

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

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Office of Oil and Gas

SEP 11 2018

WV Department of
Environmental Protection

API 47 - 051 - 01922 County Marshall District Franklin
Quad Powhatan Point 7.5' Pad Name Yoder Field/Pool Name _____
Farm name Nathan D. Yoder, et al Well Number Yoder E-6HM
Operator (as registered with the OOG) Tug Hill Operating, LLC
Address 380 Southpointe Boulevard, Plaza II, Suite 200 City Canonsburg State PA Zip 15317

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,403,403.78 Easting 513,703.89
Landing Point of Curve Northing 4,403,617.22 Easting 514,204.56
Bottom Hole Northing 4,402,313.60 Easting 514,959.83

Elevation (ft) 1,084' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine

Mud Type(s) and Additive(s)
SOBM; Base oil, osmotic inhibitor, weighting agent, viscosifier, emulsifier, hardness buffer, fluid loss additive, LCM, shale inhibitor, de-foamer, soaping agent, coagulant, flocculant; Specific additives per WSSP and Permit.

Date permit issued 7/17/2017 Date drilling commenced 8/1/2017 Date drilling ceased 2/3/2018
Date completion activities began 3/8/2018 Date completion activities ceased 4/19/2018
Verbal plugging (Y/N) n/a Date permission granted n/a Granted by n/a

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 70' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1450' Void(s) encountered (Y/N) depths N
Coal depth(s) ft Sewickley Coal - 589'; Pittsburgh Coal - 679' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed
Justin Tubate 10/23/18

Reviewed by: _____

API 47-051 - 01922 Farm name Nathan D. Yoder, et al Well number Yoder E-6HM

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	36	30	120	NEW	94.5#	N/A	YES
Surface	17 1/2	13 3/8	755	NEW	54.5#	N/A	YES
Coal	17 1/2	13 3/8	755	NEW	54.5#	N/A	YES
Intermediate 1	12 1/4	9 5/8	2619	NEW	36#	N/A	YES
Intermediate 2							
Intermediate 3							
Production	8 3/4	5 1/2	12,648	NEW	20#	N/A	YES
Tubing		2 3/8	6796	NEW	4.7#	N/A	
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	A	200	15.6	1.19	238	0	8
Surface	A	890	15.6	1.19	1059	0	8
Coal	A	890	15.6	1.19	1059	0	8
Intermediate 1	A	920	15.6	1.19	1095	0	8
Intermediate 2							
Intermediate 3							
Production	A	3110	14.5	1.17	3638	0	8
Tubing							

Drillers TD (ft) 12,669 Loggers TD (ft) _____
 Deepest formation penetrated Marcellus Plug back to (ft) n/a
 Plug back procedure n/a

Kick off depth (ft) 5809

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING 3 centralizers on surface casing at equal distance.
Intermediate - 1 centralizer every other joint
Production - one centralizer every other joint in lateral, one centralizer every joint through curve, one centralizer every other joint to surface.

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

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API 47- 051 - 01922 Farm name Nathan D. Yoder, et al Well number Yoder E-6HM

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	see attached				

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
	attached							

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Please insert additional pages as applicable.

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**Yoder E-6HM
Perforation Record**

Stage	Date Perforated	Bottom Perf (ft)	Top Perf (ft)	Number of Perfs	Formation
1	3/9/2018	12,552	12,505	2	Marcellus
2	3/11/2018	12,380	12,231	48	Marcellus
3	3/11/2018	12,204	12,056	48	Marcellus
4	3/13/2018	12,029	11,881	48	Marcellus
5	3/13/2018	11,854	11,706	48	Marcellus
6	3/14/2018	11,680	11,531	48	Marcellus
7	3/16/2018	11,505	11,356	48	Marcellus
8	3/16/2018	11,340	1,181	48	Marcellus
9	3/17/2018	11,155	11,006	48	Marcellus
10	3/18/2018	10,980	10,831	48	Marcellus
11	3/19/2018	10,805	10,656	48	Marcellus
12	3/19/2018	10,630	10,481	48	Marcellus
13	3/20/2018	10,455	10,306	48	Marcellus
14	3/20/2018	10,280	10,131	48	Marcellus
15	3/21/2018	10,105	9,956	48	Marcellus
16	3/21/2018	9,930	9,781	48	Marcellus
17	3/21/2018	9,752	9,606	48	Marcellus
18	3/22/2018	9,577	9,431	48	Marcellus
19	3/23/2018	9,405	9,256	48	Marcellus
20	3/23/2018	9,230	9,081	48	Marcellus
21	3/24/2018	9,055	8,906	48	Marcellus
22	3/25/2018	8,880	8,731	48	Marcellus
23	3/25/2018	8,705	8,556	48	Marcellus
24	3/25/2018	8,530	8,381	48	Marcellus
25	3/26/2018	8,355	8,206	48	Marcellus
26	3/26/2018	8,180	8,031	48	Marcellus
27	3/27/2018	8,005	7,856	48	Marcellus
28	3/28/2018	7,830	7,681	48	Marcellus
29	3/28/2018	7,655	7,506	48	Marcellus
30	3/29/2018	7,479	7,331	48	Marcellus
31	3/29/2018	7,302	7,156	48	Marcellus

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**Yoder E-6HM
Stimulation Summary**

