120	10*47051.295.6	C	9-7-22	MARY I BURKHART	904 638
121	10*47051.295.7	C	9-7-22	JEANNE V MELCHIORI	904 462
122	10*47051.295.9	C	9-7-22	JAMES E HIMELBECK JR AND KAREN HIMELBECK	904 465
123	10*15662	C	9-7-22	LARRY LEE CONKLE	863 354
124	10*15663	C	9-7-22	ROYA CONKLE SR AND LORIE A CONKLE	863 311
125	10*15664	C	9-7-22	THERESA ANNE HUGHES	863 343
126	10*15666	C	9-7-22	BRENDA J WHITZEL	863 635
127	10*16138	C	9-7-22	LARRY W KUHN AND VICKIE B KUHN, HUSBAND AND WIFE	905 522

No.	Lease Name or No.	Tag	Parcel	Oil & Gas Royalty Owner - Continued	Deed Book/Page
128	10*16139	C	9-7-22	HUBERT DEAN KUHN AND ANDREA KUHN	905 524
129	10*16140	C	9-7-22	ANDY PAUL KUHN & JACKIE KUHN	905 526
130	10*16141	C	9-7-22	HOWARD L KUHN AND MARY L KUHN	905 528
131	10*16049	D	9-7-24	DANNY SHAWN KERNS AND AMY LYNN KERNS	905 518
132	10*16501	D	9-7-24	LOYD DOYLE MOORE AND GWENDOLYN K MOORE	907 392
133	10*16553	D	9-7-24	MARK EDWARD AND KARRIE A GOODMAN	909 81
134	10*16585	D	9-7-24	DALE BRIAN GOODMAN	909 506
135	10*16820	D	9-7-24	ROBERTA ANN AND DAVID S GIBB	919 237
136	10*17365	D	9-7-24	MSTI JOANNE GOODMAN	927 468
137	10*17370	D	9-7-24	KELLY LUNE GOODMAN	927 470
138	10*18256	D	9-7-24	JEFFREY STEPHEN GOODMAN	929 1
139	10*47051.295.10	D	9-7-24	DEENA J PALOMO	905 470
140	10*47051.295.11	D	9-7-24	REGINA D FIGUEROA AND DAVID FIGUEROA	905 432
141	10*47051.295.12	D	9-7-24	EARL D WELLMAN	905 432
142	10*47051.295.13	D	9-7-24	THE DOLLY F WOOD REVOCABLE TRUST BY NICHOLAS CHARLES WOOD AS TRUSTEE	904 641
143	10*47051.295.3	D	9-7-24	HAZEL ARIZONA MOORE REYNOLDS	904 632
144	10*47051.295.4	D	9-7-24	LOYD D MOORE	904 659
145	10*47051.295.5	D	9-7-24	DALE R MOORE	904 635
146	10*47051.295.6	D	9-7-24	MARY I BURKHART	904 638
147	10*47051.295.7	D	9-7-24	JEANNE V MELCHIORI	904 462
148	10*47051.295.9	D	9-7-24	JAMES E HIMELBECK JR AND KAREN HIMELBECK	904 465
149	10*15662	D	9-7-24	LARRY LEE CONKLE	863 354
150	10*15663	D	9-7-24	ROYA CONKLE SR AND LORIE A CONKLE	863 311
151	10*15664	D	9-7-24	THERESA ANNE HUGHES	863 343
152	10*15666	D	9-7-24	BRENDA J WHITZEL	863 635
153	10*16138	D	9-7-24	LARRY W KUHN AND VICKIE B KUHN, HUSBAND AND WIFE	905 522
154	10*16139	D	9-7-24	HUBERT DEAN KUHN AND ANDREA KUHN	905 524
155	10*16140	D	9-7-24	ANDY PAUL KUHN & JACKIE KUHN	905 526
156	10*16141	D	9-7-24	HOWARD L KUHN AND MARY L KUHN	905 528
157	10*47051.295.22	E	9-7-23	BEVERLY J HOPSON	913 581
158	10*47051.295.21	E	9-7-23	BRENDA J WHITZEL	881 145
159	10*15746	E	9-7-23	BRUCE D SCHRUR	921 478
160	10*16247	E	9-7-23	CAROL RIGGLE PARSLEY AND JAMES DENNIS PARSLEY	925 327
161	10*47051.295.24	E	9-7-23	CATHERINE BONAR PETTIT BILLIE	904 628
162	10*47051.295.16	E	9-7-23	CHARLOTTE B HUMMELL	905 45
163	10*47051.295.15	E	9-7-23	CHARLOTTE J BONAR YOHO	904 455
164	10*17506	E	9-7-23	CHASKIA F HARRIS AND JAMES M HARRIS	919 239
165	10*17507	E	9-7-23	DEZRAY METCALF	919 235
166	10*17415	E	9-7-23	DILLON PITSENBARGER	919 241
167	10*16115	E	9-7-23	EARL W HARRIS	925 329
168	10*47051.295.10	E	9-7-23	GRACE LAURA BONAR	905 35
169	10*47051.295.14	E	9-7-23	HUGH R BUZZARD	905 37
170	10*47051.295.13	E	9-7-23	JACK L MASON AND JEAN M MASON	904 626
171	10*47051.295.20	E	9-7-23	JEFFREY THOMAS PYLES AND TERESA A PYLES	907 209
172	10*47051.295.11	E	9-7-23	JOHN L MASON	905 37
173	10*47051.295.18	E	9-7-23	JOHN WILLIAM BONAR AND SHIRLEY BONAR	913 522
174	10*47051.295.7	E	9-7-23	MARILYN S	

HEAVEN HILL 3N LEASE
 UTICA UNIT - 678.39 AC ±
 WELL 10HU
 TUG HILL OPERATING



No.	Lease Name or No.	Tag	Parcel	Oil & Gas Royalty Owner - Continued	Deed Book/Page
254	10*16471	L	9-7-2	CNX GAS COMPANY LLC	905 155
255	10*15557	M	9-7-Unassessed Parcel	RICKY L WHITLATCH ET AL	780 226
256	10*15698	N	9-7-17	ROBERT A EDGE AND SHERRIE N EDGE	900 363
257	10*15720	N	9-7-17	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	905 458
258	10*15721	N	9-7-17	TINA LEDGE MONTI AND THOMAS MONTI	905 456
259	10*16020	N	9-7-17	SHARON HINERMAN MAY & DANIEL G MAY	905 464
260	10*16028	N	9-7-17	ROSEMARY PARKINS AND STEPHEN PARKINS	905 460
261	10*16051	N	9-7-17	DONNA JEAN SNIDER AND DAVID SNIDER	905 462
262	10*16053	N	9-7-17	GARY D HINERMAN AND JUDY ANN HINERMAN	905 466
263	10*16289	N	9-7-17	BRENDA HINERMAN WILLIAMSON AND BRIAN K WILLIAMSON	905 468
264	10*16412	N	9-7-17	ELIZABETH ANN BLAZER AND PAUL R BLAZER	905 452
265	10*16413	N	9-7-17	RONALD H EDGE JR	905 454
266	10*16852	N	9-7-17	KEVIN A DURBIN AND KRISTA A DURBIN	929 312
267	10*17622	N	9-7-17	DAVID HINERMAN AND AN INCARCERATED PER BY & THRU COURT APPTD GUARDIAN AS LITEM DAVID WHITE ESQ	929 314
268	10*15667	N	9-7-17	KEVIN E MCGILTON ET AL	850 351
269	10*15557	O	9-7-Unassessed Parcel	RICKY L WHITLATCH ET AL	780 226
270	10*15665	P	9-7-1	MICHAEL J RINE ET LUX	666 147
271	10*15667	Q	9-7-16	KEVIN E MCGILTON ET LUX	850 351
272	10*15557	R	9-7-31	RICKY L WHITLATCH ET AL	780 226
273	10*15557	S	9-7-15	RICKY L WHITLATCH ET AL	780 226
274		T	9-7-14	GOODNIGHT ARNIE ET LUX	777 59
275		U	9-7-4	PAYNE HELEN R	791 58
276	10*15521	V	9-7-3	VENANGO 21ST CENTURY ENERGY INC	886 618
277	10*47051.073.1	V	9-7-3	PATRIOT RESTORATIONS LLC	908 541
278	10*47051.073.2	V	9-7-3	TRIENERGY HOLDINGS, LLC	878 330
279	10*47051.073.3	V	9-7-3	CHARLES R HAGEDORN JR	816 423
280	10*15608	V	9-7-3	VENANGO 21ST CENTURY ENERGY INC	722 281
281	10*16927	W	9-7-3.1	ELMA L HAGEDORN	697 120
282	10*16923	W	9-7-3.1	CHARLES R HAGEDORN JR ET LUX	689 177
283	10*47051.073.1	W	9-7-3.1	VENANGO 21ST CENTURY ENERGY INC	886 618
284	10*47051.073.2	W	9-7-3.1	PATRIOT RESTORATIONS LLC	908 541
285	10*47051.073.3	W	9-7-3.1	TRIENERGY HOLDINGS, LLC	878 330
286	10*15608	W	9-7-3.1	CHARLES R HAGEDORN JR	816 423
287		X	9-7-5	GOODNIGHT ARNIE ET LUX	777 59
288		Y	9-5-1	SAMPSON TERRY L ET LUX	852 351
289		Z	9-5-3	WAYT LAWRENCE ALLEN - SFX	687 233
290		Z	9-5-3	KIDD BEATRICE ANN - SFX	687 230
291		AA	9-5-4.1	GORBY IVAN F - SFX	695 527
292		AA	9-5-4.1	GONTA ADA HAZEL - SFX	695 183
293		AA	9-5-4.1	RAJU PATSY JO - SFX	694 561
294		AA	9-5-4.1	SCHIEFER STEPHANIE LET VIR - SFX	885 321
295		AA	9-5-4.1	GORBY JOHN E - SFX	695 523
296		AA	9-5-4.1	DAKAN JOSEPH D - SFX	695 519
297		AA	9-5-4.1	STORCH JEAN A AIF JOHN HERMAN STORCH - SFX	877 216
298		AA	9-5-4.1	GAST KAREN S - SFX	694 534
299		AA	9-5-4.1	LEADBETTER ROBERT A ET LUX - SFX	885 324
300	10*15481	BB	9-5-4	DEAN P RIGBY AND SUSAN RIGBY	908 197
301	10*15482	BB	9-5-4	SUSAN NELSON	908 203
302	10*15686	BB	9-5-4	JOHN OMER BOLTZ	908 160
303	10*15750	BB	9-5-4	SANDRA K TRULL	908 229
304	10*16058	BB	9-5-4	MATTIE RUTH JACKSON PRESCOTT	908 231
305	10*16118	BB	9-5-4	RUBY RIDOLE JACKSON	908 233
306	10*16383	BB	9-5-4	ROBERT STEPHEN DRIGGERS	908 224
307	10*16414	BB	9-5-4	MARY ELIZABETH DRIGGERS	908 208
308	10*16416	BB	9-5-4	CYNTHIA HUDSON	908 219
309	10*16424	BB	9-5-4	ROBERT J RIGBY	908 241
310	10*16448	BB	9-5-4	RALPH LAND JUANITA L CRIM	908 584
311	10*16478	BB	9-5-4	MARION LAND EMILY CAMPBELL	908 245
312	10*16514	BB	9-5-4	ALEX R CAMPBELL & JOYCE A CAMPBELL	908 248
313	10*16515	BB	9-5-4	ANNA MARIE JACKSON	908 251
314	10*16516	BB	9-5-4	WILSON ANDREW JACKSON	908 253
315	10*16545	BB	9-5-4	ROBERT G FOUNDS AND ELLEN FOUNDS	908 260
316	10*16662	BB	9-5-4	RICHARD THOMAS MIMS & VICKIE J MIMS	908 263
317	10*16666	BB	9-5-4	MICHAEL P PYLE	908 255
318	10*16667	BB	9-5-4	CHARLES F AND GAIL ANN PYLE	908 266
319	10*16668	BB	9-5-4	JACKI AND MERRILEE ANN PYLE	908 257
320	10*16669	BB	9-5-4	JOHN AND PATRICIA S DADO	908 269
321	10*16686	BB	9-5-4	CHERYLE M TRACEY	927 475
322	10*16688	BB	9-5-4	SHERRYL PYLE BAIR	927 481
323	10*16689	BB	9-5-4	JOHN C FOUNDS	927 478
324	10*16690	BB	9-5-4	RICARDO ORTIZ	921 352
325	10*16720	BB	9-5-4	DONNA ELAINE BRASKETT	921 152
326	10*16738	BB	9-5-4	CHARLES A RINE AND RUTH K RINE	908 274
327	10*16747	BB	9-5-4	WILLIAM DALE BRASKETT	921 96
328	10*16787	BB	9-5-4	HERBERT BRIAN AND DONNA DRU CAMPBELL	942 451
329	10*16798	BB	9-5-4	PATRICK A RANKIN AND ROBIN A RANKIN	921 364
330	10*16800	BB	9-5-4	JAMES KENNETH JACKSON AND JULIE JACKSON	921 83
331	10*16802	BB	9-5-4	CHRISTOPHER AND TAMMY RICHARDSON	921 405
332	10*16804	BB	9-5-4	WILLIAM M AND SHERRY D TAYLOR	921 510
333	10*16827	BB	9-5-4	DWIGHT D & MELODY G ANDERSON	912 420
334	10*16806	BB	9-5-4	VIRGINIA WHITMAN TRUST DTD 7-25-1984 JON WHITMAN TRUSTEE	921 528
335	10*16807	BB	9-5-4	DAVID TULLER AND SUSAN STORTS TULLER	921 513
336	10*16808	BB	9-5-4	MICHAEL L ORTIZ	921 349
337	10*16815	BB	9-5-4	HAROLD W PYLE	921 357
338	10*16819	BB	9-5-4	TERESA ORTIZ BIGGS	921 147
339	10*16821	BB	9-5-4	SHELLA BRASKETT WEICHEY	921 516
340	10*16836	BB	9-5-4	RICK A AND LENORE A STORTS	921 507
341	10*16837	BB	9-5-4	TERRY L AND THELMA A POFF	927 472
342	10*16838	BB	9-5-4	ROBERT G FUNARI	821 82
343	10*16839	BB	9-5-4	JAMES B FOUNDS AND LYNN M MOWERY	921 73
344	10*16863	BB	9-5-4	TINA MOORE	921 334
345	10*16868	BB	9-5-4	MICHAEL W STORTS AND JESSICA M STORTS	921 504
346	10*16879	BB	9-5-4	MARK E AND LESLEY A STORTS	921 501
347	10*16880	BB	9-5-4	BEVERLY ANN STORTS	921 498
348	10*16902	BB	9-5-4	MARY BARCAW DUKE	921 105
349	10*16962	BB	9-5-4	DENNIS P AND BARBARA EZELL FLORY	921 70
350	10*16976	BB	9-5-4	LESTER G AND CONSTANCE B NICKOLSON	921 343
351	10*16977	BB	9-5-4	JEREMY COCHENOUR	921 102
352	10*16987	BB	9-5-4	LAURIE EZELL PERRY	921 355
353	10*16989	BB	9-5-4	BRITANY RICHARDSON	916 135
354	10*16991	BB	9-5-4	MARILEEN FOUNDS AND LAUREN FOUNDS	921 79
355	10*16996	BB	9-5-4	THOMAS RANKIN	917 75
356	10*17130	BB	9-5-4	CINDY L BARBER	921 137
357	10*17155	BB	9-5-4	JESSE LEON JR AND TERESA GAIL EZELLE	921 118
358	10*17156	BB	9-5-4	HENRI NELL JACKSON KENT BARNES	921 139
359	10*17157	BB	9-5-4	JAMES N REEVES JR AND RITA M REEVES	921 367
360	10*17198	BB	9-5-4	THOMAS G AND DIANE W BAYLESS	921 141
361	10*17205	BB	9-5-4	SANDRA JEAN WILSON	921 524
362	10*17206	BB	9-5-4	PATRICK S GALLAGHER AND JOYCE ANN FOUNDS	921 86
363	10*17274	BB	9-5-4	DAVID H WILSON	921 474
364	10*17275	BB	9-5-4	JOHN R REEVES AND MONA G REEVES	921 373
365	10*17276	BB	9-5-4	BERTHA EZELL WATT	921 526
366	10*17278	BB	9-5-4	MICHAEL EZELLE	921 721
367	10*17339	BB	9-5-4	JOSEPH W FOUNDS	921 76
368	10*17377	BB	9-5-4	MILTON HOWARD EZELLE JR AND ELIZABETH A EZELLE	921 123
369	10*17416	BB	9-5-4	ANDREW M ORTIZ	921 346
370	10*17438	BB	9-5-4	DENNIS M WILSON	921 476
371	10*17440	BB	9-5-4	KENDRA WALISA	927 484
372	10*17441	BB	9-5-4	RALPH J WILSON	921 522
373	10*17442	BB	9-5-4	SHANE ALLEN AND MENDY JEAN ALLEN	921 134
374	10*17443	BB	9-5-4	MICHELLE MORROW-BACK	921 337
375	10*17444	BB	9-5-4	KELLY FOUNDS CAMPBELL	921 99
376	10*17449	BB	9-5-4	PHYLLIS J BLAKE	921 150
377	10*17482	BB	9-5-4	TERESA EZELLE RALYA AND DAVID L RALYA	927 487
378	10*17483	BB	9-5-4	RICHARD I PYLE	921 339

