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west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Thursday, August 8, 2019  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC  
380 SOUTHPOINTE BLVD  
  
CANONSBURG, PA 15317

Re: Permit Modification Approval for OLD CROW N-17HU  
47-051-02122-00-00

Modified Lateral

TUG HILL OPERATING, LLC

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

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

A blue ink signature of James A. Martin, written in a cursive style.

James A. Martin  
Chief

Operator's Well Number: OLD CROW N-17HU  
Farm Name: DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO  
U.S. WELL NUMBER: 47-051-02122-00-00  
Horizontal 6A New Drill  
Date Modification Issued: August 8, 2019

Promoting a healthy environment.



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west virginia department of environmental protection

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

Barry K. Lay, Chairman  
dep.wv.gov

July 10, 2019

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

RE: Application for Deep Well Permit – API #47-051-02122

COMPANY: Tug Hill Operating, LLC

FARM: Donna Vivian Yoho (TOD) Gary Lance Yoho Old Crow N-17HU

COUNTY: Marshall DISTRICT: Franklin QUAD: Powhatan Point

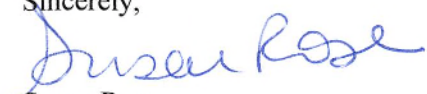
The deep well review of the application for the above company is **Approved to drill to Trenton for Point Pleasant completion.**

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: \*\*yes; Docket 282-258 Exception Location Hearing
4. Provided a plat showing that the proposed location is a distance of 228 feet from the heel to the nearest lease line or unit boundary and 10 feet from the toe to 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.

\*\* Old Crow N-18HU 47-051-02123; Old Crow N-19HU 47-051-02190; Old Crow N-20HU 47-051-02191; Bryan N-14HU 47-051-02031; Bryan N-13HU 47-051-02030; Bryan N-12HU 47-051-02029; Woodford-10HU 47-051-02152; Michter N-6HU 47-051-02206; Michter N-7HU 47-051-02207; MND 6 HHS 47-051-01732; MND20AU 47-051-02011; MND20BU 47-051-02012; MND20CU 47-051-02013; MND20DU 47-051-02014; Corley N-9HU 47-051-01983; Corley N-10HU 47-051-01998

Sincerely,

A handwritten signature in blue ink that reads "Susan Rose". The signature is written in a cursive style with a large initial 'S'.

Susan Rose  
Administrator

WW-6B  
(04/15)

API NO. 47-051 - 02122 mwp  
OPERATOR WELL NO. Old Crow N-17HU  
Well Pad Name: Old Crow

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

1) Well Operator: Tug Hill Operating, LLC    494510851    Marshall    Franklin    Powhatan Point 7  
Operator ID    County    District    Quadrangle

2) Operator's Well Number: Old Crow N-17HU    Well Pad Name: Old Crow

3) Farm Name/Surface Owner: Donna Vivian Yoho (TOD) Gary Lance Yoho    Public Road Access: Rines Ridge Road (County Route 76)

4) Elevation, current ground: 1265'    Elevation, proposed post-construction: 1265'

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

(b) If Gas    Shallow    \_\_\_\_\_    Deep    x    \_\_\_\_\_  
Horizontal    x    \_\_\_\_\_

6) Existing Pad: Yes or No    Yes

*ju*  
*5/14/19*

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Point Pleasant is the target formation at a depth of 11,248' - 11,370' - thickness of 122' and anticipated pressure of approx. 9500 psi.

8) Proposed Total Vertical Depth: 11,520'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 25,019'

11) Proposed Horizontal Leg Length: 13,211.51'

12) Approximate Fresh Water Strata Depths: 70' ; 886'

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

14) Approximate Saltwater Depths: 2,167'

15) Approximate Coal Seam Depths: Sewickley Coal - 788' ; Pittsburgh Coal - 880'

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

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

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

18)

**CASING AND TUBING PROGRAM**

<b>TYPE</b>	<b>Size (in)</b>	<b>New or Used</b>	<b>Grade</b>	<b>Weight per ft. (lb/ft)</b>	<b>FOOTAGE: For Drilling (ft)</b>	<b>INTERVALS: Left in Well (ft)</b>	<b>CEMENT: Fill-up (Cu. Ft.)/CTS</b>
Conductor	30"	NEW	BW	BW	120'	120'	259FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	986'	986'	1,592FT^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2800'	2800'	1,974FT^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	10,208'	10,208'	3,336FT^3(CTS)
Production	5 1/2"	NEW	P110	23#	25,019'	25,019'	5,905FT^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		10,825'	
Liners							

*Handwritten signature and date: 11/4/19*

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

**PACKERS**

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

WW-6B  
(10/14)

API NO. 47-051 - 02122400  
OPERATOR WELL NO. Old Crow N-17HU  
Well Pad Name: Old Crow

*ju*  
*5/14/19*

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 33,022,500 lb proppant and 510,552 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 19.18 acres

22) Area to be disturbed for well pad only, less access road (acres): 6.64 acres

23) Describe centralizer placement for each casing string:

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

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

\*See Attachment

25) Proposed borehole conditioning procedures:

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

\*Note: Attach additional sheets as needed.

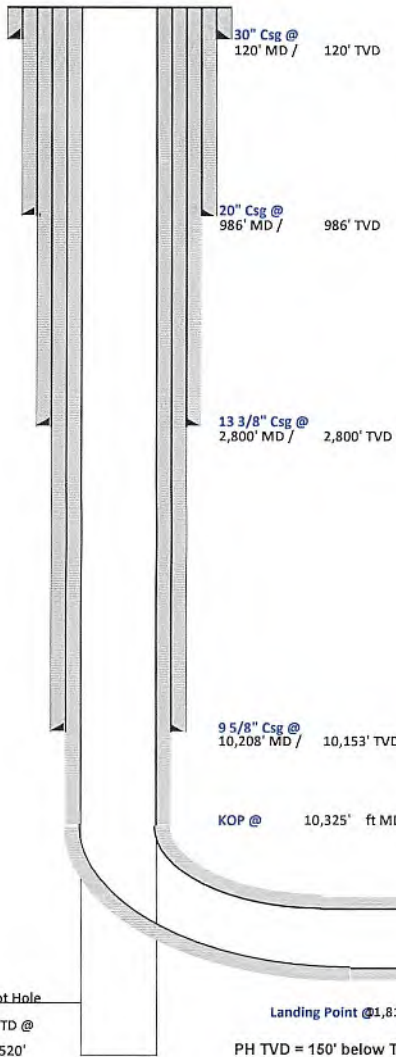


WELL NAME: Old Crow N-17HU  
 STATE: WV COUNTY: Marshall  
 DISTRICT: Franklin  
 DF Elev: 1,265' GL Elev: 1,265'  
 TD: 25,019'  
 TH Latitude: 39.77842996  
 TH Longitude: -80.76306739  
 BH Latitude: 39.810806  
 BH Longitude: 80.785694

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	886'
Sewickley Coal	788'
Pittsburgh Coal	880'
Big Lime	2,077'
Berea	2,626'
Tully	6,469'
Marcellus	6,550'
Onondaga	6,603'
Salina	7,300'
Lockport	8,336'
Utica	11,022'
Point Pleasant	11,248'
Landing Depth	11,303'
Trenton	11,370'
Pilot Hole TD	11,520'

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	986'	986'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,800'	2,800'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,208'	10,153'	47	HPP110	Surface
Production	8 1/2	5 1/2	25,019'	11,072'	23	HCP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,717	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,140	A	15	Air	1 Centralizer every other jt
Intermediate 2	2,816	A	14.5	Air	1 Centralizer every other jt
Production	5,251	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: 5/14/19*

Pilot Hole  
PH TD @  
11,520'

Landing Point @1,810' MD / 11,303' TVD  
PH TVD = 150' below Trenton Top

Lateral TD @ 25,019' ft MD  
11,072' ft TVD

51-02122 WOP



## Tug Hill Operating, LLC Casing and Cement Program

### Old Crow N-17HU

#### Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	986'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,800'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,208'	CTS
Production	5 1/2"	HCP110	8 1/2"	25,019'	CTS

#### Cement

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

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

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

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





Well: Old Crow N-17 HU (slot O)  
 Site: Old Crow Pad  
 Project: Marshall County, West Virginia.  
 Design: rev4

SECTION DETAILS

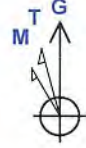
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSEct	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2°/100' build
3	3100.00	2.00	240.00	3099.98	-0.87	-1.51	2.00	240.000	-0.05	Begin 2.00° tangent
4	4000.57	2.00	240.00	4000.00	-16.59	-28.73	0.00	0.000	-0.88	Begin 2°/100' drop
5	4100.57	0.00	240.00	4099.98	-17.46	-30.24	2.00	180.000	-0.93	Begin vertical hold
6	5800.59	0.00	240.00	5800.00	-17.46	-30.24	0.00	240.000	-0.93	Begin 2°/100' build
7	6267.44	9.34	123.30	6264.78	-38.30	1.48	2.00	123.297	-34.37	Begin 9.34° tangent
8	10325.46	9.34	123.30	10269.04	-399.73	551.77	0.00	0.000	-614.44	Begin 6°/100' build/turn
9	11295.22	50.00	333.78	11134.90	-81.90	443.99	6.00	-152.787	-283.67	Begin 8°/100' build/turn
10	11809.56	91.00	330.00	11303.00	335.61	218.60	8.00	-5.752	190.79	Begin 91.00° lateral
11	25018.59	91.00	330.00	11072.00	11773.00	-6385.27	0.00	0.000	13393.11	PBHL/TD 25018.59 MD/11072.00 TVD

West(-)/East(+) (3000 usft/in)

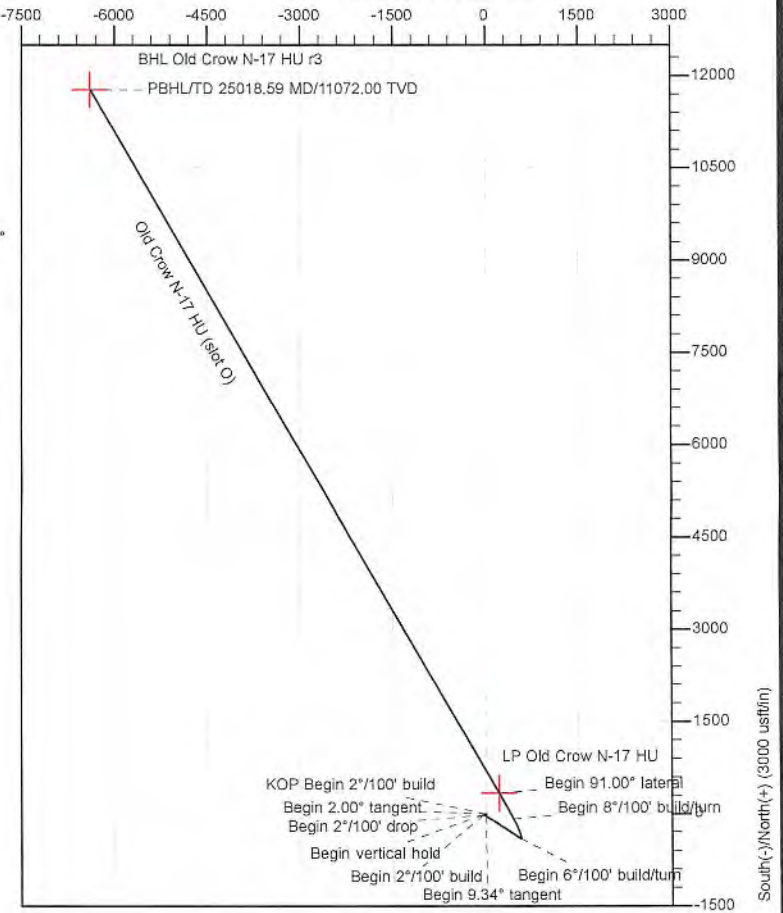
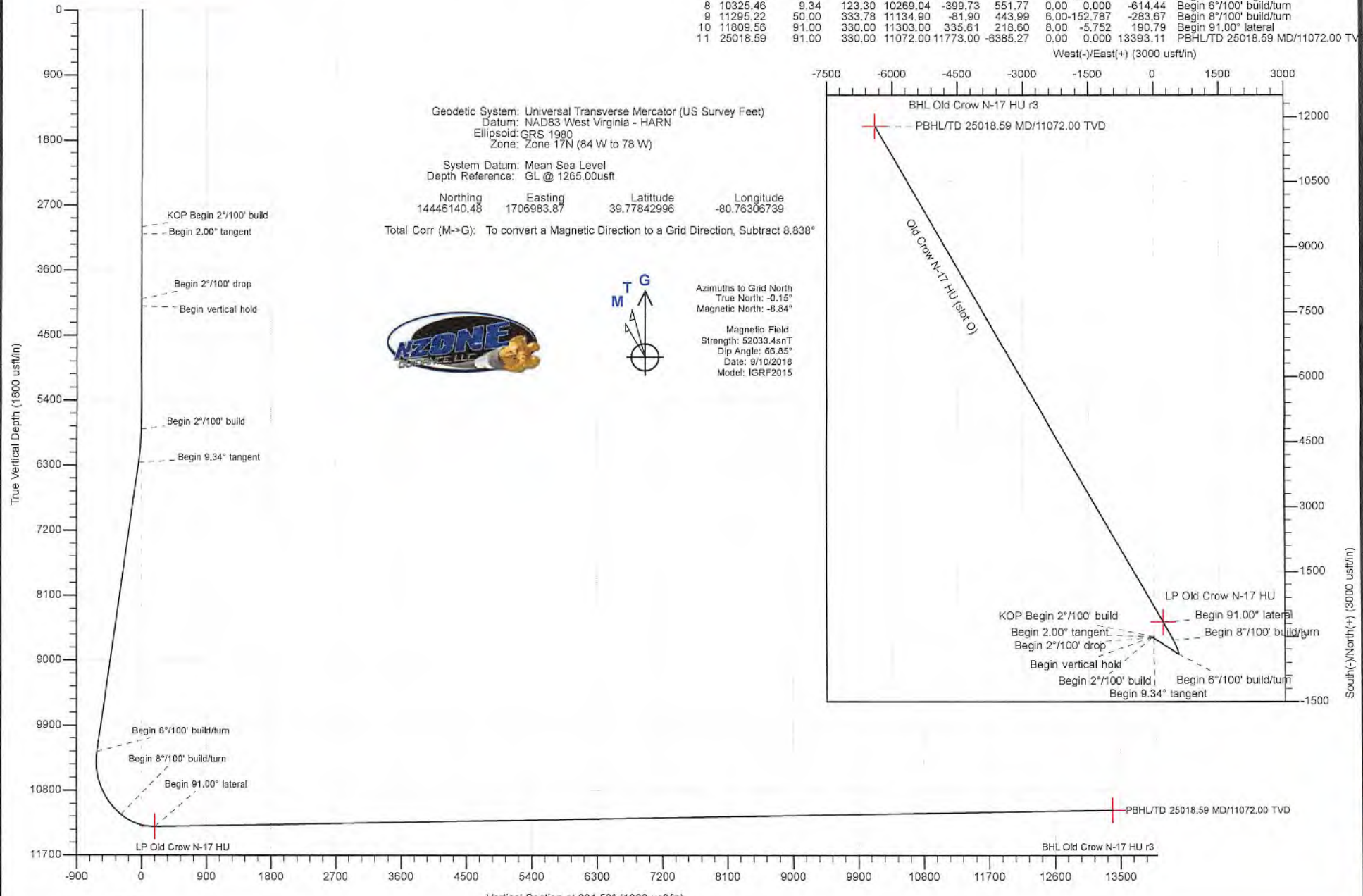
Geodetic System: Universal Transverse Mercator (US Survey Feet)  
 Datum: NAD83 West Virginia - HARN  
 Ellipsoid: GRS 1980  
 Zone: Zone 17N (84 W to 78 W)  
 System Datum: Mean Sea Level  
 Depth Reference: GL @ 1265.00usft

Northing: 14446140.48    Easting: 1706983.87    Latitude: 39.77842996    Longitude: -80.76306739