Stage	Avg. Pump Rate (BPM)	Avg. Treating Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Proppant Total (lbs)	Water Total (bbls)	N2 Volume (scf)
1	86.2	6,995	5,143	3,048	354,410	7,994	0
2	88	6,944	5,468	3,982	341,893	7,703	0
3	87.1	7,466	4,824	4,069	345,300	8,126	0
4	85.5	7,364	5,137	3,023	452,165	8,643	0
5	89.1	6,979	4,946	4,691	453,130	8,561	0
6	86.9	6,947	5,385	4,193	462,360	8,629	0
7	88.3	6,953	4,995	3,920	449,860	8,595	0
8	89.4	7,122	5,537	4,143	446,360	8,532	0
9	89.5	7,011	5,485	4,226	449,660	8,415	0
10	86.9	6,938	4,771	4,086	450,673	8,326	0
11	89.6	6,973	5,047	3,643	448,600	8,392	0
12	89.3	6,889	4,777	3,344	443,660	8,293	0
13	89	6,686	6,070	4,190	443,460	8,101	0
14	88	6,998	5,215	4,751	429,330	8,043	0
15	88.4	6,838	4,975	4,807	446,080	8,326	0
16	88.5	6,806	4,861	4,429	446,340	8,277	0
17	89.2	6,658	5,206	4,852	439,480	8,460	0
18	89.5	6,828	5,130	4,161	440,700	8,256	0
19	89.7	6,634	4,769	4,283	437,060	8,172	0
20	89.8	6,535	4,882	4,147	452,900	8,541	0
21	89.6	6,518	4,694	4,427	459,700	8,292	0
22	89.5	6,372	4,940	4,435	460,990	8,521	0
23	89.8	6,593	4,597	4,474	457,180	8,323	0
24	89.6	6,312	4,572	4,766	466,160	8,668	0
25	89.7	6,247	4,728	4,473	457,980	8,290	0
26	86.1	6,328	5,410	4,293	433,800	10,608	0
27	89.7	6,159	4,485	4,712	454,930	8,361	0
28	89.1	6,185	5,227	4,202	460,490	8,326	0
29	89.6	6,099	5,228	4,458	460,380	8,438	0
30	89.9	6,068	5,144	4,018	459,080	8,534	0
31	89.9	5,990	4,745	3,307	459,670	8,328	0

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**Yoder E-6HM
Formations/Lithology Information**

FORMATION	TOP TVD	BASE TVD	TOP MD	BASE MD	DESCRIBE ROCKY TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H2S ETC)
Marcellus	6146	-	6678	-	Black shale
Maxton	1640	1712	1641	1714	Sandstone
Big Lime	1712	1821	1714	1823	Limestone
Big Injun	1821	2129	1823	2133	Sandstone
Weir	2129	2319	2133	2324	Sandstone
Berea	2319	2637	2324	2643	Sandstone
Gordon	2637	2739	2643	2745	Sandstone
Fifty Foot	2739	3312	2745	3368	Sandstone
Speechley	3312	4648	3368	4991	Sandstone
Benson	4648	5017	4991	5438	Sandstone
Alexander	5017	5637	5438	6146	Siltstone
Rhinestreet	5637	5990	6146	6620	Black shale
Middlesex	5990	6077	6620	6775	Black shale
Geneseo/Burkett	6077	6106	6775	6843	Black shale
Tully	6106	6129	6843	6904	Limestone
Hamilton	6129	6134	6904	6919	Grey shale
Marcellus	6134	-	6919	-	Black shale

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/5/2018
Job End Date:	4/5/2018
State:	West Virginia
County:	Marshall
API Number:	47-051-01922-00-00
Operator Name:	Tug Hill Operating, LLC
Well Name and Number:	Yoder E-6HM
Latitude:	39.78046584
Longitude:	-80.83996845
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,260
Total Base Water Volume (gal):	11,146,202
Total Base Non Water Volume:	0



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Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	86.91386	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.26684	

SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant					
				Listed Below			
SAND- PREMIUM WHITE-30/50, BULK	Halliburton	Proppant					
				Listed Below			
HYDROCHLORI C ACID	Halliburton	Solvent					
				Listed Below			
SAND- PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
				Listed Below			
LD-2850	Multi Chem	Friction Reducer					
				Listed Below			
SCALECHEK LP-50	Halliburton	Scale Inhibitor					
				Listed Below			
SP BREAKER	Halliburton	Breaker					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					

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				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
				Listed Below			
OILPERM A	Halliburton	Non-ionic Surfactant					
				Listed Below			

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Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.

			Crystalline silica, quartz	14808-60-7	100.00000	12.79058	
			Hydrochloric acid	7647-01-0	15.00000	0.03480	
			Guar gum	9000-30-0	100.00000	0.01328	
			Glutaraldehyde	111-30-8	30.00000	0.00784	
			Methanol	67-56-1	60.00000	0.00714	
			Phosphate of a Diamine, Sodium Salt	Proprietary	30.00000	0.00658	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00131	
			Ethanol	64-17-5	60.00000	0.00079	
			Sodium persulfate	7775-27-1	100.00000	0.00047	
			Oxyalkylated phenolic resin	Proprietary	30.00000	0.00036	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.00027	
			Ethoxylated alcohols	Proprietary	30.00000	0.00026	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226

			Modified thiourea polymer	Proprietary	30.00000	0.00026	RECEIVED Office of Oil and Gas SEP 11 2018 NY Department of Environmental Protection
			Fatty acids, tall oil	Proprietary	30.00000	0.00026	
			Olefins	Proprietary	5.00000	0.00010	
			Propargyl alcohol	107-19-7	10.00000	0.00009	
			Naphthalene	91-20-3	5.00000	0.00004	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)- omega-hydroxy-, branched	127087-87-0	5.00000	0.00004	
			Phosphoric acid	7664-38-2	0.10000	0.00003	
			1,2,4 Trimethylbenzene	95-63-6	1.00000	0.00001	
			Sodium sulfate	7757-82-6	0.10000	0.00000	