No.	Lease Name or No.	Tag	Parcel	Oil & Gas Royalty Owner - Continued	Deed Book/Page
379	10*17484	BB	9-5-4	NELDA S JACKSON	921 330
380	10*17485	BB	9-5-4	MARGIE ANN JACKSON ROBBINS GRAHAM	921 91
381	10*17526	BB	9-5-4	JEFFREY L REEVES AND JODY L REEVES	921 370
382	10*17527	BB	9-5-4	JAMES MICHAEL EZELL AND LUCILLE D EZELL	921 111
383	10*17538	BB	9-5-4	CHERYL RANKIN-KING	952 160
384	10*17552	BB	9-5-4	JOHN BEVACQUA AND PATRICIA A BEVACQUA	921 144
385	10*17554	BB	9-5-4	MICHAEL T RANKIN	921 361
386	10*17561	BB	9-5-4	ROGER L TYRELL AND KATHRYN L TYRELL	921 519
387	10*17564	BB	9-5-4	JAMES RONALD NICKOLSON AND TRACEY E NICKOLSON	921 340
388	10*17565	BB	9-5-4	JESSE ALLEN JACKSON AND ELIZABETH D JACKSON	921 327
389	10*17566	BB	9-5-4	NATHAN P EROSSY AND BARBARA T EROSSY	921 108
390	10*17588	BB	9-5-4	JAMES M JACKSON	921 325
391	10*17589	BB	9-5-4	MARY CHRISTINE MCKENNA	921 332
392	10*17744	BB	9-5-4	SAM PRESLEY EZELL	921 116
393	10*17744	BB	9-5-4	SAM PRESLEY EZELL	921 116
394	10*19524	BB	9-5-4	THE ESTATE OF AGNES IRENE EZELL CLARK BY DAVID M EDWARDS, EXECUTOR	942 633
395	10*19622	BB	9-5-4	KENDRA WALISA	924 484
396	10*19623	BB	9-5-4	MARIO R FUNARI AIF ROBERT G FUNARI	936 145
397	10*19695	BB	9-5-4	VIRGINIA P FOUNDS KASSERMAN ET	949 212
398	10*19939	BB	9-5-4	ROBERT J MILLS & SHERA SUE MILLS	939 247
399	10*21274	BB	9-5-4	GEORGE M GONTA JR	939 251
400	10*21275	BB	9-5-4	JANICE M GONTA GAVALIK	949 212
401	10*47051.223.15	BB	9-5-4	LARRY D TALUNT AND NANCY L TALUNT	908 14
402	10*47051.223.20	BB	9-5-4	BARBARA A BUZZARD	908 24
403	10*47051.223.21	BB	9-5-4	GARY T WARD AND SHARON D WARD	908 19
404	10*47051.223.24	BB	9-5-4	JO DEE K DAVIS	908 136
405	10*47051.223.25	BB	9-5-4	JOANNE WELCH	908 141
406	10*47051.223.26	BB	9-5-4	WENDY L SMARTEL	908 69
407	10*47051.223.27	BB	9-5-4	TIM J HOBBS	908 277
408	10*47051.223.30	BB	9-5-4	LAURIE DRIGGERS MANDERSON	908 165
409	10*47051.223.33	BB	9-5-4	NANCY CIAFFAGLIONE HOUSLEY	908 187
410	10*47051.223.35	BB	9-5-4	DEBRA L CIAFFAGLIONE	908 192
411	10*47051.223.6	BB	9-5-4	JOSHUA RINE AND REBECCA RINE	907 634
412	10*17883	BB	9-5-4	HOLLY SUE CLIBBERT	925 380
413	10*18021	BB	9-5-4	CHRISTOPHER A HANIFAN AND JACKIE F HANIFAN	927 267
414	10*18022	BB	9-5-4	DALE P WARD AND CYNTHIA J WARD	927 264