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.838°



Azimuths to Grid North  
 True North: -0.15°  
 Magnetic North: -8.84°  
 Magnetic Field  
 Strength: 52033.4snT  
 Dip Angle: 66.85°  
 Date: 9/10/2018  
 Model: IGRF2015



SI-02122100



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Old Crow N-17 HU (slot O)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1265.00usft
<b>Project:</b>	Marshall County, West Virginia.	<b>MD Reference:</b>	GL @ 1265.00usft
<b>Site:</b>	Old Crow Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Old Crow N-17 HU (slot O)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev4		

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

<b>Site</b>	Old Crow Pad				
<b>Site Position:</b>		<b>Northing:</b>	14,446,179.89 usft	<b>Latitude:</b>	39.77853828
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,706,970.33 usft	<b>Longitude:</b>	-80.76311519
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.152 °

<b>Well</b>	Old Crow N-17 HU (slot O)					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	14,446,140.48 usft	<b>Latitude:</b>	39.77842996
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,706,983.86 usft	<b>Longitude:</b>	-80.76306739
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	1,265.00 usft

<b>Wellbore</b>	Original Hole				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	9/10/2018	-8.686	66.855	52,033.36539054

<b>Design</b>	rev4			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	331.53

<b>Plan Survey Tool Program</b>	<b>Date</b>	5/5/2019		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	25,018.59 rev4 (Original Hole)	MWD	MWD - Standard



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Old Crow N-17 HU (slot O)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1265.00usft
<b>Project:</b>	Marshall County, West Virginia.	<b>MD Reference:</b>	GL @ 1265.00usft
<b>Site:</b>	Old Crow Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Old Crow N-17 HU (slot O)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev4		

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	0.000	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.000	
3,100.00	2.00	240.00	3,099.98	-0.87	-1.51	2.00	2.00	0.00	240.000	
4,000.57	2.00	240.00	4,000.00	-16.59	-28.73	0.00	0.00	0.00	0.000	
4,100.57	0.00	240.00	4,099.98	-17.46	-30.24	2.00	-2.00	0.00	180.000	
5,800.59	0.00	240.00	5,800.00	-17.46	-30.24	0.00	0.00	0.00	240.000	
6,267.44	9.34	123.30	6,264.78	-38.30	1.48	2.00	2.00	0.00	123.297	
10,325.46	9.34	123.30	10,269.04	-399.73	551.77	0.00	0.00	0.00	0.000	
11,295.22	50.00	333.78	11,134.90	-81.90	443.99	6.00	4.19	-15.42	-152.787	
11,809.56	91.00	330.00	11,303.00	335.61	218.60	8.00	7.97	-0.74	-5.752	
25,018.59	91.00	330.00	11,072.00	11,773.00	-6,385.27	0.00	0.00	0.00	0.000	BHL Old Crow N-17 F



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Old Crow N-17 HU (slot O)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1265.00usft
<b>Project:</b>	Marshall County, West Virginia.	<b>MD Reference:</b>	GL @ 1265.00usft
<b>Site:</b>	Old Crow Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Old Crow N-17 HU (slot O)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev4		

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	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
100.00	0.00	0.00	100.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
200.00	0.00	0.00	200.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
300.00	0.00	0.00	300.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
400.00	0.00	0.00	400.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
500.00	0.00	0.00	500.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
600.00	0.00	0.00	600.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
700.00	0.00	0.00	700.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
800.00	0.00	0.00	800.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
900.00	0.00	0.00	900.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
1,800.00	0.00	0.00	1,800.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
1,900.00	0.00	0.00	1,900.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
2,100.00	0.00	0.00	2,100.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
2,300.00	0.00	0.00	2,300.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
2,400.00	0.00	0.00	2,400.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
2,600.00	0.00	0.00	2,600.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
2,700.00	0.00	0.00	2,700.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
2,800.00	0.00	0.00	2,800.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
2,900.00	0.00	0.00	2,900.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	14,446,140.48	1,706,983.86	39.77842996	-80.76306739	
<b>KOP Begin 2°/100' build</b>										
3,100.00	2.00	240.00	3,099.98	-0.87	-1.51	14,446,139.61	1,706,982.35	39.77842758	-80.76307278	
<b>Begin 2.00° tangent</b>										
3,200.00	2.00	240.00	3,199.92	-2.62	-4.53	14,446,137.86	1,706,979.33	39.77842281	-80.76308355	
3,300.00	2.00	240.00	3,299.86	-4.36	-7.56	14,446,136.12	1,706,976.31	39.77841804	-80.76309433	
3,400.00	2.00	240.00	3,399.80	-6.11	-10.58	14,446,134.37	1,706,973.29	39.77841327	-80.76310510	
3,500.00	2.00	240.00	3,499.74	-7.85	-13.60	14,446,132.63	1,706,970.26	39.77840850	-80.76311587	
3,600.00	2.00	240.00	3,599.68	-9.60	-16.62	14,446,130.88	1,706,967.24	39.77840373	-80.76312665	
3,700.00	2.00	240.00	3,699.61	-11.34	-19.65	14,446,129.14	1,706,964.22	39.77839896	-80.76313742	
3,800.00	2.00	240.00	3,799.55	-13.09	-22.67	14,446,127.39	1,706,961.20	39.77839418	-80.76314820	
3,900.00	2.00	240.00	3,899.49	-14.83	-25.69	14,446,125.65	1,706,958.17	39.77838941	-80.76315897	
4,000.00	2.00	240.00	3,999.43	-16.58	-28.71	14,446,123.90	1,706,955.15	39.77838464	-80.76316974	
4,000.57	2.00	240.00	4,000.00	-16.59	-28.73	14,446,123.89	1,706,955.13	39.77838462	-80.76316980	
<b>Begin 2°/100' drop</b>										
4,100.00	0.01	240.00	4,099.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
4,100.57	0.00	240.00	4,099.98	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
<b>Begin vertical hold</b>										
4,200.00	0.00	0.00	4,199.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
4,300.00	0.00	0.00	4,299.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
4,400.00	0.00	0.00	4,399.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
4,500.00	0.00	0.00	4,499.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
4,600.00	0.00	0.00	4,599.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
4,700.00	0.00	0.00	4,699.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Old Crow N-17 HU (slot O)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1265.00usft
<b>Project:</b>	Marshall County, West Virginia.	<b>MD Reference:</b>	GL @ 1265.00usft
<b>Site:</b>	Old Crow Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Old Crow N-17 HU (slot O)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev4		

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	0.00	0.00	4,799.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
4,900.00	0.00	0.00	4,899.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
5,000.00	0.00	0.00	4,999.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
5,100.00	0.00	0.00	5,099.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
5,200.00	0.00	0.00	5,199.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
5,300.00	0.00	0.00	5,299.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
5,400.00	0.00	0.00	5,399.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
5,500.00	0.00	0.00	5,499.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
5,600.00	0.00	0.00	5,599.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
5,700.00	0.00	0.00	5,699.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
5,800.00	0.00	0.00	5,799.41	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
5,800.59	0.00	0.00	5,800.00	-17.46	-30.24	14,446,123.02	1,706,953.62	39.77838223	-80.76317519	
<b>Begin 2°/100' build</b>										
5,900.00	1.99	123.30	5,899.39	-18.41	-28.80	14,446,122.07	1,706,955.06	39.77837962	-80.76317007	
6,000.00	3.99	123.30	5,999.25	-21.27	-24.44	14,446,119.21	1,706,959.42	39.77837173	-80.76315459	
6,100.00	5.99	123.30	6,098.87	-26.04	-17.18	14,446,114.44	1,706,966.69	39.77835857	-80.76312877	
6,200.00	7.99	123.30	6,198.12	-32.72	-7.01	14,446,107.76	1,706,976.86	39.77834015	-80.76309264	
6,267.44	9.34	123.30	6,264.79	-38.30	1.48	14,446,102.18	1,706,985.35	39.77832478	-80.76306247	
<b>Begin 9.34° tangent</b>										
6,300.00	9.34	123.30	6,296.92	-41.20	5.90	14,446,099.28	1,706,989.76	39.77831678	-80.76304679	
6,400.00	9.34	123.30	6,395.59	-50.10	19.46	14,446,090.38	1,707,003.32	39.77829222	-80.76299860	
6,500.00	9.34	123.30	6,494.27	-59.01	33.02	14,446,081.47	1,707,016.88	39.77826766	-80.76295042	
6,600.00	9.34	123.30	6,592.94	-67.92	46.58	14,446,072.56	1,707,030.44	39.77824311	-80.76290224	
6,700.00	9.34	123.30	6,691.62	-76.82	60.14	14,446,063.66	1,707,044.00	39.77821855	-80.76285406	
6,800.00	9.34	123.30	6,790.29	-85.73	73.70	14,446,054.75	1,707,057.57	39.77819399	-80.76280588	
6,900.00	9.34	123.30	6,888.97	-94.64	87.26	14,446,045.84	1,707,071.13	39.77816943	-80.76275770	
7,000.00	9.34	123.30	6,987.64	-103.54	100.82	14,446,036.94	1,707,084.69	39.77814487	-80.76270951	
7,100.00	9.34	123.30	7,086.32	-112.45	114.38	14,446,028.03	1,707,098.25	39.77812031	-80.76266133	
7,200.00	9.34	123.30	7,184.99	-121.36	127.94	14,446,019.12	1,707,111.81	39.77809575	-80.76261315	
7,300.00	9.34	123.30	7,283.67	-130.26	141.50	14,446,010.22	1,707,125.37	39.77807119	-80.76256497	
7,400.00	9.34	123.30	7,382.34	-139.17	155.06	14,446,001.31	1,707,138.93	39.77804663	-80.76251679	
7,500.00	9.34	123.30	7,481.02	-148.08	168.63	14,445,992.40	1,707,152.49	39.77802208	-80.76246861	
7,600.00	9.34	123.30	7,579.69	-156.98	182.19	14,445,983.50	1,707,166.05	39.77799752	-80.76242042	
7,700.00	9.34	123.30	7,678.37	-165.89	195.75	14,445,974.59	1,707,179.61	39.77797296	-80.76237224	
7,800.00	9.34	123.30	7,777.04	-174.80	209.31	14,445,965.68	1,707,193.17	39.77794840	-80.76232406	
7,900.00	9.34	123.30	7,875.72	-183.70	222.87	14,445,956.78	1,707,206.73	39.77792384	-80.76227588	
8,000.00	9.34	123.30	7,974.39	-192.61	236.43	14,445,947.87	1,707,220.29	39.77789928	-80.76222770	
8,100.00	9.34	123.30	8,073.07	-201.52	249.99	14,445,938.96	1,707,233.85	39.77787472	-80.76217952	
8,200.00	9.34	123.30	8,171.74	-210.42	263.55	14,445,930.06	1,707,247.41	39.77785016	-80.76213134	
8,300.00	9.34	123.30	8,270.42	-219.33	277.11	14,445,921.15	1,707,260.97	39.77782560	-80.76208316	
8,400.00	9.34	123.30	8,369.09	-228.24	290.67	14,445,912.24	1,707,274.53	39.77780104	-80.76203498	
8,500.00	9.34	123.30	8,467.77	-237.14	304.23	14,445,903.34	1,707,288.10	39.77777649	-80.76198679	
8,600.00	9.34	123.30	8,566.44	-246.05	317.79	14,445,894.43	1,707,301.66	39.77775193	-80.76193861	
8,700.00	9.34	123.30	8,665.12	-254.96	331.35	14,445,885.52	1,707,315.22	39.77772737	-80.76189043	
8,800.00	9.34	123.30	8,763.79	-263.86	344.91	14,445,876.62	1,707,328.78	39.77770281	-80.76184225	
8,900.00	9.34	123.30	8,862.47	-272.77	358.47	14,445,867.71	1,707,342.34	39.77767825	-80.76179407	
9,000.00	9.34	123.30	8,961.14	-281.68	372.03	14,445,858.80	1,707,355.90	39.77765369	-80.76174589	
9,100.00	9.34	123.30	9,059.82	-290.58	385.59	14,445,849.90	1,707,369.46	39.77762913	-80.76169771	
9,200.00	9.34	123.30	9,158.49	-299.49	399.15	14,445,840.99	1,707,383.02	39.77760457	-80.76164953	
9,300.00	9.34	123.30	9,257.17	-308.40	412.72	14,445,832.08	1,707,396.58	39.77758001	-80.76160135	
9,400.00	9.34	123.30	9,355.85	-317.30	426.28	14,445,823.18	1,707,410.14	39.77755545	-80.76155317	
9,500.00	9.34	123.30	9,454.52	-326.21	439.84	14,445,814.27	1,707,423.70	39.77753089	-80.76150499	
9,600.00	9.34	123.30	9,553.20	-335.12	453.40	14,445,805.36	1,707,437.26	39.77750633	-80.76145681	
9,700.00	9.34	123.30	9,651.87	-344.02	466.96	14,445,796.46	1,707,450.82	39.77748177	-80.76140862	