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

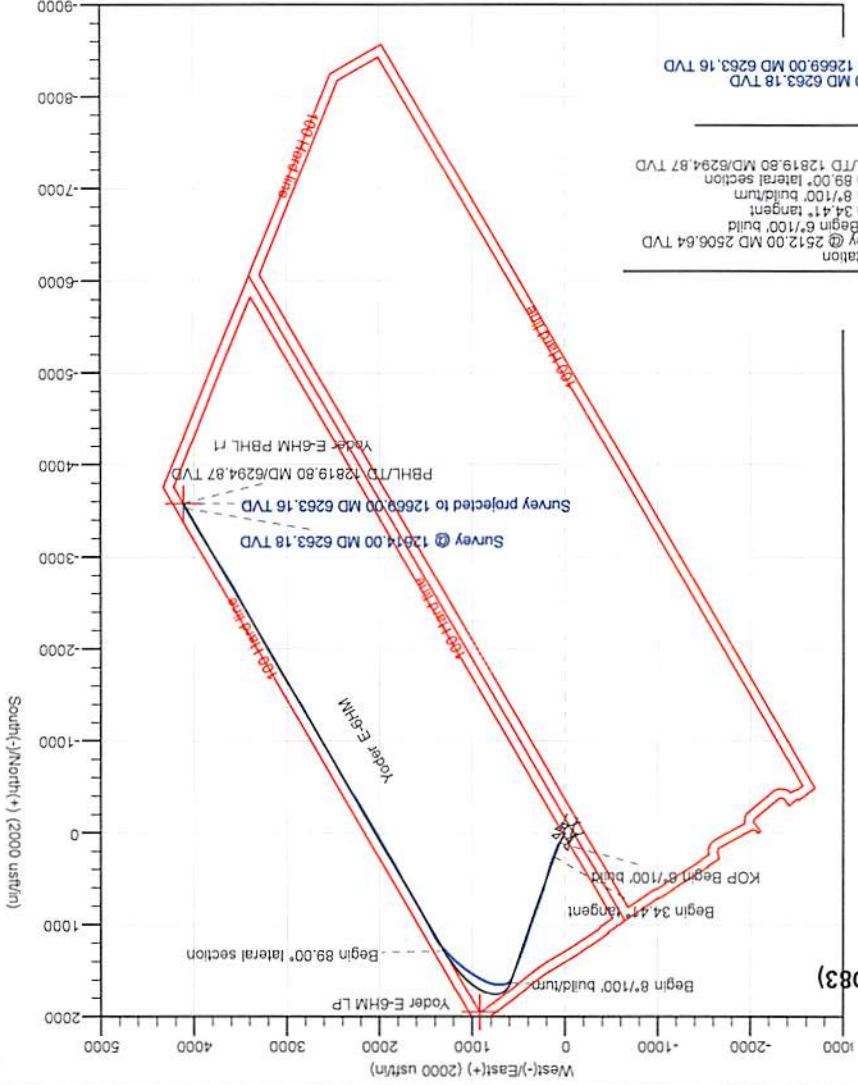
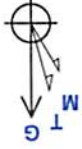
*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)



Azimuths to Grid North
 True North: -0.10°
 Magnetic North: -8.88°
 Magnetic Field
 Strength: 52257.45nT
 Dip Angle: 67.02°
 Date: 11/6/2016
 Model: IGRF2015



Tug Hill Operating LLC
 Well: Yoder E-6HM
 Site: Yoder
 Project: Wetzel County, West Virginia (UTM17 NAD83)
 Design: rev2

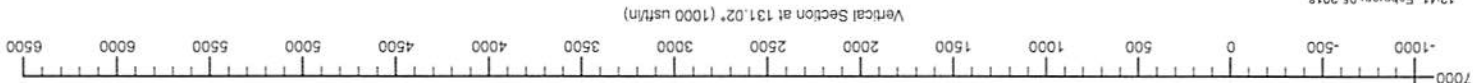


Surface Location: RKB=1083+26 @ 1109.00usft (Nabors B 28)
 NAD83 West Virginia - HARN
 Universal Transverse Mercator (US Survey Feet)
 Zone 17N (64 W 13 W)
 Northing Easting
 14446833.91 1685376.86
 14446833.91 1685376.86 39.78046584 -80.83956845
 Longitude

Total Correction (M => G) To convert a Magnetic Direction to a Grid Direction, Subtract 8.88°

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Diag	TSect	Annotation
1	2512.00	2.20	43.98	2506.64	101.92	55.88	0.00	-24.73	Survey @ 2512.00 MD 2506.64 TVD
2	2705.51	2.20	43.98	2700.00	107.27	61.04	0.00	-24.35	KOP Begin 8'100' build
3	3245.93	34.41	19.05	3206.54	263.25	119.64	6.00	-82.51	Begin 34.41' tangent
4	5809.28	34.41	19.05	5321.37	1632.49	592.35	0.00	-624.50	Begin 8'100' buildum
5	7194.80	89.00	149.98	6196.70	1268.00	1303.68	8.00	126.08	Begin 89.00' lateral section
6	12819.80	89.00	149.98	8294.87	-3581.67	4117.46	0.00	5457.27	PBHL/TD 12819.80 MD/6294.87 TVD
<p>Annotations:</p> <p>Survey @ 12614.00 MD 6263.18 TVD</p> <p>Survey projected to 12669.00 MD 6263.16 TVD</p> <p>Survey @ 12614.00 MD 6263.18 TVD</p> <p>Survey projected to 12669.00 MD 6263.16 TVD</p> <p>Yoder E-6HM PBHL LP</p> <p>Begin 89.00' lateral section</p> <p>Begin 8'100' buildum</p> <p>Begin 34.41' tangent</p> <p>KOP Begin 8'100' build</p> <p>Survey @ 2512.00 MD 2506.64 TVD</p> <p>Survey projected to 12669.00 MD 6263.16 TVD</p>									