FILE NO. 8654P10HUR5.dwg

DATE FEBRUARY 20, 20 18

REVISED 03-26-18, 07-05-18, 09-13-18

OPERATORS WELL NO. HEAVEN HILL 3N-10HU

API WELL NO. 47 STATE 051 COUNTY PERMIT #02016 #0A



STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS



COUNTY NAME

PERMIT

P.S. 677 Gregory A. Smith

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

Lease Name or No. Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment		
10*15557	A	9-7-30	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780	226	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15557	B	9-7-21	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780	226	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15486	C	9-7-22	RICHARD NEAL NORRIS AND CAROL NORRIS	THE EXPLORATION LLC	1/8+	905	430	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15487	C	9-7-22	WILLIAM C RUJAN	THE EXPLORATION LLC	1/8+	905	475	N/A	N/A	N/A	N/A	N/A
10*15489	C	9-7-22	DONALD T SNOODGRASS AND LILA F SNOODGRASS	THE EXPLORATION LLC	1/8+	915	189	N/A	N/A	N/A	N/A	N/A
10*15492	C	9-7-22	HEATHER WHORRION STILLION AND CHRISTOPHER STILLION	THE EXPLORATION LLC	1/8+	905	473	N/A	N/A	N/A	N/A	N/A
10*15609	C	9-7-22	MICHELLE R WILHELM	CHEVRON USA INC	1/8+	834	456	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15610	C	9-7-22	SARAH STEVENS	CHEVRON USA INC	1/8+	834	432	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15611	C	9-7-22	ROBERT S ZEHNDER	CHEVRON USA INC	1/8+	834	437	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15612	C	9-7-22	VERA SHIRLENE & ARTHUR WORKMAN	CHEVRON USA INC	1/8+	837	361	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15613	C	9-7-22	THOMAS L STEVENS	CHEVRON USA INC	1/8+	836	290	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15614	C	9-7-22	DAVID F RINE	CHEVRON USA INC	1/8+	837	130	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15615	C	9-7-22	PAUL WAYNE RINE	CHEVRON USA INC	1/8+	837	133	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15616	C	9-7-22	PHILLIP C RINE	CHEVRON USA INC	1/8+	836	332	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15617	C	9-7-22	GLADYS M RINE	CHEVRON USA INC	1/8+	836	329	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15618	C	9-7-22	CHARLES A RINE	CHEVRON USA INC	1/8+	835	72	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15619	C	9-7-22	SHARON M REYNOLDS	CHEVRON USA INC	1/8+	840	322	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15620	C	9-7-22	GLADYS RUCKMAN	CHEVRON USA INC	1/8+	840	319	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15621	C	9-7-22	KATHERINE A STALMAKER	CHEVRON USA INC	1/8+	840	325	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15622	C	9-7-22	JAY LEROY RINE	CHEVRON USA INC	1/8+	840	351	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15623	C	9-7-22	SUSAN JANE WHEELER	CHEVRON USA INC	1/8+	847	473	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15624	C	9-7-22	RONALD T ZEHNDER	CHEVRON USA INC	1/8+	847	213	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15625	C	9-7-22	LAWRENCE W STRILING	CHEVRON USA INC	1/8+	852	384	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15626	C	9-7-22	ROBERT J SEAVER	CHEVRON USA INC	1/8+	854	77	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15627	C	9-7-22	PAULA R SEAVER	CHEVRON USA INC	1/8+	853	483	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15628	C	9-7-22	JENNIFER SEAVER	CHEVRON USA INC	1/8+	853	272	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15629	C	9-7-22	DANIEL L RINE	CHEVRON USA INC	1/8+	860	86	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15630	C	9-7-22	JANE L HELFER	CHEVRON USA INC	1/8+	836	342	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15631	C	9-7-22	DAVID HEINZROTH	CHEVRON USA INC	1/8+	836	219	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15632	C	9-7-22	MARIAN D JONES	CHEVRON USA INC	1/8+	835	38	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15633	C	9-7-22	ROGER W GATTS	CHEVRON USA INC	1/8+	835	35	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15634	C	9-7-22	JAMES W DAYTON	CHEVRON USA INC	1/8+	847	567	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15635	C	9-7-22	EILEEN J BETINAZZI	CHEVRON USA INC	1/8+	847	496	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15636	C	9-7-22	JOSEPH ASTON JR BY HIS ATTORNEY-IN-FACT MELVIN J. ASTON	CHEVRON USA INC	1/8+	848	280	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15637	C	9-7-22	DONALD ASTON	CHEVRON USA INC	1/8+	848	274	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15638	C	9-7-22	PAUL J ASTON A/K/A JACK ASTON	CHEVRON USA INC	1/8+	848	277	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15639	C	9-7-22	DELLA M BURKEY A/K/A MAXINE ASTON	CHEVRON USA INC	1/8+	848	435	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15640	C	9-7-22	EMMA JANE DAVIS A/K/A EMA ASTON	CHEVRON USA INC	1/8+	848	271	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15641	C	9-7-22	HENRY W ASTON	CHEVRON USA INC	1/8+	847	138	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15642	C	9-7-22	KENNETH L DAYTON	CHEVRON USA INC	1/8+	852	366	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15643	C	9-7-22	NORMAN G JOHNSON	CHEVRON USA INC	1/8+	848	363	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15644	C	9-7-22	RONALD BEN LAUGHTON	CHEVRON USA INC	1/8+	852	360	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15645	C	9-7-22	KAREN K OLDFIELD	CHEVRON USA INC	1/8+	854	111	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15646	C	9-7-22	JUDITH A CIRONE	CHEVRON USA INC	1/8+	848	428	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15647	C	9-7-22	KENNETH WENDELL OLDFIELD	CHEVRON USA INC	1/8+	861	589	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15648	C	9-7-22	MARTHA CHAWROD	CHEVRON USA INC	1/8+	863	542	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15649	C	9-7-22	MARY JANE DANIEL	CHEVRON USA INC	1/8+	858	28	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15650	C	9-7-22	MARY GARYS KUHN BY ATTORNEY IN FACT CONNIE LYONS	CHEVRON USA INC	1/8+	860	89	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15651	C	9-7-22	THOMAS G ASTON	CHEVRON USA INC	1/8+	860	83	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15652	C	9-7-22	ISAAC R ASTON A/K/A KE ASTON	CHEVRON USA INC	1/8+	886	136	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15653	C	9-7-22	EMILY M HENNEROTH	CHEVRON USA INC	1/8+	882	574	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15654	C	9-7-22	GEORGE E HENNINGER	CHEVRON USA INC	1/8+	885	612	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15655	C	9-7-22	ANNA EMERSON A/K/A ANNIE ASTON	CHEVRON USA INC	1/8+	864	603	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15656	C	9-7-22	PATRY L MYERS	CHEVRON USA INC	1/8+	867	100	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15657	C	9-7-22	MARY MARGARET ASTON	CHEVRON USA INC	1/8+	868	283	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15658	C	9-7-22	GLEN MATTHEW LAUGHTON	CHEVRON USA INC	1/8+	873	324	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15659	C	9-7-22	WILLIAM E DAYTON BY HIS A/E	CHEVRON USA INC	1/8+	871	190	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15660	C	9-7-22	DOUGLAS PAUL HENNEROTH BY HIS A/E	CHEVRON USA INC	1/8+	871	193	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15663	C	9-7-22	LARRY LEE CONKLE	CHEVRON USA INC	1/8+	865	354	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15664	C	9-7-22	ROY A CONKLE SR AND LORIE A CONKLE	CHEVRON USA INC	1/8+	865	311	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15666	C	9-7-22	THERESA ANNIE HUGHES	CHEVRON USA INC	1/8+	863	343	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15673	C	9-7-22	BRENDA J WHEITZEL	CHEVRON USA INC	1/8+	863	635	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15679	C	9-7-22	DIANE B ASTON	CHEVRON USA INC	1/8+	864	595	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15679	C	9-7-22	CARA BONAR FRESSE AND GEORGE H FRESSE	TH EXPLORATION LLC	1/8+	905	481	N/A	N/A	N/A	N/A	N/A

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Lease Name or No./Tag	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed book/Page	Assignment	Assignment	Assignment	Assignment	Assignment
10*15880	ROBERTA LANE CLAYTON	TH EXPLORATION LLC	1/8+	905 485	N/A	N/A	N/A	N/A	N/A
10*15888	JOHN GANT AND CHRISTINA M GARY	TH EXPLORATION LLC	1/8+	905 487	N/A	N/A	N/A	N/A	N/A
10*15889	JOHN LEROY BAKER AND CYNTHIA A BAKER	TH EXPLORATION LLC	1/8+	905 491	N/A	N/A	N/A	N/A	N/A
10*15690	ROBERT WHORTON AND LINDSAY WHORTON	TH EXPLORATION LLC	1/8+	905 489	N/A	N/A	N/A	N/A	N/A
10*15728	MARY LOU KITTELBERGER AND FREDERICK W KITTELBERGER	TH EXPLORATION LLC	1/8+	905 483	N/A	N/A	N/A	N/A	N/A
10*15729	DONNA KAY ALLEN AND ROGER ALLEN	TH EXPLORATION LLC	1/8+	905 493	N/A	N/A	N/A	N/A	N/A
10*15747	WILLIAM H BAKER	TH EXPLORATION LLC	1/8+	905 499	N/A	N/A	N/A	N/A	N/A
10*15748	CAROLYN LEE FUREY AND MARTIN J FUREY	TH EXPLORATION LLC	1/8+	905 495	N/A	N/A	N/A	N/A	N/A
10*15749	DIANA SMITH KNIGHT	TH EXPLORATION LLC	1/8+	905 497	N/A	N/A	N/A	N/A	N/A
10*16019	ROGER E GALLAGHER AND CONIE M GALLAGHER	TH EXPLORATION LLC	1/8+	905 503	N/A	N/A	N/A	N/A	N/A
10*16029	MARTHA ASHWORTH KNIGHT	TH EXPLORATION LLC	1/8+	905 505	N/A	N/A	N/A	N/A	N/A
10*16049	DANNY SHAWN KERNS AND AMY LYNN KERNS	TH EXPLORATION LLC	1/8+	905 518	N/A	N/A	N/A	N/A	N/A
10*16050	WILLIAM I GALLAGHER	TH EXPLORATION LLC	1/8+	905 512	N/A	N/A	N/A	N/A	N/A
10*16123	ROBERT SANDFORD BLACK AND JOAN BLACK	TH EXPLORATION LLC	1/8+	905 510	N/A	N/A	N/A	N/A	N/A
10*16133	PHYLLIS R GATTO	TH EXPLORATION LLC	1/8+	905 520	N/A	N/A	N/A	N/A	N/A
10*16138	LARRY W KUHN AND VICKIE B KUHN, HUSBAND AND WIFE	TH EXPLORATION LLC	1/8+	905 522	N/A	N/A	N/A	N/A	N/A
10*16139	HILBERT DEAN KUHN AND ANDBEA KUHN	TH EXPLORATION LLC	1/8+	905 524	N/A	N/A	N/A	N/A	N/A
10*16140	HUBERT DEAN KUHN & LACRUE KUHN	TH EXPLORATION LLC	1/8+	905 526	N/A	N/A	N/A	N/A	N/A
10*16141	ANDY PAUL KUHN & LACRUE KUHN	TH EXPLORATION LLC	1/8+	905 528	N/A	N/A	N/A	N/A	N/A
10*16177	HOWARD L KUHN AND MARY L KUHN	TH EXPLORATION LLC	1/8+	905 530	N/A	N/A	N/A	N/A	N/A
10*16179	JOSEPHINE BROWN	TH EXPLORATION LLC	1/8+	905 532	N/A	N/A	N/A	N/A	N/A
10*16287	DAVA BERRY COPELAND	TH EXPLORATION LLC	1/8+	905 534	N/A	N/A	N/A	N/A	N/A
10*16295	CHARLINE M ENGLE AND KEVIN E ENGLE	TH EXPLORATION LLC	1/8+	903 183	N/A	N/A	N/A	N/A	N/A
10*16384	DONALD H SNYDER JR AND KAREN S SNYDER	TH EXPLORATION LLC	1/8+	905 501	N/A	N/A	N/A	N/A	N/A
10*16389	DANIELLE BONAR OSTER AND LOUIS MICHAEL OSTER	TH EXPLORATION LLC	1/8+	905 508	N/A	N/A	N/A	N/A	N/A
10*16423	CHARLES BERRY	TH EXPLORATION LLC	1/8+	905 536	N/A	N/A	N/A	N/A	N/A
10*16426	GAIL L VAUGHN AND LARRY VAUGHN	TH EXPLORATION LLC	1/8+	905 538	N/A	N/A	N/A	N/A	N/A
10*16440	RENE J RUTJAN	TH EXPLORATION LLC	1/8+	905 538	N/A	N/A	N/A	N/A	N/A
10*16501	MELANIE C WILKINS AND ROBERT WILKINS	TH EXPLORATION LLC	1/8+	927 462	N/A	N/A	N/A	N/A	N/A
10*16513	LOYD DOYLE MOORE AND GWENDOLYN K MOORE	TH EXPLORATION LLC	1/8+	907 392	N/A	N/A	N/A	N/A	N/A
10*16513	LOWELL D AND JANICE L KNIGHT	TH EXPLORATION LLC	1/8+	927 458	N/A	N/A	N/A	N/A	N/A
10*16546	WALTER C RINE AND CHERYL A RINE	TH EXPLORATION LLC	1/8+	927 456	N/A	N/A	N/A	N/A	N/A
10*16553	MARK EDWARD AND KARRIE A GOODMAN	TH EXPLORATION LLC	1/8+	909 81	N/A	N/A	N/A	N/A	N/A
10*16558	PAUL BONAR KNIGHT AND SUZANNE L HOPKINS-KNIGHT	TH EXPLORATION LLC	1/8+	907 460	N/A	N/A	N/A	N/A	N/A
10*16571	GRACE LAURA BONAR	TH EXPLORATION LLC	1/8+	907 411	N/A	N/A	N/A	N/A	N/A
10*16585	DALE BRIAN GOODMAN	TH EXPLORATION LLC	1/8+	909 506	N/A	N/A	N/A	N/A	N/A
10*16588	EDWIN M KNABENSHUE ADMINISTRATOR OF THE ESTATE OF SARAH J KNABENSHUE, DECEASED	TH EXPLORATION LLC	1/8+	907 408	N/A	N/A	N/A	N/A	N/A
10*16589	MARY L WHITTINGTON	TH EXPLORATION LLC	1/8+	907 400	N/A	N/A	N/A	N/A	N/A
10*16719	HOWARD T CONNER AND NANETTE CONNER	TH EXPLORATION LLC	1/8+	912 37	N/A	N/A	N/A	N/A	N/A
10*16820	ROBERTA ANN AND DAVID S GIBB	TH EXPLORATION LLC	1/8+	919 237	N/A	N/A	N/A	N/A	N/A
10*16844	HOLLY A LONGFELLOW	TH EXPLORATION LLC	1/8+	927 454	N/A	N/A	N/A	N/A	N/A
10*16845	TRACY L AND KEITH W BARBY	TH EXPLORATION LLC	1/8+	927 452	N/A	N/A	N/A	N/A	N/A
10*16896	MARTHA J BLACK	TH EXPLORATION LLC	1/8+	927 450	N/A	N/A	N/A	N/A	N/A
10*17296	DANIEL W HEINZROTH AND KATHLEEN E HEINZROTH	TH EXPLORATION LLC	1/8+	914 528	N/A	N/A	N/A	N/A	N/A
10*17365	MYSTI JOANNE GOODMAN	TH EXPLORATION LLC	1/8+	927 468	N/A	N/A	N/A	N/A	N/A
10*17370	KELLY LUNE GOODMAN	TH EXPLORATION LLC	1/8+	927 470	N/A	N/A	N/A	N/A	N/A
10*17497	SUZANNA DOOLING AND MICHAEL DOOLING	TH EXPLORATION LLC	1/8+	927 464	N/A	N/A	N/A	N/A	N/A
10*17584	WILLIAM THOMAS BONAR AND MONICA BONAR	TH EXPLORATION LLC	1/8+	927 466	N/A	N/A	N/A	N/A	N/A
10*18256	CHARLES E BROWN	TH EXPLORATION LLC	1/8+	929 624	N/A	N/A	N/A	N/A	N/A
10*18256	JEFFREY STEPHEN GOODMAN	TH EXPLORATION LLC	1/8+	929 1	N/A	N/A	N/A	N/A	N/A
10*18321	PAUL A RINE AND DEBRA A RINE	TH EXPLORATION LLC	1/8+	931 238	N/A	N/A	N/A	N/A	N/A
10*18415	CHAD LONGFELLOW	TH EXPLORATION LLC	1/8+	932 575	N/A	N/A	N/A	N/A	N/A
10*18514	JOHN R BERRY	TH EXPLORATION LLC	1/8+	933 569	N/A	N/A	N/A	N/A	N/A
10*18522	MARTIN REED BROWN AND DOLORES BROWN	TH EXPLORATION LLC	1/8+	933 558	N/A	N/A	N/A	N/A	N/A
10*19391	JEFF BERRY AND AMY BERRY	TH EXPLORATION LLC	1/8+	940 340	N/A	N/A	N/A	N/A	N/A
10*19406	WILLIAM KENT BROWN AND KAYLEEN BROWN	TH EXPLORATION LLC	1/8+	939 289	N/A	N/A	N/A	N/A	N/A
10*19568	BERNIE TWIGG, GENERAL RECEIVER	TH EXPLORATION LLC	1/8+	946 85	N/A	N/A	N/A	N/A	N/A
10*47051.295.10	DEENA J PALOMO	TH EXPLORATION LLC	1/8+	905 470	N/A	N/A	N/A	N/A	N/A