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Old Crow N-17 HU (slot O)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1265.00usft
<b>Project:</b>	Marshall County, West Virginia.	<b>MD Reference:</b>	GL @ 1265.00usft
<b>Site:</b>	Old Crow Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Old Crow N-17 HU (slot O)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev4		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,800.00	9.34	123.30	9,750.55	-352.93	480.52	14,445,787.55	1,707,464.38	39.77745721	-80.76136044	
9,900.00	9.34	123.30	9,849.22	-361.84	494.08	14,445,778.64	1,707,477.94	39.77743266	-80.76131226	
10,000.00	9.34	123.30	9,947.90	-370.74	507.64	14,445,769.74	1,707,491.50	39.77740810	-80.76126408	
10,100.00	9.34	123.30	10,046.57	-379.65	521.20	14,445,760.83	1,707,505.06	39.77738354	-80.76121590	
10,200.00	9.34	123.30	10,145.25	-388.56	534.76	14,445,751.92	1,707,518.62	39.77735898	-80.76116772	
10,300.00	9.34	123.30	10,243.92	-397.46	548.32	14,445,743.02	1,707,532.19	39.77733442	-80.76111954	
10,325.46	9.34	123.30	10,269.04	-399.73	551.77	14,445,740.75	1,707,535.64	39.77732816	-80.76110727	
<b>Begin 6°/100' build/turn</b>										
10,400.00	5.73	102.38	10,342.94	-403.85	560.47	14,445,736.63	1,707,544.33	39.77731679	-80.76107637	
10,500.00	4.77	33.32	10,442.61	-401.45	567.64	14,445,739.03	1,707,551.50	39.77732334	-80.76105083	
10,600.00	9.19	357.58	10,541.89	-389.98	569.58	14,445,750.50	1,707,553.45	39.77735480	-80.76104379	
10,700.00	14.77	346.60	10,639.68	-369.59	566.29	14,445,770.89	1,707,550.15	39.77741083	-80.76105533	
10,800.00	20.58	341.63	10,734.93	-340.49	557.79	14,445,799.99	1,707,541.65	39.77749082	-80.76108531	
10,900.00	26.47	338.79	10,826.58	-302.99	544.17	14,445,837.49	1,707,528.04	39.77759389	-80.76113341	
11,000.00	32.40	336.93	10,913.63	-257.52	525.59	14,445,882.96	1,707,509.46	39.77771891	-80.76119910	
11,100.00	38.35	335.60	10,995.13	-204.57	502.26	14,445,935.92	1,707,486.12	39.77786451	-80.76128167	
11,200.00	44.32	334.57	11,070.18	-144.71	474.41	14,445,995.77	1,707,458.28	39.77802909	-80.76138020	
11,295.22	50.00	333.78	11,134.90	-81.90	443.99	14,446,058.58	1,707,427.85	39.77820180	-80.76148789	
<b>Begin 8°/100' build/turn</b>										
11,300.00	50.38	333.73	11,137.96	-78.61	442.37	14,446,061.87	1,707,426.23	39.77821086	-80.76149363	
11,400.00	58.34	332.80	11,196.18	-6.10	405.80	14,446,134.38	1,707,389.67	39.77841025	-80.76162308	
11,500.00	66.31	332.01	11,242.58	72.31	364.79	14,446,212.80	1,707,348.66	39.77862590	-80.76176831	
11,600.00	74.29	331.32	11,276.26	155.11	320.13	14,446,295.59	1,707,303.99	39.77885360	-80.76192650	
11,700.00	82.26	330.67	11,296.57	240.67	272.68	14,446,381.15	1,707,256.55	39.77908891	-80.76209456	
11,800.00	90.24	330.06	11,303.10	327.33	223.38	14,446,467.81	1,707,207.25	39.77932727	-80.76226922	
11,809.56	91.00	330.00	11,303.00	335.61	218.61	14,446,476.09	1,707,202.47	39.77935005	-80.76228614	
<b>Begin 91.00° lateral</b>										
11,900.00	91.00	330.00	11,301.42	413.92	173.39	14,446,554.40	1,707,157.26	39.77956544	-80.76244634	
12,000.00	91.00	330.00	11,299.67	500.51	123.40	14,446,640.99	1,707,107.26	39.77980360	-80.76262347	
12,100.00	91.00	330.00	11,297.92	587.10	73.40	14,446,727.58	1,707,057.27	39.78004175	-80.76280060	
12,200.00	91.00	330.00	11,296.17	673.68	23.41	14,446,814.16	1,707,007.27	39.78027991	-80.76297774	
12,300.00	91.00	330.00	11,294.42	760.27	-26.59	14,446,900.75	1,706,957.27	39.78051807	-80.76315487	
12,400.00	91.00	330.00	11,292.67	846.86	-76.58	14,446,987.34	1,706,907.28	39.78075622	-80.76333201	
12,500.00	91.00	330.00	11,290.92	933.45	-126.58	14,447,073.93	1,706,857.28	39.78099438	-80.76350915	
12,600.00	91.00	330.00	11,289.17	1,020.03	-176.57	14,447,160.52	1,706,807.29	39.78123254	-80.76368629	
12,700.00	91.00	330.00	11,287.43	1,106.62	-226.57	14,447,247.10	1,706,757.29	39.78147069	-80.76386343	
12,800.00	91.00	330.00	11,285.68	1,193.21	-276.57	14,447,333.69	1,706,707.30	39.78170885	-80.76404057	
12,900.00	91.00	330.00	11,283.93	1,279.80	-326.56	14,447,420.28	1,706,657.30	39.78194700	-80.76421771	
13,000.00	91.00	330.00	11,282.18	1,366.38	-376.56	14,447,506.87	1,706,607.31	39.78218516	-80.76439486	
13,100.00	91.00	330.00	11,280.43	1,452.97	-426.55	14,447,593.45	1,706,557.31	39.78242331	-80.76457200	
13,200.00	91.00	330.00	11,278.68	1,539.56	-476.55	14,447,680.04	1,706,507.32	39.78266147	-80.76474915	
13,300.00	91.00	330.00	11,276.93	1,626.15	-526.54	14,447,766.63	1,706,457.32	39.78289962	-80.76492630	
13,400.00	91.00	330.00	11,275.18	1,712.74	-576.54	14,447,853.22	1,706,407.33	39.78313777	-80.76510345	
13,500.00	91.00	330.00	11,273.44	1,799.32	-626.53	14,447,939.80	1,706,357.33	39.78337593	-80.76528060	
13,600.00	91.00	330.00	11,271.69	1,885.91	-676.53	14,448,026.39	1,706,307.34	39.78361408	-80.76545775	
13,700.00	91.00	330.00	11,269.94	1,972.50	-726.52	14,448,112.98	1,706,257.34	39.78385223	-80.76563490	
13,800.00	91.00	330.00	11,268.19	2,059.09	-776.52	14,448,199.57	1,706,207.35	39.78409039	-80.76581206	
13,900.00	91.00	330.00	11,266.44	2,145.67	-826.51	14,448,286.16	1,706,157.35	39.78432854	-80.76598921	
14,000.00	91.00	330.00	11,264.69	2,232.26	-876.51	14,448,372.74	1,706,107.36	39.78456669	-80.76616637	
14,100.00	91.00	330.00	11,262.94	2,318.85	-926.50	14,448,459.33	1,706,057.36	39.78480484	-80.76634353	
14,200.00	91.00	330.00	11,261.19	2,405.44	-976.50	14,448,545.92	1,706,007.37	39.78504299	-80.76652069	
14,300.00	91.00	330.00	11,259.44	2,492.02	-1,026.49	14,448,632.51	1,705,957.37	39.78528115	-80.76669785	
14,400.00	91.00	330.00	11,257.70	2,578.61	-1,076.49	14,448,719.09	1,705,907.38	39.78551930	-80.76687501	
14,500.00	91.00	330.00	11,255.95	2,665.20	-1,126.48	14,448,805.68	1,705,857.38	39.78575745	-80.76705217	



SI-021 22400



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Old Crow N-17 HU (slot O)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1265.00usft
<b>Project:</b>	Marshall County, West Virginia.	<b>MD Reference:</b>	GL @ 1265.00usft
<b>Site:</b>	Old Crow Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Old Crow N-17 HU (slot O)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev4		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
20,100.00	91.00	330.00	11,158.02	7,514.11	-3,926.21	14,453,654.59	1,703,057.65	39.79909345	-80.77697523	
20,200.00	91.00	330.00	11,156.27	7,600.70	-3,976.21	14,453,741.18	1,703,007.66	39.79933158	-80.77715246	
20,300.00	91.00	330.00	11,154.52	7,687.29	-4,026.20	14,453,827.77	1,702,957.66	39.79956972	-80.77732969	
20,400.00	91.00	330.00	11,152.77	7,773.87	-4,076.20	14,453,914.35	1,702,907.67	39.79980785	-80.77750693	
20,500.00	91.00	330.00	11,151.02	7,860.46	-4,126.19	14,454,000.94	1,702,857.67	39.80004598	-80.77768416	
20,600.00	91.00	330.00	11,149.27	7,947.05	-4,176.19	14,454,087.53	1,702,807.68	39.80028412	-80.77786140	
20,700.00	91.00	330.00	11,147.52	8,033.64	-4,226.18	14,454,174.12	1,702,757.68	39.80052225	-80.77803864	
20,800.00	91.00	330.00	11,145.77	8,120.22	-4,276.18	14,454,260.71	1,702,707.69	39.80076038	-80.77821588	
20,900.00	91.00	330.00	11,144.03	8,206.81	-4,326.17	14,454,347.29	1,702,657.69	39.80099852	-80.77839312	
21,000.00	91.00	330.00	11,142.28	8,293.40	-4,376.17	14,454,433.88	1,702,607.70	39.80123665	-80.77857036	
21,100.00	91.00	330.00	11,140.53	8,379.99	-4,426.16	14,454,520.47	1,702,557.70	39.80147478	-80.77874760	
21,200.00	91.00	330.00	11,138.78	8,466.57	-4,476.16	14,454,607.06	1,702,507.71	39.80171291	-80.77892485	
21,300.00	91.00	330.00	11,137.03	8,553.16	-4,526.15	14,454,693.64	1,702,457.71	39.80195105	-80.77910209	
21,400.00	91.00	330.00	11,135.28	8,639.75	-4,576.15	14,454,780.23	1,702,407.72	39.80218918	-80.77927934	
21,500.00	91.00	330.00	11,133.53	8,726.34	-4,626.14	14,454,866.82	1,702,357.72	39.80242731	-80.77945659	
21,600.00	91.00	330.00	11,131.78	8,812.93	-4,676.14	14,454,953.41	1,702,307.73	39.80266544	-80.77963384	
21,700.00	91.00	330.00	11,130.04	8,899.51	-4,726.13	14,455,039.99	1,702,257.73	39.80290357	-80.77981109	
21,800.00	91.00	330.00	11,128.29	8,986.10	-4,776.13	14,455,126.58	1,702,207.74	39.80314170	-80.77998834	
21,900.00	91.00	330.00	11,126.54	9,072.69	-4,826.12	14,455,213.17	1,702,157.74	39.80337983	-80.78016559	
22,000.00	91.00	330.00	11,124.79	9,159.28	-4,876.12	14,455,299.76	1,702,107.75	39.80361796	-80.78034285	
22,100.00	91.00	330.00	11,123.04	9,245.86	-4,926.11	14,455,386.35	1,702,057.75	39.80385609	-80.78052010	
22,200.00	91.00	330.00	11,121.29	9,332.45	-4,976.11	14,455,472.93	1,702,007.75	39.80409422	-80.78069736	
22,300.00	91.00	330.00	11,119.54	9,419.04	-5,026.10	14,455,559.52	1,701,957.76	39.80433235	-80.78087462	
22,400.00	91.00	330.00	11,117.79	9,505.63	-5,076.10	14,455,646.11	1,701,907.76	39.80457048	-80.78105188	
22,500.00	91.00	330.00	11,116.04	9,592.21	-5,126.09	14,455,732.70	1,701,857.77	39.80480861	-80.78122914	
22,600.00	91.00	330.00	11,114.30	9,678.80	-5,176.09	14,455,819.28	1,701,807.77	39.80504674	-80.78140640	
22,700.00	91.00	330.00	11,112.55	9,765.39	-5,226.09	14,455,905.87	1,701,757.78	39.80528486	-80.78158366	
22,800.00	91.00	330.00	11,110.80	9,851.98	-5,276.08	14,455,992.46	1,701,707.78	39.80552299	-80.78176092	
22,900.00	91.00	330.00	11,109.05	9,938.57	-5,326.08	14,456,079.05	1,701,657.79	39.80576112	-80.78193819	
23,000.00	91.00	330.00	11,107.30	10,025.15	-5,376.07	14,456,165.63	1,701,607.79	39.80599925	-80.78211546	
23,100.00	91.00	330.00	11,105.55	10,111.74	-5,426.07	14,456,252.22	1,701,557.80	39.80623737	-80.78229272	
23,200.00	91.00	330.00	11,103.80	10,198.33	-5,476.06	14,456,338.81	1,701,507.80	39.80647550	-80.78246999	
23,300.00	91.00	330.00	11,102.05	10,284.92	-5,526.06	14,456,425.40	1,701,457.81	39.80671363	-80.78264726	
23,400.00	91.00	330.00	11,100.31	10,371.50	-5,576.05	14,456,511.99	1,701,407.81	39.80695175	-80.78282453	
23,500.00	91.00	330.00	11,098.56	10,458.09	-5,626.05	14,456,598.57	1,701,357.82	39.80718988	-80.78300181	
23,600.00	91.00	330.00	11,096.81	10,544.68	-5,676.04	14,456,685.16	1,701,307.82	39.80742800	-80.78317908	
23,700.00	91.00	330.00	11,095.06	10,631.27	-5,726.04	14,456,771.75	1,701,257.83	39.80766613	-80.78335636	
23,800.00	91.00	330.00	11,093.31	10,717.85	-5,776.03	14,456,858.34	1,701,207.83	39.80790425	-80.78353363	
23,900.00	91.00	330.00	11,091.56	10,804.44	-5,826.03	14,456,944.92	1,701,157.84	39.80814238	-80.78371091	
24,000.00	91.00	330.00	11,089.81	10,891.03	-5,876.02	14,457,031.51	1,701,107.84	39.80838050	-80.78388819	
24,100.00	91.00	330.00	11,088.06	10,977.62	-5,926.02	14,457,118.10	1,701,057.85	39.80861863	-80.78406547	
24,200.00	91.00	330.00	11,086.32	11,064.21	-5,976.01	14,457,204.69	1,701,007.85	39.80885675	-80.78424275	
24,300.00	91.00	330.00	11,084.57	11,150.79	-6,026.01	14,457,291.27	1,700,957.86	39.80909487	-80.78442003	
24,400.00	91.00	330.00	11,082.82	11,237.38	-6,076.00	14,457,377.86	1,700,907.86	39.80933300	-80.78459731	
24,500.00	91.00	330.00	11,081.07	11,323.97	-6,126.00	14,457,464.45	1,700,857.87	39.80957112	-80.78477460	
24,600.00	91.00	330.00	11,079.32	11,410.56	-6,175.99	14,457,551.04	1,700,807.87	39.80980924	-80.78495188	
24,700.00	91.00	330.00	11,077.57	11,497.14	-6,225.99	14,457,637.63	1,700,757.88	39.81004737	-80.78512917	
24,800.00	91.00	330.00	11,075.82	11,583.73	-6,275.98	14,457,724.21	1,700,707.88	39.81028549	-80.78530646	
24,900.00	91.00	330.00	11,074.07	11,670.32	-6,325.98	14,457,810.80	1,700,657.89	39.81052361	-80.78548375	
25,000.00	91.00	330.00	11,072.33	11,756.91	-6,375.97	14,457,897.39	1,700,607.89	39.81076173	-80.78566104	
25,018.59	91.00	330.00	11,072.00	11,773.00	-6,385.27	14,457,913.48	1,700,598.60	39.81080600	-80.78569400	

PBHL/TD 25018.59 MD/11072.00 TVD





Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Old Crow N-17 HU (slot O)
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL @ 1265.00usft
<b>Project:</b>	Marshall County, West Virginia.	<b>MD Reference:</b>	GL @ 1265.00usft
<b>Site:</b>	Old Crow Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	Old Crow N-17 HU (slot O)	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev4		

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									
BHL Old Crow N-17 HU - plan hits target center - Point	0.00	0.00	11,072.00	11,773.00	-6,385.27	14,457,913.49	1,700,598.60	39.81080600	-80.78569400
LP Old Crow N-17 HU - plan misses target center by 0.01usft at 11809.56usft MD (11303.00 TVD, 335.61 N, 218.61 E) - Point	0.00	0.00	11,303.00	335.61	218.60	14,446,476.09	1,707,202.46	39.77935004	-80.76228618

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(usft)	(usft)	+N/-S	+E/-W		
		(usft)	(usft)		
3,000.00	3,000.00	0.00	0.00	KOP Begin 2°/100' build	
3,100.00	3,099.98	-0.87	-1.51	Begin 2.00° tangent	
4,000.57	4,000.00	-16.59	-28.73	Begin 2°/100' drop	
4,100.57	4,099.98	-17.46	-30.24	Begin vertical hold	
5,800.59	5,800.00	-17.46	-30.24	Begin 2°/100' build	
6,267.44	6,264.79	-38.30	1.48	Begin 9.34° tangent	
10,325.46	10,269.04	-399.73	551.77	Begin 6°/100' build/turn	
11,295.22	11,134.90	-81.90	443.99	Begin 8°/100' build/turn	
11,809.56	11,303.00	335.61	218.61	Begin 91.00° lateral	
25,018.59	11,072.00	11,773.00	-6,385.27	PBHL/TD 25018.59 MD/11072.00 TVD	

SI-02122400

WW-6A1  
(5/13)

Operator's Well No. Old Crow N-17HU

**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

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 - Appalachia Region

**OLD CROW N LEASE  
UTICA UNIT - 394.85 AC±  
WELL 17HU  
TUG HILL OPERATING**

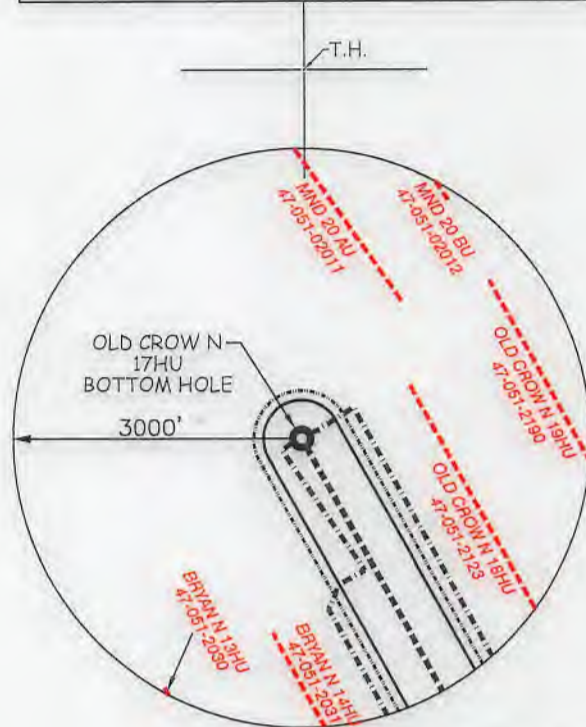
T.H. LATITUDE 39°47'30"  
B.H. LATITUDE 39°50'00"