12-41, February 05 2018

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Survey Report

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Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Yoder E-6HM
Project:	Wetzel County, West Virginia (UTM17 NAD83)	TVD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Site:	Yoder	MD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Well:	Yoder E-6HM	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Jul2216dt_v14

Project	Wetzel County, West Virginia (UTM17 NAD83)		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Yoder				
Site Position:		Northing:	14,446,864.35 usft	Latitude:	39.78054955
From:	Lat/Long	Easting:	1,685,354.97 usft	Longitude:	-80.84004615
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.10 °

Well	Yoder E-6HM					
Well Position	+N/-S	0.00 usft	Northing:	14,446,833.91 usft	Latitude:	39.78046584
	+E/-W	0.00 usft	Easting:	1,685,376.85 usft	Longitude:	-80.83996845
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	1,083.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/6/2016	-8.57	67.02	52,257.35999988

Design	Surveys Original Hole				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	131.02	

Survey Program	Date	2/5/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
347.00	2,512.00	MWD (Original Hole)	MWD	MWD - Standard	
2,578.00	12,669.00	MWD lat (Original Hole)	MWD	MWD - Standard	

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
347.00	0.27	21.95	347.00	0.76	0.31	-0.27	0.08	0.08	0.00
MWD surveys									
438.00	0.69	5.60	438.00	1.50	0.44	-0.65	0.48	0.46	-17.97
529.00	0.49	304.61	528.99	2.27	0.17	-1.36	0.68	-0.22	-67.02
622.00	0.59	53.87	621.99	2.78	0.23	-1.65	0.95	0.11	117.48
712.00	0.25	67.36	711.99	3.13	0.79	-1.46	0.39	-0.38	14.99
743.00	0.44	45.01	742.99	3.24	0.93	-1.42	0.74	0.61	-72.10
816.00	0.47	26.83	815.98	3.70	1.27	-1.47	0.20	0.04	-24.90
907.00	0.15	35.22	906.98	4.13	1.50	-1.58	0.35	-0.35	9.22

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Survey Report

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Yoder E-6HM
Project:	Wetzel County, West Virginia (UTM17 NAD83)	TVD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Site:	Yoder	MD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Well:	Yoder E-6HM	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Jul2216dt_v14

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,001.00	0.50	77.96	1,000.98	4.32	1.98	-1.34	0.43	0.37	45.47
1,095.00	0.56	46.28	1,094.98	4.72	2.71	-1.05	0.31	0.06	-33.70
1,190.00	1.65	58.26	1,189.96	5.76	4.21	-0.61	1.17	1.15	12.61
1,285.00	2.92	31.96	1,284.88	8.53	6.65	-0.58	1.70	1.34	-27.68
1,380.00	4.49	29.04	1,379.68	13.84	9.74	-1.73	1.66	1.65	-3.07
1,475.00	6.04	49.05	1,474.29	20.37	15.32	-1.81	2.51	1.63	21.06
1,569.00	5.65	9.49	1,567.83	28.17	19.82	-3.54	4.22	-0.41	-42.09
1,664.00	3.97	354.88	1,662.50	36.06	20.30	-8.36	2.18	-1.77	-15.38
1,758.00	3.78	45.75	1,756.31	41.47	22.23	-10.45	3.54	-0.20	54.12
1,851.00	5.48	37.32	1,849.00	47.14	27.12	-10.48	1.96	1.83	-9.06
1,946.00	7.41	25.85	1,943.40	56.26	32.54	-12.38	2.43	2.03	-12.07
2,040.00	7.17	31.25	2,036.64	66.73	38.22	-14.96	0.77	-0.26	5.74
2,134.00	7.54	26.19	2,129.87	77.28	43.99	-17.53	0.79	0.39	-5.38
2,227.00	6.41	33.89	2,222.18	87.07	49.58	-19.74	1.57	-1.22	8.28
2,322.00	3.64	14.33	2,316.82	94.39	53.28	-21.75	3.39	-2.92	-20.59
2,417.00	2.02	10.09	2,411.70	98.96	54.32	-23.97	1.72	-1.71	-4.46
2,512.00	2.20	43.98	2,506.64	101.92	55.88	-24.73	1.31	0.19	35.67
2,578.00	2.97	43.98	2,572.57	104.06	57.95	-24.58	1.17	1.17	0.00
2,680.00	3.84	48.44	2,674.39	108.23	62.34	-24.00	0.89	0.85	4.37
2,775.00	7.59	38.03	2,768.90	115.29	68.59	-23.92	4.08	3.95	-10.96
2,869.00	14.60	29.87	2,861.09	130.47	78.32	-26.54	7.62	7.46	-8.68
2,974.00	17.52	21.10	2,962.00	156.70	90.61	-34.48	3.61	2.78	-8.35
3,068.00	21.83	18.32	3,050.49	186.51	101.20	-46.05	4.69	4.59	-2.96
3,163.00	26.76	18.53	3,137.05	223.58	113.56	-61.06	5.19	5.19	0.22
3,258.00	32.18	20.54	3,219.73	267.58	129.24	-78.11	5.80	5.71	2.12
3,353.00	34.17	19.05	3,299.24	316.49	146.83	-96.94	2.26	2.09	-1.57
3,448.00	35.03	17.26	3,377.44	367.75	163.63	-117.91	1.40	0.91	-1.88
3,543.00	33.85	15.81	3,455.79	419.24	178.92	-140.16	1.51	-1.24	-1.53
3,637.00	34.65	15.72	3,533.49	470.16	193.30	-162.74	0.85	0.85	-0.10
3,732.00	34.93	15.23	3,611.51	522.40	207.76	-186.11	0.42	0.29	-0.52
3,827.00	34.27	17.14	3,689.71	574.20	222.79	-208.77	1.34	-0.69	2.01
3,921.00	33.68	19.50	3,767.66	624.06	239.29	-229.05	1.54	-0.63	2.51
4,016.00	34.40	19.68	3,846.39	674.16	257.12	-248.48	0.77	0.76	0.19
4,111.00	35.40	21.02	3,924.30	725.12	276.03	-267.65	1.33	1.05	1.41
4,206.00	34.11	19.84	4,002.35	775.86	294.94	-286.69	1.53	-1.36	-1.24
4,301.00	34.76	19.02	4,080.70	826.52	312.80	-306.46	0.84	0.68	-0.86
4,396.00	34.41	17.94	4,158.92	877.66	329.90	-327.13	0.74	-0.37	-1.14
4,490.00	34.29	18.09	4,236.52	928.10	346.30	-347.85	0.16	-0.13	0.16
4,585.00	35.38	19.30	4,314.50	979.50	363.70	-368.46	1.36	1.15	1.27
4,680.00	35.47	19.36	4,391.91	1,031.46	381.93	-388.81	0.10	0.09	0.06
4,774.00	34.38	18.12	4,468.98	1,082.41	399.23	-409.21	1.38	-1.16	-1.32
4,869.00	34.26	18.24	4,547.44	1,133.30	415.94	-430.00	0.15	-0.13	0.13
4,965.00	34.80	16.95	4,626.53	1,185.17	432.38	-451.63	0.95	0.56	-1.34