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Lease Name or No	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment
10*47051.295.11	C	9-7-22	REGINA D FIGUEROA AND DAVID FIGUEROA	TH EXPLORATION LLC	1/8+	905 435	N/A	N/A	N/A	N/A	N/A
10*47051.295.12	C	9-7-22	EARL D WELLMAN	TH EXPLORATION LLC	1/8+	905 432	N/A	N/A	N/A	N/A	N/A
10*47051.295.13	C	9-7-22	THE DOLLYE F WOOD REVOCABLE TRUST BY NICHOLAS CHARLES WOOD AS TRUSTEE	TH EXPLORATION LLC	1/8+	904 641	N/A	N/A	N/A	N/A	N/A
10*47051.295.3	C	9-7-22	HAZEL ARIZONA MOORE REYNOLDS	TH EXPLORATION LLC	1/8+	904 632	N/A	N/A	N/A	N/A	N/A
10*47051.295.4	C	9-7-22	LLOYD D MOORE	TH EXPLORATION LLC	1/8+	904 459	N/A	N/A	N/A	N/A	N/A
10*47051.295.5	C	9-7-22	DALE R MOORE	TH EXPLORATION LLC	1/8+	904 635	N/A	N/A	N/A	N/A	N/A
10*47051.295.6	C	9-7-22	MARY I BURKHART	TH EXPLORATION LLC	1/8+	904 638	N/A	N/A	N/A	N/A	N/A
10*47051.295.7	C	9-7-22	JEANNE V MELCHIORI	TH EXPLORATION LLC	1/8+	904 462	N/A	N/A	N/A	N/A	N/A
10*47051.295.9	C	9-7-22	JAMES E HIMELRICK JR AND KAREN HIMELRICK	TH EXPLORATION LLC	1/8+	904 465	N/A	N/A	N/A	N/A	N/A
10*15662	D	9-7-24	LARRY LEE CONKLE	CHEVRON USA INC	1/8+	863 354	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15663	D	9-7-24	ROY A CONKLE SR AND LORIE A CONKLE	CHEVRON USA INC	1/8+	863 311	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15664	D	9-7-24	THERESA ANNE HUGHES	CHEVRON USA INC	1/8+	863 343	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15666	D	9-7-24	BRENDA J WHETZEL	CHEVRON USA INC	1/8+	863 635	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*16049	D	9-7-24	DANNY SHAWN KERNS AND AMY LYNN KERNS	TH EXPLORATION LLC	1/8+	905 518	N/A	N/A	N/A	N/A	N/A
10*16138	D	9-7-24	LARRY W KUHN AND VICKIE B KUHN, HUSBAND AND WIFE	TH EXPLORATION LLC	1/8+	905 522	N/A	N/A	N/A	N/A	N/A
10*16139	D	9-7-24	HUBERT DEAN KUHN AND ANDREA KUHN	TH EXPLORATION LLC	1/8+	905 524	N/A	N/A	N/A	N/A	N/A
10*16140	D	9-7-24	ANDY PAUL KUHN & JACKIE KUHN	TH EXPLORATION LLC	1/8+	905 526	N/A	N/A	N/A	N/A	N/A
10*16141	D	9-7-24	HOWARD L KUHN AND MARY L KUHN	TH EXPLORATION LLC	1/8+	905 528	N/A	N/A	N/A	N/A	N/A
10*16501	D	9-7-24	LLOYD DOYLE MOORE AND GWENDOLYN K MOORE	TH EXPLORATION LLC	1/8+	907 392	N/A	N/A	N/A	N/A	N/A
10*16553	D	9-7-24	MARK EDWARD AND KARRIE A GOODMAN	TH EXPLORATION LLC	1/8+	909 81	N/A	N/A	N/A	N/A	N/A
10*16585	D	9-7-24	DALE BRIAN GOODMAN	TH EXPLORATION LLC	1/8+	909 506	N/A	N/A	N/A	N/A	N/A
10*16820	D	9-7-24	ROBERTA ANN AND DAVID S GIBB	TH EXPLORATION LLC	1/8+	919 237	N/A	N/A	N/A	N/A	N/A
10*17365	D	9-7-24	MYSTI JOANNE GOODMAN	TH EXPLORATION LLC	1/8+	927 468	N/A	N/A	N/A	N/A	N/A
10*17370	D	9-7-24	KELLY JUNE GOODMAN	TH EXPLORATION LLC	1/8+	927 470	N/A	N/A	N/A	N/A	N/A
10*18256	D	9-7-24	JEFFREY STEPHEN GOODMAN	TH EXPLORATION LLC	1/8+	929 1	N/A	N/A	N/A	N/A	N/A
10*47051.295.10	D	9-7-24	DEENA J PALOMO	TH EXPLORATION LLC	1/8+	905 470	N/A	N/A	N/A	N/A	N/A
10*47051.295.11	D	9-7-24	REGINA D FIGUEROA AND DAVID FIGUEROA	TH EXPLORATION LLC	1/8+	905 435	N/A	N/A	N/A	N/A	N/A
10*47051.295.12	D	9-7-24	EARL D WELLMAN	TH EXPLORATION LLC	1/8+	905 432	N/A	N/A	N/A	N/A	N/A
10*47051.295.13	D	9-7-24	THE DOLLYE F WOOD REVOCABLE TRUST BY NICHOLAS CHARLES WOOD AS TRUSTEE	TH EXPLORATION LLC	1/8+	904 641	N/A	N/A	N/A	N/A	N/A
10*47051.295.3	D	9-7-24	HAZEL ARIZONA MOORE REYNOLDS	TH EXPLORATION LLC	1/8+	904 632	N/A	N/A	N/A	N/A	N/A
10*47051.295.4	D	9-7-24	LLOYD D MOORE	TH EXPLORATION LLC	1/8+	904 459	N/A	N/A	N/A	N/A	N/A
10*47051.295.5	D	9-7-24	DALE R MOORE	TH EXPLORATION LLC	1/8+	904 635	N/A	N/A	N/A	N/A	N/A
10*47051.295.6	D	9-7-24	MARY I BURKHART	TH EXPLORATION LLC	1/8+	904 638	N/A	N/A	N/A	N/A	N/A
10*47051.295.7	D	9-7-24	JEANNE V MELCHIORI	TH EXPLORATION LLC	1/8+	904 462	N/A	N/A	N/A	N/A	N/A
10*47051.295.9	D	9-7-24	JAMES E HIMELRICK JR AND KAREN HIMELRICK	TH EXPLORATION LLC	1/8+	904 465	N/A	N/A	N/A	N/A	N/A
10*15746	E	9-7-23	BRUCE D SCHURR	TH EXPLORATION LLC	1/8+	921 478	N/A	N/A	N/A	N/A	N/A
10*16021	E	9-7-23	TOMMY BONAR AND TANYA S BONAR	TH EXPLORATION LLC	1/8+	925 325	N/A	N/A	N/A	N/A	N/A
10*16115	E	9-7-23	EARL W HARRIS	TH EXPLORATION LLC	1/8+	925 329	N/A	N/A	N/A	N/A	N/A
10*16247	E	9-7-23	CAROL RIGGLE PARSLEY AND JAMES DENNIS PARSLEY	TH EXPLORATION LLC	1/8+	925 327	N/A	N/A	N/A	N/A	N/A
10*17415	E	9-7-23	DILLON PITSENBARGER	TH EXPLORATION LLC	1/8+	919 241	N/A	N/A	N/A	N/A	N/A
10*17506	E	9-7-23	CHASKIA F HARRIS AND JAMES M HARRIS	TH EXPLORATION LLC	1/8+	919 239	N/A	N/A	N/A	N/A	N/A
10*17507	E	9-7-23	DEZRAY METCALF	TH EXPLORATION LLC	1/8+	919 235	N/A	N/A	N/A	N/A	N/A
10*47051.256.1	E	9-7-23	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	881 145	N/A	N/A	N/A	N/A	N/A
10*47051.256.10	E	9-7-23	GRACE LAURA BONAR	TH EXPLORATION LLC	1/8+	905 35	N/A	N/A	N/A	N/A	N/A
10*47051.256.11	E	9-7-23	JOHN L MASON	TH EXPLORATION LLC	1/8+	905 37	N/A	N/A	N/A	N/A	N/A
10*47051.256.12	E	9-7-23	STEVEN A BOHRER	TH EXPLORATION LLC	1/8+	905 39	N/A	N/A	N/A	N/A	N/A
10*47051.256.13	E	9-7-23	WILLIAM W CRAIG AND GLENDA L CRAIG	TH EXPLORATION LLC	1/8+	905 41	N/A	N/A	N/A	N/A	N/A
10*47051.256.14	E	9-7-23	HUGH R BUZZARD	TH EXPLORATION LLC	1/8+	905 43	N/A	N/A	N/A	N/A	N/A
10*47051.256.15	E	9-7-23	CHARLOTTE J BONAR YOHO	TH EXPLORATION LLC	1/8+	904 455	N/A	N/A	N/A	N/A	N/A
10*47051.256.16	E	9-7-23	CHARLOTTE B HUMMELL	TH EXPLORATION LLC	1/8+	905 45	N/A	N/A	N/A	N/A	N/A
10*47051.256.17	E	9-7-23	MAXINE G JOHNSON	TH EXPLORATION LLC	1/8+	904 457	N/A	N/A	N/A	N/A	N/A
10*47051.256.18	E	9-7-23	JOHN WILLIAM BONAR AND SHIRLEY BONAR	TH EXPLORATION LLC	1/8+	913 522	N/A	N/A	N/A	N/A	N/A
10*47051.256.19	E	9-7-23	MICHAEL DAVID PYLES AND CYNTHIA A PYLES	TH EXPLORATION LLC	1/8+	907 207	N/A	N/A	N/A	N/A	N/A
10*47051.256.20	E	9-7-23	JEFFREY THOMAS PYLES AND TERESA A PYLES	TH EXPLORATION LLC	1/8+	907 209	N/A	N/A	N/A	N/A	N/A
10*47051.256.21	E	9-7-23	JACK L MASON AND JEAN M MASON	TH EXPLORATION LLC	1/8+	904 626	N/A	N/A	N/A	N/A	N/A
10*47051.256.22	E	9-7-23	BEVERLY J HOPSON	TH EXPLORATION LLC	1/8+	913 581	N/A	N/A	N/A	N/A	N/A
10*47051.256.23	E	9-7-23	ROBERT L BONAR	TH EXPLORATION LLC	1/8+	913 556	N/A	N/A	N/A	N/A	N/A

