

#### west virginia department of environmental protection

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

Harold D. Ward, Cabinet Secretary www.dep.wv.gov

# Tuesday, June 14, 2022 PERMIT MODIFICATION APPROVAL Horizontal 6A / New Drill

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

Re: Permit Modification Approval for KEITH STERN N-7HM

47-051-02101-00-00

#### Extended 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.

Operator's Well Number: KEITH STERN N-7HM Farm Name: TH EXPLORATION, LLC

U.S. WELL NUMBER: 47-051-02101-00-00

Horizontal 6A New Drill Date Modification Issued: 6/14/2022

Promoting a healthy environment.

WW-6B (04/15)

## Modification

API NO. 47-051 -	02101	
<b>OPERATOR WELL</b>	NO.	Keith Stern N-7HM
Well Pad Name:	Keith S	Stern

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

1) Well Operator	: Tug Hill (	Operating,	, LLC	494510851	Marshall	Meade	Glen Easton 7.5'
····				Operator ID	County	District	Quadrangle
2) Operator's We	ll Number:	Keith Ster	n N-7HM	Well Pad	Name: Keith	Stern	
3) Farm Name/St	ırface Owne	r: TH Exp	oloration,	LLC Public Road	d Access: Fish	Creek Roa	d (County Route 74)
4) Elevation, curi	ent ground:	747'	Ele	evation, proposed j	post-construction	on: 747'	
5) Well Type (	a) Gas <u>x</u>		_ Oil	Unde	erground Storag	ge	
(	Other						
(	b)If Gas	Shallow	X	Deep			0
		Horizontal	<u>X</u>		Ju	10/16/2	020
6) Existing Pad:	_						Gayne Digitally signed Gayne Knitowski Date: 2022.06.1
<ol> <li>Proposed Target Marcellus is the target forma</li> </ol>	et Formation lion at a depth of 6266' -	n(s), Depth 6317', thickness of 51	(S), Antic and an anticipated	ipated Thickness a approximate pressure of 3800 psi.	nd Expected Pi	ressure(s):	15:20:01-04'00
0) D	1 Vantinal D		17'				
8) Proposed Total			Onondaga	a			
9) Formation at 7		., Берии	14,479'	<u> </u>			
10) Proposed Tot		. Бории					
11) Proposed Ho	rizontal Leg	Length:	6,701.12'				
12) Approximate	Fresh Wate	r Strata De		70'; 406'			
13) Method to D	etermine Fre	sh Water I	Depths:	se shallow offset wells to determine deeper	st freshwater, or determine using p	re-dril tests, testing while	drilling or petrophysical evaluation of resistivity.
14) Approximate							
15) Approximate	Coal Seam	Depths: S	Sewickley	Coal - 307' and F	Pittsburgh Coa	al - 400'	
				ine, karst, other):			
17) Does Propos directly overlyin	ed well loca	tion contain	n coal sear	ms		RECEIVED	as
					C MI	CEU	72
(a) If Yes, prov	ide Mine In					JUN 13 20	9
		Deptl	-			WV Departme	nt of
		Seam			En	WV Departme Wironmental Pr	
		Owne	er:				

WW-6B	
(04/15)	

API NO. 47-051 - 02101

OPERATOR WELL NO. Keith Stern N-7HM

Well Pad Name: Keith Stern

#### 18)

## CASING AND TUBING PROGRAM

ТҮРЕ	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120'	259ft^3(CTS)
Fresh Water	13 3/8"	NEW	J55	54.5#	490'	490'	690ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	490'	490'	690ft^3(CTS)
	9 5/8"	NEW	J55	36#	2,229'	2,229'	722ft^3(CTS)
	5 1/2"	NEW	P110	20#	14,479'	14,479'	3710ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#	6,976'		
Liners							

Ju 10 10000 Gay

Gayne Digitally signed by Gayne Knitowski Date: 2022.06.13
15:20:21 -04'00'

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	<u>Cement</u> <u>Yield</u> (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	13 3/8"	17.5"	.33	2,740	2,192	SEE #24	1.2
Coal	13 3/8"	17.5"	.33	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.352	3,520	2,816	SEE #24	1.19
Production	5 1/2"	8 7/8" 8 3/4"	.361	12,640	10,112	SEE #24	1.17/1.19
Tubing	2 3/8"	_	.19	11,200	8,960		
Liners							

### **PACKERS**

	1.2	RECEIVED
Kind:	N/A	Office of Oil and Gas  JUN 1 3 2022
Sizes:	N/A	3011
Depths Set:	N/A	WV Department of Environmental Protection

WW-6B	
(10/14)	

API NO. 47- 051 - 02101

OPERATOR WELL NO. Keith Stern N-7HM

Well Pad Name: Keith Stern

Gayne Signed by Gayne Knitowski Date: 2022.06.13

Digitally signed by Gayne Knitovski Date: 2022.06.13 15:20.40-0400°

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

Drill through the Marcellus tagging less than 100' from the top of the Onondaga to get depths and log data. Plug back to proposed kick off point. Drill the horizontal section to planned and proposed TD. Run casing and cement to surface. Run Bond Log from app. 60 deg to surface. Make clean out run and stimulate.

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

Well to completed with approximately 16,060,000 lb. proppant and 248,299 barrels of water. Max rate = 80bpm; max psi = 9,000#.

- 21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 10.35 acres
- 22) Area to be disturbed for well pad only, less access road (acres): 4.32 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 other joint. Production casing will have one centralizer every other joint in lateral, one centralizer every joint through curve, one centralizer every other joint to surface.

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

Sfc - Premium NE-1 + 2% CaCl; Int1 - Premium NE-1 + 1.5% CaCL + Flake; Int2 - Lead: Premium NE-1 + 5% BA-90 + .85% R-3 + 3% KCl + .75 gals/100sk FP-13L + 1% MPA-170 Tail: Premium NE-1 + .1% R-3 + 5% KCl + 1% CD-32 + .4% FL-52 + .2% ASA-301 + .6% Sodium Metasilicate; Kick Plug - Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L; Prod - Lead: 50:50 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .75 gal/100sk FP-13L Tail: 25:75 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .375 gal/100sk FP-13L

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.

RECEIVED
Office of Oil and Gas

JUN 1 3 2022

WV Department of Environmental Protection

\*Note: Attach additional sheets as needed.



30" Cig @ 120' MD / 120' TVD 13 3/8" Csg @ 420' TVD 9 5/8" Cag @ 2,229" MD /

WELL NAME: Keith Stern N-7HM Marshall wv COUNTY: STATE: DISTRICT: Meade 747 747 GL Clev: DF Elev: 14,479 39.77491863 TH Latitude: -80.69202368 TH Longitude: 39.791737 BH Latitude: -80.69314 BH Longitude:

FORMATION TO	PS	
Formation	Depth TVD	
Deepest Fresh Water	406	
Sewickley Coal	307	
Pittsburgh Coal	400	
Dig Ume	1614	
Welf	1927	
Beres	2119	
Gordon	2384	
Rhinestreet	5595	
Geneseo/Burkett	6109	
Tully	6140	
Hamilton	6175	
Marcellus	6266	
Landing Depth	6299	
Onondaga	6317	
Pilot Hole Depth	6417	

CASING SUMMARY									
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (Ib/ft)	Grade	Top of Cemen		
Conductor	36	30	120'	120'	aw	nw	Surface		
Surface	17.5	13 3/8	490"	490'	54.5	155	Surface		
Intermediate 1	12 1/4	95/8	2,229*	2,200'	36	122	Surface		
Production	27/8×83/4	51/2	14,479"	6,182	20	CYHP110	Surface		

CEMENT SUMMARY				DRILLING DETAILS		
Sacks		Class	Density	Fluid Type	Centraliter Notes	
Conductor	338	A	15.6	Alr	None	
Surface	669	A	15.6	Alr	3 Contralizers at equal distance	
Intermediate 1	758	A	15	Alr	1 Centralizer every other jt	
Production	3,412	A	14.5	Air / SOBM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt t	

KOPS 6,476" ft MD

2,200° TVD

Pilot Hole

PH TD @ 6,417' TVD Landing Point @ 7,779' MD / 6,299' TVD

PH TVD = 100' below Onondaga Top

Lateral TD @

14,479' ft MD 6,182 ft TVD



## Tug Hill Operating, LLC Casing and Cement Program

#### Keith Stern N-7HM

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	_	 

Conductor Surface Intermediate Production	String 30" 13 3/8" 9 5/8" 5 1/2"	Grade BW J55 J55 CYHP110	Bit Size 36" 17 1/2" 12 1/4" 8 7/8 x 8 3/4	Depth (Measured) 120' 490' 2,229' 14,479'	Cement Fill Up CTS CTS CTS CTS
--	--	--------------------------------------	--	---	--

#### Cement

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

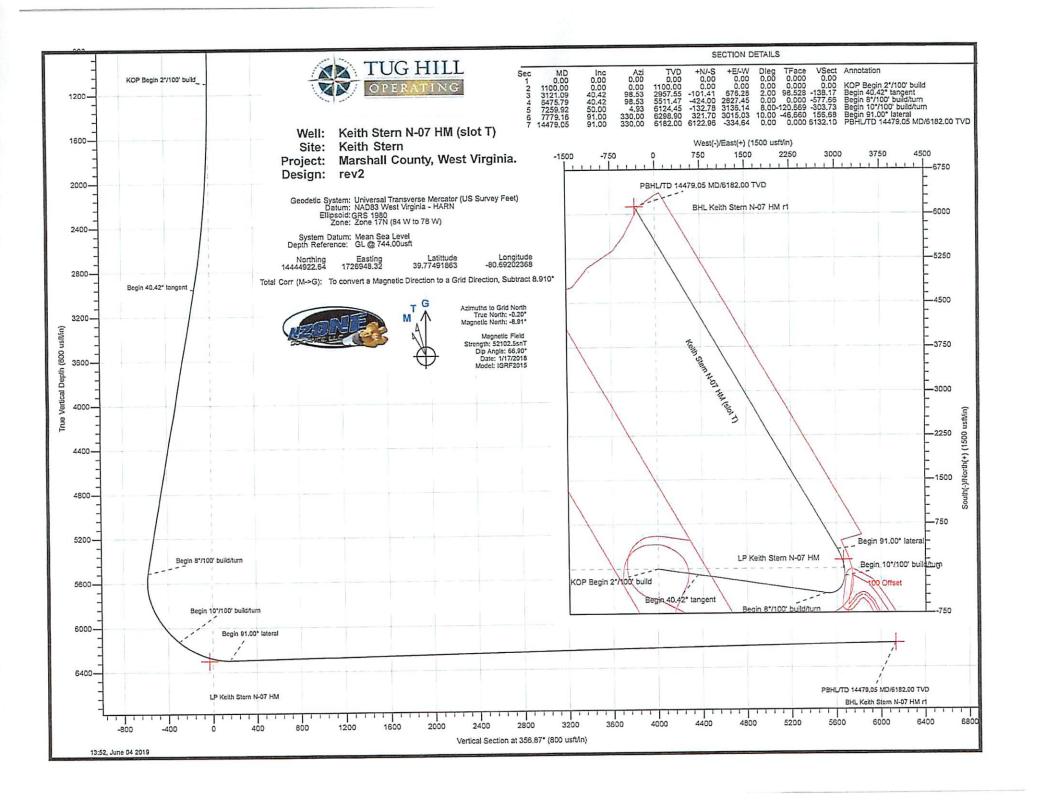
Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water - Surface Cement mixed at 15.6 ppg, Y=1.2 Surface:

Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water - Intermediate Cement mixed at 15.6 ppg, Y=1.19 Intermediate:

Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L - KOP Plug Kick Off Plug:

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 = 1.19

Production:





Database: Company: DB\_Jul2216dt\_v14 Tug Hill Operating LLC

Marshall County, West Virginia. Project: Keith Stern Site:

Well: Wellbore: Keith Stern N-07 HM (slot T)

Original Hole rev2 Design:

Local Co-ordinate Reference:

TVD Reference: MD Reference: North Reference:

Survey Calculation Method:

Well Keith Stern N-07 HM (slot T)

GL @ 744.00usft GL @ 744.00usft

Grid

Minimum Curvature

Project

Marshall County, West Virginia.

Map System: Geo Datum:

Universal Transverse Mercator (US Survey Feet)

NAD83 West Virginia - HARN

Zone 17N (84 W to 78 W)

System Datum:

Mean Sea Level

Map Zone: Site

Keith Stern

Site Position: From:

Lat/Long

Northing: Easting:

14,444,890.33 usft 1,726,932.47 usft

Latitude: Longitude:

39.77483004 -80.69208048

Position Uncertainty:

0.00 usft Slot Radius: 13-3/16 "

Grid Convergence:

0.197°

Well Well Position Keith Stern N-07 HM (slot T) +N/-S

+E/-W

rev2

0.00 usft 0.00 usft Northing: Easting:

14,444,922.64 usft 1,726,948.32 usft Latitude: Longitude:

39.77491863 -80.69202368

Position Uncertainty

0.00 usft

Wellhead Elevation:

1/17/2018

Ground Level:

744.00 usft

Wellbore Magnetics

Original Hole

Sample Date Model Name

Declination (°) -8.713 Dip Angle (°) 66,896 Field Strength

(nT) 52,102.54613207

Design

Audit Notes:

Version:

Phase:

PLAN

Tie On Depth:

0.00

Vertical Section:

Depth From (TVD) (usft)

0.00

+N/-S (usft)

0.00

+E/-W (usft)

0.00

Direction (°) 356.87

Depth From

(usft)

Plan Survey Tool Program Date

Depth To

(usft)

IGRF2015

6/4/2019

Survey (Wellbore)

**Tool Name** 

Remarks

1

0.00

14,479.05 rev2 (Original Hole)

MWD

MWD - Standard

an 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	
1,100.00		0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.000	
3,121.09	40.42	98.53	2,957.55	-101.41	676.28	2.00	2.00	0.00	98.528	
6,475,79	40.42	98,53	5,511.47	-424.00	2,827.45	0.00	0.00	0.00	0.000	
7,259.92		4.93	6,124,45	-132.78	3,136.14	8.00	1.22	-11.94	-120.669	
7,779.16		330.00	6,298.90	321.70	3,015.03	10.00	7.90	-6.73	-46.660	
14,479.05		330.00	6,182.00	6,122.96	-334.64	0.00	0.00	0.00	0.000	BHL Keith Stern N-0



Database: Company: Project:

Site:

DB\_Jul2216dt\_v14 Tug Hill Operating LLC Marshall County, West Virginia.