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Survey Report

WV Department of
Environmental Protection



Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Yoder E-6HM
Project:	Wetzel County, West Virginia (UTM17 NAD83)	TVD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Site:	Yoder	MD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Well:	Yoder E-6HM	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Jul2216dt_v14

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,060.00	35.24	17.33	4,704.33	1,237.27	448.45	-473.70	0.52	0.46	0.40
5,152.00	34.85	22.32	4,779.67	1,286.93	466.34	-492.80	3.14	-0.42	5.42
5,247.00	34.56	21.07	4,857.77	1,337.19	486.34	-510.69	0.81	-0.31	-1.32
5,341.00	33.03	18.93	4,935.89	1,386.30	504.23	-529.43	2.06	-1.63	-2.28
5,435.00	33.06	18.90	5,014.68	1,434.79	520.85	-548.71	0.04	0.03	-0.03
5,529.00	34.10	22.68	5,093.00	1,483.37	539.32	-566.66	2.48	1.11	4.02
5,623.00	33.30	21.54	5,171.21	1,531.68	558.95	-583.56	1.08	-0.85	-1.21
5,737.00	30.55	19.25	5,267.96	1,588.16	580.00	-604.75	2.64	-2.41	-2.01
5,832.00	26.02	47.64	5,351.97	1,625.18	603.48	-611.33	14.80	-4.77	29.88
5,927.00	22.51	74.01	5,438.82	1,644.29	636.46	-598.99	11.88	-3.69	27.76
6,021.00	25.01	90.09	5,524.93	1,649.22	673.67	-574.15	7.36	2.66	17.11
6,116.00	25.85	89.04	5,610.73	1,649.54	714.46	-543.58	1.00	0.88	-1.11
6,211.00	32.84	94.66	5,693.50	1,647.79	760.91	-507.39	7.90	7.36	5.92
6,305.00	38.95	107.05	5,769.72	1,637.03	814.69	-459.75	10.07	6.50	13.18
6,400.00	42.86	115.67	5,841.56	1,614.25	872.42	-401.24	7.22	4.12	9.07
6,495.00	46.95	122.43	5,908.87	1,581.61	930.90	-335.70	6.61	4.31	7.12
6,589.00	50.29	122.87	5,971.00	1,543.56	990.28	-265.93	3.57	3.55	0.47
6,684.00	54.33	124.28	6,029.08	1,501.97	1,052.88	-191.40	4.41	4.25	1.48
6,779.00	62.15	128.76	6,079.06	1,453.85	1,117.64	-110.96	9.15	8.23	4.72
6,874.00	67.91	132.89	6,119.16	1,397.53	1,182.71	-24.90	7.23	6.06	4.35
6,968.00	73.27	135.00	6,150.39	1,336.02	1,246.50	63.60	6.08	5.70	2.24
7,063.00	78.86	139.05	6,173.27	1,268.57	1,309.29	155.24	7.19	5.88	4.26
7,156.00	84.44	144.32	6,186.78	1,196.41	1,366.27	245.59	8.21	6.00	5.67
7,250.00	87.65	154.25	6,193.28	1,115.89	1,414.08	334.51	11.08	3.41	10.56
7,345.00	87.08	151.61	6,197.64	1,031.40	1,457.27	422.55	2.84	-0.60	-2.78
7,440.00	85.41	150.21	6,203.87	948.56	1,503.35	511.69	2.29	-1.76	-1.47
7,535.00	88.13	151.61	6,209.22	865.69	1,549.46	600.86	3.22	2.86	1.47
7,630.00	86.90	150.38	6,213.34	782.69	1,595.48	690.06	1.83	-1.29	-1.29
7,725.00	89.45	150.12	6,216.36	700.26	1,642.59	779.71	2.70	2.68	-0.27
7,820.00	90.46	149.77	6,216.44	618.03	1,690.17	869.57	1.13	1.06	-0.37
7,914.00	89.98	150.21	6,216.08	536.63	1,737.18	958.47	0.69	-0.51	0.47
8,009.00	88.40	150.91	6,217.42	453.91	1,783.87	1,047.98	1.82	-1.66	0.74
8,103.00	88.48	151.09	6,219.98	371.73	1,829.42	1,136.29	0.21	0.09	0.19
8,197.00	89.27	151.00	6,221.82	289.49	1,874.92	1,224.59	0.85	0.84	-0.10
8,292.00	90.02	151.09	6,222.41	206.37	1,920.91	1,313.85	0.80	0.79	0.09
8,387.00	89.41	149.68	6,222.89	123.78	1,967.86	1,403.47	1.62	-0.64	-1.48
8,482.00	90.42	148.80	6,223.03	42.15	2,016.44	1,493.70	1.41	1.06	-0.93
8,577.00	88.53	149.33	6,223.90	-39.33	2,065.27	1,584.02	2.07	-1.99	0.56
8,671.00	89.19	149.94	6,225.77	-120.42	2,112.78	1,673.08	0.96	0.70	0.65
8,766.00	89.98	150.56	6,226.46	-202.89	2,159.92	1,762.78	1.06	0.83	0.65
8,861.00	88.35	149.51	6,227.84	-285.18	2,207.36	1,852.58	2.04	-1.72	-1.11
8,956.00	88.31	148.89	6,230.61	-366.75	2,255.99	1,942.80	0.65	-0.04	-0.65
9,051.00	88.97	148.89	6,232.86	-448.06	2,305.06	2,033.19	0.69	0.69	0.00