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10*47051.256.24	E	9-7-23	CATHERINE BONAR PETTIT BILLIE	TH EXPLORATION LLC	1/8+	904 628	N/A	N/A	N/A	N/A	N/A
10*47051.256.7	E	9-7-23	MARILYN SUE BUMER	TH EXPLORATION LLC	1/8+	905 29	N/A	N/A	N/A	N/A	N/A
10*47051.256.8	E	9-7-23	PAMELA ANN MASON	TH EXPLORATION LLC	1/8+	905 31	N/A	N/A	N/A	N/A	N/A
10*47051.256.9	E	9-7-23	WANDA MASON SUNSHINE	TH EXPLORATION LLC	1/8+	905 33	N/A	N/A	N/A	N/A	N/A
10*15746	F	9-11-7	BRUCE D SCHURR	TH EXPLORATION LLC	1/8+	921 478	N/A	N/A	N/A	N/A	N/A
10*16021	F	9-11-7	TOMMY BONAR AND TANYA S BONAR	TH EXPLORATION LLC	1/8+	925 325	N/A	N/A	N/A	N/A	N/A
10*16115	F	9-11-7	EARL W HARRIS	TH EXPLORATION LLC	1/8+	925 329	N/A	N/A	N/A	N/A	N/A
10*16121	F	9-11-7	ISAIAH BENNETT	TH EXPLORATION LLC	1/8+	933 105	N/A	N/A	N/A	N/A	N/A
10*16247	F	9-11-7	CAROL RIGGLE PARSLEY AND JAMES DENNIS PARSLEY	TH EXPLORATION LLC	1/8+	925 327	N/A	N/A	N/A	N/A	N/A
10*17415	F	9-11-7	DILLON PITSENBARGER	TH EXPLORATION LLC	1/8+	919 241	N/A	N/A	N/A	N/A	N/A
10*17506	F	9-11-7	CHASKIA F HARRIS AND JAMES M HARRIS	TH EXPLORATION LLC	1/8+	919 239	N/A	N/A	N/A	N/A	N/A
10*17507	F	9-11-7	DEZRAY METCALF	TH EXPLORATION LLC	1/8+	919 235	N/A	N/A	N/A	N/A	N/A
10*47051.256.1	F	9-11-7	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	881 145	N/A	N/A	N/A	N/A	N/A
10*47051.256.10	F	9-11-7	GRACE LAURA BONAR	TH EXPLORATION LLC	1/8+	905 35	N/A	N/A	N/A	N/A	N/A
10*47051.256.11	F	9-11-7	JOHN L MASON	TH EXPLORATION LLC	1/8+	905 37	N/A	N/A	N/A	N/A	N/A
10*47051.256.12	F	9-11-7	STEVEN A BOHRER	TH EXPLORATION LLC	1/8+	905 39	N/A	N/A	N/A	N/A	N/A
10*47051.256.13	F	9-11-7	WILLIAM W CRAIG AND GLENDA L CRAIG	TH EXPLORATION LLC	1/8+	905 41	N/A	N/A	N/A	N/A	N/A
10*47051.256.14	F	9-11-7	HUGH R BUZZARD	TH EXPLORATION LLC	1/8+	905 43	N/A	N/A	N/A	N/A	N/A
10*47051.256.15	F	9-11-7	ROY E AND CHARLOTTE J BONAR YOHO	TH EXPLORATION LLC	1/8+	904 455	N/A	N/A	N/A	N/A	N/A
10*47051.256.16	F	9-11-7	CHARLOTTE B HUMMELL	TH EXPLORATION LLC	1/8+	905 45	N/A	N/A	N/A	N/A	N/A
10*47051.256.17	F	9-11-7	MAXINE G JOHNSON	TH EXPLORATION LLC	1/8+	904 457	N/A	N/A	N/A	N/A	N/A
10*47051.256.18	F	9-11-7	JOHN WILLIAM BONAR AND SHIRLEY BONAR	TH EXPLORATION LLC	1/8+	913 522	N/A	N/A	N/A	N/A	N/A
10*47051.256.19	F	9-11-7	MICHAEL DAVID PYLES AND CYNTHIA A PYLES	TH EXPLORATION LLC	1/8+	907 207	N/A	N/A	N/A	N/A	N/A
10*47051.256.20	F	9-11-7	JEFFREY THOMAS PYLES AND TERESA A PYLES	TH EXPLORATION LLC	1/8+	907 209	N/A	N/A	N/A	N/A	N/A
10*47051.256.21	F	9-11-7	JACK L MASON AND JEAN M MASON	TH EXPLORATION LLC	1/8+	904 626	N/A	N/A	N/A	N/A	N/A
10*47051.256.22	F	9-11-7	BEVERLY J HOPSON	TH EXPLORATION LLC	1/8+	913 581	N/A	N/A	N/A	N/A	N/A
10*47051.256.23	F	9-11-7	ROBERT L BONAR	TH EXPLORATION LLC	1/8+	913 556	N/A	N/A	N/A	N/A	N/A
10*47051.256.24	F	9-11-7	CATHERINE BONAR PETTIT BILLIE	TH EXPLORATION LLC	1/8+	904 628	N/A	N/A	N/A	N/A	N/A
10*47051.256.7	F	9-11-7	MARILYN SUE BUMER	TH EXPLORATION LLC	1/8+	905 29	N/A	N/A	N/A	N/A	N/A
10*47051.256.8	F	9-11-7	PAMELA ANN MASON	TH EXPLORATION LLC	1/8+	905 31	N/A	N/A	N/A	N/A	N/A
10*47051.256.9	F	9-11-7	WANDA MASON SUNSHINE	TH EXPLORATION LLC	1/8+	905 33	N/A	N/A	N/A	N/A	N/A
10*15560	G	9-11-6.2	WILLIAM F KERNS ET UX	CHESAPEAKE APPALACHIA LLC	1/8+	677 561	N/A	Chesapeake to Statoil: 21/565	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15669	G	9-11-6.2	EMMA ANDERSON	CHEVRON USA INC	1/8+	861 586	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15670	G	9-11-6.2	GARY M BONAR AND ELLEN L BONAR	CHEVRON USA INC	1/8+	861 577	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15671	G	9-11-6.2	JUDALENE K COLLUMS	CHEVRON USA INC	1/8+	861 571	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15672	G	9-11-6.2	NAOMI HUPP	CHEVRON USA INC	1/8+	916 304	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.256.2	G	9-11-6.2	CAROL JEAN ANDERSON	TH EXPLORATION LLC	1/8+	879 299	N/A	N/A	N/A	N/A	N/A
10*47051.256.3	G	9-11-6.2	BRENDA S DYKHOUSE	TH EXPLORATION LLC	1/8+	881 148	N/A	N/A	N/A	N/A	N/A
10*47051.256.4	G	9-11-6.2	GLEN A BONAR	TH EXPLORATION LLC	1/8+	881 151	N/A	N/A	N/A	N/A	N/A
10*47051.256.5	G	9-11-6.2	JERRY W ZIEN AND KATHLEEN E ZIEN	TH EXPLORATION LLC	1/8+	882 530	N/A	N/A	N/A	N/A	N/A
10*15669	H	9-11-6.1	EMMA ANDERSON	CHEVRON USA INC	1/8+	861 586	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15670	H	9-11-6.1	GARY M BONAR AND ELLEN L BONAR	CHEVRON USA INC	1/8+	861 577	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15671	H	9-11-6.1	JUDALENE K COLLUMS	CHEVRON USA INC	1/8+	861 571	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15672	H	9-11-6.1	NAOMI HUPP	CHEVRON USA INC	1/8+	916 304	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.256.1	H	9-11-6.1	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	881 145	N/A	N/A	N/A	N/A	N/A
10*47051.256.2	H	9-11-6.1	CAROL JEAN ANDERSON	TH EXPLORATION LLC	1/8+	879 299	N/A	N/A	N/A	N/A	N/A
10*47051.256.3	H	9-11-6.1	BRENDA S DYKHOUSE	TH EXPLORATION LLC	1/8+	881 148	N/A	N/A	N/A	N/A	N/A
10*47051.256.4	H	9-11-6.1	GLEN A BONAR	TH EXPLORATION LLC	1/8+	881 151	N/A	N/A	N/A	N/A	N/A
10*47051.256.5	H	9-11-6.1	JERRY W ZIEN AND KATHLEEN E ZIEN	TH EXPLORATION LLC	1/8+	882 530	N/A	N/A	N/A	N/A	N/A
10*15667	I	9-7-19	KEVIN E MCGILTON ET UX	CHEVRON USA INC	1/8+	850 351	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15667	J	9-7-20	KEVIN E MCGILTON ET UX	CHEVRON USA INC	1/8+	850 351	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15698	J	9-7-20	ROBERT A EDGE AND SHERRIE N EDGE	TH EXPLORATION LLC	1/8+	900 363	N/A	N/A	N/A	N/A	N/A
10*15720	J	9-7-20	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	TH EXPLORATION LLC	1/8+	905 458	N/A	N/A	N/A	N/A	N/A
10*15721	J	9-7-20	TINA L EDGE MONTI AND THOMAS MONTI	TH EXPLORATION LLC	1/8+	905 456	N/A	N/A	N/A	N/A	N/A