Keith Stern

Well: Wellbore: Keith Stern N-07 HM (slot T)

Original Hole

Local Co-ordinate Reference:

TVD Reference: MD Reference:

Survey Calculation Method:

North Reference:

Well Keith Stern N-07 HM (slot T)

GL @ 744.00usft GL @ 744.00usft

Grid

Minimum Curvature

sign:	rev2					THE RESERVE OF THE PARTY OF THE			
nned Survey									
Measured			Vertical			Мар	Мар		
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Northing	Easting		t troute
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,444,922.64	1,726,948.32	39.77491863	-80.69202
100.00		0.00	100.00	0.00	0.00	14,444,922.64	1,726,948.32	39.77491863	-80,69202
200.00		0.00	200.00	0.00	0.00	14,444,922.64	1,726,948.32	39.77491863	-80.69202
300.00		0.00	300,00	0.00	0.00	14,444,922.64	1,726,948.32	39.77491863	-80.69202 -80.69202
400.00	0.00	0.00	400.00	0.00	0.00	14,444,922.64	1,726,948.32	39.77491863	-80,69202
500.00	0.00	0.00	500.00	0.00	0.00	14,444,922.64	1,726,948.32	39.77491863 39.77491863	-80.69202
600.00		0.00	600.00	0.00	0.00	14,444,922.64	1,726,948.32	39.77491863	-80.69202
700.00		0.00	700.00	0.00	0.00	14,444,922.64	1,726,948.32 1,726,948.32	39.77491863	-80.69202
800.00		0.00	800.00	0.00	0.00	14,444,922.64	1,726,948.32	39.77491863	-80,69202
900.00		0.00	900.00	0.00	0.00	14,444,922.64 14,444,922.64	1,726,948.32	39.77491863	-80,69202
1,000.00		0.00	1,000.00	0.00	0.00	14,444,922.64	1,726,948.32	39.77491863	-80.69202
1,100.00		0.00	1,100.00	0.00	0.00	14,444,022.04	1,720,010.02		
	gln 2°/100' bu	lld oo so	1,199.98	-0.26	1.73	14,444,922.38	1,726,950.04	39.77491790	-80.69201
1,200.00		98.53	1,199.98	-1.03	6.90	14,444,921.60	1,726,955.22	39.77491572	-80.69199
1,300.00		98.53 98.53	1,299.84	-2.33	15.52	14,444,920.31	1,726,963.84	39.77491209	-80.69196
1,400.00		98.53	1,498.70	-4.13	27.57	14,444,918.50	1,726,975.89	39.77490702	-80.69192
1,500.00		98.53	1,597.46	-6.45	43.04	14,444,916.18	1,726,991.36	39.77490050	-80.69187
1,700.00		98.53	1,695.62	-9.28	61.91	14,444,913.36	1,727,010.23	39.77489255	-80.69180
1,800.00			1,793.05	-12.62	84.15	14,444,910.02	1,727,032.47	39.77488318	-80.69172
1,900.00			1,889.64	-16.46	109.75	14,444,906.18	1,727,058.07	39.77487240	-80.69163
2,000.00			1,985.26	-20.79	138.66	14,444,901.85	1,727,086.98	39.77486022	-80.69153
2,100.00			2,079.81	-25.62	170.86	14,444,897.02	1,727,119.17	39.77484665	-80.6914° -80.69128
2,200.00		98.53	2,173.16	-30.94	206.29	14,444,891.70	1,727,154.61	39.77483172	-80.6911
2,300.00		98.53	2,265.21	-36.73	244.93	14,444,885.91	1,727,193.25	39.77481545	-80.6910
2,400.00	26.00	98.53	2,355.84	-43.00	286.73	14,444,879.64	1,727,235.04	39.77479784 39.77477893	-80.69084
2,500.00			2,444.93	-49.73	331.62	14,444,872.91	1,727,279.94	39.77475873	-80.6906
2,599.99			2,532.39	-56.92	379.56	14,444,865.72	1,727,327.88 1,727,378.81	39.77473727	-80.69049
2,699.99			2,618.10	-64.56	430.49	14,444,858.08	1,727,432.67	39.77471458	-80.6903
2,799.99				-72.63	484.35 541.07	14,444,850.01 14,444,841.50	1,727,489.39	39.77469068	-80.6900
2,899.99				-81.14 -90.06	600.59	14,444,832.58	1,727,548.90	39.77466561	-80.6898
2,999.99				-99.39	662.82	14,444,823.24	1,727,611.14	39.77463938	-80.6896
3,099.99			and the same of the same where	-101.41	676.28	14,444,821.23	1,727,624.60	39.77463371	-80.6896
3,121.09			2,557.55	-101,41	0,0.20				
	10.42° tangent		3,017.63	-109.00	726.88	14,444,813.64	1,727,675.20	39.77461239	-80.6894
3,199.99			100	-118.62	791.01	14,444,804.02	1,727,739.33	39.77458537	-80.6892
3,299.9				-128.23	855.13	14,444,794.41	1,727,803.45	39.77455835	-80.6889
3,499.9			The state of the s	-137.85	919.25	14,444,784.79	1,727,867.57	39.77453133	-80.6887
3,599.9			The Control of the Control	-147.46	983.38	14,444,775.17	1,727,931.70	39.77450431	-80.6885
3,699.9				-157.08	1,047.50	14,444,765.56	1,727,995.82	39.77447729	-80.6882
3,799.9			3,474.40	-166.70	1,111.63	14,444,755.94	1,728,059.94	39.77445027	-80.6880
3,899.9		98.53		-176.31	1,175.75	14,444,746,33	1,728,124.07	39.77442325	-80.6878 -80.6876
3,999.9				-185.93	1,239.87	14,444,736.71	1,728,188.19	39,77439623	-80.6878
4,099.9				-195.54	1,304.00	14,444,727.10	1,728,252.32	39.77436921 39.77434219	-80.6871
4,199.9				-205.16	1,368.12	14,444,717.48	1,728,316.44 1,728,380.56	39.77431516	-80.6869
4,299.9				-214.78	1,432.24 1,496.37	14,444,707.86 14,444,698.25	1,728,444.69	39.77428814	-80.6867
4,399.9				-224.39 -234.01	1,560.49	14,444,688.63	1,728,508.81	39.77426112	-80.6864
4,499.9				-234.01	1,624.62	14,444,679.02	1,728,572.93	39.77423409	-80.6862
4,599.9				-253.24	1,688.74	14,444,669.40	1,728,637.06	39.77420707	-80.6860
4,699.9				-262.85	1,752.86	14,444,659.78	1,728,701.18	39.77418004	-80.6857
4,799.9 4,899.9				-272.47	1,816.99	14,444,650.17	1,728,765.31	39.77415302	-80.6855
4,999.9				-282.09	1,881.11	14,444,640.55	1,728,829.43	39.77412599	-80.6853



Database: Company: Project:

Site:

DB\_Jul2216dt\_v14 Tug Hill Operating LLC Marshall County, West Virginia,

Keith Stern

Well:

Keith Stern N-07 HM (slot T)

Wellbore: Original Hole Local Co-ordinate Reference: TVD Reference:

MD Reference: North Reference:

Survey Calculation Method:

Well Keith Stern N-07 HM (slot T)

GL @ 744.00usft GL @ 744.00usft

Grid Minimum Curvature

lgn:	rev2				D. D. Daries				
nned Survey									
Measured			Vertical			Мар	Мар		
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Northing	Easting		
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)	Latitude	Longitude
5,099.99	40.42	98.53	4,464.08	-291.70	1,945.23	14,444,630.94	1,728,893.55	39.77409896	-80.685104
5,199.99	40.42	98,53	4,540.21	-301.32	2,009.36	14,444,621.32	1,728,957.68	39.77407194	-80.684876 -80.684647
5,299.99	40.42	98.53	4,616.34	-310.93	2,073.48	14,444,611.71	1,729,021.80	39.77404491	-80.684419
5,399.99	40.42	98.53	4,692.47	-320.55	2,137.61	14,444,602.09	1,729,085.92	39.77401788	-80.684191
5,499.99	40.42	98.53	4,768.60	-330.17	2,201.73	14,444,592.47	1,729,150.05	39,77399085	-80,683963
5,599.99	40.42	98,53	4,844.72	-339.78	2,265.85	14,444,582.86	1,729,214.17	39,77396382	-80.683735
5,699.99	40.42	98.53	4,920.85	-349.40	2,329.98	14,444,573.24	1,729,278.30	39.77393680	-80.683507
5,799.99	40.42	98.53	4,996.98	-359.01	2,394.10	14,444,563.63	1,729,342.42	39.77390977	
5,899.99	40.42	98.53	5,073.11	-368.63	2,458.22	14,444,554.01	1,729,406.54	39.77388274	-80.683279
5,999.99		98.53	5,149.24	-378.24	2,522.35	14,444,544.39	1,729,470.67	39.77385571	-80.68305
6,099.99		98.53	5,225.37	-387.86	2,586.47	14,444,534.78	1,729,534.79	39.77382867	-80.682823
6,199.99		98.53	5,301.50	-397.48	2,650.60	14,444,525.16	1,729,598.91	39.77380164	-80.68259
6,299.99		98.53	5,377.63	-407.09	2,714.72	14,444,515.55	1,729,663.04	39.77377461	-80.68236
6,399.99		98.53	5,453.76	-416.71	2,778.84	14,444,505.93	1,729,727.16	39.77374758	-80,68213
6,475.79		98.53	5,511.47	-424.00	2,827.45	14,444,498.64	1,729,775.77	39.77372709	-80.68196
Begin 8°	/100' build/tui			105.05	0.040.00	11 111 100 00	1,729,791.18	39.77372157	-80.68191
6,499.99		95.91	5,530.02	-425.95	2,842.86	14,444,496.69	1,729,852.26	39.77372050	-80.68169
6,599.99		83.98	5,609.09	-426.12	2,903.94	14,444,496.51		39.77375436	-80.68149
6,699.99	34.30	70.49	5,690.88	-413.60	2,959.95	14,444,509.04	1,729,908.27	39.77382249	-80.68131
6,799.99	33.98	56.22	5,773.79	-388.61	3,009.81	14,444,534.03	1,729,958.13	39.77392358	-80,68116
6,899.99	35.29	42.31	5,856.20	-351.65	3,052.55	14,444,570.99	1,730,000.87		-80.68103
6,999.99	38.06	29.72	5,936.51	-303.44	3,087.33	14,444,619.20	1,730,035.64	39.77405563 39.77421610	-80.68094
7,099.99	42.00	18.87	6,013.16	-244.91	3,113.47	14,444,677.73	1,730,061.79		-80.68088
7,199.99	46.81	9.72	6,084.65	-177.21	3,130.48	14,444,745.42	1,730,078.79	39,77440186	-80.68086
7,259.92		4.93	6,124.45	-132.78	3,136.14	14,444,789.86	1,730,084.46	39.77452383	-00,0000
	0°/100' build/t	um	0.440.44	404 50	2 127 01	14,444,821.11	1,730,086.13	39.77460964	-80,68085
7,299.99		1.27	6,149.44	-101.53	3,137.81	14,444,904.25	1,730,081.89	39.77483799	-80.68087
7,399.99		353.23	6,204.63	-18.39	3,133.57	14,444,992.64	1,730,065.77	39.77508091	-80,68093
7,499.99		346.33	6,248.23	70.00	3,117.45	14,445,083.62	1,730,038.27	39.77533102	-80,6810
7,599,98			6,278.91	160.98	3,089.95	14,445,174.41	1,730,000.21	39.77558073	-80.6811
7,699.98			6,295.75	251.77	3,051.89		1,729,963.35	39.77577312	-80.6812
7,779.16		330.00	6,298.90	321.70	3,015.03	14,445,244.34	1,729,800,00	00.77077012	
	1.00° lateral	330.00	6,298,54	339.73	3,004.62	14,445,262.37	1,729,952.93	39.77582275	-80.6813
7,799.98			6,296.80	426.32	2,954.62	14,445,348.96	1,729,902.94	39.77606103	-80.6815
7,899.98			6,295.05	512.90	2,904.63	14,445,435.54	1,729,852.94	39.77629931	-80.6816
7,999.98			6,293.31	599.49	2,854.63	14,445,522.13	1,729,802.95	39.77653758	-80.6818
8,099.98			6,291.56	686.08	2,804.63	14,445,608.72	1,729,752.95	39.77677586	-80.6820
8,199.98			6,289.82	772.67	2,754.64	14,445,695.30	1,729,702.96	39.77701414	-80.6822
8,299.98			6,288.07	859.25	2,704.64	14,445,781.89	1,729,652.96	39.77725242	-80.6823
8,399.98			6,286.33	945.84	2,654.65	14,445,868.48	1,729,602.96	39.77749070	-80.6825
8,499.98			6,284.58	1.032.43	2,604.65	14,445,955.07	1,729,552.97	39.77772897	-80.6827
8,599.98			6,282.84	1,119.01	2,554.66	14,446,041.65	1,729,502.97	39.77796725	-80.6829
8,699.98			6,281.09	1,205.60	2,504.66	14,446,128.24	1,729,452.98	39,77820553	-80.6830
8,799.98			6,279.35	1,292.19	2,454.66	14,446,214.83	1,729,402.98	39.77844380	-80.6832
8,899.98				1,378.78	2,404.67	14,446,301.41	1,729,352.99	39.77868208	-80.6834
8,999.98				1,465.36	2,354.67	14,446,388.00	1,729,302.99	39.77892035	-80.6836
9,099.98				1,551.95	2,304.68	14,446,474.59	1,729,252.99	39.77915863	-80.6838
9,199.98				1,638.54	2,254.68	14,446,561.18	1,729,203.00	39.77939691	-80,6839
9,299.98				1,725.12	2,204.68	14,446,647.76	1,729,153.00	39.77963518	-80.6841
9,399.98				1,811.71	2,154.69	14,446,734.35	1,729,103.01	39.77987346	-80.6843
9,499.98		and the second second	and the second	1,898.30	2,104.69	14,446,820.94	1,729,053.01	39.78011173	-80.6845
9,599.98	91.00			1,984.89	2,054.70	14,446,907.53	1,729,003.02	39.78035000	-80.6846
9,699.98	91.00	330.00							



Database: Company: Project:

Site:

DB\_Jul2216dt\_v14 Tug Hill Operating LLC Marshall County, West Virginia.