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WV Department of
Environmental Protection



Survey Report

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Yoder E-6HM
Project:	Wetzel County, West Virginia (UTM17 NAD83)	TVD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Site:	Yoder	MD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Well:	Yoder E-6HM	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Jul2216dt_v14

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,146.00	89.63	149.33	6,234.02	-529.58	2,353.83	2,123.49	0.83	0.69	0.46
9,239.00	90.59	149.68	6,233.85	-609.71	2,401.02	2,211.69	1.10	1.03	0.38
9,334.00	89.14	150.12	6,234.07	-691.90	2,448.66	2,301.58	1.60	-1.53	0.46
9,429.00	89.98	151.00	6,234.80	-774.63	2,495.35	2,391.10	1.28	0.88	0.93
9,523.00	88.70	149.59	6,235.88	-856.27	2,541.93	2,479.82	2.03	-1.36	-1.50
9,618.00	89.76	149.51	6,237.16	-938.15	2,590.07	2,569.89	1.12	1.12	-0.08
9,712.00	87.69	149.94	6,239.25	-1,019.31	2,637.44	2,658.89	2.25	-2.20	0.46
9,807.00	88.26	149.94	6,242.61	-1,101.48	2,685.00	2,748.71	0.60	0.60	0.00
9,902.00	89.10	150.38	6,244.79	-1,183.86	2,732.26	2,838.43	1.00	0.88	0.46
9,995.00	89.71	150.91	6,245.76	-1,264.92	2,777.84	2,926.02	0.87	0.66	0.57
10,090.00	90.64	151.18	6,245.47	-1,348.04	2,823.83	3,015.28	1.02	0.98	0.28
10,185.00	90.42	149.15	6,244.59	-1,430.44	2,871.09	3,105.01	2.15	-0.23	-2.14
10,279.00	88.62	148.89	6,245.38	-1,511.02	2,919.47	3,194.41	1.93	-1.91	-0.28
10,373.00	89.32	148.71	6,247.07	-1,591.42	2,968.16	3,283.90	0.77	0.74	-0.19
10,467.00	90.29	148.54	6,247.39	-1,671.67	3,017.10	3,373.50	1.05	1.03	-0.18
10,562.00	89.01	149.59	6,247.97	-1,753.15	3,065.93	3,463.82	1.74	-1.35	1.11
10,657.00	89.98	149.94	6,248.81	-1,835.22	3,113.77	3,553.78	1.09	1.02	0.37
10,752.00	87.91	150.21	6,250.56	-1,917.54	3,161.15	3,643.55	2.20	-2.18	0.28
10,846.00	88.26	150.74	6,253.70	-1,999.29	3,207.45	3,732.13	0.68	0.37	0.56
10,940.00	91.47	150.47	6,253.92	-2,081.17	3,253.58	3,820.68	3.43	3.41	-0.29
11,033.00	89.49	150.82	6,253.14	-2,162.23	3,299.16	3,908.27	2.16	-2.13	0.38
11,128.00	90.02	150.38	6,253.55	-2,244.99	3,345.80	3,997.78	0.73	0.56	-0.46
11,222.00	90.73	150.30	6,252.93	-2,326.67	3,392.31	4,086.48	0.76	0.76	-0.09
11,316.00	89.27	150.91	6,252.93	-2,408.57	3,438.45	4,175.04	1.68	-1.55	0.65
11,411.00	90.24	151.61	6,253.34	-2,491.86	3,484.13	4,264.17	1.26	1.02	0.74
11,506.00	89.01	150.12	6,253.96	-2,574.84	3,530.38	4,353.52	2.03	-1.29	-1.57
11,601.00	89.98	151.61	6,254.80	-2,657.81	3,576.63	4,442.88	1.87	1.02	1.57
11,696.00	88.31	150.74	6,256.21	-2,741.03	3,622.42	4,532.04	1.98	-1.76	-0.92
11,791.00	89.32	147.75	6,258.18	-2,822.64	3,670.99	4,622.25	3.32	1.06	-3.15
11,886.00	89.14	147.92	6,259.45	-2,903.05	3,721.56	4,713.18	0.26	-0.19	0.18
11,980.00	89.54	148.36	6,260.54	-2,982.88	3,771.17	4,803.01	0.63	0.43	0.47
12,075.00	90.86	149.07	6,260.21	-3,064.07	3,820.50	4,893.51	1.58	1.39	0.75
12,170.00	89.49	149.59	6,259.92	-3,145.77	3,868.96	4,983.70	1.54	-1.44	0.55
12,265.00	89.63	149.59	6,260.65	-3,227.70	3,917.05	5,073.75	0.15	0.15	0.00
12,357.00	90.59	149.86	6,260.47	-3,307.15	3,963.43	5,160.89	1.08	1.04	0.29
12,451.00	88.53	149.33	6,261.19	-3,388.22	4,011.00	5,249.98	2.26	-2.19	-0.56
12,546.00	89.45	150.03	6,262.86	-3,470.21	4,058.95	5,339.97	1.22	0.97	0.74
12,614.00	90.02	149.94	6,263.18	-3,529.09	4,092.96	5,404.28	0.85	0.84	-0.13
Survey @ 12614.00 MD 6263.18 TVD									
12,669.00	90.02	149.94	6,263.16	-3,576.69	4,120.51	5,456.31	0.00	0.00	0.00
Survey projected to 12669.00 MD 6263.16 TVD									