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Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment
10*16020	J	9-7-20	SHARON HINERMAN MAY & DANIEL G MAY	TH EXPLORATION LLC	1/8+	905 464	N/A	N/A	N/A	N/A	N/A
10*16028	J	9-7-20	ROSEMARY PARKINS AND STEPHEN PARKINS	TH EXPLORATION LLC	1/8+	905 460	N/A	N/A	N/A	N/A	N/A
10*16051	J	9-7-20	DONNA JEAN SNIDER AND DAVID SNIDER	TH EXPLORATION LLC	1/8+	905 462	N/A	N/A	N/A	N/A	N/A
10*16053	J	9-7-20	GARY D HINERMAN AND JUDY ANN HINERMAN	TH EXPLORATION LLC	1/8+	905 466	N/A	N/A	N/A	N/A	N/A
10*16289	J	9-7-20	BRENDA HINERMAN WILLIAMSON AND BRIAN K WILLIAMSON	TH EXPLORATION LLC	1/8+	905 468	N/A	N/A	N/A	N/A	N/A
10*16412	J	9-7-20	ELIZABETH ANN BLAZER AND PAUL R BLAZER	TH EXPLORATION LLC	1/8+	905 452	N/A	N/A	N/A	N/A	N/A
10*16413	J	9-7-20	RONALD H EDGE JR	TH EXPLORATION LLC	1/8+	905 454	N/A	N/A	N/A	N/A	N/A
10*16852	J	9-7-20	KEVIN R DURBIN AND KRISTA A DURBIN	TH EXPLORATION LLC	1/8+	929 312	N/A	N/A	N/A	N/A	N/A
10*17622	J	9-7-20	WHITE ESQ	TH EXPLORATION LLC	1/8+	929 314	N/A	N/A	N/A	N/A	N/A
10*15667	K	9-7-18	KEVIN E MCGILTON ET UX	CHEVRON USA INC	1/8+	850 351	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15720	K	9-7-18	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	TH EXPLORATION LLC	1/8+	905 458	N/A	N/A	N/A	N/A	N/A
10*15721	K	9-7-18	TINA L EDGE MONTI AND THOMAS MONTI	TH EXPLORATION LLC	1/8+	905 456	N/A	N/A	N/A	N/A	N/A
10*16020	K	9-7-18	SHARON HINERMAN MAY & DANIEL G MAY	TH EXPLORATION LLC	1/8+	905 464	N/A	N/A	N/A	N/A	N/A
10*16028	K	9-7-18	ROSEMARY PARKINS AND STEPHEN PARKINS	TH EXPLORATION LLC	1/8+	905 460	N/A	N/A	N/A	N/A	N/A
10*16051	K	9-7-18	DONNA JEAN SNIDER AND DAVID SNIDER	TH EXPLORATION LLC	1/8+	905 462	N/A	N/A	N/A	N/A	N/A
10*16053	K	9-7-18	GARY D HINERMAN AND JUDY ANN HINERMAN	TH EXPLORATION LLC	1/8+	905 466	N/A	N/A	N/A	N/A	N/A
10*16289	K	9-7-18	BRENDA HINERMAN WILLIAMSON AND BRIAN K WILLIAMSON	TH EXPLORATION LLC	1/8+	905 468	N/A	N/A	N/A	N/A	N/A
10*16412	K	9-7-18	ELIZABETH ANN BLAZER AND PAUL R BLAZER	TH EXPLORATION LLC	1/8+	905 452	N/A	N/A	N/A	N/A	N/A
10*16413	K	9-7-18	RONALD H EDGE JR	TH EXPLORATION LLC	1/8+	905 454	N/A	N/A	N/A	N/A	N/A
10*16852	K	9-7-18	KEVIN R DURBIN AND KRISTA A DURBIN	TH EXPLORATION LLC	1/8+	929 312	N/A	N/A	N/A	N/A	N/A
10*17622	K	9-7-18	WHITE ESQ	TH EXPLORATION LLC	1/8+	929 314	N/A	N/A	N/A	N/A	N/A
10*16471	L	9-7-2	CNX GAS COMPANY LLC	TH EXPLORATION LLC	1/8+	905 155	N/A	N/A	N/A	N/A	N/A
10*15557	M	Parcel	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15667	N	9-7-17	KEVIN E MCGILTON ET UX	CHEVRON USA INC	1/8+	850 351	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15698	N	9-7-17	ROBERT A EDGE AND SHERRIE N EDGE	TH EXPLORATION LLC	1/8+	900 363	N/A	N/A	N/A	N/A	N/A
10*15720	N	9-7-17	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	TH EXPLORATION LLC	1/8+	905 458	N/A	N/A	N/A	N/A	N/A
10*15721	N	9-7-17	TINA L EDGE MONTI AND THOMAS MONTI	TH EXPLORATION LLC	1/8+	905 456	N/A	N/A	N/A	N/A	N/A
10*16020	N	9-7-17	SHARON HINERMAN MAY & DANIEL G MAY	TH EXPLORATION LLC	1/8+	905 464	N/A	N/A	N/A	N/A	N/A
10*16028	N	9-7-17	ROSEMARY PARKINS AND STEPHEN PARKINS	TH EXPLORATION LLC	1/8+	905 460	N/A	N/A	N/A	N/A	N/A
10*16051	N	9-7-17	DONNA JEAN SNIDER AND DAVID SNIDER	TH EXPLORATION LLC	1/8+	905 462	N/A	N/A	N/A	N/A	N/A
10*16053	N	9-7-17	GARY D HINERMAN AND JUDY ANN HINERMAN	TH EXPLORATION LLC	1/8+	905 466	N/A	N/A	N/A	N/A	N/A
10*16289	N	9-7-17	BRENDA HINERMAN WILLIAMSON AND BRIAN K WILLIAMSON	TH EXPLORATION LLC	1/8+	905 468	N/A	N/A	N/A	N/A	N/A
10*16412	N	9-7-17	ELIZABETH ANN BLAZER AND PAUL R BLAZER	TH EXPLORATION LLC	1/8+	905 452	N/A	N/A	N/A	N/A	N/A
10*16413	N	9-7-17	RONALD H EDGE JR	TH EXPLORATION LLC	1/8+	905 454	N/A	N/A	N/A	N/A	N/A
10*16852	N	9-7-17	KEVIN R DURBIN AND KRISTA A DURBIN	TH EXPLORATION LLC	1/8+	929 312	N/A	N/A	N/A	N/A	N/A
10*17622	N	9-7-17	WHITE ESQ	TH EXPLORATION LLC	1/8+	929 314	N/A	N/A	N/A	N/A	N/A
10*15557	O	Parcel	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15665	p	9-7-1	MICHAEL J RINE ET UX	CENTRAL MICHIGAN EXPLORATION LLC	1/8+	668 147	N/A	N/A	Central Michigan to Stone Energy: 21/288	Stone Energy to Chevron: 33/276	Chevron to Tug Hill: 36/148
10*15667	Q	9-7-16	KEVIN E MCGILTON ET UX	CHEVRON USA INC	1/8+	850 351	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15557	R	9-7-31	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15557	S	9-7-15	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
	T	9-7-14	GOODNIGHT ARNIE ET UX	CHEVRON USA INC	1/8+	777 59	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 42/435
	U	9-7-4	PAYNE HELEN R	CHEVRON USA INC	1/8+	791 38	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 42/435
10*15521	V	9-7-3	VENANGO 21ST CENTURY ENERGY INC	TH EXPLORATION LLC	1/8+	888 618	N/A	N/A	N/A	N/A	N/A
10*15608	V	9-7-3	VENANGO 21ST CENTURY ENERGY INC	TRIENERGY HOLDINGS, LLC	1/8+	722 281	N/A	N/A	TriEnergy to NPAR: 24/196	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*47051.073.1	V	9-7-3	PATRIOT RESTORATIONS LLC	TH EXPLORATION LLC	1/8+	908 541	N/A	N/A	N/A	N/A	N/A
10*47051.073.2	V	9-7-3	TRIENERGY HOLDINGS, LLC	TH EXPLORATION LLC	1/8+	878 330	N/A	N/A	N/A	N/A	N/A
10*47051.073.3	V	9-7-3	CHARLES R HAGEDORN JR	CHEVRON USA INC	1/8+	816 423	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15608	W	9-7-3.1	CHARLES R HAGEDORN JR	CHEVRON USA INC	1/8+	816 423	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*16923	W	9-7-3.1	CHARLES R HAGEDORN JR ET UX	CHESAPEAKE APPALACHIA LLC	1/8+	689 177	N/A	Chesapeake to Statoil: 22/506	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*16927	W	9-7-3.1	ELMA L HAGEDORN	CHESAPEAKE APPALACHIA LLC	1/8+	697 120	N/A	Chesapeake to Statoil: 22/506	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*47051.073.1	W	9-7-3.1	VENANGO 21ST CENTURY ENERGY INC	TH EXPLORATION LLC	1/8+	888 618	N/A	N/A	N/A	N/A	N/A
10*47051.073.2	W	9-7-3.1	PATRIOT RESTORATIONS LLC	TH EXPLORATION LLC	1/8+	908 541	N/A	N/A	N/A	N/A	N/A
10*47051.073.3	W	9-7-3.1	TRIENERGY HOLDINGS, LLC	TH EXPLORATION LLC	1/8+	878 330	N/A	N/A	N/A	N/A	N/A

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment
10*15558	X	9-7-5	GOODNIGHT ARNIE ET UX	CHEVRON USA INC	1/8+	777 59	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 42/435
10*21585	Y	9-5-1	SAMPSON TERRY L ET UX	CHEVRON USA INC	1/8+	852 351	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 42/435
10*21588	Z	9-5-3	WAYT LAWRENCE ALLEN - SFX	CHESAPEAKE APPALACHIA LLC	1/8+	687 233	N/A	Chesapeake to Statoil: 22/646	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 42/435
10*21591	Z	9-5-3	KIDD BEATRICE ANN - SFX	CHESAPEAKE APPALACHIA LLC	1/8+	687 230	N/A	Chesapeake to Statoil: 22/646	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 42/435
10*15594	AA	9-5-4.1	GORBY IVAN F - SFX	CHESAPEAKE APPALACHIA LLC	1/8+	695 527	Chesapeake to Statoil: 22/506	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 42/435
10*15595	AA	9-5-4.1	DAKAN JOSEPH D - SFX	CHESAPEAKE APPALACHIA LLC	1/8+	695 519	Chesapeake to Statoil: 22/506	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 42/435
10*15596	AA	9-5-4.1	GORBY JOHN E - SFX	CHESAPEAKE APPALACHIA LLC	1/8+	695 523	Chesapeake to Statoil: 22/506	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 42/435
10*15597	AA	9-5-4.1	GAST KAREN S - SFX	CHESAPEAKE APPALACHIA LLC	1/8+	694 534	Chesapeake to Statoil: 22/506	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 42/435
10*15598	AA	9-5-4.1	GONTA ADA HAZEL - SFX	CHESAPEAKE APPALACHIA LLC	1/8+	695 183	Chesapeake to Statoil: 22/506	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 42/435
10*15599	AA	9-5-4.1	RAJU PATSY JO - SFX	CHESAPEAKE APPALACHIA LLC	1/8+	694 561	Chesapeake to Statoil: 22/506	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 42/435
10*47051.223.1	AA	9-5-4.1	STORCH JEAN A AIF JOHN HERMAN STORCH - SFX	TH EXPLORATION LLC	1/8+	877 216	N/A	N/A	N/A	N/A	Tug Hill to Chevron: 36/168
10*47051.223.2	AA	9-5-4.1	SCHIEFER STEPHANIE L ET VIR - SFX	TH EXPLORATION LLC	1/8+	885 321	N/A	N/A	N/A	N/A	Tug Hill to Chevron: 36/168
10*47051.223.3	AA	9-5-4.1	LEADBETTER ROBERT A ET UX - SFX	TH EXPLORATION LLC	1/8+	885 324	N/A	N/A	N/A	N/A	Tug Hill to Chevron: 36/168
10*15481	BB	9-5-4	DEAN P RIGBY AND SUSAN RIGBY	TH EXPLORATION LLC	1/8+	908 197	N/A	N/A	N/A	N/A	N/A
10*15482	BB	9-5-4	SUSAN NELSON	TH EXPLORATION LLC	1/8+	908 203	N/A	N/A	N/A	N/A	N/A
10*15594	BB	9-5-4	GORBY IVAN F - SFX	CHESAPEAKE APPALACHIA LLC	1/8+	695 527	Chesapeake to Statoil: 22/506	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 42/435
10*15595	BB	9-5-4	DAKAN JOSEPH D - SFX	CHESAPEAKE APPALACHIA LLC	1/8+	695 519	Chesapeake to Statoil: 22/506	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 42/435
10*15596	BB	9-5-4	GORBY JOHN E - SFX	CHESAPEAKE APPALACHIA LLC	1/8+	695 523	Chesapeake to Statoil: 22/506	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 42/435
10*15597	BB	9-5-4	GAST KAREN S - SFX	CHESAPEAKE APPALACHIA LLC	1/8+	694 534	Chesapeake to Statoil: 22/506	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 42/435
10*15598	BB	9-5-4	GONTA ADA HAZEL - SFX	CHESAPEAKE APPALACHIA LLC	1/8+	695 183	Chesapeake to Statoil: 22/506	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 42/435
10*15599	BB	9-5-4	RAJU PATSY JO - SFX	CHESAPEAKE APPALACHIA LLC	1/8+	694 561	Chesapeake to Statoil: 22/506	Statoil to Chevron: 30/427	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 42/435
10*15686	BB	9-5-4	JOHN OMER BOLTZ	TH EXPLORATION LLC	1/8+	908 160	N/A	N/A	N/A	N/A	N/A
10*15750	BB	9-5-4	SANDRA K TRULL	TH EXPLORATION LLC	1/8+	908 229	N/A	N/A	N/A	N/A	N/A
10*16058	BB	9-5-4	MATTIE RUTH JACKSON PRESCOTT	TH EXPLORATION LLC	1/8+	908 231	N/A	N/A	N/A	N/A	N/A
10*16118	BB	9-5-4	RUBY RIDDLE JACKSON	TH EXPLORATION LLC	1/8+	908 233	N/A	N/A	N/A	N/A	N/A
10*16383	BB	9-5-4	ROBERT STEPHEN DRIGGERS	TH EXPLORATION LLC	1/8+	908 224	N/A	N/A	N/A	N/A	N/A
10*16414	BB	9-5-4	MARY ELIZABETH DRIGGERS	TH EXPLORATION LLC	1/8+	908 208	N/A	N/A	N/A	N/A	N/A
10*16416	BB	9-5-4	CYNTHIA HUDSON	TH EXPLORATION LLC	1/8+	908 219	N/A	N/A	N/A	N/A	N/A
10*16424	BB	9-5-4	ROBERT J RIGBY	TH EXPLORATION LLC	1/8+	908 241	N/A	N/A	N/A	N/A	N/A
10*16448	BB	9-5-4	RALPH L AND JUANITA L CRIM	TH EXPLORATION LLC	1/8+	908 584	N/A	N/A	N/A	N/A	N/A
10*16478	BB	9-5-4	MARION L AND EMILY CAMPBELL	TH EXPLORATION LLC	1/8+	908 245	N/A	N/A	N/A	N/A	N/A
10*16514	BB	9-5-4	ALEX R CAMPBELL & JOYCE A CAMPBELL	TH EXPLORATION LLC	1/8+	908 248	N/A	N/A	N/A	N/A	N/A
10*16515	BB	9-5-4	ANNA MARIE JACKSON	TH EXPLORATION LLC	1/8+	908 251	N/A	N/A	N/A	N/A	N/A
10*16516	BB	9-5-4	WILSON ANDREW JACKSON	TH EXPLORATION LLC	1/8+	908 253	N/A	N/A	N/A	N/A	N/A
10*16545	BB	9-5-4	ROBERT G FOUNDS AND ELLEN FOUNDS	TH EXPLORATION LLC	1/8+	908 260	N/A	N/A	N/A	N/A	N/A
10*16662	BB	9-5-4	RICHARD THOMAS MIMS & VICKIE J MIMS	TH EXPLORATION LLC	1/8+	908 263	N/A	N/A	N/A	N/A	N/A
10*16666	BB	9-5-4	MICHAEL P PYLE	TH EXPLORATION LLC	1/8+	908 255	N/A	N/A	N/A	N/A	N/A
10*16667	BB	9-5-4	CHARLES F AND GAIL ANN PYLE	TH EXPLORATION LLC	1/8+	908 266	N/A	N/A	N/A	N/A	N/A
10*16668	BB	9-5-4	JACK I AND MERRILEE ANN PYLE	TH EXPLORATION LLC	1/8+	908 257	N/A	N/A	N/A	N/A	N/A
10*16669	BB	9-5-4	JOHN S AND PATRICIA S DADO	TH EXPLORATION LLC	1/8+	908 269	N/A	N/A	N/A	N/A	N/A
10*16686	BB	9-5-4	CHERYLE M TRACEY	TH EXPLORATION LLC	1/8+	927 475	N/A	N/A	N/A	N/A	N/A
10*16688	BB	9-5-4	SHERRYL PYLE BAIR	TH EXPLORATION LLC	1/8+	927 481	N/A	N/A	N/A	N/A	N/A
10*16689	BB	9-5-4	JOHN C FOUNDS	TH EXPLORATION LLC	1/8+	927 478	N/A	N/A	N/A	N/A	N/A
10*16690	BB	9-5-4	RICARDO ORTIZ	TH EXPLORATION LLC	1/8+	921 352	N/A	N/A	N/A	N/A	N/A
10*16720	BB	9-5-4	DONNA ELAINE BRASKETT	TH EXPLORATION LLC	1/8+	921 152	N/A	N/A	N/A	N/A	N/A
10*16738	BB	9-5-4	CHARLES A RINE AND RUTH K RINE	TH EXPLORATION LLC	1/8+	908 274	N/A	N/A	N/A	N/A	N/A
10*16747	BB	9-5-4	WILLIAM DALE BRASKETT	TH EXPLORATION LLC	1/8+	921 96	N/A	N/A	N/A	N/A	N/A
10*16787	BB	9-5-4	HERBERT BRIAN AND DONNA DRU CAMPBELL	TH EXPLORATION LLC	1/8+	942 451	N/A	N/A	N/A	N/A	N/A
10*16798	BB	9-5-4	PATRICK A RANKIN AND ROBIN A RANKIN	TH EXPLORATION LLC	1/8+	921 364	N/A	N/A	N/A	N/A	N/A
10*16800	BB	9-5-4	JAMES KENNETH JACKSON AND JULIE JACKSON	TH EXPLORATION LLC	1/8+	921 93	N/A	N/A	N/A	N/A	N/A
10*16802	BB	9-5-4	CHRISTOPHER AND TAMMY RICHARDSON	TH EXPLORATION LLC	1/8+	921 495	N/A	N/A	N/A	N/A	N/A
10*16804	BB	9-5-4	WILLIAM N AND SHERRY D TAYLOR	TH EXPLORATION LLC	1/8+	921 510	N/A	N/A	N/A	N/A	N/A
10*16806	BB	9-5-4	VIRGINIA WHITMAN TRUST DTD 7-25-1984 JON WHITMAN TRUSTEE	TH EXPLORATION LLC	1/8+	921 528	N/A	N/A	N/A	N/A	N/A
10*16807	BB	9-5-4	DAVID TULLER AND SUSAN STORTS TULLER	TH EXPLORATION LLC	1/8+	921 513	N/A	N/A	N/A	N/A	N/A
10*16808	BB	9-5-4	MICHAEL L ORTIZ	TH EXPLORATION LLC	1/8+	921 349	N/A	N/A	N/A	N/A	N/A
10*16815	BB	9-5-4	HAROLD W PYLE	TH EXPLORATION LLC	1/8+	921 357	N/A	N/A	N/A	N/A	N/A
10*16819	BB	9-5-4	TERESA ORTIZ BIGGS	TH EXPLORATION LLC	1/8+	921 147	N/A	N/A	N/A	N/A	N/A
10*16821	BB	9-5-4	SHEILA BRASKETT WEICHEY	TH EXPLORATION LLC	1/8+	921 516	N/A	N/A	N/A	N/A	N/A
10*16827	BB	9-5-4	DWIGHT D & MELODY G ANDERSON	TH EXPLORATION LLC	1/8+	912 420	N/A	N/A	N/A	N/A	N/A
10*16836	BB	9-5-4	RICK A AND LENORE A STORTS	TH EXPLORATION LLC	1/8+	921 507	N/A	N/A	N/A	N/A	N/A
10*16837	BB	9-5-4	TERRY L AND THELMA A POFF	TH EXPLORATION LLC	1/8+	927 472	N/A	N/A	N/A	N/A	N/A
10*16838	BB	9-5-4	ROBERT G FUNARI	TH EXPLORATION LLC	1/8+	821 82	N/A	N/A	N/A	N/A	N/A
10*16839	BB	9-5-4	JAMES B FOUNDS AND LYNN M MOWERY	TH EXPLORATION LLC	1/8+	921 73	N/A	N/A	N/A	N/A	N/A
10*16863	BB	9-5-4	TINA MOORE	TH EXPLORATION LLC	1/8+	921 334	N/A	N/A	N/A	N/A	N/A
10*16868	BB	9-5-4	MICHAEL W STORTS AND JESSICA M STORTS	TH EXPLORATION LLC	1/8+	921 504	N/A	N/A	N/A	N/A	N/A
10*16879	BB	9-5-4	MARK E AND LESLEY A STORTS	TH EXPLORATION LLC	1/8+	921 501	N/A	N/A	N/A	N/A	N/A
10*16880	BB	9-5-4	BEVERLY ANN STORTS	TH EXPLORATION LLC	1/8+	921 498	N/A	N/A	N/A	N/A	N/A
10*16902	BB	9-5-4	MARY BARCAW DUKE	TH EXPLORATION LLC	1/8+	921 105	N/A	N/A	N/A	N/A	N/A
10*16962	BB	9-5-4	DENNIS P AND BARBARA EZELL FLORY	TH EXPLORATION LLC	1/8+	921 70	N/A	N/A	N/A	N/A	N/A
10*16976	BB	9-5-4	LESTER G AND CONSTANCE B NICKOLSON	TH EXPLORATION LLC	1/8+	921 343	N/A	N/A	N/A	N/A	N/A
10*16977	BB	9-5-4	JEREMY COCHENOUR	TH EXPLORATION LLC	1/8+	921 102	N/A	N/A	N/A	N/A	N/A