Keith Stern

Keith Stern N-07 HM (slot T) Well:

Wellbore: Original Hole

Design: rev2 Local Co-ordinate Reference:

TVD Reference: MD Reference: North Reference:

Survey Calculation Method:

Well Keith Stern N-07 HM (slot T)

GL @ 744.00usft GL @ 744.00usft

Grid

Minimum Curvature

		Children Commis	-	MENT NEW YORK				A STATE OF THE PARTY OF THE PAR	ALL DESCRIPTION OF THE PERSON
anned Survey									
Measured			Vertical			Мар	Мар		
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Northing	Easting		
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)	Latitude	Longitude
9,899,98	91.00	330.00	6,261.90	2,158.06	1,954.71	14,447,080.70	1,728,903.02	39.78082655	-80,68503
9,999.98	91.00	330.00	6,260.15	2,244.65	1,904.71	14,447,167.29	1,728,853.03	39,78106483	-80,68521
10,099.98	91.00	330.00	6,258.41	2,331.23	1,854.71	14,447,253.87	1,728,803.03	39.78130310	-80.68539
10,199.98	91.00	330.00	6,256.66	2,417.82	1,804.72	14,447,340.46	1,728,753.04	39.78154137	-80.68557
10,299.98	91.00	330.00	6,254.92	2,504.41	1,754.72	14,447,427.05	1,728,703.04	39.78177964	-80.68574
10,399.98	91.00	330.00	6,253,17	2,591.00	1,704.73	14,447,513.64	1,728,653.05	39.78201792	-80,68592
10,499.98	91.00	330.00	6,251.43	2,677.58	1,654.73	14,447,600.22	1,728,603.05	39.78225619	-80.68610
10,599.98	91.00	330.00	6,249.69	2,764.17	1,604.74	14,447,686.81	1,728,553.05	39.78249446	-80.68627
10,699,98	91.00	330.00	6,247.94	2,850.76	1,554.74	14,447,773.40	1,728,503.06	39.78273273	-80.68645
10,799.98	91.00	330.00	6,246.20	2,937.35	1,504.74	14,447,859.98	1,728,453.06	39.78297100	-80,68663
10,899.98	91.00	330.00	6,244.45	3,023.93	1,454.75	14,447,946.57	1,728,403.07	39.78320927	-80.68680
10,999.98	91.00	330.00	6,242.71	3,110.52	1,404.75	14,448,033.16	1,728,353.07	39.78344754	-80.68698
11,099.98	91.00	330.00	6,240.96	3,197.11	1,354.76	14,448,119.75	1,728,303.08	39.78368581	-80.68716
11,199.98	91.00	330.00	6,239.22	3,283,69	1,304.76	14,448,206.33	1,728,253.08	39.78392408	-80.68733
11,299.98	91.00	330.00	6,237.47	3,370.28	1,254.77	14,448,292.92	1,728,203.08	39.78416235	-80,68751
11,399.98	91.00	330.00	6,235.73	3,456.87	1,204.77	14,448,379,51	1,728,153.09	39.78440062	-80.68769
11,499.98	91.00	330.00	6,233,98	3,543.46	1,154.77	14,448,466.09	1,728,103.09	39.78463889	-80,68786
11,599.98	91.00	330.00	6,232.24	3,630.04	1,104.78	14,448,552.68	1,728,053.10	39.78487716	-80.68804
	91.00	330.00	6,230.49	3,716.63	1,054.78	14,448,639.27	1,728,003.10	39.78511543	-80.68822
11,699.98	91.00	330.00	6,228,75	3,803.22	1,004.79	14,448,725.86	1,727,953.11	39.78535370	-80.68840
11,799.98 11,899.98	91.00	330.00	6,227.00	3,889.80	954.79	14,448,812.44	1,727,903.11	39.78559197	-80.68857
11,999.98	91.00	330.00	6,225.26	3,976.39	904.80	14,448,899.03	1,727,853.11	39.78583024	-80.6887
12,099.98	91.00	330.00	6,223.51	4,062.98	854.80	14,448,985.62	1,727,803.12	39.78606850	-80.6889
12,199.98	91.00	330.00	6,221.77	4,149.57	804.80	14,449,072.21	1,727,753.12	39.78630677	-80.68910
	91.00	330.00	6,220.02	4,236.15	754.81	14,449,158.79	1,727,703.13	39.78654504	-80.6892
12,299.98	91.00	330.00	6,218.28	4,322.74	704.81	14,449,245.38	1,727,653.13	39.78678330	-80.6894
12,399.98	91.00	330.00	6,216.53	4,409.33	654.82	14,449,331.97	1,727,603.14	39.78702157	-80.6896
12,499.98		330.00	6,214.79	4,495.91	604.82	14,449,418.55	1,727,553.14	39.78725984	-80.6898
12,599.98		330.00	6,213.04	4,582.50	554.83	14,449,505.14	1,727,503.14	39.78749810	-80.6899
12,699.97		330.00	6,211.30	4,669.09	504.83	14,449,591.73	1,727,453.15	39.78773637	-80.6901
12,799.97		330.00	6,209.55	4,755.68	454.83	14,449,678.32	1,727,403.15	39.78797463	-80.6903
12,899.97		330.00	6,207.81	4,842.26	404.84	14,449,764.90	1,727,353.16	39.78821290	-80.6905
12,999.97	State State of	330.00	6,206.06	4,928.85	354.84	14,449,851.49	1,727,303.16	39.78845116	-80.6907
13,099.97		330.00	6,204.32	5,015.44	304.85	14,449,938.08	1,727,253.17	39.78868943	-80.6908
13,199.97		330.00	6,202.57	5,102.03	254.85	14,450,024.66	1,727,203.17	39,78892769	-80.6910
13,299.97		330,00	6,200.83	5,188.61	204.86	14,450,111.25	1,727,153.17	39,78916596	-80.6912
13,399.97		330.00	6,199.08	5,275.20	154.86	14,450,197.84	1,727,103.18	39.78940422	-80.6914
13,499.97			6,197.34	5,361.79	104.86	14,450,284.43	1,727,053.18	39.78964248	-80.6915
13,599.97		330.00	6,195.59	5,448.37	54.87	14,450,371.01	1,727,003.19	39.78988075	-80.6917
13,699.97			6,193.85	5,534.96	4.87	14,450,457.60	1,726,953.19	39.79011901	-80.6919
13,799.97			6,193.00	5,621.55	-45.12	14,450,544.19	1,726,903.19	39.79035727	-80.6921
13,899.97			6,192.10	5,708.14	-95.12	14,450,630.77	1,726,853.20	39.79059554	-80.6922
13,999.97			6,188.61	5,794.72	-145.11	14,450,717.36	1,726,803.20	39.79083380	-80,6924
14,099.97			6,186.87	5,881.31	-195.11	14,450,803.95	1,726,753.21	39.79107206	-80.6926
14,199.97			6,185.12	5,967.90	-245.11	14,450,890.54	1,726,703.21	39.79131032	-80.6928
14,299.97			6,183.38	6,054.48	-295.10	14,450,977.12	1,726,653.22	39.79154858	-80,6930
14,399.97 14,479.05			6,182.00	6,122.96	-334.64	14,451,045.60	1,726,613.68	39.79173700	-80.6931



Database: Company: Project:

DB\_Jul2216dt\_v14
Tug Hill Operating LLC

Marshall County, West Virginia, Keith Stern

Well:

Site:

Keith Stern N-07 HM (slot T)

Wellbore: Design:

Original Hole

rev2

Local Co-ordinate Reference:

TVD Reference: MD Reference:

North Reference: Survey Calculation Method: Well Keith Stern N-07 HM (slot T)

GL @ 744.00usft GL @ 744.00usft

Grid

Minimum Curvature

Design Targets									
Target Name - hil/miss target - Shape	Dip Angle	Dip Dir.	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
BHL Keith Stern N-07 HI - plan hits target cent - Point	0.00 er	0.00	6,182.00	6,122.96	-334.64	14,451,045.60	1,726,613.68	39.79173700	-80.69314000
LP Keith Stern N-07 HM - plan misses target o - Point	0.00 center by 36.8	0.01 6usft at 758	6,303.00 1.83usft MD	141.66 (6274.35 TVD	3,118.77 ), 144.39 N, 3	14,445,064.30 095.75 E)	1,730,067.09	39.77527769	-80,68092196

Measured	Vertical	Local Coor	dinates	
Depth	Depth	+N/-S	+E/-W	
(usft)	(usft)	(usft)	(usft)	Comment
1,100,00	1,100.00	0.00	0.00	KOP Begin 2°/100' build
3,121,09	2,957.55	-101.41	676.28	Begin 40.42° tangent
6,475,79	5,511.47	-424.00	2,827.45	Begin 8°/100' build/turn
7,259.92	6,124.45	-132.78	3,136.14	Begin 10°/100' build/turn
7,779.16	6,298.90	321.70	3,015.03	Begin 91.00° lateral
14,479.05	6,182.00	6,122.96	-334.64	PBHL/TD 14479.05 MD/6182.00 TVD



# Well Site Safety Plan Part A – Site Specific Data and Figures

Well Name: Keith Stern N-7HM

Pad Name: Keith Stern

RECEIVED
Office of Oil and Gas

JUN 1 4 2022

County: Marshall JUN 1

UTM (meters), NAD83, Zone 17

WV Department of Environmental Protection

Northing: 4,402,821.23

Easting: 526,374.90

Gayne Digitally signed by Gayne Knitowski Date: 2022.06.14 08:22:12 -04'00'

# KEY CONTACT FOR WELL SITE SAFETY PLAN DEVELOPMENT AND MAINTENANCE

Jerry V. DeRosa, Director EH&S Affairs (724) 338-2029 (office) (412) 736-5767 (cellular)

24-HOUR EMERGENCY PHONE NUMBER (800) 921-9745

DARREN BROWN CT CORPORATION

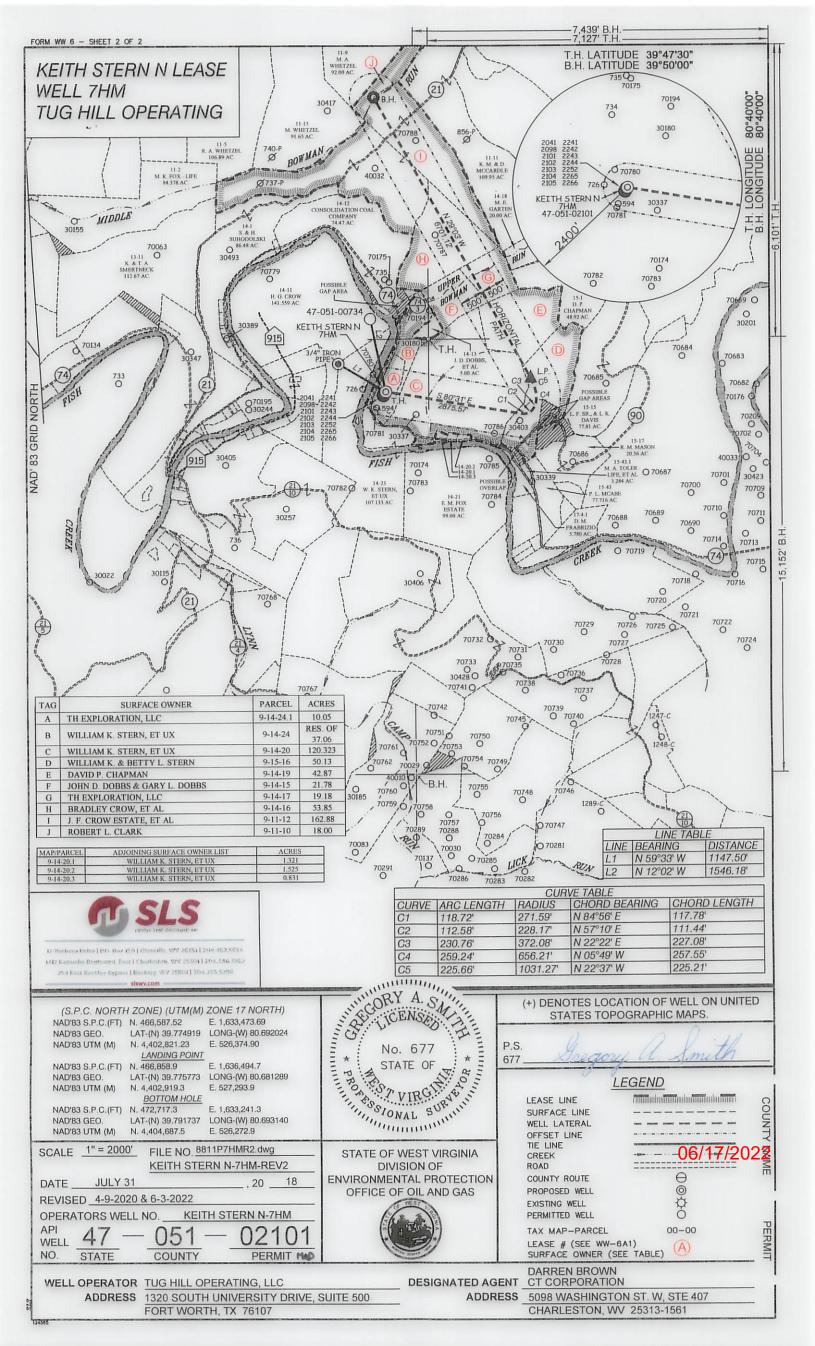
ADDRESS 5098 WASHINGTON ST. W, STE 407 CHARLESTON, WV 25313-1561

DESIGNATED AGENT

FORT WORTH, TX 76107

WELL OPERATOR TUG HILL OPERATING, LLC

ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500



#### 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 –

- 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:

Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
Lease Name or				

\*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. Morris WW SUUTU
Its:	Permitting Specialist - Appalachia Region