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)  
NAD'83 S.P.C.(FT) N. 468,139.24 E. 1,613,525.64  
NAD'83 GEO. LAT-(N) 39.778430 LONG-(W) 80.763067  
NAD'83 UTM (M) N. 4,403,192.43 E. 520,289.72

LANDING POINT  
NAD'83 S.P.C.(FT) N. 468,471.3 E. 1,613,749.9  
NAD'83 GEO. LAT-(N) 39.779350 LONG-(W) 80.762286  
NAD'83 UTM (M) N. 4,403,294.43 E. 520,356.4

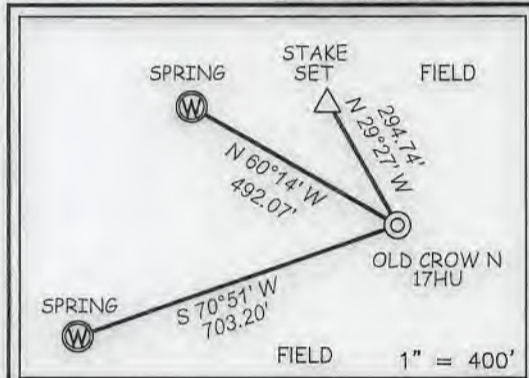
BOTTOM HOLE  
NAD'83 S.P.C.(FT) N. 480,021.3 E. 1,607,835.8  
NAD'83 GEO. LAT-(N) 39.810806 LONG-(W) 80.785694  
NAD'83 UTM (M) N. 4,406,780.8 E. 518,843.5

TAG	SURFACE OWNER	PARCEL	ACRES
A	JOHN SWIERKOS	5-16-25	79.04
B	DONNA VIVIAN YOHO - TOD	5-16-3	71.205
C	JOHN SWIERKOS	5-16-5	52.07
D	JOHN SWIERKOS	5-10-14	100.00
E	JIMMY OSTRANDER, SR., ET UX	5-16-3.2	1.435
F	PAUL ANDREW & DEBRA A. RINE	5-10-15	120.80
G	DONALD T. MILLER	5-10-15.1	2.095
H	TIMOTHY SR. & LINDA MCGINNIS	5-10-16	30.87
I	TRAVIS A. & BREA M. WAYT	5-10-16.4	30.87
J	WILLIAM A. PRASCIK, ET AL.	5-10-2	52.00
K	ALVIN A. YODER	5-10-17	57.28
L	WESLEY R. BRYAN & WESLEY R. BRYAN, II	5-11-11.2	25.03
M	ALVIN A. YODER	5-11-10	31.91
N	JACK S. HUGGINS, ET UX	5-11-9.4	4.129
O	JACK SHEPARD HUGGINS, JR., ET AL	5-11-9.1	10.92
P	EDWIN C. MILLER	5-10-1	49.96
Q	SEAN F. MOORE	5-11-9.7	2.03
R	EDWIN C. & KIMBERLY A. MILLER	5-11-9	54.625
S	SEAN F. MOORE	5-11-9.8	2.070
T	JAMES M. & ROBERT L. STERN	5-9-29	3.1777
U	TRUSTEES OF LIGHTHOUSE TABERNACLE CHURCH	5-9-30.2	1.954
V	JOHN D. & MARSHA J. ROBERTS	5-9-38.6	0.719
W	JOHN D. & MARSHA J. ROBERTS	5-9-38.7	0.795
X	JOHN D. & MARSHA J. ROBERTS	5-9-38.5	0.619
Y	JOHN D. & MARSHA J. ROBERTS	5-9-38.4	0.669
Z	FISH CREEK-WV DIVISION OF NATURAL RESOURCES	N/A	N/A
AA	DAVID ARRICK, ET UX	5-11-4	31.5
BB	SHELVA G. SMITH, ET UX	5-9-38.3	0.706
CC	SHELVA G. SMITH, ET UX	5-9-38.2	0.735
DD	JOHN H. LONG, ET UX	5-9-38.1	0.815
EE	ROBERT S. COWGILL	5-9-38.10	0.920
FF	DALISON LUMBER COMPANY	5-9-31	32.10
GG	JOHN D. ROBERTS, ET UX	5-9-38.8	0.903
HH	JOHN D. ROBERTS, ET UX	5-9-38.9	1.017
II	SHIRLEY A. HILL, ESTATE	5-9-38	3.331
JJ	FRANK T. & ANNA M. WALKER	5-9-37	10.857
KK	RUBY M. HENRY ESTATE (C/O GEORGE E. HENRY)	5-9-3.4	0.379
LL	JOHN DRAKE ALBAUGH	5-9-32.12	1.09
MM	JOHN DRAKE ALBAUGH	5-9-32.1	1.002
NN	JOHN DRAKE ALBAUGH	5-9-32.2	0.231
OO	RUBY M. HENRY ESTATE (C/O GEORGE E. HENRY)	5-9-32.6	0.474
PP	JOHN D. ALBAUGH	5-9-32.13	0.848
QQ	JOHN D. ALBAUGH	5-9-32.7	0.729
RR	SANDRA J. BONETTE	5-9-32	2.321
SS	JAMES EDWARD FRANCIS, ET UX	5-8-8	28.3
TT	JAMES B. JACKSON, JR., ET UX	5-8-9	89.723
UU	EDWIN C. MILLER	5-8-7	180.31



T.H. LONGITUDE 80°45'00"  
B.H. LONGITUDE 80°45'00"  
4,822' T.H.  
8,206' B.H.

**REFERENCES**

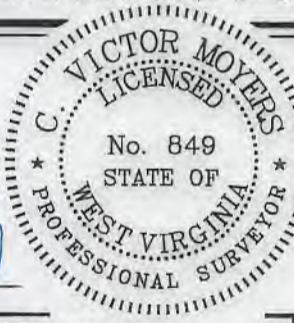


**NOTES ON SURVEY**

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 825' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE ARE 1"=2000'
- PROPOSED LATERAL OR TOP HOLE OF OLD CROW N-17HU (47-051-02122) IS WITHIN 3000' OF THE TOP HOLES OR LATERALS OF EXISTING WELLS BRYAN N 13HU (47-051-02030), BRYAN N 14HU (47-051-02031), OLD CROW N-18HU (47-051-02123), & PROPOSED OLD CROW N-19HU (47-051-02190).



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.



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
DATE OCTOBER 3, 20 18  
REVISED 03/05/19, 04/25/19, 05/14/19  
OPERATORS WELL NO. OLD CROW N-17HU  
API WELL NO. 47 - 051 - 02122  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8796P17HUR3.dwg  
OLD CROW NORTH 17HU\_REV4  
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  LIQUID INJECTION  WASTE DISPOSAL  IF "GAS" PRODUCTION  STORAGE  DEEP  SHALLOW

LOCATION: GROUND = 1286.73' ELEVATION PROPOSED = 1264.99' WATERSHED TRIBUTARY OF FISH CREEK (HUC-10)  
DISTRICT FRANKLIN COUNTY MARSHALL QUADRANGLE POWHATAN POINT 7.5'

SURFACE OWNER DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO ACREAGE 71.205±  
ROYALTY OWNER DONNA VIVIAN YOHO, ET AL - SEE ADDITIONAL SHEETS ACREAGE 71.205±

PROPOSED WORK: DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  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: 11,520' / TMD: 25,019'

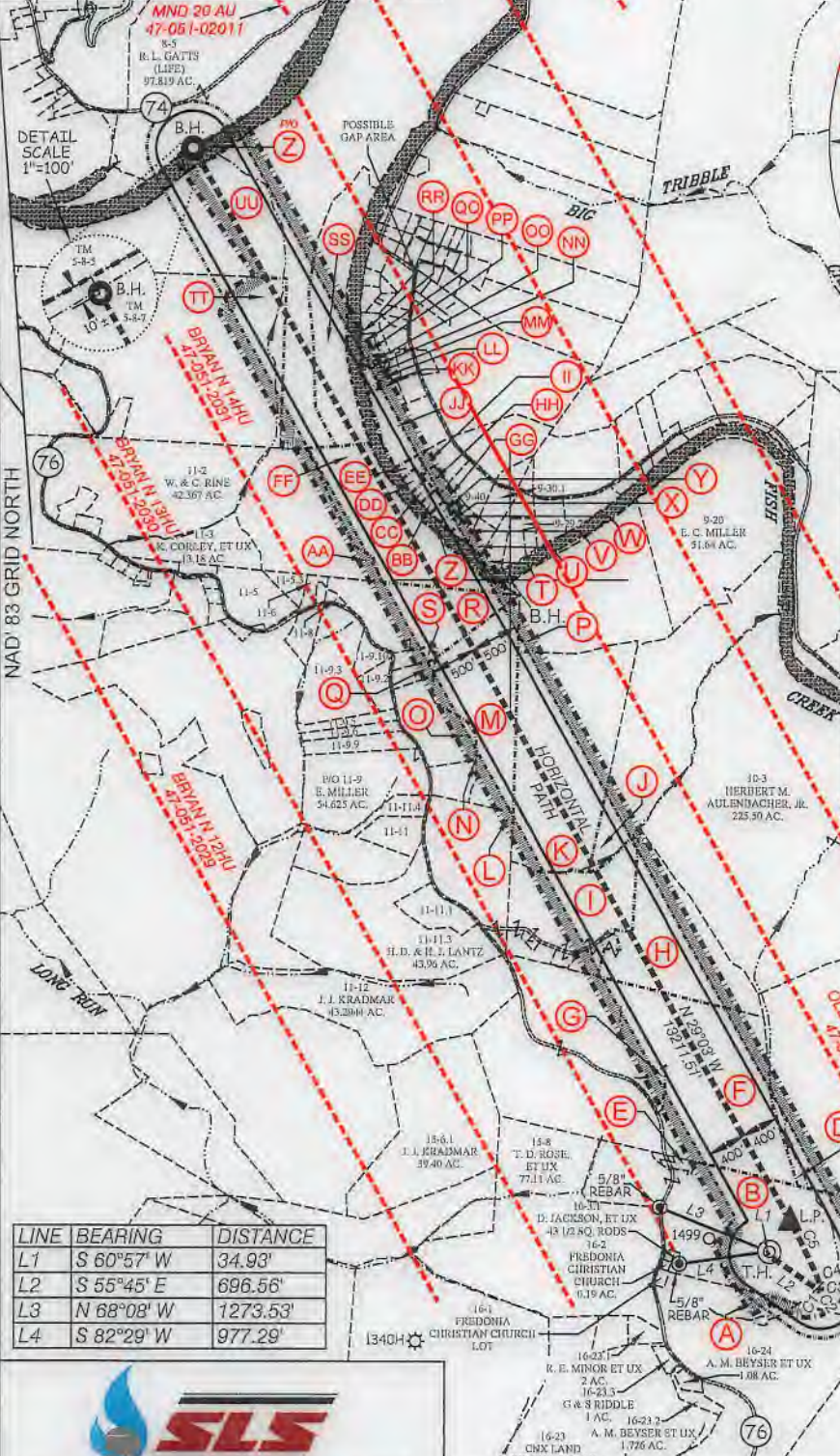
WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER  
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD  
FORT WORTH, TX 76107 CHARLESTON, WV 25313

COUNTY NAME  
PERMIT

**OLD CROW N LEASE  
UTICA UNIT - 394.85 AC±  
WELL 17HU  
TUG HILL OPERATING**

T.H. LATITUDE 39°47'30"  
B.H. LATITUDE 39°50'00"

T.H. LONGITUDE 80°45'00"  
B.H. LONGITUDE 80°45'00"



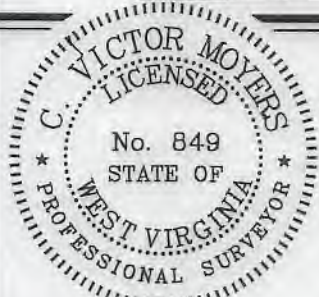
MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
5-9-29.2	JAMES E. & AMY L. MCDONOUGH	2.807
5-9-30.1	DAVID JR. & MELISA LOVE	2.518
5-9-40	SHIRLEY A. HILL EST	368' X 425'
5-11-5	KEVIN R. CORLEY, ET UX	10.36
5-11-5.3	ROBERT HARRIS ARRICK, ET UX	3.00
5-11-6	ROBERT & REBECCA ARRICK	1.29
5-11-8	BAPTIST CHURCH	1.5
5-11-9.2	MICHAEL R. BRYAN	3.143
5-11-9.3	JOSEPH M. & STEVEN HAUGHT	16.3
5-11-9.5	SOUTHERN COUNTRY FARMS INC.	2.559
5-11-9.6	SOUTHERN COUNTRY FARMS INC.	2.488
5-11-9.9	LEONARD L. PARSONS, ET UX	5.89
5-11-9.10	JOHN A. & JANET L. BEUCKE	2.348
5-11-11	BRAD M. & AMANDA J. BLAKE	5.00
5-11-11.1	NELLIE MARIE & ROBERT SPENCER	5.813
5-11-11.4	BRAD M. & AMANDA J. BLAKE	15.193

LINE	BEARING	DISTANCE
L1	S 60°57' W	34.93'
L2	S 55°45' E	696.56'
L3	N 68°08' W	1273.53'
L4	S 82°29' W	977.29'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	9.65'	37.61'	S 63°41' E	9.63'
C2	12.79'	7.38'	N 52°24' E	11.25'
C3	27.53'	89.14'	N 05°17' W	27.42'
C4	243.25'	1584.90'	N 21°16' W	243.01'
C5	544.51'	7131.71'	N 27°05' W	544.37'

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Solutions from the ground up.  
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www.sls-wv.com

P.S. 849 *C. Victor Moyers*



(+) 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)

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)  
 NAD'83 S.P.C.(FT) N. 468,139.24 E. 1,613,525.64  
 NAD'83 GEO. LAT-(N) 39.778430 LONG-(W) 80.783067  
 NAD'83 UTM (M) N. 4,403,192.43 E. 520,289.72  
**LANDING POINT**  
 NAD'83 S.P.C.(FT) N. 468,471.3 E. 1,613,749.9  
 NAD'83 GEO. LAT-(N) 39.779350 LONG-(W) 80.762286  
 NAD'83 UTM (M) N. 4,403,294.7 E. 520,356.4  
**BOTTOM HOLE**  
 NAD'83 S.P.C.(FT) N. 480,021.3 E. 1,607,335.8  
 NAD'83 GEO. LAT-(N) 39.810806 LONG-(W) 80.785694  
 NAD'83 UTM (M) N. 4,406,780.8 E. 518,343.5

SCALE 1" = 2000' FILE NO. 8796P17HUR3.dwg  
 OLD CROW NORTH 17HU\_REV4  
 DATE OCTOBER 3, 2018  
 REVISED 03/05/19, 04/25/19, 05/14/19  
 OPERATORS WELL NO. OLD CROW N-17HU  
 API WELL NO. 47-051-02122 MOD  
 NO. STATE COUNTY PERMIT

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 CT CORPORATION SYSTEM ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