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Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment
10*16987	BB	9-5-4	LAURIE EZELL PERRY	TH EXPLORATION LLC	1/8+	921 355	N/A	N/A	N/A	N/A	N/A
10*16989	BB	9-5-4	BRITTANY RICHARDSON	TH EXPLORATION LLC	1/8+	916 135	N/A	N/A	N/A	N/A	N/A
10*16991	BB	9-5-4	MARYELLEN FOUNDS AND LAUREN FOUNDS	TH EXPLORATION LLC	1/8+	921 79	N/A	N/A	N/A	N/A	N/A
10*16996	BB	9-5-4	THOMAS RANKIN	TH EXPLORATION LLC	1/8+	917 75	N/A	N/A	N/A	N/A	N/A
10*17130	BB	9-5-4	CINDY L BARGER	TH EXPLORATION LLC	1/8+	921 137	N/A	N/A	N/A	N/A	N/A
10*17155	BB	9-5-4	JESSE LEON JR AND TERESA GAIL EZELLE	TH EXPLORATION LLC	1/8+	921 118	N/A	N/A	N/A	N/A	N/A
10*17156	BB	9-5-4	HENRI NELL JACKSON KENT BARNES	TH EXPLORATION LLC	1/8+	921 139	N/A	N/A	N/A	N/A	N/A
10*17157	BB	9-5-4	JAMES N REEVES JR AND RITA M REEVES	TH EXPLORATION LLC	1/8+	921 367	N/A	N/A	N/A	N/A	N/A
10*17198	BB	9-5-4	THOMAS G AND DIANE W BAYLESS	TH EXPLORATION LLC	1/8+	921 141	N/A	N/A	N/A	N/A	N/A
10*17205	BB	9-5-4	SANDRA JEAN WILSON	TH EXPLORATION LLC	1/8+	921 524	N/A	N/A	N/A	N/A	N/A
10*17208	BB	9-5-4	PATRICK S GALLAGHER AND JOYCE ANN FOUNDS	TH EXPLORATION LLC	1/8+	921 86	N/A	N/A	N/A	N/A	N/A
10*17274	BB	9-5-4	DAVID H WILSON	TH EXPLORATION LLC	1/8+	921 474	N/A	N/A	N/A	N/A	N/A
10*17275	BB	9-5-4	JOHN R REEVES AND MONA G REEVES	TH EXPLORATION LLC	1/8+	921 373	N/A	N/A	N/A	N/A	N/A
10*17276	BB	9-5-4	BERTHA EZELL WYATT	TH EXPLORATION LLC	1/8+	921 526	N/A	N/A	N/A	N/A	N/A
10*17278	BB	9-5-4	MICHAEL L EZELLE	TH EXPLORATION LLC	1/8+	921 121	N/A	N/A	N/A	N/A	N/A
10*17339	BB	9-5-4	JOSEPH W FOUNDS	TH EXPLORATION LLC	1/8+	921 76	N/A	N/A	N/A	N/A	N/A
10*17377	BB	9-5-4	MILTON HOWARD EZELLE JR AND ELIZABETH A EZELLE	TH EXPLORATION LLC	1/8+	921 123	N/A	N/A	N/A	N/A	N/A
10*17416	BB	9-5-4	ANDREW M ORTIZ	TH EXPLORATION LLC	1/8+	921 346	N/A	N/A	N/A	N/A	N/A
10*17438	BB	9-5-4	DENNIS M WILSON	TH EXPLORATION LLC	1/8+	921 476	N/A	N/A	N/A	N/A	N/A
10*17440	BB	9-5-4	KENDRA WALISA	TH EXPLORATION LLC	1/8+	927 484	N/A	N/A	N/A	N/A	N/A
10*17441	BB	9-5-4	RALPH J WILSON	TH EXPLORATION LLC	1/8+	921 522	N/A	N/A	N/A	N/A	N/A
10*17442	BB	9-5-4	SHANE ALLEN AND MENDY JEAN ALLEN	TH EXPLORATION LLC	1/8+	921 134	N/A	N/A	N/A	N/A	N/A
10*17443	BB	9-5-4	MICHELLE MORROW-BACK	TH EXPLORATION LLC	1/8+	921 337	N/A	N/A	N/A	N/A	N/A
10*17444	BB	9-5-4	KELLY FOUNDS CAMPBELL	TH EXPLORATION LLC	1/8+	921 99	N/A	N/A	N/A	N/A	N/A
10*17449	BB	9-5-4	PHYLIS J BLAKE	TH EXPLORATION LLC	1/8+	921 150	N/A	N/A	N/A	N/A	N/A
10*17482	BB	9-5-4	TERESA EZELLE RALYA AND DAVID L RALYA	TH EXPLORATION LLC	1/8+	927 487	N/A	N/A	N/A	N/A	N/A
10*17483	BB	9-5-4	RICHARD I PYLE	TH EXPLORATION LLC	1/8+	921 359	N/A	N/A	N/A	N/A	N/A
10*17484	BB	9-5-4	NELDA S JACKSON	TH EXPLORATION LLC	1/8+	921 330	N/A	N/A	N/A	N/A	N/A
10*17485	BB	9-5-4	MARGIE ANN JACKSON ROBBINS GRAHAM	TH EXPLORATION LLC	1/8+	921 91	N/A	N/A	N/A	N/A	N/A
10*17526	BB	9-5-4	JEFFREY L REEVES AND JODY L REEVES	TH EXPLORATION LLC	1/8+	921 370	N/A	N/A	N/A	N/A	N/A
10*17527	BB	9-5-4	JAMES MICHAEL EZELL AND LUCILLE D EZELL	TH EXPLORATION LLC	1/8+	921 111	N/A	N/A	N/A	N/A	N/A
10*17538	BB	9-5-4	CHERYL RANKIN-KING	TH EXPLORATION LLC	1/8+	952 160	N/A	N/A	N/A	N/A	N/A
10*17552	BB	9-5-4	JOHN BEVACQUA AND PATRICIA A BEVACQUA	TH EXPLORATION LLC	1/8+	921 144	N/A	N/A	N/A	N/A	N/A
10*17554	BB	9-5-4	MICHAEL T RANKIN	TH EXPLORATION LLC	1/8+	921 361	N/A	N/A	N/A	N/A	N/A
10*17561	BB	9-5-4	ROGER L TYRELL AND KATHRYN L TYRELL	TH EXPLORATION LLC	1/8+	921 519	N/A	N/A	N/A	N/A	N/A
10*17564	BB	9-5-4	JAMES RONALD NICKOLSON AND TRACEY E NICKOLSON	TH EXPLORATION LLC	1/8+	921 340	N/A	N/A	N/A	N/A	N/A
10*17565	BB	9-5-4	JESSE ALLEN JACKSON AND ELIZABETH D JACKSON	TH EXPLORATION LLC	1/8+	921 327	N/A	N/A	N/A	N/A	N/A
10*17566	BB	9-5-4	NATHAN P ERDOSSY AND BARBARA T ERDOSSY	TH EXPLORATION LLC	1/8+	921 108	N/A	N/A	N/A	N/A	N/A
10*17588	BB	9-5-4	JAMES M JACKSON	TH EXPLORATION LLC	1/8+	921 325	N/A	N/A	N/A	N/A	N/A
10*17589	BB	9-5-4	MARY CHRISTINE MCKENNA	TH EXPLORATION LLC	1/8+	921 332	N/A	N/A	N/A	N/A	N/A
10*17744	BB	9-5-4	SAM PRESLEY EZELL	TH EXPLORATION LLC	1/8+	921 116	N/A	N/A	N/A	N/A	N/A
10*17744	BB	9-5-4	SAM PRESLEY EZELL	TH EXPLORATION LLC	1/8+	921 116	N/A	N/A	N/A	N/A	N/A
10*17983	BB	9-5-4	HOLLY SUE CUTHBERT	TH EXPLORATION LLC	1/8+	925 380	N/A	N/A	N/A	N/A	N/A
10*18021	BB	9-5-4	CHRISTOPHER A HANIFAN AND JACKIE F HANIFAN	TH EXPLORATION LLC	1/8+	927 267	N/A	N/A	N/A	N/A	N/A
10*18022	BB	9-5-4	DALE P WARD AND CYNTHIA J WARD	TH EXPLORATION LLC	1/8+	927 264	N/A	N/A	N/A	N/A	N/A
10*19524	BB	9-5-4	THE ESTATE OF AGNES IRENE EZELL CLARK BY DAVID M EDWARDS, EXECUTOR	TH EXPLORATION LLC	1/8+	942 633	N/A	N/A	N/A	N/A	N/A
10*19692	BB	9-5-4	KENDRA WALISA	TH EXPLORATION LLC	1/8+	924 484	N/A	N/A	N/A	N/A	N/A
10*19693	BB	9-5-4	MARIO R FUNARI AIF ROBERT G FUNARI	TH EXPLORATION LLC	1/8+	936 145	N/A	N/A	N/A	N/A	N/A
10*19695	BB	9-5-4	VIRGINIA P FOUNDS KASSERMAN ET	TH EXPLORATION LLC	1/8+	944 333	N/A	N/A	N/A	N/A	N/A
10*19939	BB	9-5-4	ROBERT J MILLS & SHERRA SUE MILLS	TH EXPLORATION LLC	1/8+	949 212	N/A	N/A	N/A	N/A	N/A
10*21274	BB	9-5-4	GEORGE M GONTA JR	TH EXPLORATION LLC	1/8+	939 247	N/A	N/A	N/A	N/A	N/A
10*21275	BB	9-5-4	IANICE M GONTA GAVALIK	TH EXPLORATION LLC	1/8+	939 251	N/A	N/A	N/A	N/A	N/A
10*47051.223.1	BB	9-5-4	STORCH JEAN A AIF JOHN HERMAN STORCH - SFX	TH EXPLORATION LLC	1/8+	877 216	N/A	N/A	N/A	Tug Hill to Chevron: 36/168	Chevron to Tug Hill: 42/435
10*47051.223.15	BB	9-5-4	LARRY D TAUNT AND NANCY L TAUNT	TH EXPLORATION LLC	1/8+	908 14	N/A	N/A	N/A	N/A	N/A
10*47051.223.2	BB	9-5-4	SCHIEFER STEPHANIE L ET VIR - SFX	TH EXPLORATION LLC	1/8+	885 321	N/A	N/A	N/A	Tug Hill to Chevron: 36/168	Chevron to Tug Hill: 42/435
10*47051.223.20	BB	9-5-4	BARBARA A BUZZARD	TH EXPLORATION LLC	1/8+	908 24	N/A	N/A	N/A	N/A	N/A
10*47051.223.21	BB	9-5-4	GARY T WARD AND SHARON D WARD	TH EXPLORATION LLC	1/8+	908 19	N/A	N/A	N/A	N/A	N/A
10*47051.223.24	BB	9-5-4	JO DEE K DAVIS	TH EXPLORATION LLC	1/8+	908 136	N/A	N/A	N/A	N/A	N/A
10*47051.223.25	BB	9-5-4	JOANNE WELCH	TH EXPLORATION LLC	1/8+	908 141	N/A	N/A	N/A	N/A	N/A
10*47051.223.26	BB	9-5-4	WENDY L SMARKEL	TH EXPLORATION LLC	1/8+	908 69	N/A	N/A	N/A	N/A	N/A
10*47051.223.27	BB	9-5-4	TIMI J HOBBS	TH EXPLORATION LLC	1/8+	908 277	N/A	N/A	N/A	N/A	N/A
10*47051.223.3	BB	9-5-4	LEADBETTER ROBERT A ET UX - SFX	TH EXPLORATION LLC	1/8+	885 324	N/A	N/A	N/A	Tug Hill to Chevron: 36/168	Chevron to Tug Hill: 42/435
10*47051.223.30	BB	9-5-4	LAURIE DRIGGERS MANDERSON	TH EXPLORATION LLC	1/8+	908 165	N/A	N/A	N/A	N/A	N/A
10*47051.223.33	BB	9-5-4	NANCY CIAFFAGLIONE HOUSLEY	TH EXPLORATION LLC	1/8+	908 187	N/A	N/A	N/A	N/A	N/A
10*47051.223.35	BB	9-5-4	DEBRA L CIAFFAGLIONE	TH EXPLORATION LLC	1/8+	908 192	N/A	N/A	N/A	N/A	N/A
10*47051.223.6	BB	9-5-4	JOSHUA RINE AND REBECCA RINE	TH EXPLORATION LLC	1/8+	907 634	N/A	N/A	N/A	N/A	N/A