Page 1 of

													r					
Leese No.	Tags	Percei	Lessor	Lessee	Royalty			Assignment	Assignment	Assignment 2/136 Union Gasoline & Oil	Assignment	Assignment 422/204 Manufacturers Light &	Assignment	Assignment 13/623 Columbia Natural	Assignment 619/499 Nicole Gas	Assignment 14/471 Dennis N. Broglio,	Assignment	Assignment
10°15603	A	9-14-24.1	ISAAC CROW ET UX	JOHN G CRAWFORD	1/8+	74	394			2) 136 Union Gazonne a Chi Corporation to Preston Oil Company	Manufacturers Light & Heat Company	Heat Corroany to Columbia Gas Transmission Corporation	Transmission Corporation to Columbia Natural Resources, Inc	Resources, Inc. to Nicole Gas	Production, LTD to and Nicole Energy Marketing, Inc. to Pennsylvania Land Holdings Corporation	Successor Trustee to Tri-County Oil & Gas, Inc.	Certificate of Merger Tri-County Oil and Gas, Inc. and Leatherwood, Inc.	to TH Exploration, LLC
10*15605	В	9-14-24	ISAAC CROW ET UX	JOHN G CRAWFORD	1/8+	74	394		Light & Heat Company to	2/135 Union Gasoline & Oil Corporation to Preston Oil Company	2/225 Preston Oil Company to Manufacturers Light & Heat Company	422/204 Manufacturers Light & Heat Company to Columbia Gas Transmission Corporation		Resources, Inc. to Nicole Gas	619/499 Nicole Gas Production, LTD to and Nicole Energy Marketing, Inc. to Pennsylvania Land Holdings Corporation	14/471 Dennis N. Brogilo, Successor Trustee to Tri-County Oil & Gas, Inc.	Certificate of Merger Tri-County Oil and Gas, Inc. and Leatherwood, Inc.	42/140 CNX Gas Company LLI to TH Exploration, LLC
10*15509	c	9-14-20	WILLIAM K STERN AND BETTY L STERN	NPAR, LLC	1/8+	718	320	NA	NA	NA	NA	NA	NA .		24/466 NPAR, LLC and AB Resources, LLC to Chief Exploration & Development, LLC and Radier 2000 Limited Partnership	28/130 Chief Exploration & Development, LLC, Radier 2000 Limited Partnership, and Enerplus Resources (USA) Corporation to Chevron U.S.A., Inc.	756/332 NPAR, LLC to Chevron U.S.A., Inc.	36/148 Chevron U.S.A., Inc. to TH Exploration, LLC
10*15819	D	9-15-16	ROBERT B THOMAS	CHESAPEAXE APPALACHIA LLC	1/8+	692	235	NA	NA I	NA	NA	NA	NA	Appalachia LLC to Statoli USA	33/110 Chesapeake Appalechia LLC to SWN Production Company, LLC	33/424 Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC		35/431 SWN Production Company, LLC to TH Exploration, LLC
10*21814	D	9-15-16	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION ILC	1/8+	958	135	NA .	NA .	NA	NA	INA .	NA	NA	NA .	MA	NA .	NA
10*21862	D	9-15-16	NOSLE MARCELLUS LP	TH EXPLORATION LLC	1/8+	961	641	NA	NA	NA .	NA	NA .	NA	NA	NA	NA	NA	NA
10*15818	D	9-15-16	ELIZABETH ANN STRAUSBAUGH	CHESAPEAXE APPALACHIA LLC	1/8+	703	578	NA	NA	NA	NA	NA	NA	29/325 Chesapeake Appalachia LLC to Statoli USA Onshore Properties Inc	33/110 Chesapeake Appelachia LLC to SWN Production Company, LLC	33/424 Statoli USA Onshore Properties Inc to SWN Exchange Titleholder LLC		36/431 SWN Production Company, LLC to TH Exploration, LLC
10*15819	D	9-15-16	JANET LEA BLANXENSHIP	CHESAPEAXE APPALACHIA LLC	1/8+	708	114	NA .	NA	NA .	NA	NA	NA		33/110 Chesapeake Appalachia LLC to SWN Production Company, LLC	33/424 Statoli USA Onshore Properties Inc to SWN Exchange Titleholder LLC	19/624 SWN Exchange Trisholder LLC and SWN Production Company, LLC merger	86/431 SWN Production Company, LLC to TH Exploration, LLC
10*15814	D	9-15-16	MARY E BASSETT	CHESAPEARE APPALACHIA LLC	1/8+	694	499	NA .	NA	NA	NA	NA	NA	24/84 Chesapeaka Appalachia LLC to Statoli USA Onshore Properties Inc	33/110 Chesepeake Appalachia LLC to SWN Production Company, LLC	33/424 Statoli USA Onshore Properties inc to SWN Exchange Titleholder LLC		36/431 SWN Production Company, LLC to TH Exploration, LLC
10*21818	D	9-15-16	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	953	337	NA .	NA	NA	NA	NA.	NA	NA .	NA.	NA .	NA .	NA
10*17445	D	9-15-16	GENEVA BASSETT SANCHEZ	TH EXPLORATION LLC	1/8+	929	292	NA	NA .	NA	NA	NA .	NA	NA	NA .	NA .	NA .	NA
10*15817	D	9-15-16	RUTH MEADOWS	CHESAPEAKE APPALACHIA LLC	1/8+	703	583	NA	NA	NA	NA .	NA .	NA		33/110 Chesapeake Appalachia LLC to SWN Production Company, LLC	33/424 Statoli USA Onshore Properties Inc to SWN Exchange Thieholder LLC	Titleholder LLC and SWN	36/431 SWN Production Company, LLC to TH Exploration, LLC
10*15815	D	9-15-16	FORREST M THOMAS	CHESAPEAKE APPALACHIA LLC	1/8+	694	516	NA	NA	NA .	NA	NA		29/479 Chesapeake Appalechia LLC to Statoli USA Onshora Properties	33/110 Chesapeake Appelachia LLC to SWN Production Company, LLC	33/424 Statoli USA Onshore Properties Inc to SWN Exchange Titlehokder LLC	Titleholder LLC and SWN	38/431 SWN Production Company, LLC to TH Exploration, LLC

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10°12889 E 9-4-69 PORDETT MICHOLINE PROPRIES OF STATE PROPRIES OF	10   12   12   13   14   15   15   15   15   15   15   15	10°15814	E	9-14-19	MARY E BASSETT	CHESAPEAKE APPALACHIA LLC		l l	1	1			1						- contract company, ccc	expression, the
10*12418 E 9-14-19 STORE MILL MOREMALS MILLOWING LLC  10*17445 E 9-14-19 GENTYN BASSETT SANCHEZ  10*17445 E 9-1	10*13418 E 9-64 9 STORE HILL MONEBALL'S MICHAELS		- 1			·			1	1	i I						1	1	merger	1
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¥N.	AN	AN	YA	AN	AN	VN	AN	VN	Y)	V	N SEE	196	+8/1	ти ехеловалном сес	MILLIAM T SCHMITT AND PENNY E SCHMITT	91-+1-6	н	10-22899
∀N	AN	AN	49	. AN	AN	YN YN	ΨN	VN	A)	· · · · · · · · ·	N STT	£96	+8/1	ти ехисоватном сіс	3800M M AGA	91+1-6	н	10,33416
VN.	AN	VN	4	1 AN	AH	VM	VN ₩	VN.	VI	· · · · · ·	N OSE	£96	+8/1	TH EXPLORATION LLC	OPK2	02.44	н	
۷N	VN →	ΨN	49	4	AN	₩.	∀N	- VN	49	, <sub>*</sub>	N TZT	E96	+8/t	, J. 1105130 18.2112	Lori ann Oaks and Larry D Oaks	91+1-6		10.53408
٧N	VN ▼N	₩.	\ 	i vn	VN	i VA	YN	VN		, <u>v</u>	N 797	196	+8/1	эээ моцииолиз нд	CATHERINI M MESSKER	91-+1-6	н	£5922.01
AN	AH	Yh	t yı	V: YN	<b>∀</b> N	1 47	4 VN	VA.	VI	· · · · · · · · · · · · · · · · · · ·	N 099	196	+8/1	TH EXPLORATION LLC	GRACOD V JAAHTIM	91-1-6	н	10.33426
AN	V	Ay	n Ai	N AN	VI.	1 41	i vn	N V	VI		N 069	996	+8/1	DIJ NOTTAROJAX3 HT	TTOOS GMA 3100M 3 ARB3Q 3ROOM	8-14-18	H	10.53233
VN.	Yh	A	ų y	N W	, v	. 41	V VN	ı v	y Y		N 667	996	+8/1	эті болғаранда ні	IAMES D COCHRAN AND LINDA M COCHRAN	91+1-6	н	775273
YN						4	ų vi	( VA	·		N 657	656	+8/1	эті юпалеолузі нт	KEITH GOUDY AND NANCY	91-91-6	н	11912.01
	VX	4												TH EXPLORATION LLC	SACQUELINE & CHARLES PATTERSON	91-71-6	н	10.23331
Inemajira AN	inemmitriA Ay	memojissA Ai	A Annualist A	M MedikodistA	ImenicalizaA A)	memmilizzA A	Ay	fremnyltså (	InternalizaA.		63 eg	#008 888	1/2+ VOASUA	998397	70239.1	lemen	ezer.	.oM eesed

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VN VN	YN.	¥N	. VN	AN	VN.	AN	₩	Al		AN DEE	<b>4</b> \$6	+g/t	ти ехргозаттом исс	HOWARD A BLAKE & HOWARD HORARS ROR SHARE BY HOWARD	91-91-6	н	10.57222
YN VN	- AN	· •		AN	VN	. ∀n	¥N			AN TRA	956	+8/1	тн ехргояаттом гсс	THERESA E CREEGER AND GREGORY I CREEGER	91-91-6	н	10*21610
										AN QTS	126	+9/1	эті коплаволчаз ні	VAPRIL M WEED	97 <del>+</del> 76	н	∠9891.0T
YN YN	AN	¥N	() VN	AN AN		AN	YN YN			VN CEE	656	+9/1	эті куговатіон ГГС	VANCY R ARRINGTON AND NOTONIRA C AZERST	91:+1:6	н	10,21612
YN YN	AN	VN	VN							VN 688	626	+8/t	тн ехрголаатом 1.1.С	POACE D YOME?	91-91-6	н	11681*01
AN AN	AN	¥N		AN									ти ехрговаттом 11.С	RICKY LEE AND TAMMY J	8-1¢-10	н	00841°01
VN. ∀N	AN	¥N	VI VN	AN						AN SEE	125	+8/t	эн ехрояатной есс	TERRY LEE PETITI AND STEPHANIE LYNN PETIT	91-91-6	Н	8927.01
VN ∀N	AN	<b>V</b> N	U <u>∀</u> N	AN	. ∀N	i	VA ∀A	VI		AN ESS	726	+8/1	эті коплалочаса нт	HELEN LOUISE HUGHES	91+16	н	TBSTZ-CT
VN VN	AN	VN	i v	VN	VA	i vn	VN	VI		SZZ NY	ESS	+8/1	ти ехрговалтои ис	A REVASA WEEKLEY BEVASA A SHIBL T SEVASE T JEIWAO	8-14-18	н	10-21889
VN ∀N	AN	AV.	N YA	VN VN	i yn	4 VN	YN.			VN +	096	+9/3	эл иопахолхэ нт	B CHEALD W LUNA AND CHERS E ANUL	91-91-6	H	10,55721
YN YN	AN	VA	N YI	i AN	( Y)	N YA	YA.	i A		VN EPS	156	+8/t 	тн ехргоядатом 11С	MARK L ADAMS	91+1-6	н	78525°01
VN. VN	AN	AI	N 43	i VA	4)	V VA	V)			AN ESS	296	+8/3	ти ехиозгазон ис	DAVID W HUMMEL SR	91-01-6	н	10,52520
VN VN	ΑN	41	N AI	, VN	N AI	N Ay	VI	1 A	3	SRI NV	796	+8/1	ти ехргоялтом цс	33JOW TN3R8 23MAL	91-91-6	н	10,55588
montalista AN montalista	memojisA An	fnemælmA Al	N MennaliseA As	mennghaA 1 Ay	Al fremmitta Al	A) A)	fnemajtrA A)	memojissA ( A	inemojusA	AN 285	396 296	+e/t AysAoy		Kyben elaine wolfe and	ļ		Leese No.

WW-6A1 Supplement
Operator's Well No. Keith Stern - N 7HM

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YN. YN	AN	AN.	VH.	VN.	AN	AN.	AN .	YN.	VA.	285	\$16	<b>+8/</b> T	ти ехріогалітом ііс	nitram e nazus	91 <b>-</b> 71-6	н	10°19836
YN YN	AN	AV	AN.	YN.	VN.	AN.	٧N	AN	Vi	SLZ.	256	+8/1	TH EXPLORATION LLC	George a Johns ir and Karen lidhns	91-71-6	н	££781*01
YN YN	AN	AN	4N	AN.	AN	ΨN	۷N	∀N	Vi.	\$5	828	+8/1	ти ехрговаттом ГГС	PEGGY HARTLEY	91-71-6	н	10,31348
VN. VN		An	VN.	AN.		AN	٧n	٧n	44	572	ES6	+9/1	тн ехреояаттом гес	MANAHOUR SIZES	8-1 <del>4-</del> 18	н	10,51548
VN			VN.	¥K		AN	۷N	¥N	Y)	1, 15	828	+0/1	эт волаголи гес	פרסצוע רחכעפ	91-11-6	н	£9212.01
YN YN	AN		VA	411	AN	AN	. VN	٧N	YA	212	656	+8/1	тн ехрговатіом 1.cc	HTIMS W 13AHDIM	91-91-6	н	629TZ-0T
	AN			VN	AN	AN	VN	AN	Yh	412	E\$6	+8/1	тн ехргояльтном гіс	DOROTHY ! WHITE	91-91-6	н	86612-01
VN VN						AN	WI	¥N		314	828	+8/1	эл копляюляся нт	yangir dna enru buna yang Parub 9	91-91-6	н	10,57340
YN YN				AN	AN	AN		VI.		885	926	+8/1	эті ноітаколуж нт	CHIKAKO YAMASHIRO HIZER	91+1-6	н	E1+12-01
YN YN								VN.			958	+8/1	тн ехргояаттон гес	eina l updegraft	97-97-6	н	7##TZ#0I
YN YN		VN						V			9\$6	+2/1	тн Ехргояалтон ис	Veroð j aruaj	91-71-6	н	10,37448
AN AN		YN									230	+8/1	тн Ехргояаттом ГГС	PAUL EUGENE SUTTON SR	91-71-6	н	TAIS*01
AN AN	N AN			. VN	AN	VN VN	· ·		Y		770	+8/1	тн ехргояатлом 11.с	תורות 1 פעצבג	91-11-6	н	10,13410
momunitas mammatas AN AN	Ay Ay	filemosta. Ay	InternationA Au	memrajasA Au	######################################	ImemirajiseA	\$1180000\$145A	Internigista	fnemrakssA	6364	300g	улеуол	besséj	Joseph	192424	- EFE	Lease No.