Survey Report



Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Yoder E-6HM
Project:	Wetzel County, West Virginia (UTM17 NAD83)	TVD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Site:	Yoder	MD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Well:	Yoder E-6HM	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Jul2216dt_v14

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
347.00	347.00	0.76	0.31	MWD surveys	
12,614.00	6,263.18	-3,529.09	4,092.96	Survey @ 12614.00 MD 6263.18 TVD	
12,669.00	6,263.16	-3,576.69	4,120.51	Survey projected to 12669.00 MD 6263.16 TVD	

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Survey Report - Geographic

WV Department of
Environmental Protection

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Yoder E-6HM
Project:	Wetzel County, West Virginia (UTM17 NAD83)	TVD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Site:	Yoder	MD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Well:	Yoder E-6HM	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Jul2216dt_v14

Project	Wetzel County, West Virginia (UTM17 NAD83)		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Yoder				
Site Position:		Northing:	14,446,864.35 usft	Latitude:	39.78054955
From:	Lat/Long	Easting:	1,685,354.97 usft	Longitude:	-80.84004615
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.10 °

Well	Yoder E-6HM					
Well Position	+N/-S	0.00 usft	Northing:	14,446,833.91 usft	Latitude:	39.78046584
	+E/-W	0.00 usft	Easting:	1,685,376.85 usft	Longitude:	-80.83996845
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	1,083.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/6/2016	-8.57	67.02	52,257.35999988

Design	Surveys Original Hole				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	131.02	

Survey Program	Date	2/5/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
347.00	2,512.00	MWD (Original Hole)	MWD	MWD - Standard	
2,578.00	12,669.00	MWD lat (Original Hole)	MWD	MWD - Standard	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	14,446,833.91	1,685,376.85	39.78046584	-80.83996845	
347.00	0.27	21.95	347.00	0.76	0.31	14,446,834.67	1,685,377.16	39.78046792	-80.83996736	
MWD surveys										
438.00	0.69	5.60	438.00	1.50	0.44	14,446,835.41	1,685,377.29	39.78046997	-80.83996688	
529.00	0.49	304.61	528.99	2.27	0.17	14,446,836.18	1,685,377.03	39.78047207	-80.83996782	
622.00	0.59	53.87	621.99	2.78	0.23	14,446,836.69	1,685,377.09	39.78047347	-80.83996761	
712.00	0.25	67.36	711.99	3.13	0.79	14,446,837.04	1,685,377.64	39.78047442	-80.83996563	
743.00	0.44	45.01	742.99	3.24	0.93	14,446,837.15	1,685,377.79	39.78047472	-80.83996511	
816.00	0.47	26.83	815.98	3.70	1.27	14,446,837.61	1,685,378.12	39.78047600	-80.83996392	
907.00	0.15	35.22	906.98	4.13	1.50	14,446,838.04	1,685,378.36	39.78047718	-80.83996307	
1,001.00	0.50	77.96	1,000.98	4.32	1.98	14,446,838.23	1,685,378.83	39.78047769	-80.83996139	

SEP 11 2018



Survey Report - Geographic

WV Department of
Environmental Protection

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Yoder E-6HM
Project:	Wetzel County, West Virginia (UTM17 NAD83)	TVD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Site:	Yoder	MD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Well:	Yoder E-6HM	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Jul2216dt_v14