10-02-2014

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AFFIDAVIT

STATE OF TEXAS §
 § SS
COUNTY OF TARRANT §

On this 18th day of October, 2016, before me, the undersigned authority, personally appeared David D. Kalish ("Affiant") who being first duly sworn under oath, deposes and saith:

1. TH Exploration, LLC, TH Exploration II, LLC and TH Exploration III, LLC are wholly owned subsidiaries of THQ Appalachia I, LLC.
2. Tug Hill Operating, LLC provides oil and gas operations services to THQ Appalachia I, LLC under an Operating Services Agreement dated July 23, 2014.
3. David D. Kalish, the Affiant, is the Vice President of Tug Hill Operating, LLC, THQ Appalachia I, LLC, TH Exploration, LLC, TH Exploration II, LLC and TH Exploration III, LLC, and;
3. Tug Hill Operating, LLC is authorized to operate and maintain the assets owned by THQ Appalachia I, LLC, including, as referenced above, TH Exploration, LLC, TH Exploration II, LLC, and TH Exploration III, LLC, including oil and gas leases, wells, pipelines, surface facilities, and other all other assets that support the business of THQ Appalachia I, LLC, and;
4. Specifically, Tug Hill Operating, LLC is authorized to submit and obtain well work permits and carry out all activities pursuant to such work permits for assets owned by TH Exploration, LLC, TH Exploration II, LLC, TH Exploration III, LLC.

FURTHER, AFFIANT SAITH NOT.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this 18th day of October, 2016.

David D. Kalish
Affiant: David D. Kalish

JURAT

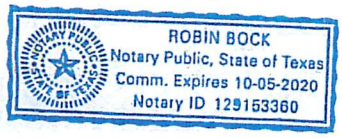
Jan Pest
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 Date Recorded 10/19/2016
 Document Type MIS
 Pages Recorded 1
 Book-Page 28-62
 Recording Fee \$5.00
 Additional \$6.00

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COUNTY OF TARRANT §

Sworn and subscribed to (or affirmed) before me on this, the 18th day of October, 2016, by David D. Kalish

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

My Commission Expires: 10-05-2020
 Signature/Notary Public: Robin Bock
 Name/Notary Public (Print): Robin Bock



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 WV Department of
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STATE OF WEST VIRGINIA §
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COUNTY OF MARSHALL §

Jan Pest
MARSHALL County 12:43:01 PM
Instrument No 1404876
Date Recorded 05/20/2016
Document Type ASN
Pages Recorded 20
Book-Page 36-148
Recording Fee \$20.00
Additional \$8.00

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "**Assignment**") is made and entered into this 17th day of May, 2016 (the "**Effective Date**"), by and between **CHEVRON U.S.A. INC.** (hereinafter "**Assignor**") and **TH EXPLORATION, LLC** (hereinafter "**Assignee**") pursuant to the terms of that certain Acreage Trade Agreement between the Assignor and the Assignee dated May 2, 2016 (the "**Acreage Trade Agreement**"). Capitalized terms used but not defined herein and defined in the Acreage Trade Agreement shall have the meanings given to such terms in the Acreage Trade Agreement.

WITNESSETH:

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to those certain Oil and Gas Leases situated in Marshall County, West Virginia, as described in **Exhibit "A"**, and as depicted in **Exhibits "A-1"** and "**A-2"**, attached hereto and made a part hereof (hereinafter the "**Leases**"); and

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to the Leases as described below.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and subject to the limited warranties, restrictions and conditions hereinafter mentioned, the parties hereto, intending to be legally bound, do covenant and agree as follows:

1. **Assignment.** Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, all of Assignor's right, title and interest in and to the Leases, and the lands covered thereby, together with all rights incident thereto and appurtenances thereon, except that Assignor accepts and reserves from this Assignment the Chevron ORRI previously conveyed to Assignor and as described in that certain Memorandum of Assignment of Oil and Gas Lease Interests dated November 6, 2012 by and between Cornell Holdings Incorporated and Chevron U.S.A. Inc., which is recorded at Book 0028, Page 0239 in the Office of the County Clerk of Marshall County, West Virginia.

TO HAVE AND TO HOLD such right, title and interest in and to the Leases unto Assignee or its designee, and their respective successors and assigns, forever, in accordance with the provisions of this Assignment.

2. **Special Warranty.** Assignor represents and warrants that Assignor has not conveyed or otherwise encumbered (other than Permitted Encumbrances) its interest in the Conveyed Interests since the time that Assignor obtained its interests in the Leases. Assignor does covenant, promise and agree, to and with the Assignee, its respective successors and assigns, to forever specially warrant and defend the title to the Leases or portions thereof included under this Assignment, unto the Assignee and its respective successors and assigns, against the lawful claims of Assignor, and all persons claiming, or to claim, the same or any part thereof, by, through or under Assignor.

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STATE OF WEST VIRGINIA
COUNTY OF MARSHALL

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MEMORANDUM OF ASSIGNMENT OF OIL AND GAS LEASES

This **MEMORANDUM OF ASSIGNMENT OF OIL AND GAS LEASES** ("Memorandum") dated as of September 7th, 2018 (the "Effective Date"), is made by and between **Chevron U.S.A. Inc.**, a Pennsylvania corporation, with an address at 700 Cherrington Parkway, Coraopolis, PA 15108 ("**Chevron**" or "**Assignor**") and **TH Exploration, LLC**, Texas limited liability company, with an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 ("**Assignee**"). **Chevron** and **Assignee** are each referred to herein as a "**Party**" and collectively as the "**Parties**." Capitalized terms used but not defined herein shall have the meaning ascribed to those terms in that certain Assignment of Oil and Gas Leases between the Parties dated September 7th, 2018 ("**Assignment**").

- A. Notice is hereby given that the Parties have entered into the Assignment, pursuant to which **Chevron** assigned to **Assignee** all of **Assignor's** right, title, and interest in and to those certain Leases situated in Marshall County, West Virginia, less and except certain identified portions, as described in **Exhibit "A"**, attached hereto and made a part hereof.
- B. **Chevron** does covenant, promise and agree, to and with the **Assignee**, its respective successors and assigns, to forever specially warrant and defend the title to the Leases or portions thereof included under the Assignment and this Memorandum, unto the **Assignee** and its respective successors and assigns, against the lawful claims of **Chevron**, and all persons claiming, or to claim, the same or any part thereof, by, through or under **Chevron**.
- C. Preparation of this Memorandum has been a joint effort of the Parties and it must not be construed more severely against any of the Parties than against any other.
- D. This Memorandum is subject to and expressly incorporates the terms of the Assignment. The Assignment will govern to the extent of any conflict between the terms of this Memorandum and the Assignment.
- E. In consideration of the mutual promises set out in this Assignment, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree to be bound by the terms of this Assignment.

IN WITNESS WHEREOF, this Memorandum is executed this 7th day of September, 2018.

Marshall County
Jan Pest, Clerk
Instrument 1445509
09/11/2018 @ 02:17:18 PM
ASSIGNMENTS
Book 42 @ Page 435
Pages Recorded 7
Recording Cost \$ 13.00

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Environmental Protection

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MARSHALL	MEADE	9-6-7	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-14	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-15	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-16	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-17	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-18	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-19	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-2	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-20	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-21	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-22	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-23	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-24	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-3	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107

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MARSHALL	MEADE	9-7-3.1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-30	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
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MARSHALL	MEADE	9-7-31	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-4	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	MEADE	9-7-5	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107

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