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	, , , , , , , , , , , , , , , , , , ,	AN	AN	AN	YN.	AM	¥N	<b>v</b> N	VN VN	٧	N 028	<b>LE</b> 6	+g/t	эті монтаяолязі нт	LLOYD T HALL AND LORNA K HALL	91-01-6	z	10,78609
	n: vn	VN.	AN	AN	AN	¥N.	VI.	YN	AN		N TOT	T\$6	+9/1	тн Екроратіон і.с.	TERRY S WEEKLEY AND KRYSTAL D WEEKLEY		н	63112°01
							-	VA.		v		T\$6	+8/1	эті вимоваліюм етс	JEFFREY S HIZER AND BONNIE	97 <b>÷</b> 7€	н	∠STIZ.OT
	N AN			AN AN				VA	78			156	+2/1	ти ехргозатіом ГІС	GLORIA JEAN SELMON	9-14-1 <b>2</b>	н	TELLESOL
	N YN							<b>V</b>		·			+8/1	эті вхріозелію гіс	STEVEN J KIM AND LICIA B KIM	9T+T6	н	98112.01
	N AN								VN ∀N			656		этэ моггалолага кт	CHARLES K NATIONS	91+1-6	н	SETTZ-OT
	N YN					YN.			VN	· · · · · · · · ·		696	+B/T	эээ моцаясычхэ нт	אאכג ז חודסאי	91-91-6	н	<b>PETTZ-07</b>
,	N VN	VN	VN			YN			VN			196	+8/1	ол иоптаяолчя нт	JOHN 7 HENSK III	8-14-18	н	10,53049
	N AH					YN YN	( VA		VN ∀N		N SET	TS6	+8/1	ти ехисоваттом ис	GNA NOTJIR Z AGNOR NOTJIR A ZAMOHT	91-91-6	н	<b>\$2861,07</b>
,	N AV	YN			i An				VN			816	+s/t	сты волгаяолям не	dna nogrod i ajiwt nogrod i rednaxela	91-91-6	н	16261,01
	(N) VA										N SZÞ	\$16	+6/1	DIJ NOITAROJAZE HT	reterroi una ol	91+1-6	н	06861.01
	N YI										N 695	\$16	+8/1	TH EXPLOSATION LLC	nwdrb bydd alema	91-11-6	н	66861.01
	in vi	4	4 41	N AN	4 AV	4	K AI	1 41	() VA		N 985	546	+8/1	эээ молтаяолчая нт	GRANO31 % NORAR2	97+7-6	н	1001001
friemsjissa	M memmaltaA	frementina A	Ail Ail	Ay Ay	SnemozittA AV	memmins. A)	A) A)	fineringlissA.	memralissA Ay	tnemmilisiA.	N OPP	900g	Hoyalty 1/8+	995397	308381	Percel	eset.	con acces.

		<del></del>															
AN .	VN V	IN V	N Y	n .									EXPLORATION LLC	HT BHAID GNA RI T23W W 2T	MEST	5 н	0/457
				4	V	N V	(N	/N	AN	AN EDS	126	+8/1		244.0 CM 01 T23W W 21	ans		92151.0
ΑN	AN AI	N Y	N VA	N A	N; Y	N y	, n	rn.	VN.	AN II	920	+8/1	ЕХРІОЯАТІОИ ЦС	TT NOERSON LTSIR	31-1-E	5 H	69951.0
VN	VN V												ноплания исс	IT HALL AND KYLE W HALL	Merry AV-1	+-	
		***************************************	N AM	VA.	<u> </u>	N V	N. V	N	AN	AN 281	196	+8/1	-		A211 81-41-8	H	10.51010
YN	AN AN	N. AN	AN AN	n Av	٧.	Al Al	N A	N	4N	AN 082	696	+8/t	н ехргозелтон исс	ND SIDNEY P	P-14-16 PO	H	10,51040
VN.	AN AN											78/ 9	DIT NOTE AND PASSE HE	R2 H2JAW		+-	<del> </del>
	AN AN	YN YN	AN	N AN	VA	VA	d vi	,	YN .	/N 991	156	+8/1		JEANCHM GWA HELAW A ARU. RE HEJAW	91-91-6	#	10.51098
VN.	AN AN	an an	YN	N. AN	YN.	VN ∀N	V3		m	N OLT			DI NOTTASONYES HT	ETER DOMINICK DENOON &	91-91-6	н	09012,01
											795	+8/1	200 11011100 110	V3311		<del>                                     </del>	
٧N	AN AN	i YN	VN.	VN.	AN	NA AN	VN	v	N V	N ZEE	156	+8/1	OU NOTTAROJNOS HT	J AYNOS GNA REIZER AND SONYA L	9-14-18	н	10.51029
AN	AN AN	VN.	AN	٧N	YN	YN	AN .	ļ					эт ехргояаттом ис	Karen Louise and Roger L Mahna	91-91-6	н	81671*01
										324	126	+8/1				$\dashv$	
AN	AN AN	VN VN	YN	٧N	YN	AN	¥k	<b>V</b>	VI VI	LOZ	126	+8/t	211 KOITAROJAKI HT	HAROLD & CROW AND CONNIE SUE CROW	91-91-6	н	06871*01
VN.	AN AN		AM	VN.	VN.	_ VN	AK	W					TH EXPLORATION LLC	СІКОТ І АКО DARKELL L FULKS	91-91-6	н	TREAT-OF
									43	398	125	+ <b>8</b> /T				+	
VN ,	AN AN	AM	AN	ΨN	ΨN	AN	VN ∀N	YN	VN VN	SBI	\$7.6	+8/1	DIJ NOTIARIONATI	BRIVH K CKOM	8-14-1 <b>0</b>	н	10-17404
vn	AN AN	ΨN	YN.	YN	¥N	Vii.							TH EXPLORATION LLC	IAMES B CROW AND PENNY C	97-91-6	н ,	10+17403
						73	AN	AN	AN	£81	97.6	+8/1			-	$\dashv$	
Friendstrad Friendstrad AM	AN monthly AN	Inerragius AN	tnemples. Av	Snonradisa An	fnechnalitaA AM	inemalisiA Asi	tnomiglită AM	žmonninglistA AM	AN An	ÞĪ .	SES	+8/T	TH EXPLOSATION LLC	рели Р Рениінстон	91-11-6	H s	\$4.581*01
										eled	Moof   V	Royali	101100	[63204	Percel	-	

WW-6A1 Supplement

YN YN	YN	VN	VN.	¥N	VN	YN	YN	VN	565	<b>LE</b> 5	+8/1	эті копаволузі ні	strebuelyn a roberts	91-91-6	н	10°18831
7N YN		YN. YN	YN.	WAL.	YN	AN	AN	¥N	162	625	+8/1	эт ехьговатіом гіс	WARY IO ROCKEY	91-91-6	н	70e7894S
		78			YN.	AN	AN		266	626	+8/1	ЭТІ МОПАЯОЛЧЯЗ НТ	MARGARET E JONES AND CHARLES T JONES	8-14-18	н	19691.0T
YN YN	YN .	VN VN	VN.	VN				VI.		686	+8/1	тн ехргояатіон гіс	STEVEN T JOHNS AND KAREN A	91-91-6	н	10+19340
YN YN	AN	YN YN			AN	AN	AN					тн ехрговаттом Г.С.	PEGGY J CROW	8-1 <del>4-</del> 18	н	10,18929
AN AN	AN	AN AN	AN	AN	YN.	AN	¥N		186	828	+9/1	эл юптаяолча нт	MICHELE T VALYKEO	91+1-6	н	95691,01
VN VN	VN	YN YN	AN	AN	W	AN AN	VN	- AN	£6₹	T96	+9/1	TH EXPLOSATION LLC	CHARLES W LADNER	91-97-6	н	\$\$68T <sub>*</sub> 0T
AN AN	ΨN	AN AN	YN.	YN	VN.	AN	AN	AM	582	<b>196</b>	+8/1	TH EXPLOSABITION LLC	GMA RI R37430T 3 TR380R R37430T A HT38ASIJ3	91-11-6	н	PS581.01
YN YN	ΑΝ	AN Ay	AN	AN	YN.	AN	AN	AM	395	196	+8/1	ти ехрговатнои исс	MICHAEL D GROSS Cynthia m Gross and	91-11-6	н	ESSET-OT
VN VN	۷N	AN AI	AN AN	AN	AN	YN	∀N	¥N	567	196	+2/1		D23 STHW			
YN YN	ΨN	AN AI	1 AN	AN	AN	VN	VN	YN	181	1116	+9/1	211 MOTTASO 1923 MT	JAMES KEITH NATIONS BY GUAGNAN AD ILIEM DAVID C	91+1-6	*	10,19603
VN VN	VN VN	AN AI	4 AN	YN YN	ΨN	VN	VN ∀N	¥N	857	136	+8/1	SEL ESPLORATION LLC	ROTTUS 1 SANDON	\$1+16	н	TD-13662
VN VN	ı va	AM AI	N 9N	AN	- YN	VN	V8	VN VN	436	1116	+8/1	TH EXPLORATION LLC	PAUL EUGENE SUTTON IR & MOTTUZ L'AUNIN	91+1-6	н	19961,01
Themoglish AN Themoglish AV	( VINNINGSTAN NA HAMI	AN Shormshan A		məmnələsə I AN	impergitsh AN	inentralita Ay	anemicissA Ay	Ay	985	516	1/3+	PERSONALICE			н	70,73840 Feese Mor

												,			·			
-	AN.	AN	AN	AV.	AN .	ΑN	AN	VN VN	49		AN 86>	1116	+8/1	эл иопаяолуз ні	WILLIAM E MOORE AUD	91-91-6	н	10°18303
44		AN		AN	AN	VN.	· vn	VA	· VA		428 NA	1116	+9/1	ін ехрговатіом LLC	WILLIAM E MOORE AND SROOM M AINTHIY		н	E0E81-01
							٧n	MAN	VA.		AN 81A	\$16	+9/1	эті коптаяолуд ні	ODITALIDESA 4 A SIRBINICO	91-91-6	H	01681-01
AN	1 YN						VIII.		VA		AN 57.5	826	+9/t	тн ехегозьятом шс	кеинелн в влясн	91-91-6	н	\$1787*01
AN		VN		AN										эт ехьгозеріюм гіс	н егеии свом	97-91-6	н	II/81•01
AN	AN.	. ∀N	I VN		AN AN	AN					AN 695	826	+8/1	эл иоптаволуз нт	A GRIGEEA FEMIS W GRIGEEA WAD WAXINE	91-91-6	н	01/81-01
AN	AN	VN.	i v	AN	AN	V ∀N	N AN	YA.	Ŭ. ¥N		AN 785	885	+8/1	эн ехролахант	CONSTRUCE L SIMPSON AND	BI-#I-6	н	80281+01
AN	AN	VN ∀N	1 YN	1 AH	AN	I ∀N	i	Vh.	Al		AN TER	826	+8/1	эті молтаяолузі нт	DEFOSEE KOFYKOM2KI	<b>9-1</b> +16	н	80181-01
AN	AN	VN	) Av	i VN	VN	1 VA	4 VN	YA	A»		VN OFS	826	+9/t	эті жолалауы ні	DOLORES IEAN POLAND	9-14-18	н	20781°01
AN	AN	AV	1 V	N YN	AN	. 4>	d VA	1 41	V)		VN SES	885	+8/1	эл ноптаволуж иг	GERALD Q MOORE AND SLYVIA JUDITH MOORE	8-1¢-10	н	10,18830
AN	i An	Al	N YI	N YA	i Vh	V VI	N A9	41	( VI		AN EGE	762	+8/1	эн биголагант			н	PERRI-01
ΨN	; <b>v</b> n	VI.	N ¥1	N VA	i Vi	N Yi	N A1	Y!	1 41	4	YN T	826	+8/1	этн ехмоямлом г.с				
₩	4 AN	Y	N Y	N VI	A)	N Y	N 41	K AI	N 41		VN 665	758	+8/1			<i>5</i> -1¢-7€	H	TO. 18833
inemiglists.	AN TRANSPORTED AN	finemrigissA.	и <u>Лингилина </u> А	N friemmalizzA	A STROMENSHIPS AS	<del>риолизікзА</del> м	H montaletA Ai	SnormglasA N A	fremnalesA N A	fnemrajasA.	AN 726	#008 7.62	+8/t +8/t	PHING THE EXPLOSIVATION LLC	ASSECUT NOTES MAG		egeT H	10, 18835

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	N AN	AN	AN	AN	AN	AN	VN.	₩	VI		TN 5Z	SE6	*8/T	эті колавалазі нт	NAGRAW SIRAM BAG	91-91-6	н	925B1 <b>.</b> 01
					VN	AN	VN	VII.	¥i		/N >	\$26	+8/1	эті колаяолазіні	вулогет в ском	91-91-6	н	08281*01
Ai	n Av		YN	**										тн ехеговатіон ітс	ROGER EDWARD DENOON IR	91-91-6	н	67281*01
- vi	N AN		( VN		AN.	₩	AN	¥N	V		/N 9	SE6	+e/t	тн ехрголатион ГТС	KIMBERTA EFTEN DENOON	8-14-18	н	87281.01
A	N AK	¥N	. ∀N	VN.	AN	<u> </u>	AN				rN •	\$26	+8/t	OUS NOTTAROSTAR HT	KETTA YNN DENOON	97-97-6	н	77281°01
<u> </u>	N AN	¥N	4 78	VN	AN	¥X	AN AN	VN.	, vi	4	rN CT	\$26	+8/1	DIJ NOITAROJAKS HT	D NYTHZA GNA ZAOONE MOORE MOORE	9-14-16	н	90561,01
<u> </u>	N VN	¥N	Ay	VN	AN	VN	T AN	₩		,	/N CT9	845	+8/1		АМЕЛИ МОВИТИ МОТЕМА ИНТОВОМ Н		н	10-18071
· · · · · ·	N AX	VN.	d Av	i VN	AN	VN	i AR	VN	A	,	/N BSS	766	+6/1					
	N AN	VA.	41	N AN	¥N	AN	t AN	∀N		N	7N 25	826	+8/1	DII NOITAROININ HT	SUDHWEWHOUSE	91-11-6	H	10.18576
	N AN	V1	N AI	N YM	VN ∀N	VA.	4. AN	<b>V</b>		N	AN 885	926	+2/1	DIJ HOTTAROJANE HT	GIVDA2 CBOM	91-91-6	н	\$6991,01
	IN AN	41	N. Y	N 41	ı v	VI	N YN	Ay		N Y	VN 982	926	+8/t	эн бхроялтон ис	TRUEZ 3 NYFHTAX	<b>6-14-16</b>	н	10.18994
	IN: WI	, vi	N. A	N AI	ı v	i Ai	N AN	Al	i v	N .	AN SES	926	+8/1	OUL NOTTAROJANG HT	GNA MOJJU G YHTOMIT MOJJU M YZWAW	91-91-6	н	CESSTCI
			N V	N. Y			N VI	V		N .	AN OES	926	+2/1	тн бургояллон шс	тномль в издом вив Сетневие а издом	91+1E	н	TO. T8629
	N Ai	V	, v	7							AN PES	966	+8/t	DIJ NOTTAROJNIS HT	GERALDINE MAY SPONAUGLE SPOUAUGLE	97-97-6	н	£2981.01
friemritistA /	Inemiglisă N Aș	memmaliza 4 A:	M A A	M montralizaA A	Assignment As	InternativeA A	M InstructionA	fnemngitsA	InemrgittA				VrievoR +6/1	661161	102354]	ferred	8287	Leesse No.