COUNTY NAME PERMIT

**OLD CROW N LEASE  
UTICA UNIT - 394.85 AC±  
WELL 17HU  
TUG HILL OPERATING**



NO.	Lease ID	Tag	Parcel	Grantor, Lessor, Etc.	Deed Book/Page
1	10*21468	A	5-16-25	JOHN A SWIERKOS	953 317
2	10*19340	B	5-16-3	DONNA V YOHO	665 407
3	10*14919	C	5-16-5	CHESTNUT HOLDINGS INC	836 117
4	10*14920	D	5-10-14	CHESTNUT HOLDINGS INC	836 119
5	10*19340	E	5-16-3.2	DONNA V YOHO	665 407
6	10*19017	F	5-10-15	PAUL A RINE AND DEBRA A RINE	796 24
7	10*19223	G	5-10-15.1	DONALD T MILLER	737 284
8	10*19126	H	5-10-16	KEVIN R. CORLEY AND ANITA L. CORLEY, HUSBAND AND WIFE	859 44
9	10*19109	J	5-10-16.4	JOHN W. MILLER AND MARY ALICE MILLER, HUSBAND AND WIFE	863 275
10	10*47051.260.0	J	5-10-2	WILLIAMA PRASCIK, ET AL	879 302
11	10*19021	K	5-10-17	MARCELLUS TX MINERAL PARTNERS LTD, et al	800 216
12	10*19034	K	5-10-17	JMK IRREVOCABLE TRUST	813 145
13	10*19035	K	5-10-17	PURPLEBURGH VENTURES, LLC	813 138
14	10*19336	L	5-11-11.2	BONNIE JEAN DAWSON	665 397
15	10*19021	M	5-11-10	MARCELLUS TX MINERAL PARTNERS LTD, et al	800 216
16	10*19034	M	5-11-10	JMK IRREVOCABLE TRUST	813 145
17	10*19035	M	5-11-10	PURPLEBURGH VENTURES, LLC	813 138
18	10*19153	N	5-11-9.4	JACK S HUGGINS JR AND TERRY L HUGGINS	700 396
19	10*19153	O	5-11-9.1	JACK S HUGGINS JR	700 396
20	10*18970	P	5-10-1	DONALD E BERISFORD, et al	941 287
21	10*19036	P	5-10-1	HAROLD W HOWARD JR	813 91
22	10*19037	P	5-10-1	NEVELLE SEELEY	813 116
23	10*19039	P	5-10-1	RALPH B RUSSELL MARY ANN RUSSELL	813 106
24	10*19040	P	5-10-1	RUTHANNE RUSSELL TOPPING	813 79
25	10*19041	P	5-10-1	CHERYL L HILL	813 101
26	10*19043	P	5-10-1	JACK R BERISFORD LINDA JO BERISFORD	813 96
27	10*19045	P	5-10-1	JOHN W MURDOCK HELEN CAROLINA MURDOCK	814 327
28	10*19049	P	5-10-1	RUTH ANN FERRIS	814 313
29	10*19050	P	5-10-1	LARRY F JEFFERSON CATHY L JEFFERSON	814 473
30	10*19059	P	5-10-1	MARY VANESSA GILSON	815 464
31	10*19060	P	5-10-1	ALYSIA JORDAN	815 135
32	10*18503	P	5-10-1	FRANK DALE BERISFORD AND KATHLEEN BERISFORD	942 625
33	10*19610	P	5-10-1	BRENT BERISFORD AND JEAN MARIE COSTA	944 207
34	10*22637	P	5-10-1	HOWARD T CONNER AND NANETTE CONNER	968 219
35	10*22639	P	5-10-1	EDWIN MARK KNABENSHUE	968 217
36	10*22640	P	5-10-1	JESSICA M CREMEANS	984 532
37	10*22641	P	5-10-1	CHRISTOPHER STALEY & MICHAEL ANNE STALEY	968 221
38	10*22772	P	5-10-1	BILLIE J STALEY AND APRIL STALEY	970 8
39	10*23040	P	5-10-1	MARY L WHITTINGTON	977 300
40	10*23725	P	5-10-1	GRAYSVILLE CALVARY UNITED METHODIST	1011 550
41	10*24029	P	5-10-1	MICHAEL L STEWART	1020 353
42	10*24261	P	5-10-1	GREG STEWART	1020 351
43	10*24514	P	5-10-1	GAYLE F BRITTON TRUST	1026 253
44	10*24515	P	5-10-1	AARON M BROWN	1024 269
45	10*24525	P	5-10-1	DAVID E BOWWER	1027 285
46	10*24554	P	5-10-1	JOSH D AND LAUREN K HALE	1024 254
47	10*24555	P	5-10-1	DAVID W HALE JR	1024 257
48	10*24556	P	5-10-1	BETTY L KEAN	1024 263
49	10*47051.127.1	P	5-10-1	EDWIN C MILLER AND KIMBERLY ANN MILLER	885 61
50	10*47051.127.2	P	5-10-1	JANE S BLANEY	898 547
51	10*47051.127.3	P	5-10-1	JOANNE SCHAFF FOSTER	895 29
52	10*47051.127.4	P	5-10-1	RAYMOND E SCHAFF	898 550
53	10*47051.127.5	P	5-10-1	FIRST CHRISTIAN CHURCH OF MOUNDSVILLE BY ROGER FRANCIS AND ROBERT ALBERT TRUSTEES	898 600
54	10*47051.127.6	P	5-10-1	BARBARA GODWIN AND CHARLES RODNEY GODWIN	902 419
55	PENDING	P	5-10-1	FORREST D MILLER	1029 581
56	10*25617	P	5-10-1	GLEN DALE UNITED METHODIST CHURCH	1031 610
57	10*14099	Q	5-11-9.7	SOUTHERN COUNTRY FARMS INC	666 489
58	10*14099	R	5-11-9	SOUTHERN COUNTRY FARMS INC	666 489
59	10*19172	S	5-11-9.8	SEAN F MOORE LINDA MOORE	706 581
60	10*17512	T	5-9-29	BONNIE LOU POSTLEWAIT, et al	917 68
61	10*17530	T	5-9-29	WOODROW N WARD AND HILDA A WARD	916 208
62	10*17916	T	5-9-29	MARY E BISHOP	927 167
63	10*18270	T	5-9-29	GERALD L BISHOP III	943 10
64	10*18796	T	5-9-29	DWG OIL & GAS ACQUISITIONS LLC	938 476
65	10*19193	T	5-9-29	LARRY A GUMP	717 488
66	10*19572	T	5-9-29	DOUGLAS R BISHOP	943 12
67	10*21478	T	5-9-29	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	960 173
68	10*21937	T	5-9-29	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	960 33
69	10*22044	T	5-9-29	MICHAEL A BISHOP	960 421
70	10*22296	T	5-9-29	NOAH BAKER AND ALISA BAKER	962 200
71	10*22326	T	5-9-29	RACHEL SONDA AND SCOTT SONDA	962 532
72	10*22407	T	5-9-29	BRADLEY MURPHY	962 575
73	10*22430	T	5-9-29	DEBORAH VANVRANKEN	964 510
74	10*22492	T	5-9-29	FAITH MARIE FREESTONE AND ERIC FREESTONE	972 50
75	10*22547	T	5-9-29	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	966 628
76	10*22606	T	5-9-29	ROBERT B MURPHY AND LINDA MURPHY	966 469
77	10*22636	T	5-9-29	CHANDA WILSON AND DANIEL WILSON	968 226
78	10*23035	T	5-9-29	DEAN S CARR	977 364
79	10*23508	T	5-9-29	MICHAEL A MURPHY	1009 98
80	10*24888	T	5-9-29	ARTHUR LEE MILLER ET AL	1027 187
81	10*24984	T	5-9-29	JONATHAN BAKER	1027 562
82	10*17600	T	5-9-29	CARLA JO ALLEN AND KENNETH ALLEN SANDRA PARDINI AKA KATHERINE S PARDINI AND ALLEN F PARDINI	916 129
83	PENDING	T	5-9-29		1031 544
84	Q090332002	T	5-9-29	LORETTA JEAN RIGGLE ET VIR	860 538
85	Q090332003	T	5-9-29	PATTY BERISFORD ET VIR	860 555
86	Q090332007	T	5-9-29	ROBERT RANDOLPH WOODBURN ET UX	860 568
87	10*21547	U	5-9-30.2	GARY A MILLER AND MARCELLET MILLER, et al	952 370
88	10*21548	U	5-9-30.2	JEANNE M MILLER	952 386
89	10*21719	U	5-9-30.2	ROBERT A MILLER	952 389
90	10*22566	U	5-9-30.2	KENNETH A MILLER	964 233
91	CVX935271	U	5-9-30.2	CHARLES W. MILLER AND ESTHER JEAN MILLER	853 59
92	CVX935273	U	5-9-30.2	PAUL PARSONS ET UX	853 430
93	CVX935276	U	5-9-30.2	SHARON LYN RUSSELL	853 422
94	CVX935969	U	5-9-30.2	TIMOTHY HUFF ET UX	864 47
95	CVX936053	U	5-9-30.2	LLOYD C. ARNOLD ET UX	864 39
96	CVX936054	U	5-9-30.2	MARY JO CRONIN	864 43
97	CVX936058	U	5-9-30.2	RICHARD KURPIL ET UX	863 594
98	CVX936061	U	5-9-30.2	CLARA MAE CLIFTON	853 426
99	CVX936062	U	5-9-30.2	GEORGE EDWARDS ET UX	853 418
100	CVX936112	U	5-9-30.2	DONNA FAE KYLE	853 449

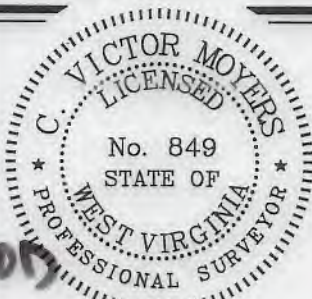
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OLD CROW NORTH 17HU\_REV 4

DATE OCTOBER 3, 20 18

REVISED 03/05/19, 04/25/19, 05/14/19

OPERATORS WELL NO. OLD CROW N-17HU

API WELL NO. 47 — 051 — 02122  
NO. STATE COUNTY PERMIT



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



P.S. 849 C. Victor Moyers

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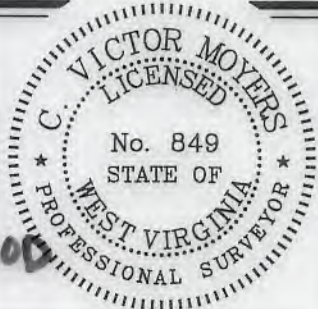
COUNTY NAME \_\_\_\_\_ PERMIT \_\_\_\_\_

**OLD CROW N LEASE  
UTICA UNIT - 394.85 AC±  
WELL 17HU  
TUG HILL OPERATING**



NO.	Lease ID	Tag	Parcel	Grantor, Lessor, Etc.	Deed Book/Page
101	CVX936113	U	5-9-30.2	JUDITH MAY CONNER	853 445
102	CVX866958	U	5-9-30.2	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
103	CVX866959	U	5-9-30.2	PAUL SCHEIBELHOOD ET AL	695 629
104	CVX935271	V	5-9-38.6	CHARLES W. MILLER AND ESTHER JEAN MILLER, et al	853 59
105	CVX935273	V	5-9-38.6	PAUL PARSONS ET UX	853 430
106	CVX935276	V	5-9-38.6	SHARON LYN RUSSELL	853 422
107	CVX935969	V	5-9-38.6	TIMOTHY HUFF ET UX	864 47
108	CVX936053	V	5-9-38.6	LLOYD C. ARNOLD ET UX	864 39
109	CVX936054	V	5-9-38.6	MARY JO CRONIN	864 43
110	CVX936058	V	5-9-38.6	RICHARD KURPIL ET UX	863 594
111	CVX936061	V	5-9-38.6	CLARA MAE CLIFTON	853 426
112	CVX936062	V	5-9-38.6	GEORGE EDWARDS ET UX	853 418
113	CVX936112	V	5-9-38.6	DONNA FAE KYLE	853 449
114	CVX936113	V	5-9-38.6	JUDITH MAY CONNER	853 445
115	CVX866958	V	5-9-38.6	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
116	CVX866959	V	5-9-38.6	PAUL SCHEIBELHOOD ET AL	695 629
117	CVX935271	W	5-9-38.7	CHARLES W. MILLER AND ESTHER JEAN MILLER, et al	853 59
118	CVX935273	W	5-9-38.7	PAUL PARSONS ET UX	853 430
119	CVX935276	W	5-9-38.7	SHARON LYN RUSSELL	853 422
120	CVX935969	W	5-9-38.7	TIMOTHY HUFF ET UX	864 47
121	CVX936053	W	5-9-38.7	LLOYD C. ARNOLD ET UX	864 39
122	CVX936054	W	5-9-38.7	MARY JO CRONIN	864 43
123	CVX936058	W	5-9-38.7	RICHARD KURPIL ET UX	863 594
124	CVX936061	W	5-9-38.7	CLARA MAE CLIFTON	853 426
125	CVX936062	W	5-9-38.7	GEORGE EDWARDS ET UX	853 418
126	CVX936112	W	5-9-38.7	DONNA FAE KYLE	853 449
127	CVX936113	W	5-9-38.7	JUDITH MAY CONNER	853 445
128	CVX866958	W	5-9-38.7	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
129	CVX866959	W	5-9-38.7	PAUL SCHEIBELHOOD ET AL	695 629
130	CVX935271	X	5-9-38.5	CHARLES W. MILLER AND ESTHER JEAN MILLER, et al	853 59
131	CVX935273	X	5-9-38.5	PAUL PARSONS ET UX	853 430
132	CVX935276	X	5-9-38.5	SHARON LYN RUSSELL	853 422
133	CVX935969	X	5-9-38.5	TIMOTHY HUFF ET UX	864 47
134	CVX936053	X	5-9-38.5	LLOYD C. ARNOLD ET UX	864 39
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137	CVX936061	X	5-9-38.5	CLARA MAE CLIFTON	853 426
138	CVX936062	X	5-9-38.5	GEORGE EDWARDS ET UX	853 418
139	CVX936112	X	5-9-38.5	DONNA FAE KYLE	853 449
140	CVX936113	X	5-9-38.5	JUDITH MAY CONNER	853 445
141	CVX866958	X	5-9-38.5	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
142	CVX866959	X	5-9-38.5	PAUL SCHEIBELHOOD ET AL	695 629
143	CVX935271	Y	5-9-38.4	CHARLES W. MILLER AND ESTHER JEAN MILLER, et al	853 59
144	CVX935273	Y	5-9-38.4	PAUL PARSONS ET UX	853 430
145	CVX935276	Y	5-9-38.4	SHARON LYN RUSSELL	853 422
146	CVX935969	Y	5-9-38.4	TIMOTHY HUFF ET UX	864 47
147	CVX936053	Y	5-9-38.4	LLOYD C. ARNOLD ET UX	864 39
148	CVX936054	Y	5-9-38.4	MARY JO CRONIN	864 43
149	CVX936058	Y	5-9-38.4	RICHARD KURPIL ET UX	863 594
150	CVX936061	Y	5-9-38.4	CLARA MAE CLIFTON	853 426
151	CVX936062	Y	5-9-38.4	GEORGE EDWARDS ET UX	853 418
152	CVX936112	Y	5-9-38.4	DONNA FAE KYLE	853 449
153	CVX936113	Y	5-9-38.4	JUDITH MAY CONNER	853 445
154	CVX866958	Y	5-9-38.4	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
155	CVX866959	Y	5-9-38.4	PAUL SCHEIBELHOOD ET AL	695 629
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157	10*19096	AA	5-11-4	DAVID HARRICK AND LELAH MARRICK, et al	800 505
158	10*22753	AA	5-11-4	JAMES AND DIANA MIDCAP	803 615
159	CVX935271	BB	5-9-38.3	CHARLES W. MILLER AND ESTHER JEAN MILLER, et al	853 59
160	CVX935273	BB	5-9-38.3	PAUL PARSONS ET UX	853 430
161	CVX935276	BB	5-9-38.3	SHARON LYN RUSSELL	853 422
162	CVX935969	BB	5-9-38.3	TIMOTHY HUFF ET UX	864 47
163	CVX936053	BB	5-9-38.3	LLOYD C. ARNOLD ET UX	864 39
164	CVX936054	BB	5-9-38.3	MARY JO CRONIN	864 43
165	CVX936058	BB	5-9-38.3	RICHARD KURPIL ET UX	863 594
166	CVX936061	BB	5-9-38.3	CLARA MAE CLIFTON	853 426
167	CVX936062	BB	5-9-38.3	GEORGE EDWARDS ET UX	853 418
168	CVX936112	BB	5-9-38.3	DONNA FAE KYLE	853 449
169	CVX936113	BB	5-9-38.3	JUDITH MAY CONNER	853 445
170	CVX866958	BB	5-9-38.3	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
171	CVX866959	BB	5-9-38.3	PAUL SCHEIBELHOOD ET AL	695 629
172	CVX935271	CC	5-9-38.2	CHARLES W. MILLER AND ESTHER JEAN MILLER, et al	853 59
173	CVX935273	CC	5-9-38.2	PAUL PARSONS ET UX	853 430
174	CVX935276	CC	5-9-38.2	SHARON LYN RUSSELL	853 422
175	CVX935969	CC	5-9-38.2	TIMOTHY HUFF ET UX	864 47
176	CVX936053	CC	5-9-38.2	LLOYD C. ARNOLD ET UX	864 39
177	CVX936054	CC	5-9-38.2	MARY JO CRONIN	864 43
178	CVX936058	CC	5-9-38.2	RICHARD KURPIL ET UX	863 594
179	CVX936061	CC	5-9-38.2	CLARA MAE CLIFTON	853 426
180	CVX936062	CC	5-9-38.2	GEORGE EDWARDS ET UX	853 418
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182	CVX936113	CC	5-9-38.2	JUDITH MAY CONNER	853 445
183	CVX866958	CC	5-9-38.2	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
184	CVX866959	CC	5-9-38.2	PAUL SCHEIBELHOOD ET AL	695 629
185	CVX935271	DD	5-9-38.1	CHARLES W. MILLER AND ESTHER JEAN MILLER, et al	853 59
186	CVX935273	DD	5-9-38.1	PAUL PARSONS ET UX	853 430
187	CVX935276	DD	5-9-38.1	SHARON LYN RUSSELL	853 422
188	CVX935969	DD	5-9-38.1	TIMOTHY HUFF ET UX	864 47
189	CVX936053	DD	5-9-38.1	LLOYD C. ARNOLD ET UX	864 39
190	CVX936054	DD	5-9-38.1	MARY JO CRONIN	864 43
191	CVX936058	DD	5-9-38.1	RICHARD KURPIL ET UX	863 594
192	CVX936061	DD	5-9-38.1	CLARA MAE CLIFTON	853 426
193	CVX936062	DD	5-9-38.1	GEORGE EDWARDS ET UX	853 418
194	CVX936112	DD	5-9-38.1	DONNA FAE KYLE	853 449
195	CVX936113	DD	5-9-38.1	JUDITH MAY CONNER	853 445
196	CVX866958	DD	5-9-38.1	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
197	CVX866959	DD	5-9-38.1	PAUL SCHEIBELHOOD ET AL	695 629
198	CVX935271	EE	5-9-38.10	CHARLES W. MILLER AND ESTHER JEAN MILLER, et al	853 59
199	CVX935273	EE	5-9-38.10	PAUL PARSONS ET UX	853 430
200	CVX935276	EE	5-9-38.10	SHARON LYN RUSSELL	853 422
201	CVX935969	EE	5-9-38.10	TIMOTHY HUFF ET UX	864 47
202	CVX936053	EE	5-9-38.10	LLOYD C. ARNOLD ET UX	864 39
203	CVX936054	EE	5-9-38.10	MARY JO CRONIN	864 43