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	w An	AN	AN	AN	AN	AN	¥N.	AN	AN	v	165 N	£66	+8/T	эн ехргозаттом ис	NANCY L PAINETTE AND 105EPH L PAULETTE	91-41-6	н	70,78462
		AN		VN.	σn)	AN	AN	Αν	<b>∀</b> N	; ¥	N 891	£\$6	+8/1	эті воловатіон ітс	STEVEN E RUNION AND JAN M	97476	н	19981.01
				VN.	AN.	WN	VN	AN	Ay		N TZT	<b>68</b> 6	+8/1	эті молтаяолчхэ нт	ROBERT W CERMAK AND AMRED SYNTLA CERTA	91-91-6	н	09981-01
V	N YN	Αν		AV.	44	VI.		W.				686	+B/T	эті колтаволуга нт	Sandra k nelson and rickey a nelson	91+1-6	н	70+78429
Ā	IN AN	AN				YN		wa.	YA.			E65	+8/1	эн буговатом ис	395039 GMA SITOU LYTTAG SITOU	97-91-6	н	10.78 <del>10</del> 8
4	N) AN	VN	▼N	ΨN		VII.			V)		N SOT	<b>8</b> 25	+8/1	эл копляолуз нт	GNA ESLYGE I BOYLES AND PARRELL L BOYLES	<b>6-7</b> ¢-7 <b>0</b>	н	£9921.01
	NV NN	AN						VA	<b>V</b>		N PST	686	+g/t	эті мопаласіята нт	REBECCA M PENNINGTON	91+1-6	н	10.78466
·	NN AN	<u>VN</u>		AN	AN	VN		VA	γ,			<b>*25</b>	+8/1	ти ехргояллом ис	LARALD GNA 331 ZAMOHT THĐƯỢH	91+1-6	н	16921-01
	AN AN	VN	YN		AN	YN		VN	4,		N 545	+Z6	+8/1	ти ехргояльтом исс	COMMIE SUE DOUGLAS ROWNIE SUE DOUGLAS	91-91-6	н	06921.01
•	AN AN	YN	YA	i An		Av			V				+9/1	эн буговатом не	мелие и севирк	91-91-6	H	\$258T.0T
	AN AN	YA		N		Ay		VA	<del>-</del>		N +65	EE5	+8/1	эн бирголим нт	гіяған я тизх	91-91-6	н	EZSBT.OT
	AN AN	Y)				41					N 009			эн ехргояатиом ис	INITY YETTOON CHOM	91-91-6	н	65671*01
· · · · · ·	AN AN	A	4 <u>vi</u>	N AN	i YN	41	N A3	VX.	V		N ÞEE	125	+9/1	эті мопаяолазі нт	SHEILA M KRULL AND IAMES W KRULL	91-91-6	н	72081°01
1		l	ul v		س ا،	ıl v	ul vi	I WA		VI 1	N LLT	EE5	+8/T				i 1	,cM etse.l

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	N YA	ΨN	AN	VN.	AN.	AK	YN.	<b>A</b> K	<b>v</b>		IN ES	850	*8/T	тн ехргоядайом исс	MELBA EILEEN HUDDLESTUN	91-91-6	н	10•17389
				VN.	VN	VIII	AN AN	¥N.	Y		N Zb_	025	+8/1	тн Ехрьоватіом ССС	MCCRAY HELEN MARIE AND DAVID E	97-97-6	н	Z8671*01
VI	N AN	AN	***	Vn							IN ZZS		+2/1	эт ехьгоя <b>чэ</b> нг	HT343908H MALLIW HT38ASU3 NIA3 CHA HT343303H	91-91-6	н	80+17+01
V.	N AN	VN.	AN	AN	YN	- YN	AN	Av	Al					эті коңаяолазі ні	NOSTAW GRAWGS GIANOR NOSTAW J ANAIG GNA	91-91-6	н	9857£*0£
	N AN	AM	AN AN	AN	AN.	VN		AN	Y.		OZT N		+ <b>2/</b> t	OLI NOITAROISMA HT	GMA REMEUT JERRAD TAG REMRUT SEINEG AMIT	97-41-6	н	72871*01
<del>_</del>	N YN	VN.	AN	YN.	AN	VN	VN.	VN VN	Y	v .	IN LEE	\$26	+8/1	тн Ехрговаттом LLC	INDA FORISE GEOAEB	91-91-6	н	\$6571°Q1
<b>v</b>	N AN	AN	AN AN	AK	AN	VN	VN	VN	¥1	1	N ZEZ	555	+8/t	тн Ехргоялайи ССС	GNA RINRUT M JURAHO RINRUT M 18238	81-41-8	н	ESETI-O1
	M AN	AN	: ∀N	AH	AN	VN	VN	VN VN	V	,	FN 65	026	+9/t	эн боловолов ис	BEVERLY KATHRYN GODDARD	91+1-6	Ħ	26\$2T•OT
	N AN	YN	I YN	AN	AN	Vh	\ 	VN	Ψ.	N	rn ss	026	+8/1					
	N ∀N	<b>₩</b>	4 VH	i YN	VN	V)	t Ar	I VA	, , , , , , , , , , , , , , , , , , ,	N .	N OTZ	TZ6	+8/5	SIJ HOTTAROTATA HT	RUDGINS SELLA FOR PAD OFFIE CHARLES	91+16	H	16671.01
	IN AH	44	N 49	v vn	AN	1 41	S. Ai	YA	•	N.	200 NY	1726	+8/\	н ехеловатном выс	DAVID LEE AND ANN F BAKER	91+14	н	02941001
	an an	i Ai	N 41	N VN	ı Vi	4 VI	N Ai	4 49		N .	720 NY	££6	+8/1	тн Биголлан исс	VAWAITE C HATHAWAY	91-98-5	H	\$9 <b>18</b> T.07
	7N VI		N 41	v v	4 4	4 4	N <del>V</del> I	N Y	, ,	N.	T28 NY	556	+8/1	ти Бреоватном исс	ОДАНОЯ СИА YOG I ATREBOR YOGS C	91-71-6	H	10.18 <del>100</del>
								,		N N	AN SOL	EE6	+9/1	эті боголадын	GNA REDUINGER AND IM REDUINGER W TREEDR	91-91-6	H	E99ET-0T
frommitteA ,	AN Ay	finemizitiA.	M America izză.	y snemnziszA	InemuliasA A.	İnemiziti?A	វាទភាពរូវនសិ	\$nemrajssA	memmalasA	InsmitalisA	9304			996597	109661	leared	egeT	,oM assal

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AN .	VA	N VN	VN:	AN	AN	VN.	<b>AN</b>	VI.	; v	338	126	+8/1	эті иоптаяолука нт	TRUBIZ M ANOSI	91-1-6	н	12691-01
			YN.	¥N	AN	40	YN.	Ay		609	255	+8/1	элі копаяолую нт	GNERYL ANN VYHNAL AND JAWHYY T XMARI	91->1-6	н	10,18400
AN	VN V	N TN			va								эті молтаяоляха нт	IERRY HOWELL	91-91-6	н	£9££₹•0₹
AN	VN	N VN	YN.	AN	AN	YN.	ΨN	₹ V			930	+8/1	эл юотаяолях нт	GOOW 330 AIVITS	91-51-6	н	99821,01
VN .	VN V	VN	AN	VN.	AN.	AN	VN		( V)		126	<b>+8/</b> ₹	элі коплаволуж нт	NILA VIRGINIA AND FREDERICK THDISRTE SHEDUS	91-91-6	н	\$9££1.01
AN	AN A	IN YH	ı AN	YN	AN	AN	VN	V1	41	32 <i>1</i>	126	+8/1	DIJ NOTTAROJAXB HT	WORD AMOMAR CROW	91-91-6	#	19671*01
VN.	AM A	n va	i AN	VN.	YN.	AN	VX	ν,	4 ¥7	87	GZS.	<b>48</b> /1	TH EXPLORATION LLC	DESORAH IREKE PIERCE SARRETT LEE PIERCE	91-91-6	н	09821.01
VN.	VN. Y	IN A	1 AN	٧N	AK	YN	VN_	Al	4 43	96	026	+8/1	TH EXPLORATION LLC	егер номено соснвеи	8-1418	н	ATETI*OI
AN	AN , , , ,	LN A	4 AN	AN	AN	YN.	¥k	Ai	41	23	850	<b>+e/t</b>					
VN.	AN ,	rai yi	4) AW	٧N	YN	AN	<b>V</b> A	VI.	47	SP_	025	+8/1	TH EXPLORATION LLC	MIZATA HEDGEPTH		н	EYEY1°G1
VN	VN .	YN YI	N: YN	AN	VN	AN	Y).	V1	N 47	27	026	<b>+8/</b> 1	SUN EXPLORATION LLC	DONNIE JASON HEDGEPETH ATS KAREN L KEDGEPETH	8t+t4	н	Z7871°01
٧N	٧N	AN AI	N. ∀N	AN	YN	. YN	Α)	YI	N YI	y +62	126	+8/1	SUL BOTTAROJAXS HT	WCK A AND CAROL A CROW	91+14	+	17571°01
VN.	∀N.	AN A	N AN	AN	YN.	- AN	AI	. vi	K AI	N 69	026	+8/T	эн юптаяолчаз нт	DELORES A WALLACE	91-91-6	н	69ELT-01
۷N	AN	An	N YN		Ay	4 VN	mentigen Ai	i memajisa i	Memoritasi A	301 N	125	+9/1	ТИ БУРЕОЙАТІОМ ЦЕС	DONALD PAUL CROW AND	91716	н	10,732 <b>8</b> 8
memmathsA memma	zA memozissA	freenraimA	žmennajatA	fmemers/szA	memnajasA	FriemrylizzA	I transming	frameshrig	- Instantology	1 4016	- Towa	Mayality	- eartel	201191	learef	947	Lacsa No.

VN.	VN VI	N. <b>V</b> N		AN		<b>∀</b> N	YN	VI.	. VI	EEE	676	7/8+	эті юоітаяолуз нт	M 23MA! GWA 21VAG A AGNI! RAVIS	91- <del>0</del> 1-6	н	80681*01
VN.	VN VI	, , , , , , , , , , , , , , , , , , ,	AN	AN	VN.	∀N	<b>∀</b> N	٧٠		1 055	676	+2/t	ол мопаволуж нт	Deborah s Kackley Robert a Kackley	97:+7:6	н	10°18307
100				VN		VN	YN			1 /26	626	+9/1	ээг иолтаяолууд нт	DIA VODURAM B WAIIM VODURAM 3 HT38ASLI3	91- <del>1</del> 1-6	н	10,18306
VAI.	AN A		VN	VN			YA			354	626	+8/1	ти ехреоватіом і.с.	MARY I, WOLFKILL AND HARRY H WOLFKILL	97-97-6	н	10,18305
AN	AN A		VN			Y		Y		TEE	626	+8/1	эн ехролагийн нт	EVA L FAWCETT	91476	н	10°18304
AM	AN A				YN.		VN						эн биронатион не	ELMA LOU LADNER	81-91-6	н	10.18347
AN	AN A	N YI	4 49	YA.			₹K	47		768	765	+9/1	эті моітаяолаха нт	DAWN C DOSKY AND GLENN P		н	6>E81+01
VN	<u> </u>	N A	d VN	VA	▼A	4 VA	VN	AI		365		+8/1	эн ехроратіон ІСС	gna trugie u Tēbrot Trugie g Biajra		н	20°18348
VN	<u> </u>	VI	N YN	A)	t As	d VA	¥A	Y		393	tes	+9/t	эн бүргөөгүү нт	DELORES & SOWERS & LEONARD B BOWERS	8-14-16	н	7889T+01
٧N	AN A	N VI	N YX	d vi	i 41	AI AI	Al	Y	N Y	N 192	126	7/8+	эн баголагон ис	VICKIE LYNN PAPE AND JOHN	97-91-5	н	1001688
AN	AN A	N A	N Ay	4 VI	4 41	N YI	V1	¥	N		126	<b>+9/</b> 1	он ехрголугант	T23W EEL WEST	97-91-6	н	91691-01
٧N	AN A	IN A	N YA	N Y	N A	N. VI	VI	×	N V	N LLZ	126	+8/1	ти ехрговалпои сіс	KEZZEľBING NYNCK C KEZZEľBING & CYBI E	97-97-6	н	E269T.0T
VN	AN	yN Y	N. AI	N Y	N Y	N Y	. v	( ×	N A	N ZZ	026	+9/1	DIJ NOITAROJ9X3 HT	эсотт виарсеу свімім Зневру ами свімім	91-91-6	н	Z2697.0T
memojisA memojisA AN	AM Institution A	AN Internative A	M Andriktalista Ai	MemmakraA A	N Stremestra.	H treemratura N A	f fremmitteA A	fnomrgitzA f		S43 M	921 Book	+8/t	901100	101101	ferref	s3eT	,olf azsal