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**OLD CROW NORTH 17HU\_REV 4**  
 DATE OCTOBER 3, 20 18  
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 OPERATORS WELL NO. OLD CROW N-17HU  
 API WELL NO. 47 — 051 — 02122  
 STATE COUNTY PERMIT



STATE OF WEST VIRGINIA  
 DIVISION OF ENVIRONMENTAL PROTECTION  
 OFFICE OF OIL AND GAS  
 P.S. 849 *C. Victor Moyers*

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

COUNTY NAME  
 PERMIT

**OLD CROW N LEASE  
UTICA UNIT - 394.85 AC±  
WELL 17HU  
TUG HILL OPERATING**



NO.	Lease ID	Tag	Parcel	Grantor, Lessor, Etc.	Deed Book/Page
204	CVX936058	EE	5-9-38.10	RICHARD KURPIL ET UX	863 594
205	CVX936061	EE	5-9-38.10	CLARA MAE CLIFTON	853 426
206	CVX936062	EE	5-9-38.10	GEORGE EDWARDS ET UX	853 418
207	CVX936112	EE	5-9-38.10	DONNA FAE KYLE	853 449
208	CVX936113	EE	5-9-38.10	JUDITH MAY CONNER	853 445
209	CVX866958	EE	5-9-38.10	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
210	CVX866959	EE	5-9-38.10	PAUL SCHEIBELHOOD ET AL	695 629
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213	CVX935273	GG	5-9-38.8	PAUL PARSONS ET UX	853 430
214	CVX935276	GG	5-9-38.8	SHARON LYN RUSSELL	853 422
215	CVX935969	GG	5-9-38.8	TIMOTHY HUFF ET UX	864 47
216	CVX936053	GG	5-9-38.8	LLOYD C. ARNOLD ET UX	864 39
217	CVX936054	GG	5-9-38.8	MARY JO CRONIN	864 43
218	CVX936058	GG	5-9-38.8	RICHARD KURPIL ET UX	863 594
219	CVX936061	GG	5-9-38.8	CLARA MAE CLIFTON	853 426
220	CVX936062	GG	5-9-38.8	GEORGE EDWARDS ET UX	853 418
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223	CVX866958	GG	5-9-38.8	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
224	CVX866959	GG	5-9-38.8	PAUL SCHEIBELHOOD ET AL	695 629
225	CVX935271	HH	5-9-38.9	CHARLES W. MILLER AND ESTHER JEAN MILLER, et al	853 59
226	CVX935273	HH	5-9-38.9	PAUL PARSONS ET UX	853 430
227	CVX935276	HH	5-9-38.9	SHARON LYN RUSSELL	853 422
228	CVX935969	HH	5-9-38.9	TIMOTHY HUFF ET UX	864 47
229	CVX936053	HH	5-9-38.9	LLOYD C. ARNOLD ET UX	864 39
230	CVX936054	HH	5-9-38.9	MARY JO CRONIN	864 43
231	CVX936058	HH	5-9-38.9	RICHARD KURPIL ET UX	863 594
232	CVX936061	HH	5-9-38.9	CLARA MAE CLIFTON	853 426
233	CVX936062	HH	5-9-38.9	GEORGE EDWARDS ET UX	853 418
234	CVX936112	HH	5-9-38.9	DONNA FAE KYLE	853 449
235	CVX936113	HH	5-9-38.9	JUDITH MAY CONNER	853 445
236	CVX866958	HH	5-9-38.9	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
237	CVX866959	HH	5-9-38.9	PAUL SCHEIBELHOOD ET AL	695 629
238	CVX935271	II	5-9-38	CHARLES W. MILLER AND ESTHER JEAN MILLER, et al	853 59
239	CVX935273	II	5-9-38	PAUL PARSONS ET UX	853 430
240	CVX935276	II	5-9-38	SHARON LYN RUSSELL	853 422
241	CVX935969	II	5-9-38	TIMOTHY HUFF ET UX	864 47
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243	CVX936054	II	5-9-38	MARY JO CRONIN	864 43
244	CVX936058	II	5-9-38	RICHARD KURPIL ET UX	863 594
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250	CVX866959	II	5-9-38	PAUL SCHEIBELHOOD ET AL	695 629
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255	CVX936053	JJ	5-9-37	LLOYD C. ARNOLD ET UX	864 39
256	CVX936054	JJ	5-9-37	MARY JO CRONIN	864 43
257	CVX936058	JJ	5-9-37	RICHARD KURPIL ET UX	863 594
258	CVX936061	JJ	5-9-37	CLARA MAE CLIFTON	853 426
259	CVX936062	JJ	5-9-37	GEORGE EDWARDS ET UX	853 418
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261	CVX936113	JJ	5-9-37	JUDITH MAY CONNER	853 445
262	CVX866958	JJ	5-9-37	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
263	CVX866959	JJ	5-9-37	PAUL SCHEIBELHOOD ET AL	695 629
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265	CVX935273	KK	5-9-32.4	PAUL PARSONS ET UX	853 430
266	CVX935276	KK	5-9-32.4	SHARON LYN RUSSELL	853 422
267	CVX935969	KK	5-9-32.4	TIMOTHY HUFF ET UX	864 47
268	CVX936053	KK	5-9-32.4	LLOYD C. ARNOLD ET UX	864 39
269	CVX936054	KK	5-9-32.4	MARY JO CRONIN	864 43
270	CVX936058	KK	5-9-32.4	RICHARD KURPIL ET UX	863 594
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275	CVX866958	KK	5-9-32.4	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
276	CVX866959	KK	5-9-32.4	PAUL SCHEIBELHOOD ET AL	695 629
277	CVX935271	LL	5-9-32.12	CHARLES W. MILLER AND ESTHER JEAN MILLER, et al	853 59
278	CVX935273	LL	5-9-32.12	PAUL PARSONS ET UX	853 430
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281	CVX936053	LL	5-9-32.12	LLOYD C. ARNOLD ET UX	864 39
282	CVX936054	LL	5-9-32.12	MARY JO CRONIN	864 43
283	CVX936058	LL	5-9-32.12	RICHARD KURPIL ET UX	863 594
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285	CVX936062	LL	5-9-32.12	GEORGE EDWARDS ET UX	853 418
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287	CVX936113	LL	5-9-32.12	JUDITH MAY CONNER	853 445
288	CVX866958	LL	5-9-32.12	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
289	CVX866959	LL	5-9-32.12	PAUL SCHEIBELHOOD ET AL	695 629
290	CVX935271	MM	5-9-32.1	CHARLES W. MILLER AND ESTHER JEAN MILLER, et al	853 59
291	CVX935273	MM	5-9-32.1	PAUL PARSONS ET UX	853 430
292	CVX935276	MM	5-9-32.1	SHARON LYN RUSSELL	853 422
293	CVX935969	MM	5-9-32.1	TIMOTHY HUFF ET UX	864 47
294	CVX936053	MM	5-9-32.1	LLOYD C. ARNOLD ET UX	864 39
295	CVX936054	MM	5-9-32.1	MARY JO CRONIN	864 43
296	CVX936058	MM	5-9-32.1	RICHARD KURPIL ET UX	863 594
297	CVX936061	MM	5-9-32.1	CLARA MAE CLIFTON	853 426
298	CVX936062	MM	5-9-32.1	GEORGE EDWARDS ET UX	853 418
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300	CVX936113	MM	5-9-32.1	JUDITH MAY CONNER	853 445
301	CVX866958	MM	5-9-32.1	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
302	CVX866959	MM	5-9-32.1	PAUL SCHEIBELHOOD ET AL	695 629
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304	CVX935273	NN	5-9-32.2	PAUL PARSONS ET UX	853 430
305	CVX935276	NN	5-9-32.2	SHARON LYN RUSSELL	853 422
306	CVX935969	NN	5-9-32.2	TIMOTHY HUFF ET UX	864 47

FILE NO. 8796P17HUR3.dwg  
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OPERATORS WELL NO. OLD CROW N-17HU

API WELL NO. 47 — 051 — 02122  
STATE COUNTY PERMIT



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



P.S. 849 C. Victor Moyers

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

COUNTY NAME

PERMIT

**OLD CROW N LEASE  
UTICA UNIT - 394.85 AC±  
WELL 17HU  
TUG HILL OPERATING**



NO.	Lease ID	Tag	Parcel	Grantor, Lessor, Etc.	Deed Book/Page
307	CVX936053	NN	5-9-32.2	LLOYD C. ARNOLD ET UX	864 39
308	CVX936054	NN	5-9-32.2	MARY JO CRONIN	864 43
309	CVX936058	NN	5-9-32.2	RICHARD KURPIL ET UX	863 594
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314	CVX866958	NN	5-9-32.2	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
315	CVX866959	NN	5-9-32.2	PAUL SCHEIBELHOOD ET AL	695 629
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317	CVX935273	OO	5-9-32.6	PAUL PARSONS ET UX	853 430
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321	CVX936054	OO	5-9-32.6	MARY JO CRONIN	864 43
322	CVX936058	OO	5-9-32.6	RICHARD KURPIL ET UX	863 594
323	CVX936061	OO	5-9-32.6	CLARA MAE CLIFTON	853 426
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333	CVX936053	PP	5-9-32.13	LLOYD C. ARNOLD ET UX	864 39
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335	CVX936058	PP	5-9-32.13	RICHARD KURPIL ET UX	863 594
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366	CVX866958	RR	5-9-32	ANITA L. SLOUGH AND WILLIAM O. JOBES	696 7
367	CVX866959	RR	5-9-32	PAUL SCHEIBELHOOD ET AL	695 629
368	10*25370	SS	5-8-8	JAMES EDWARD & LAURA J FRANCIS	1030 377
369	PENDING	SS	5-8-8	STONE HILL MINERAL HOLDINGS LLC	1031 538
370	10*47051.105.0	TT	5-8-9	JAMES B JACKSON JR AND MARION L JACKSON	859 478
371	10*21546	UU	5-8-7	EDWIN C MILLER AND KIMBERLY ANN MILLER	957 257

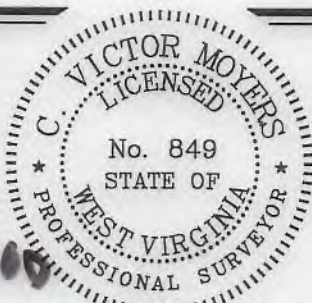
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DESIGNATED AGENT DIANNA STAMPER  
ADDRESS 5400 D BIG TYLER ROAD  
CHARLESTON, WV 25313

COUNTY NAME

PERMIT



Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*21468	5-16-25	A	JOHN A SWIERKOS	TH EXPLORATION LLC	1/8+	953	317	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19340	5-16-3	B	DONNA V YOHO	GASTAR EXPLORATION USA INC	1/8+	665	407	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar & Atinum to AB Resources LLC: 23/617	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000: 24/319	Chief, Chief Oil & Gas LLC, Radler & Enerplus Resources (USA) Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to Chevron USA Inc: 756/397	Chevron USA Inc to TH Exploration II LLC: 40/57
10*14919	5-16-5	C	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	836	117	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 32/428	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14920	5-10-14	D	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	836	119	N/A	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 32/428	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*19340	5-16-3.2	E	DONNA V YOHO	GASTAR EXPLORATION USA INC	1/8+	665	407	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar & Atinum to AB Resources LLC: 23/617	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000: 24/319	Chief, Chief Oil & Gas LLC, Radler & Enerplus Resources (USA) Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to Chevron USA Inc: 756/397	Chevron USA Inc to TH Exploration II LLC: 40/57
10*19017	5-10-15	F	PAUL A RINE AND DEBRA A RINE	CHEVRON USA INC	1/8+	796	24	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19223	5-10-15.1	G	DONALD T MILLER	TRIENERGY HOLDINGS LLC	1/8+	737	284	N/A	N/A	N/A	N/A	N/A	TriEnergy Holdings LLC & TriEnergy Inc to Chevron USA Inc: 28/356	Chevron USA Inc to TH Exploration LLC: 40/127
10*19126	5-10-16	H	KEVIN R. CORLEY AND ANITA L. CORLEY, HUSBAND AND WIFE	CHEVRON USA INC	1/8+	859	44	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19109	5-10-16.4	I	JOHN W. MILLER AND MARY ALICE MILLER, HUSBAND AND WIFE	CHEVRON USA INC	1/8+	863	275	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*47051.260.0	5-10-2	J	WILLIAM A PRASCIK, ET AL	TH EXPLORATION LLC	1/8+	879	302	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19021	5-10-17	K	MARCELLUS TX MINERAL PARTNERS LTD	CHEVRON USA INC	1/8+	800	216	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19034	5-10-17	K	JMK IRREVOCABLE TRUST	CHEVRON USA INC	1/8+	813	145	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19035	5-10-17	K	PURPLEBURGH VENTURES, LLC	CHEVRON USA INC	1/8+	813	138	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19336	5-11-11.2	L	BONNIE JEAN DAWSON	GASTAR EXPLORATION USA INC	1/8+	665	397	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar & Atinum to AB Resources LLC: 23/617	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000: 24/319	Chief, Chief Oil & Gas LLC, Radler & Enerplus Resources (USA) Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to Chevron USA Inc: 756/397	Chevron USA Inc to TH Exploration II LLC: 40/57
10*19021	5-11-10	M	MARCELLUS TX MINERAL PARTNERS LTD	CHEVRON USA INC	1/8+	800	216	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19034	5-11-10	M	JMK IRREVOCABLE TRUST	CHEVRON USA INC	1/8+	813	145	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19035	5-11-10	M	PURPLEBURGH VENTURES, LLC	CHEVRON USA INC	1/8+	813	138	N/A	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127





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10*17600	5-9-29	T	CARLA JO ALLEN AND KENNTH ALLEN	TH EXPLORATION LLC	1/8+	916 129	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PENDING	5-9-29	T	SANDRA PARDINI AKA KATHERINE S PARDINI AND ALLEN F PARDINI	TH EXPLORATION LLC	1/8+	1031 544	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Q090332002	5-9-29	T	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860 538	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-29	T	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860 555	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-29	T	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860 568	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*21547	5-9-30.2	U	GARY A MILLER AND MARCELLE T MILLER	TH EXPLORATION LLC	1/8+	952 370	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21548	5-9-30.2	U	JEANNE M MILLER	TH EXPLORATION LLC	1/8+	952 386	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21719	5-9-30.2	U	ROBERT A MILLER	TH EXPLORATION LLC	1/8+	952 389	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22566	5-9-30.2	U	KENNETH A MILLER	TH EXPLORATION LLC	1/8+	964 233	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CVX935271	5-9-30.2	U	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853 59	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935273	5-9-30.2	U	PAUL PARSONS ET UX	CHEVRON USA INC	1/8+	853 430	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935276	5-9-30.2	U	SHARON LYN RUSSELL	CHEVRON USA INC	1/8+	853 422	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935969	5-9-30.2	U	TIMOTHY HUFF ET UX	CHEVRON USA INC	1/8+	864 47	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936053	5-9-30.2	U	LLOYD C. ARNOLD ET UX	CHEVRON USA INC	1/8+	864 39	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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CVX936054	5-9-30.2	U	MARY JO CRONIN	CHEVRON USA INC	1/8+	864	43	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936058	5-9-30.2	U	RICHARD KURPIL ET UX	CHEVRON USA INC	1/8+	863	594	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936061	5-9-30.2	U	CLARA MAE CLIFTON	CHEVRON USA INC	1/8+	853	426	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936062	5-9-30.2	U	GEORGE EDWARDS ET UX	CHEVRON USA INC	1/8+	853	418	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936112	5-9-30.2	U	DONNA FAE KYLE	CHEVRON USA INC	1/8+	853	449	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936113	5-9-30.2	U	JUDITH MAY CONNER	CHEVRON USA INC	1/8+	853	445	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX866958	5-9-30.2	U	ANITA L. SLOUGH AND WILLIAM O. JOBES	AB RESOURCES LLC	1/8+	696	7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX866959	5-9-30.2	U	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695	629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX935271	5-9-38.6	V	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853	59	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154

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CVX936061	5-9-38.6	V	CLARA MAE CLIFTON	CHEVRON USA INC	1/8+	853 426	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936062	5-9-38.6	V	GEORGE EDWARDS ET UX	CHEVRON USA INC	1/8+	853 418	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
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CVX866958	5-9-38.6	V	ANITA L. SLOUGH AND WILLIAM O. JOBES	AB RESOURCES LLC	1/8+	696 7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866959	5-9-38.6	V	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695 629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935271	5-9-38.7	W	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853 59	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
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CVX935969	5-9-38.7	W	TIMOTHY HUFF ET UX	CHEVRON USA INC	1/8+	864 47	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936053	5-9-38.7	W	LLOYD C. ARNOLD ET UX	CHEVRON USA INC	1/8+	864 39	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
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CVX935271	5-9-38.5	X	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853 59	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
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CVX936053	5-9-38.5	X	LLOYD C. ARNOLD ET UX	CHEVRON USA INC	1/8+	864 39	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936054	5-9-38.5	X	MARY JO CRONIN	CHEVRON USA INC	1/8+	864 43	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936058	5-9-38.5	X	RICHARD KURPIL ET UX	CHEVRON USA INC	1/8+	863 594	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936061	5-9-38.5	X	CLARA MAE CLIFTON	CHEVRON USA INC	1/8+	853 426	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936062	5-9-38.5	X	GEORGE EDWARDS ET UX	CHEVRON USA INC	1/8+	853 418	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936112	5-9-38.5	X	DONNA FAE KYLE	CHEVRON USA INC	1/8+	853 449	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936113	5-9-38.5	X	JUDITH MAY CONNER	CHEVRON USA INC	1/8+	853 445	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154

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CVX866958	5-9-38.5	X	ANITA L. SLOUGH AND WILLIAM O. JOBES	AB RESOURCES LLC	1/8+	696 7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866959	5-9-38.5	X	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695 629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935271	5-9-38.4	Y	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853 59	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935273	5-9-38.4	Y	PAUL PARSONS ET UX	CHEVRON USA INC	1/8+	853 430	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935276	5-9-38.4	Y	SHARON LYN RUSSELL	CHEVRON USA INC	1/8+	853 422	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935969	5-9-38.4	Y	TIMOTHY HUFF ET UX	CHEVRON USA INC	1/8+	864 47	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936053	5-9-38.4	Y	LLOYD C. ARNOLD ET UX	CHEVRON USA INC	1/8+	864 39	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936054	5-9-38.4	Y	MARY JO CRONIN	CHEVRON USA INC	1/8+	864 43	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
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CVX936062	5-9-38.4	Y	GEORGE EDWARDS ET UX	CHEVRON USA INC	1/8+	853 418	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	
CVX936112	5-9-38.4	Y	DONNA FAE KYLE	CHEVRON USA INC	1/8+	853 449	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	
CVX936113	5-9-38.4	Y	JUDITH MAY CONNER	CHEVRON USA INC	1/8+	853 445	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	
CVX866958	5-9-38.4	Y	ANITA L. SLOUGH AND WILLIAM O. JOBES	AB RESOURCES LLC	1/8+	696 7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	
CVX866959	5-9-38.4	Y	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695 629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	
Q091960000	FISH CREEK	Z	WEST VIRGINIA DIVISION OF NATURAL RESOURCES	NOBLE ENERGY INC	1/8+	865 558	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	
10*19098	5-11-4	AA	DAVID H ARRICK AND LELAH M ARRICK	CHEVRON USA INC	1/8+	800 505	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to TH Exploration LLC: 40/127	
10*22753	5-11-4	AA	JAMES AND DIANA MIDCAP	NOBLE ENERGY INC	1/8+	803 615	N/A	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 33/28	CNX Gas Company LLC to Noble Energy Inc: 37/169	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Noble Energy Inc to HG Energy II Appalachia LLC: 39/1
CVX935271	5-9-38.3	BB	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853 59	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	

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CVX935276	5-9-38.3	BB	SHARON LYN RUSSELL	CHEVRON USA INC	1/8+	853	422	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX935969	5-9-38.3	BB	TIMOTHY HUFF ET UX	CHEVRON USA INC	1/8+	864	47	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936053	5-9-38.3	BB	LLOYD C. ARNOLD ET UX	CHEVRON USA INC	1/8+	864	39	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936054	5-9-38.3	BB	MARY JO CRONIN	CHEVRON USA INC	1/8+	864	43	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936058	5-9-38.3	BB	RICHARD KURPIL ET UX	CHEVRON USA INC	1/8+	863	594	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936061	5-9-38.3	BB	CLARA MAE CLIFTON	CHEVRON USA INC	1/8+	853	426	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936062	5-9-38.3	BB	GEORGE EDWARDS ET UX	CHEVRON USA INC	1/8+	853	418	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936112	5-9-38.3	BB	DONNA FAE KYLE	CHEVRON USA INC	1/8+	853	449	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154

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CVX866958	5-9-38.3	BB	ANITA L. SLOUGH AND WILLIAM O. JOBES	AB RESOURCES LLC	1/8+	696	7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866959	5-9-38.3	BB	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695	629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935271	5-9-38.2	CC	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853	59	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935273	5-9-38.2	CC	PAUL PARSONS ET UX	CHEVRON USA INC	1/8+	853	430	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935276	5-9-38.2	CC	SHARON LYN RUSSELL	CHEVRON USA INC	1/8+	853	422	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935969	5-9-38.2	CC	TIMOTHY HUFF ET UX	CHEVRON USA INC	1/8+	864	47	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
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CVX866959	5-9-38.2	CC	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695 629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX935271	5-9-38.1	DD	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853 59	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
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CVX866959	5-9-38.1	DD	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695 629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935271	5-9-38.10	EE	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853 59	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935273	5-9-38.10	EE	PAUL PARSONS ET UX	CHEVRON USA INC	1/8+	853 430	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935276	5-9-38.10	EE	SHARON LYN RUSSELL	CHEVRON USA INC	1/8+	853 422	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935969	5-9-38.10	EE	TIMOTHY HUFF ET UX	CHEVRON USA INC	1/8+	864 47	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936053	5-9-38.10	EE	LLOYD C. ARNOLD ET UX	CHEVRON USA INC	1/8+	864 39	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936054	5-9-38.10	EE	MARY JO CRONIN	CHEVRON USA INC	1/8+	864 43	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936058	5-9-38.10	EE	RICHARD KURPIL ET UX	CHEVRON USA INC	1/8+	863 594	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286



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CVX936062	5-9-38.10	EE	GEORGE EDWARDS ET UX	CHEVRON USA INC	1/8+	853	418	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936112	5-9-38.10	EE	DONNA FAE KYLE	CHEVRON USA INC	1/8+	853	449	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936113	5-9-38.10	EE	JUDITH MAY CONNER	CHEVRON USA INC	1/8+	853	445	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX866958	5-9-38.10	EE	ANITA L. SLOUGH AND WILLIAM O. JOBES	AB RESOURCES LLC	1/8+	696	7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
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10*19217	5-9-31	FF	JAY DEE DALLISON EDDIE D DALLISON	CHESAPEAKE APPALACHIA LLC	1/8+	676	463	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 22/536	Chesapeake to Chevron USA Inc: 30/392	Statoil to Chevron: 30/404 Chevron USA Inc to TH Exploration LLC: 40/127
CVX935271	5-9-38.8	GG	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853	59	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
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CVX936061	5-9-38.9	HH	CLARA MAE CLIFTON	CHEVRON USA INC	1/8+	853 426	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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CVX866958	5-9-37	JJ	ANITA L. SLOUGH AND WILLIAM O. JOBES	AB RESOURCES LLC	1/8+	696 7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX866959	5-9-37	JJ	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695 629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX935271	5-9-32.4	KK	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853 59	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX935273	5-9-32.4	KK	PAUL PARSONS ET UX	CHEVRON USA INC	1/8+	853 430	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX935276	5-9-32.4	KK	SHARON LYN RUSSELL	CHEVRON USA INC	1/8+	853 422	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX935969	5-9-32.4	KK	TIMOTHY HUFF ET UX	CHEVRON USA INC	1/8+	864 47	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936053	5-9-32.4	KK	LLOYD C. ARNOLD ET UX	CHEVRON USA INC	1/8+	864 39	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154

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CVX936054	5-9-32.4	KK	MARY JO CRONIN	CHEVRON USA INC	1/8+	864 43	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936058	5-9-32.4	KK	RICHARD KURPIL ET UX	CHEVRON USA INC	1/8+	863 594	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936061	5-9-32.4	KK	CLARA MAE CLIFTON	CHEVRON USA INC	1/8+	853 426	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936062	5-9-32.4	KK	GEORGE EDWARDS ET UX	CHEVRON USA INC	1/8+	853 418	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936112	5-9-32.4	KK	DONNA FAE KYLE	CHEVRON USA INC	1/8+	853 449	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936113	5-9-32.4	KK	JUDITH MAY CONNER	CHEVRON USA INC	1/8+	853 445	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX866958	5-9-32.4	KK	ANITA L. SLOUGH AND WILLIAM O. JOBES	AB RESOURCES LLC	1/8+	696 7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX866959	5-9-32.4	KK	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695 629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX935271	5-9-32.12	LL	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853 59	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154



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CVX935276	5-9-32.12	LL	SHARON LYN RUSSELL	CHEVRON USA INC	1/8+	853	422	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX935969	5-9-32.12	LL	TIMOTHY HUFF ET UX	CHEVRON USA INC	1/8+	864	47	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936053	5-9-32.12	LL	LLOYD C. ARNOLD ET UX	CHEVRON USA INC	1/8+	864	39	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
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CVX936058	5-9-32.12	LL	RICHARD KURPIL ET UX	CHEVRON USA INC	1/8+	863	594	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936061	5-9-32.12	LL	CLARA MAE CLIFTON	CHEVRON USA INC	1/8+	853	426	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936062	5-9-32.12	LL	GEORGE EDWARDS ET UX	CHEVRON USA INC	1/8+	853	418	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936112	5-9-32.12	LL	DONNA FAE KYLE	CHEVRON USA INC	1/8+	853	449	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154

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CVX936113	5-9-32.12	LL	JUDITH MAY CONNER	CHEVRON USA INC	1/8+	853 445	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX866958	5-9-32.12	LL	ANITA L. SLOUGH AND WILLIAM O. JOBES	AB RESOURCES LLC	1/8+	696 7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX866959	5-9-32.12	LL	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695 629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX935271	5-9-32.1	MM	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853 59	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
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CVX935276	5-9-32.1	MM	SHARON LYN RUSSELL	CHEVRON USA INC	1/8+	853 422	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX935969	5-9-32.1	MM	TIMOTHY HUFF ET UX	CHEVRON USA INC	1/8+	864 47	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936053	5-9-32.1	MM	LLOYD C. ARNOLD ET UX	CHEVRON USA INC	1/8+	864 39	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX936054	5-9-32.1	MM	MARY JO CRONIN	CHEVRON USA INC	1/8+	864 43	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154

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CVX936058	5-9-32.1	MM	RICHARD KURPIL ET UX	CHEVRON USA INC	1/8+	863 594	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936061	5-9-32.1	MM	CLARA MAE CLIFTON	CHEVRON USA INC	1/8+	853 426	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936062	5-9-32.1	MM	GEORGE EDWARDS ET UX	CHEVRON USA INC	1/8+	853 418	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936112	5-9-32.1	MM	DONNA FAE KYLE	CHEVRON USA INC	1/8+	853 449	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936113	5-9-32.1	MM	JUDITH MAY CONNER	CHEVRON USA INC	1/8+	853 445	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866958	5-9-32.1	MM	ANITA L. SLOUGH AND WILLIAM O. JOBES	AB RESOURCES LLC	1/8+	696 7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866959	5-9-32.1	MM	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695 629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935271	5-9-32.2	NN	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853 59	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935273	5-9-32.2	NN	PAUL PARSONS ET UX	CHEVRON USA INC	1/8+	853 430	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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CVX935276	5-9-32.2	NN	SHARON LYN RUSSELL	CHEVRON USA INC	1/8+	853 422	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
CVX935969	5-9-32.2	NN	TIMOTHY HUFF ET UX	CHEVRON USA INC	1/8+	864 47	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 Chevron USA Inc to HG Energy II Appalachia LLC: 41/154
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CVX866959	5-9-32.2	NN	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695 629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935271	5-9-32.6	OO	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853 59	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
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CVX936062	5-9-32.6	OO	GEORGE EDWARDS ET UX	CHEVRON USA INC	1/8+	853 418	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
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CVX866958	5-9-32.6	OO	ANITA L. SLOUGH AND WILLIAM O. JOBES	AB RESOURCES LLC	1/8+	696 7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
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CVX935271	5-9-32.13	PP	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON USA INC	1/8+	853 59	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
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10*25370	5-8-8	SS	JAMES EDWARD & LAURA J FRANCIS	TH EXPLORATION LLC	1/8+	1030 377	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PENDING	5-8-8	SS	STONE HILL MINERAL HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1031 538	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.105.0	5-8-9	TT	JAMES B JACKSON JR AND MARION L JACKSON	TH EXPLORATION LLC	1/8+	859 478	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21546	5-8-7	UU	EDWIN C MILLER AND KIMBERLY ANN MILLER	TH EXPLORATION LLC	1/8+	957 257	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*19126	5-10-163		KEVIN R. CORLEY AND ANITA L. CORLEY, HUSBAND AND WIFE	CHEVRON USA INC	1/8+	859 44	N/A	N/A	N/A	N/A	N/A	N/A	N/A
													Chevron USA Inc to TH Exploration LLC: 40/127

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

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

*Execution Version*

**ASSIGNMENT AND BILL OF SALE**

STATE OF WV

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KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF MARSHALL

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

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

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

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

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

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

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STATE OF WEST VIRGINIA           §  
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COUNTY OF MARSHALL           §

**ASSIGNMENT AND BILL OF SALE**

This **ASSIGNMENT AND BILL OF SALE** (this "Assignment") dated as of August 1, 2017 (the "Signing Date"), but effective from and after 7:00 a.m., Eastern Standard Time on August 2, 2017 being the day immediately following the Signing Date (the "Effective Date"), is made by **Chevron U.S.A. Inc.**, a Pennsylvania corporation, with an address at 700 Cherrington Parkway, Coraopolis, PA 15108 ("Chevron" or "Assignor") to **TH Exploration II, LLC** and **TH Exploration, LLC**, Texas limited liability companies, with an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (collectively "Assignee") and is accepted by Assignee upon the following terms and conditions.