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	N AN	ΨN	AN	VN.	AN		AN	VN VN	V	Vi	sz v	026	+8/1	эн ехмовалюи есс	GNA RI NOZAM A MALLIM NOZAM NIBOR	91-51-6	н	10,19452
	30	VII.		AM	AN	VN	, ,	∀N	Vi	i	N SZZ	176	+8/1	CLI NOTE AND SEE	ввелъч к лоно	91-91-6	н	££\$97.01
	***				uu.	YN	VI)	VI	, and the second	A	N LSZ	176	+8/1	тн Ехрговатіои ГСС	ROGER ALLAN AND CYNTHIA L	91-91-6	н	BC#9T.0I
•	N AN	VN		VA	***			YN			N PEZ	176	+8/1	ЭТІ БЕБГОВАТІОН ГГС	YBROD 32NOJ YRAM	91-+1-6	н	\$2 <del>9</del> 91+01
	N <u>∀N</u>		() VN	VN	VA.	YN	V.				N 992	1725	+8/1	эті копаяолузі нт	TRUBIS YAN ARABRAB	91-01-6	н	\$289T.0T
,	n An	<u></u> ∀N		VN	VN ∀N				,		N 9SZ	675	+8/1	эн бараан ис	LINDA ELAINE AND RICHARD LEROY LITTELL	91+1-6	н	£49\$1.01
	N VN	VA.	N . Yh	VN	AN			,						тн ехегоялятом стс	JUDY DELORIS SIBURT	91-91-6	н	\$769£*01
<u> </u>	N AN	V)	N AV	i VN	₹ VA	V)	VI YN	Y	<b>∀</b> 1		N 599	626	+9/1	эті есилемотиз ні	Carolyn sue franklin and Raymond eugene franklin	91-+1-6	н	02991-01
	'N ∀N	A)	N A)	i VN	▼N				4		S78 N	126	+9/1	ти ехеговалтон ис	J TESADSAM GNA ISAE EEMAI TRUSIS	87-77-6	н	69991.01
	/N VN	AI	N Y	AV AV	I ∀N	4	N Y	4)			N SVS	126	+8/t	DIJ NOTTAROJ9X3 HT	HTIMR LYNN SMIREHTAN	91-01-6	н	SSZET-OT
	IN AV	Ų VI	N ¥	N AV	d VA			4 VI			N 489	626	+9/1	ээл могтаяслахэ нт	F CHOM TYCK F CHOM IB YND AIBEINIY	<b>8-7</b> 0+70	н	TSS9T.OT
	N A	) A	N Y	N YI	4 41	N Y	N Y				360 N	125	+8/1	эл молтаяолчза нт	CHARLES LEROY LEACH AND HOASI & AHTRAM	91+1E	н	10,19220
	IN Y	, Y	IN Y	N AI	N AI	N V	N A	N Y	N Y	N	N 61	850	+8/1	эн болаяолфа нт	ГРИНА М НОВОКЕИ КРІЖИЛИ І НОВОКЕИ	91-91-6	н	10,18208
memmilizak	An fremmajista Ai	memmylasA A	N Inemalia	N SnemralizaA A:	A STREET, STRE	h hieringlesA A	M Antoninglish A	SnemnstraA A	n memmalitaA N A	M frommylasA A	N 956	959 900g	+8/T AyeAoy	986391	losse)	lans9	द्धश	, chi essal

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	N AN	AN	. AN	YN.	. AN	VNVN	<b>∀</b> N	VN	VN	,	N 59	076	+9/1	ЭЭЭ МОПТАЯОЛАЗЭ НТ	DEBORAH KAY COOLEY AND ROBERT T BECK	91-91-6	н	10+16186
	N. WI	VIN	VA.	AN	AN	₩.	<b>∀</b> N	↓ ∀n	¥ V		n cez	126	+9/1	эн биговатон ЦС	Yaud dna Rango H andlara Хаигон изіле	9.1÷1.6	н	90191,01
	N VI			VII.	AN	YN		VA.	V)		'N 161	126	+8/1	эн бираядай нт	Кутнили у мнібкел	91-91-6	н	10-19tot
				VN	AN			-	YA		W T9	026	+9/1	DIJ NOTTAROJAKS HT	WILLIAM C EDGAR AND RADGE E EDGAR	97-97-6	н	10+19103
	N VN						, VI		Y		IN ZL	926	+8/1	TH EXPLORATION LLC	HTAIH M STISHASI	91-91-6	н	5099Te0T
¥	N VN	i VN	( Ya											TH EXPLORATION LLC	EDNARI I FRANCIS	91-91-6	н	10,16408
<b></b>	N AN	4h	VI	₹N		AV					78e N	837	+8/t	OUT NOTTAROJAXS HT	JANICE F BROOKOVER	91+16	н	10°16407
	N VN	i vi	49	d AH	VN ∀N	YA					N bL	650	+0/5	эті колтаястазі нт	STNASKOZ M NAOL	\$-J4-16	н	\$518T+01
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	N VN	1 AP	i Ai	N YN			i vi				N 695	828	+B/T	эті моцаяралаз ні	n gianog dna j norak? Ræzian	91+14	н	10+18252
<u> </u>	N YN						4 4)				725 ZZS	826	+8/1	эті мошаяалага кт	Brzera iran tomaszczyk Wid Lawysence m Tomaszczyk	9T+7F	н	15291.01
	IN AP	K A1									N ST2	976	+8/1	эті мошаларант	BRENDA KAY COFFIELD AND WILLIAM E COFFIELD	91+16	н	10+18250
	IN A)	N AI	ν	N Ai	N VA	( vi					(N 975	87.6	+8/1	эті юбітаяаладі кт	Price mariene persinger	91+14	н	10°16438
,	IN AI	N VI	N ¥	N YI	N A)	N AI	N Ai	A)	i Ai	N	/N 9EZ	17.6	+8/1	ти ехрговатном гтс	BRUCE LYNN IOHNSON AND	91+16	н	10,78458
meantital	Ai fineministra	A Americaliza	M Amenglas A	hieminghae A	Memorial Ai	InemigliziA A	Memcalita A	As freemonitaria	i snemmissA		N OS	350 goog	+9/I AyeAcy	\$65361	101367	Parcel	Sel .	,oh essel

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	i vn	AN	VN.	VN.	AN	AN.	AN	YN.	<b>Y</b> A	VN	291	\$7.6	+8/1	эн ехеоватюн ис	юки <b>м</b> наибнт ів аир Сневті, а наибнт	91-91-6	н	10071.01
<u> </u>	Va						AN	¥N.	AN	YN	1 261	176	+8/1	DIJ NOSTAROSTICE	MILLIAM F MCDONALD AND GJANOQOM YZHRIREY	91-91-6	н	£2451.01
YI	( AN	<u>₩</u>	AN	YN		AN								DII NOTTAROJ4X3 HT	\$2907 1 ALL36	97-97-6	н	02 <del>9</del> 5T+07
Y	e vn	AN	AN	ΨN	AN AN		AK	YN.	VN		385	126	+8/1	TH EXPLOSATION LLC	диа тванияав аяабяав Тяанияав яэттач	91-91-6	н	S69ST-OT
Ā	d AN	<b>V</b> M	YN.	YN	٧N	AN	AN	AH	AN	VN VN	222	126	+8/1	элэ мопалюлчаз нт	NYNCL & SAS & SISPHEN M FYE	91-91-6	н	10.12488
	4N	YN	AN	AN	VR.	AN .	AN	¥N	AN	٧٨	336	126	+8/1					
	4: YN	AN	. Av	AN	۸N	AM	YN	YN.	YN YN	₩.	575	126	+8/1	TH EXPLORATION LLC	ASMIAN PALMER	81-91-6	н	10-12696
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#### ASSIGNMENT AND CONVEYANCE

This Assignment and Conveyance (this "Assignment") is from SWN PRODUCTION COMPANY, LLC, a Delaware corporation ("Assignor"), to TH Exploration, LLC, a Texas limited liability company ("Assignee"), and is executed on August 22, 2016 (the "Effective Date"). Assignor and Assignee may be referred to herein collectively as the "Parties," or individually as a "Party." Capitalized terms used herein but not otherwise defined herein (including in Section 3.7) shall have the meanings given such terms in that certain Acreage Trade Agreement between the Assignor and the Assignee dated June 19, 2016 (the "Acreage Trade Agreement").

# ARTICLE 1 ASSIGNMENT OF ASSETS

Section 1.1 <u>Assignment.</u> For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor hereby GRANTS, BARGAINS, ASSIGNS, CONVEYS AND TRANSFERS unto Assignee all of Assignor's right, title and interest in and to (i) the oil and gas leases described in more detail on <u>Exhibit A</u> attached hereto (the "Leases") INSOFAR AND ONLY INSOFAR as they cover the Target Formations and INSOFAR AND ONLY INSOFAR as they cover those lands described on <u>Exhibit A</u> (the "Leasehold Rights") and (ii) any surface use agreements that relate to such Leasehold Rights (collectively with the Leasehold Rights, the "Conveyed Assets"). Assignor does hereby reserve unto itself the right and subsurface easement to drill through the Leasehold Rights to access the those depths and formations in the Leases other than the Target Formations and (y) to shoot seismic, sonic, or other energy or waves through the Leasehold Rights and to receive, record and evaluate such energy or waves, including those reflected from or in any way pertaining to the reserved depths, and to utilize any and all other exploration technologies that image the subsurface of the leasehold including the reserved depths and to receive, record and evaluate all images resulting therefrom.

TO HAVE AND TO HOLD the Conveyed Assets, together with all and singular the rights, privileges, contracts and appurtenances, in any way appertaining or belonging thereto, unto Assignee, its successors and assigns, forever, subject, to the terms and conditions of this Assignment.

Section 1.4 <u>Assignment Subject to Acreage Trade Agreement</u>. This Assignment is made in accordance with and is subject to the terms, covenants and conditions contained in that certain Acreage Trade Agreement. In the event of a conflict between the provisions of the Acreage Trade Agreement and this Assignment, the provisions of the Acreage Trade Agreement shall control. The execution and delivery of this Assignment by Assignor, and the execution and acceptance of this Assignment by Assignee, shall not operate to release or impair any surviving rights or obligations of either Party with respect to the other under the Acreage Trade Agreement.

## ARTICLE 2 SPECIAL WARRANTY OF TITLE AND DISCLAIMERS

Section 2.1 <u>Special Warranty of Title.</u> Assignor hereby agrees to warrant and defend Defensible Title to the Leases unto Assignee, its successors and assigns, against every Person whomsoever lawfully claiming or to claim the same or any part thereof by, through or under Assignor or any of its Affiliates, but not otherwise.

#### Section 2.2 Disclaimers of Warranties and Representations.

(a) EXCEPT AS EXPRESSLY REPRESENTED OTHERWISE IN SECTION VI OF THE ACREAGE TRADE AGREEMENT OR THIS ASSIGNMENT, ASSIGNOR MAKES NO, AND HEREBY EXPRESSLY DISCLAIMS, ANY REPRESENTATION OR WARRANTY, EXPRESS, IMPLIED OR STATUTORY, INCLUDING AS TO (I) TITLE TO THE LEASEHOLD RIGHTS, (II) THE CONTENTS, CHARACTER OR NATURE OF ANY DESCRIPTIVE MEMORANDUM, OR ANY REPORT OF ANY OF ITS PETROLEUM

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STATE OF WEST VIRGINIA § COUNTY OF MARSHALL

#### ASSIGNMENT AND CONVEYANCE

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

#### WITNESSETH:

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

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

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

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

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

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

#### PARTIAL ASSIGNMENT OF OIL AND GAS LEASES

WHEREAS, Assignor desires to assign all of Assignor's right, title and interest in and to those Oil and Gas Lease(s) as same may have been previously or will in the future be modified, extended, or amended (hereinafter, "Lease" or "Leases"), covering certain tracts of land (hereinafter, "Lands") located in Marshall County, West Virginia; such Leases and Lands covered thereby being more particularly described on Exhibit "A" attached hereto and made a part hereof insofar and only insofar as such Leases cover the Target Formations (as defined below).

NOW, THEREFORE, for and in consideration of Ten AND NO/100 DOLLARS (\$10.00) and other valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignor does hereby GRANT, BARGAIN, ASSIGN, TRANSFER, AND CONVEY unto Assignee the following "Assigned Rights":

- (a) All of Assignor's right, title, and interest in and to those Leases set forth on <u>Exhibit A</u> attached hereto INSOFAR AND ONLY INSOFAR as to the particular Target Formation(s) (defined below) described and delineated on <u>Exhibit A</u> for each Lease:
  - i. "Target Formation(s)" means, with respect to each Lease, two hundred feet (200') above the top and two hundred feet (200') below the base of the Marcellus Formation or the Utica Formation or both, as specified for each Lease on Exhibit A. For the purposes of this Assignment, the Marcellus Formation shall be defined as the formation commonly known as the Marcellus Shale Formation, with the top of the Marcellus Shale Formation defined as the correlative stratigraphic equivalent to that point found at 6517 feet (6517') measured depth on the Halliburton Simms U-5H Composite DLL\_DEN\_NEU Log dated June 14, 2014 (the "Log")

WW-6A (9-13)

API NO, 47- 051 OPERATOR WELL NO. see attached list
Well Pad Name: Kelth Stern

# STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the filing date of permit application. Date of Notice: 2/24/2021 Date Permit Application Filed: 2/25/2021 Notice of: PERMIT FOR ANY ☐ CERTIFICATE OF APPROVAL FOR THE WELL WORK CONSTRUCTION OF AN IMPOUNDMENT OR PIT Delivery method pursuant to West Virginia Code § 22-6A-10(b) REGISTERED PERSONAL METHOD OF DELIVERY THAT REQUIRES A SERVICE MAII. RECEIPT OR SIGNATURE CONFIRMATION Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule. ☑ Application Notice ☑ WSSP Notice ☑ E&S Plan Notice ☑ Well Plat Notice is hereby provided to: ☑ SURFACE OWNER(s) IZ COAL OWNER OR LESSEE Name: TH Exploration, LLC (Access Road and Well Pad) Name: CONSOL Energy, Inc. Attn: Casey Saunders Address: 380 Southpointe Boulevard, Plaza II, Sulte 200 Address: 1000 CONSOL Energy Drive Canonsburg, PA 15318 Canonsburg, PA 15317 Name: COAL OPERATOR Address: Name: Address: ☐ SURFACE OWNER(s) (Road and/or Other Disturbance) Name: ☑ SURFACE OWNER OF WATER WELL Address: AND/OR WATER PURVEYOR(s) Name: \*See attached list Name: Address: Address: OPERATOR OF ANY NATURAL GAS STORAGE FIELD ☐ SURFACE OWNER(s) (Impoundments or Pits) Name: Name: Name: Address: Address: \*Please attach additional forms if necessary

API NO. 47- 051

OPERATOR WELL NO. see allached list

Well Pad Name: Keith Stern

#### Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

#### This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting <a href="https://www.dep.wv.gov/oil-and-gas/pages/default.aspx">www.dep.wv.gov/oil-and-gas/pages/default.aspx</a>.

#### **Well Location Restrictions**

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

API NO. 47-051

OPERATOR WELL NO. see attached list

Well Pad Name: Kelth Stern

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

#### Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

#### Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

#### Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggreed under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

#### Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57<sup>th</sup> St. SE
Charleston, WV 25304
(304) 926-0450

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.

API NO. 47-051

OPERATOR WELL NO. see attached list

Well Pad Name: Keith Stern

#### Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have THIRTY (30) DAYS after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

#### **Comment Requirements**

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <a href="http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx">http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx</a> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

#### **Permit Denial or Condition**

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

WW-6A (8-13)

API NO. 47-051 OPERATOR WELL NO. see attached list Well Pad Name: Keith Stern

Notice is	hereby	given	by:
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Well Operator: Tug Hill Operating, LLC Telephone: 724-749-8388 Email: amiller@tug-hillop.com Facsimile: 724-338-2030

Address: 380 Southpointe Boulevard, Plaza II, Suite 200

Canonsburg, PA 15317

#### Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

Commonwealth of Pennsylvania - Notary Seal Susanne Deliere, Notary Public **Washington County** My commission expires January 15, 2025 Commission number 1382332 Member, Pennsylvania Association of Notaries

Subscribed and sworn before me this Notary Public

My Commission Expires

# WW-6A Notice of Application Well Number Attachment

Keith Stern N-1HM

Keith Stern N-2HM

Keith Stern N-3HM

Keith Stern N-4HM

Keith Stern N-5HM

Keith Stern N-6HM (47-051-02098)

Keith Stern N-7HM (47-051-02101)

Keith Stern S-8HM (47-051-02103)

Keith Stern S-9HM (47-051-02102)

Keith Stern S-10HM (47-051-02105)

Keith Stern S-12HM (47-051-02104)

#### **Exhibit WW-6A**

Tug Hill Operating, LLC 380 Southpointe Blvd, Suite 200 Cannonsburg, PA 15137

### Residences within Two-Thousand Feet (2,000')

Well:

KEITH STERN N - 7HM

District:

Meade (House #'s 1-5)

State:

WV

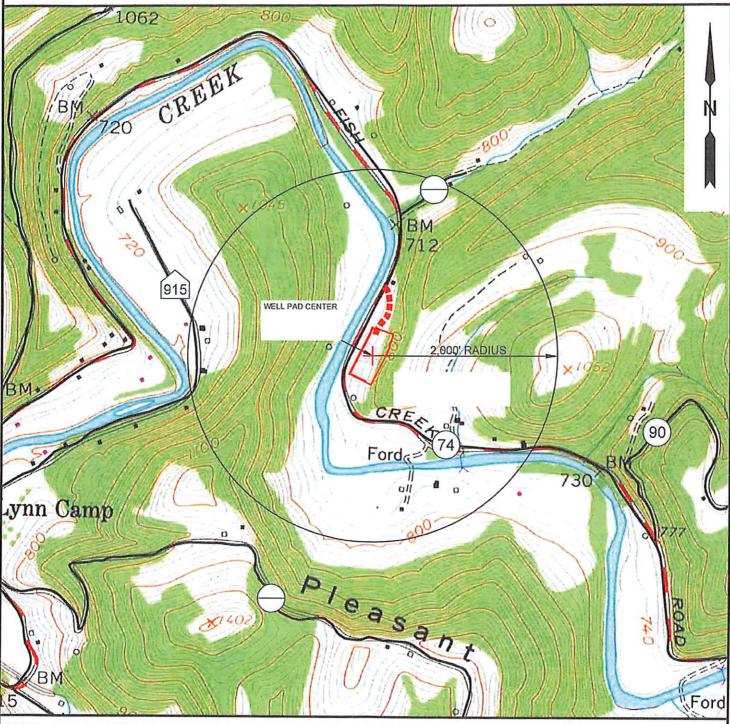
There are five (5) residences, no businesses, no churches, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

House 1 TM 14 Pcl. 20 William K. Stern, Et Ux Phone: 304-843-1478 (Per Address – Keith, Betty & Ginger Sue Stern) Physical Address: 14912 Fish Creek Rd. Glen Easton, WV 26039	House 2 TM 14 Pcl. 20.1 William K. Stern, Et Ux Phone: 304-843-1478 (Per Address – Keith, Betty & Ginger Sue Stern) Physical Address: 15056 Fish Creek Rd. Glen Easton, WV 26039	House 3 TM 14 Pcl. 21 Eleanore M. Fox Est. Phone: 304-845-6016 (Per Tax Address – Thomas Fox) Physical Address: None Found – Appears to be an old home.
Tax Address: Same	Tax Address: 14912 Fish Creek Rd. Glen Easton, WV 26039	Tax Address: 100 Lynn Camp Ln. Glen Easton, WV 26039-9707
House 4 TM 14 Pcl. 27 Patrick J. Shellhase Phone: 304-845-0742; 304-810-0258 Physical Address: 593 Crow Dr. Glen Easton, WV 26039 Tax Address: 2300 7 <sup>th</sup> St. Moundsville, WV 26041	House 5 TM 14 Pcl. 25 Patricia A. Dugas Phone: None Found Physical Address: 681 Crow Dr. Glen Easton, WV 26039 Tax Address: Same	



# PROPOSED KEITH STERN N - 7HM

SUPPLEMENT PG. 1B

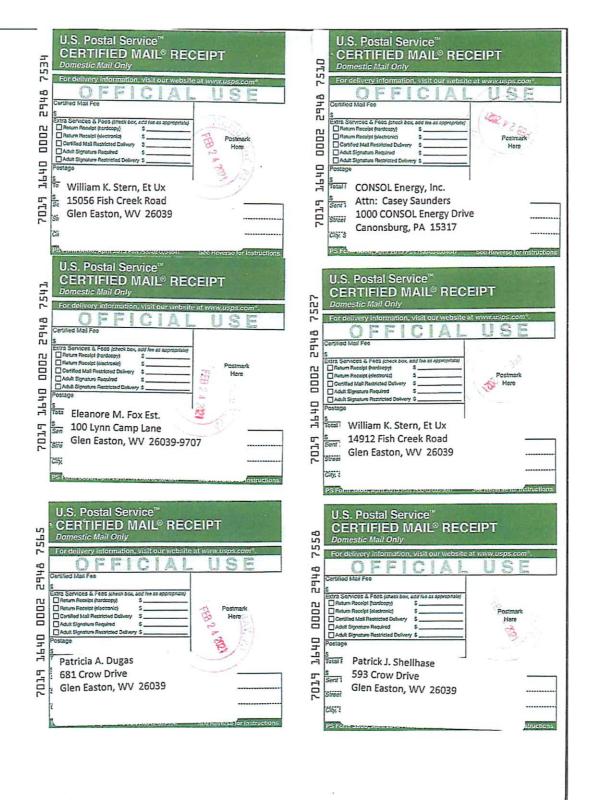


NOTE: THERE APPEARS TO BE FIVE (5) POSSIBLE WATER SOURCES WITHIN 2,000'.



TOPO S	ECTION:	OPER	ATOR:		
GLEN EA	STON 7.5'	PREPARED FOR: TUG HILL OPERATING, LLC			
COUNTY	DISTRICT	380 SOUTHPO	INTE BLVD		
MARSHALL	MEADE	SUITE 200 CANONSBURG, PA 15317			
DRAWN BY	JOB NO.	DATE	SCALE		
K.G.M.	8811	07/31/2018	1" - 1000'		





LH



June 3, 2022

WADE STANSBERRY
WV DEP OFFICE OF OIL & GAS
601 57<sup>TH</sup> STREET SE
CHARLESTON, WV 25304-2345

Exp 2 Cks=\$5 k 1-055804-3/24/22 \$2500 2-055805-3/24/22

**VIA USPS** 

RE: Keith Stern N-7HM API # 47-051-02101 (H6A Permit Modification)

Meade District, Marshall County, WV

Dear Wade:

Tug Hill Operating, LLC is submitting a permit modification for its permitted well, Keith Stern N-7HM to add 507.41' to the lateral length. Therefore, enclosed please find the following:

- Updated WW-6A with certified receipts (change in freshwater/coal string required new notifications.
- Modified WW-6B with changes highlighted in yellow.
- Updated well plat.
- Updated WW-6A1 information.

If you have any questions or need any additional information, please do not hesitate to call me on (304) 376-0111. Thank you for attention to this matter, it is greatly appreciated.

Sincerely,

AMY MORRIS

PERMIT SPECIALIST-APPALACHIA REGION

TUG HILL OPERATING, LLC

anythous

Enclosures

# **Expedited Permit Modification**

Received date: 6/4/22	Expedited Final Date: 6-24-22
Operator: Tug Hill	Well Name: N - 7HM
Rad Nama: Vait Storal	ADI: 51-07101

	MODIFIED PERMIT	ORIGINAL PERMIT
TVD	K 6417	6414
TMD -	* 14479	14187
HL ,	£6701.12	6424.73
FW	<u></u>	70', 460'
SW	_	1740
COAL	307,400	31.9, 454
CONDUCTOR	120	120
FRESHWATER	× 490.	560
INTERMEDIATE 1	2229	2200
INTERMEDIATE 2	•	
PRODUCTION	+ 14479	14187

Notes: A Crow -	A 9-14-24 1 Crow
B Crow -	B 9-14-24 Crow
(Stern -	C 9-14-20 Sterns
D Thomas-	D 9-15-16 Thomas
E Ynompor	E 9-15-19 Thomas
F Robbor	F 9-14-15 Dobbs
E Stone -	6 9-14-17 Stone Mill
H Goddard -	H 9-14-40 Goddard
I Silbaugh	I 9-11-12 S. Marsh
I Clark 9-11-10	

WW-6B (04/15)

## Modification

API NO. 47-051	- 02101	
OPERATOR WE	ELL NO.	Keith Stern N-7HM
Well Pad Nam	e: Keith S	Stern

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

1) Well Operator:	Tug Hill Op	perating, L	_C	4945	10851	Marshall	Meade	Glen Easton 7.5'
				Ope	rator ID	County	District	Quadrangle
2) Operator's Well	Number: K	eith Stern N	I-7HM		Well Pad	Name: Keith	Stern	
3) Farm Name/Sur	face Owner:	TH Exploi	ation,	LLC	Public Road	d Access: Fish	Creek Roa	d (County Route 74)
4) Elevation, curre	nt ground:	747'	El	evatio	ı, proposed p	oost-constructio	on: 747'	
5) Well Type (a)	Gas x		Oil		Unde	rground Storag	e	
Ot	her							
(b)	)If Gas Sh	allow <u>x</u>	3		_ Deep			
	Но	rizontal X			_	Ju	10/16/2	020
6) Existing Pad: Y					- November -			
7) Proposed Targe:  Marcellus is the target formation	t Formation(	s), Depth(s)	, Antic	ipated	Thickness at pressure of 3800 psl.	nd Expected Pr	essure(s):	
\ <u></u>		W. 5000000						
8) Proposed Total		_	•					
9) Formation at To	otal Vertical I		ondag	a 				
10) Proposed Tota	l Measured I	Depth: 14	479'					
11) Proposed Hori	zontal Leg L	ength: 6,7	01.12					
12) Approximate I	Fresh Water	Strata Deptl	is:	70';	106'			
13) Method to Det	ermine Fresh	n Water Dep	oths:	se shallow offs	et wells to determine deepes	t freshwater, or determine using pr	e-drill tests, testing white o	triting or petrophysical evaluation of resistivity.
14) Approximate S	Saltwater De	pths: 1,740	)'					
15) Approximate (	Coal Seam D	epths: Sev	vickley	Coal	- 307' and F	ittsburgh Coa	I - 400'	
16) Approximate I								
17) Does Proposed								
directly overlying					Yes	No	X	
(a) If Yes, provide	le Mine Info	: Name:						
(a) 11 103, provid	.c mile mile	Depth:						
		Seam:						
		Owner:	9-11-					

API NO. 47- 051 - 02101

OPERATOR WELL NO. Keith Stern N-7HM

Well Pad Name: Koith Stern

18)

#### CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120'	259ft^3(CTS)
Fresh Water	13 3/8"	NEW	J55	54.5#	490'	490'	690ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	490'	490'	690ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,229'	2,229'	722ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	14,479'	14,479'	3710ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#	6,976'		
Liners							

m 10/16/2020

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	13 3/8"	17.5"	.33	2,740	2,192	SEE #24	1.2
Coal	13 3/8"	17.5"	.33	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.352	3,520	2,816	SEE #24	1.19
Production	5 1/2"	8 7/8"_8 3/4"	.361	12,640	10,112	SEE #24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners							

#### **PACKERS**

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

WW-6B
(10/14)

API NO. 47- 051 - 02101

OPERATOR WELL NO. Keith Stern N-7HM

Well Pad Name: Keith Stern

10/16/2020

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

Drill through the Marcellus tagging less than 100' from the top of the Onondaga to get depths and log data. Plug back to proposed kick off point. Drill the horizontal section to planned and proposed TD. Run casing and cement to surface. Run Bond Log from app. 60 deg to surface. Make clean out run and stimulate.

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

Well to completed with approximately 16,060,000 lb. proppant and 248,299 barrels of water. Max rate = 80bpm; max psi = 9,000#.

- 21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 10.35 acres
- 22) Area to be disturbed for well pad only, less access road (acres): 4.32 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 other joint. Production casing will have one centralizer every other joint in lateral, one centralizer every joint through curve, one centralizer every other joint to surface.

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

Sfc - Premium NE-1 + 2% CaCl; Int1 - Premium NE-1 + 1.5% CaCL + Flake; Int2 - Lead: Premium NE-1 + 5% BA-90 + .85% R-3 + 3% KCl + .75 gals/100sk FP-13L + 1% MPA-170 Tail: Premium NE-1 + .1% R-3 + 5% KCl + 1% CD-32 + .4% FL-52 + .2% ASA-301 + .6% Sodium Metasilicate; Kick Plug - Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L; Prod - Lead: 50:50 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .75 gal/100sk FP-13L Tail: 25:75 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .375 gal/100sk FP-13L

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.

<sup>\*</sup>Note: Attach additional sheets as needed.



Stansberry, Wade A <wade.a.stansberry@wv.gov>

#### Expedited Modification Horizontal H6A Well Work Permits API: (47-051-02098 & 47-051-02101)

Stansberry, Wade A <wade.a.stansberry@wv.gov>

Tue, Jun 14, 2022 at 9:54 AM

To: Amy Morris <amorris@tug-hillop.com>, Strader C Gower <strader.c.gower@wv.gov>, "Gayne J. Knitowski" <gayne.j.knitowski@wv.gov>, Eric Buzzard <ebuzzard@marshallcountywv.org>

I have attached a copy of the newly issued well permit numbers:

47-051-02098 - KEITH STERN N-6HM 47-051-02101 - KEITH STERN N-7HM

These will serve as your copy.

Thank you,

Wade A. Stansberry

**Environmental Resource Specialist 3** 

**West Virginia Department of Environmental Protection** 

Office of Oil & Gas

601 57th St. SE

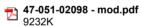
Charleston, WV 25304

(304) 926-0499 ext. 41115

(304) 926-0452 fax

Wade.A.Stansberry@wv.gov

#### 2 attachments



47-051-02101 - mod.pdf 8956K