**RECITALS**

- A. Assignor desires to sell, convey, transfer, assign and deliver to Assignee Assignor's Bryan 1H well and certain related assets, including certain leasehold interests, located in Marshall County, West Virginia.
- B. Through an Acreage Trade Agreement to be executed contemporaneously with this Assignment, Assignor desires to transfer, convey and assign to Assignee certain of Assignor's oil and gas leasehold interests located in Marshall County, West Virginia in exchange for the transfer, conveyance and assignment to Assignor by Assignee certain of Assignee's oil and gas leasehold interests located in Marshall County, West Virginia and Greene County, West Virginia.
- C. In consideration of the mutual promises set out in this Assignment, including execution of the Acreage Trade Agreement, 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.

**1. DEFINITIONS**

1.1 **Definitions.** As used in this Assignment, these words and expressions have the following meanings:

"Acreage Trade Agreement" means that certain Acreage Trade Agreement by and between Chevron U.S.A. Inc. and TH Exploration, LLC with an Effective Date of August 1, 2017 to be contemporaneously executed with this Assignment.

"Act" has the meaning given to such term in Section 9.1(C).

"Affiliate" means any legal entity which controls, is controlled by, or is under common control with, another legal entity. An entity is deemed to "control" another if it owns directly or indirectly at least fifty percent of either of the following: (A) the shares entitled to vote at a general election of directors of such other entity or (B) the voting interest in such other entity if such entity does not have either shares or directors.

"Applicable Law(s)" means all laws, principles of common law, regulations, statutes, codes, rules, orders, ordinances, permits, enforceable policies, licenses, certifications, decrees, constitutions, standards or other requirements with similar effect of any Government Entity and any binding interpretations of the foregoing.

"Assets" has the meaning given to such term in Section 2.1 of this Assignment.

"Assigned Hydrocarbons" means all Hydrocarbons produced and severed from, or allocable, after severance, to the Leases, Units, and Wells on and after the Effective Date.

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MICHAEL MORAN  
BRIGHTON RESOURCES  
5851 ELLSWORTH AVENUE, #1  
PITTSBURGH PA 15232-1707

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STATE OF WEST VIRGINIA §  
  §  
COUNTY OF MARSHALL §

Marshall County  
Jan Pest, Clerk  
Instrument 1428356  
08/16/2017 @ 12:08:49 PM  
ASSIGNMENTS  
Book 40 @ Page 127  
Pages Recorded 25  
Recording Cost \$ 33.00

**ASSIGNMENT AND CONVEYANCE**

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 1 day of August, 2017 (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 the 1st day of August, 2017 (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", attached hereto and made a part hereof (hereinafter the "Leases"), less and except certain overriding royalty interests and exclusions; 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, subject to certain overriding royalty interests and less and except certain exclusions.

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 excepts and reserves from this Assignment the following:

A. 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, and

B. As to each of the Leases and all oil, gas, and associated hydrocarbons produced, saved and sold thereunder, an overriding royalty interest equal to the difference between 82% and the

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APR 26 2019  
WV Department of  
Environmental Protection

MEMORANDUM OF OPERATING AGREEMENT AND FINANCING STATEMENT

This Memorandum of Operating Agreement and Financing Statement (hereinafter referred to as "Memorandum") is executed to be effective concurrently with that certain Operating Agreement (the "Operating Agreement") by and between TH Exploration, LLC, as Operator, and HG Energy II Appalachia, LLC and TH Exploration II, LLC, as Non-Operators, covering, among other things, the development and production of crude oil, natural gas and associated substances from the leases (hereinafter called the "Contract Area") described on Exhibit "A-1" and Exhibit "A-2" attached hereto and owned by Operator and Non-Operator in the respective percentages of shares indicated on Exhibit "A" to the Operating Agreement.

The Operating Agreement contains an Accounting Procedure, along with provisions giving the parties hereto mutual liens and security interests where one or more parties hereto are or may become Debtors to one or more other parties hereto. This Memorandum incorporates by reference all of the terms and conditions of the Operating Agreement, including but not limited to the lien and security interest provisions.

The purpose of this Memorandum is to place third parties on notice of the Operating Agreement, and to secure and perfect the mutual liens and security interests of the parties hereto.

The Operating Agreement specifically provides and the parties do hereby confirm and agree that:

1. The Operator shall conduct and direct and have full control of all operations on the Contract Area as permitted and required by, and within the limits of, the Operating Agreement.
2. The liability of the parties under the Operating Agreement shall be several, not joint or collective. Each party shall be responsible only for its obligations and shall be liable only for its proportionate share of costs.
3. Each Non-Operator grants to Operator a lien upon its oil and gas rights, oil and gas leases and mineral interests in the Contract Area, and a security interest in its share of oil and/or gas when extracted and its interest in all fixtures, inventory, personal property and equipment located on or used on the Contract Area and in all its contract rights and receivables related thereto and arising therefrom to secure payment of its present and future share of costs and expenses, together with interest thereon at the rate provided in the Accounting Procedure referred to above. To the extent that Operator has a security interest under the Uniform Commercial Code ("Code") of the state or states in which the Contract Area is located, Operator without prejudice and in addition to all other legal, equitable and contractual remedies which are expressly reserved, shall be entitled to exercise the rights and remedies of a secured party under the Code. The bringing of a suit and the obtaining of judgment by Operator for the secured indebtedness shall not be deemed an election of remedies or otherwise affect the rights or security interests for the payment thereof.
4. The Operator grants to Non-Operator a lien and security interest equivalent to that granted to Operator as described in Paragraph 3 above, to secure payment by Operator of its own share of costs and expenses when due.

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COPY

STATE OF WEST VIRGINIA §  
COUNTY OF MARSHALL §

Marshall County  
Jan Pest, Clerk  
Instrument 1453305  
04/24/2019 @ 11:51:22 AM  
ASSIGNMENTS  
Book 43 @ Page 503  
Pages Recorded 10  
Recording Cost \$ 17.00

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 23<sup>rd</sup> day of April, 2019 (the "Effective Date"), by and between AMERICAN PETROLEUM PARTNERS OPERATING, LLC, (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 November 15, 2018 (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-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.

**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 Leases 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.

Assignor represents and warrants that Assignor has paid any and all bonuses, rentals, royalties, overriding royalties, and other payments required by the Leases which were due for the period in which Assignor held its interests in the Leases, and that Assignor has fully performed all conditions necessary to maintain the Leases in full force and effect during such period, free and clear of all Encumbrances, except for and subject only to Permitted Encumbrances.

3. Successors and Assigns. The terms of this Assignment shall be binding upon and inure to the benefit of the parties hereto and each of their respective successors

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west virginia department of environmental protection

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

Barry K. Lay, Chairman  
dep.wv.gov

May 17, 2019

HG Energy II Appalachia LLC  
5260 Dupont Rd  
Parkersburg WV 26101

91 7199 9991 7039 1715 2250

RE: Intentional Deviation of New Deep Well  
Tug Hill Operating, LLC – Old Crow N-17HU

Dear Sir:

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

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

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

Sincerely,

A handwritten signature in black ink that reads "Susan Rose". The signature is written in a cursive, flowing style.

Susan Rose  
Administrator

encl:



51-02122M00

June 6, 2019

Dear Susan Rose:

The following is in response to your request for proof of delivery on your item with the tracking number:  
**9171 9999 9170 3917 1522 50.**

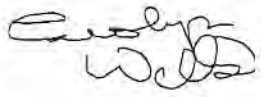

#### Item Details

<b>Status:</b>	Delivered, Front Desk/Reception/Mail Room
<b>Status Date / Time:</b>	May 22, 2019, 10:52 am
<b>Location:</b>	PARKERSBURG, WV 26101
<b>Postal Product:</b>	First-Class Mail®
<b>Extra Services:</b>	Certified Mail™ Return Receipt Electronic

#### Shipment Details

<b>Weight:</b>	5lb, 7.7oz
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#### Recipient Signature

Signature of Recipient:	
Address of Recipient:	

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Sincerely,  
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 west virginia department of environmental protection
 

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

Barry K. Lay, Chairman  
 dep.wv.gov

May 17, 2019

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

91 7199 9991 7039 1715 2243

---

RE: Intentional Deviation of New Deep Well  
 Tug Hill Operating, LLC – Old Crow N-17HU

Dear Sir:

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

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

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

Sincerely,

Susan Rose  
 Administrator

encl:



June 6, 2019

Dear Susan Rose:

The following is in response to your request for proof of delivery on your item with the tracking number:  
**9171 9999 9170 3917 1522 43.**

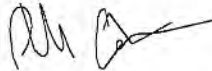
#### Item Details

<b>Status:</b>	Delivered, Front Desk/Reception/Mail Room
<b>Status Date / Time:</b>	May 23, 2019, 12:13 pm
<b>Location:</b>	FORT WORTH, TX 76107
<b>Postal Product:</b>	First-Class Mail®
<b>Extra Services:</b>	Certified Mail™ Return Receipt Electronic

#### Shipment Details

<b>Weight:</b>	5lb, 8.6oz
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#### Recipient Signature

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

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

Barry K. Lay, Chairman  
 dep.wv.gov

May 17, 2019

Harry E. Karr Jr.  
 3816 Fish Creek Rd  
 Proctor WV 26055

91 7199 9991 7039 1715 2236

---

RE: Intentional Deviation of New Deep Well  
 Tug Hill Operating, LLC – Old Crow N-17HU

Dear Sir:

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

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

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

Sincerely,

Susan Rose  
 Administrator

encl:

SI-02122 Mail



June 6, 2019

Dear Susan Rose:

The following is in response to your request for proof of delivery on your item with the tracking number: **9171 9999 9170 3917 1522 36**.

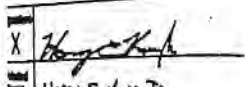

**Item Details**

<b>Status:</b>	Delivered, Left with Individual
<b>Status Date / Time:</b>	May 25, 2019, 1:45 pm
<b>Location:</b>	PROCTOR, WV 26055
<b>Postal Product:</b>	First-Class Mail®
<b>Extra Services:</b>	Certified Mail™
	Return Receipt Electronic

**Shipment Details**

**Weight:** 5lb, 6.2oz

**Recipient Signature**

Signature of Recipient:	
Address of Recipient:	

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 Washington, D.C. 20260-0004




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

Barry K. Lay, Chairman  
 dep.wv.gov

May 17, 2019

Michaela L. Karr  
 3816 Fish Creek Rd  
 Proctor WV 26055

91 7199 9991 7039 1715 2229

RE: Intentional Deviation of New Deep Well  
 Tug Hill Operating, LLC – Old Crow N-17HU


Dear Sir or Ma'am:

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

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

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

Sincerely,

  
 Susan Rose  
 Administrator

encl:

SI-02122100



June 6, 2019

Dear Susan Rose:

The following is in response to your request for proof of delivery on your item with the tracking number: 9171 9999 9170 3917 1522 29.

**Item Details**

<b>Status:</b>	Delivered, Left with Individual
<b>Status Date / Time:</b>	May 25, 2019, 1:45 pm
<b>Location:</b>	PROCTOR, WV 26055
<b>Postal Product:</b>	First-Class Mail®
<b>Extra Services:</b>	Certified Mail™ Return Receipt Electronic

**Shipment Details**

**Weight:** 5lb, 6.4oz

**Recipient Signature**

Signature of Recipient:	<table border="1"> <tr> <td style="font-size: small;">Signature</td> <td style="border: none;"></td> </tr> <tr> <td style="font-size: small;">Name</td> <td style="border: none;">HARRY E. KANA JR.</td> </tr> </table>	Signature		Name	HARRY E. KANA JR.	
Signature						
Name	HARRY E. KANA JR.					
Address of Recipient:	<table border="1"> <tr> <td style="font-size: small;">Address</td> <td style="border: none;"></td> </tr> </table>	Address				
Address						

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Sincerely,  
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Washington, D.C. 20260-0004



Offset Operators within 1500'				
Old Crow N - 17HU				
COUNTY	DISTRICT	PARCEL	OWNER	ADDRESS
MARSHALL	FRANKLIN	5-8-4	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-8-4.1	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-8-5	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-8-7	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-8-8	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-8-9	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-8A-50	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-8A-54	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-8A-54.1	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-4	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-4.1	HARRY E KARR JR	3816 Fish Creek Road Proctor, WV 26055
MARSHALL	FRANKLIN	5-9-4.1	MICHAELA L KARR	3816 Fish Creek Road Proctor, WV 26055
MARSHALL	FRANKLIN	5-9-4.2	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-4.3	HARRY E KARR JR	3816 Fish Creek Road Proctor, WV 26055
MARSHALL	FRANKLIN	5-9-4.4	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-4.5	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-4.6	HARRY E KARR JR	3816 Fish Creek Road Proctor, WV 26055
MARSHALL	FRANKLIN	5-9-4.6	MICHAELA L KARR	3816 Fish Creek Road Proctor, WV 26055
MARSHALL	FRANKLIN	5-9-4.13	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-4.20	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-25	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-25	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-27	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-27	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-28	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-28	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107

SI-02122 Mon

MARSHALL	FRANKLIN	5-9-29	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-29	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-29.1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-29.1	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-29.2	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-29.2	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-30	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-30	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-30.1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-30.1	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-30.2	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-30.2	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-30.3	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-30.3	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-31	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-32	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-32.1	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-32.2	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-32.3	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-32.4	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-32.5	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-32.6	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-32.7	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-32.8	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-32.9	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-32.10	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-32.11	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101

5-02122 Mon

MARSHALL	FRANKLIN	5-9-32.12	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-32.13	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-33	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-33.1	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-33.2	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-33.3	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-33.4	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-34	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-34.1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-34.2	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-34.3	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-34.4	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-34.5	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-34.6	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-36	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-37	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-38	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-38.1	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-38.10	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-38.2	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-38.3	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-38.4	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-38.5	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-38.6	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-38.7	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-38.8	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-38.9	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-39	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101

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MARSHALL	FRANKLIN	5-9-40	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-10-1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-1	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-10-2	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-3	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-14	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-15	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-15.1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-16	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-16.3	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-16.4	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-17	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-11-2	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-11-4	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-11-5	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-11-5.3	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-11-6	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-11-7	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-11-8	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-11-9	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-11-9.1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-11-9.10	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107

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MARSHALL	FRANKLIN	5-11-9.2	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-9.3	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-9.4	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-9.5	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-9.6	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-9.7	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-9.8	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-9.9	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-10	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-11	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-11.1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-11.2	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-11.3	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-11.4	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-12	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-16	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-11-16.3	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-15-8	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-16-1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-16-2	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-16-3	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107

MARSHALL	FRANKLIN	5-16-3.1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-16-3.2	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-16-4	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-16-5	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-16-6	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-16-19	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-16-23.1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-16-23	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-16-25	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	5-16-23.3	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth,TX 76107
MARSHALL	FRANKLIN	FISH CREEK	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101