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,095.00	0.56	46.28	1,094.98	4.72	2.71	14,446,838.63	1,685,379.56	39.78047879	-80.83995878
1,190.00	1.65	58.26	1,189.96	5.76	4.21	14,446,839.67	1,685,381.06	39.78048164	-80.83995344
1,285.00	2.92	31.96	1,284.88	8.53	6.65	14,446,842.45	1,685,383.51	39.78048925	-80.83994472
1,380.00	4.49	29.04	1,379.68	13.84	9.74	14,446,847.75	1,685,386.59	39.78050380	-80.83993370
1,475.00	6.04	49.05	1,474.29	20.37	15.32	14,446,854.28	1,685,392.17	39.78052170	-80.83991379
1,569.00	5.65	9.49	1,567.83	28.17	19.82	14,446,862.09	1,685,396.67	39.78054312	-80.83989773
1,664.00	3.97	354.88	1,662.50	36.06	20.30	14,446,869.98	1,685,397.15	39.78056478	-80.83989598
1,758.00	3.78	45.75	1,756.31	41.47	22.23	14,446,875.38	1,685,399.08	39.78057961	-80.83988907
1,851.00	5.48	37.32	1,849.00	47.14	27.12	14,446,881.05	1,685,403.97	39.78059517	-80.83987164
1,946.00	7.41	25.85	1,943.40	56.26	32.54	14,446,890.17	1,685,409.39	39.78062019	-80.83985228
2,040.00	7.17	31.25	2,036.64	66.73	38.22	14,446,900.64	1,685,415.08	39.78064892	-80.83983197
2,134.00	7.54	26.19	2,129.87	77.28	43.99	14,446,911.19	1,685,420.84	39.78067786	-80.83981139
2,227.00	6.41	33.89	2,222.18	87.07	49.58	14,446,920.98	1,685,426.43	39.78070470	-80.83979143
2,322.00	3.64	14.33	2,316.82	94.39	53.28	14,446,928.30	1,685,430.14	39.78072481	-80.83977820
2,417.00	2.02	10.09	2,411.70	98.96	54.32	14,446,932.87	1,685,431.18	39.78073735	-80.83977447
2,512.00	2.20	43.98	2,506.64	101.92	55.88	14,446,935.83	1,685,432.73	39.78074548	-80.83976891
2,578.00	2.97	43.98	2,572.57	104.06	57.95	14,446,937.98	1,685,434.80	39.78075135	-80.83976153
2,680.00	3.84	48.44	2,674.39	108.23	62.34	14,446,942.14	1,685,439.19	39.78076277	-80.83974588
2,775.00	7.59	38.03	2,768.90	115.29	68.59	14,446,949.20	1,685,445.44	39.78078211	-80.83972359
2,869.00	14.60	29.87	2,861.09	130.47	78.32	14,446,964.38	1,685,455.18	39.78082376	-80.83968884
2,974.00	17.52	21.10	2,962.00	156.70	90.61	14,446,990.61	1,685,467.46	39.78089574	-80.83964494
3,068.00	21.83	18.32	3,050.49	186.51	101.20	14,447,020.42	1,685,478.05	39.78097754	-80.83960705
3,163.00	26.76	18.53	3,137.05	223.58	113.56	14,447,057.49	1,685,490.41	39.78107929	-80.83956283
3,258.00	32.18	20.54	3,219.73	267.58	129.24	14,447,101.49	1,685,506.10	39.78120005	-80.83950672
3,353.00	34.17	19.05	3,299.24	316.49	146.83	14,447,150.40	1,685,523.68	39.78133429	-80.83944382
3,448.00	35.03	17.26	3,377.44	367.75	163.63	14,447,201.66	1,685,540.48	39.78147497	-80.83938370
3,543.00	33.85	15.81	3,455.79	419.24	178.92	14,447,253.16	1,685,555.78	39.78161633	-80.83932891
3,637.00	34.65	15.72	3,533.49	470.16	193.30	14,447,304.07	1,685,570.15	39.78175608	-80.83927742
3,732.00	34.93	15.23	3,611.51	522.40	207.76	14,447,356.31	1,685,584.61	39.78189947	-80.83922561
3,827.00	34.27	17.14	3,689.71	574.20	222.79	14,447,408.11	1,685,599.64	39.78204166	-80.83917179
3,921.00	33.68	19.50	3,767.66	624.06	239.29	14,447,457.97	1,685,616.14	39.78217851	-80.83911274
4,016.00	34.40	19.68	3,846.39	674.16	257.12	14,447,508.07	1,685,633.97	39.78231601	-80.83904895
4,111.00	35.40	21.02	3,924.30	725.12	276.03	14,447,559.03	1,685,652.88	39.78245586	-80.83898132
4,206.00	34.11	19.84	4,002.35	775.86	294.94	14,447,609.77	1,685,671.79	39.78259512	-80.83891368
4,301.00	34.76	19.02	4,080.70	826.52	312.80	14,447,660.43	1,685,689.66	39.78273416	-80.83884976
4,396.00	34.41	17.94	4,158.92	877.66	329.90	14,447,711.57	1,685,706.75	39.78287453	-80.83878859
4,490.00	34.29	18.09	4,236.52	928.10	346.30	14,447,762.01	1,685,723.16	39.78301296	-80.83872988
4,585.00	35.38	19.30	4,314.50	979.50	363.70	14,447,813.41	1,685,740.56	39.78315403	-80.83866761
4,680.00	35.47	19.36	4,391.91	1,031.46	381.93	14,447,865.37	1,685,758.78	39.78329664	-80.83860240
4,774.00	34.38	18.12	4,468.98	1,082.41	399.23	14,447,916.33	1,685,776.08	39.78343649	-80.83854051
4,869.00	34.26	18.24	4,547.44	1,133.30	415.94	14,447,967.22	1,685,792.79	39.78357617	-80.83848069
4,965.00	34.80	16.95	4,626.53	1,185.17	432.38	14,448,019.08	1,685,809.24	39.78371853	-80.83842182
5,060.00	35.24	17.33	4,704.33	1,237.27	448.45	14,448,071.18	1,685,825.30	39.78386152	-80.83836430
5,152.00	34.85	22.32	4,779.67	1,286.93	466.34	14,448,120.84	1,685,843.20	39.78399782	-80.83830029
5,247.00	34.56	21.07	4,857.77	1,337.19	486.34	14,448,171.10	1,685,863.19	39.78413574	-80.83822879
5,341.00	33.03	18.93	4,935.89	1,386.30	504.23	14,448,220.21	1,685,881.09	39.78427054	-80.83816476
5,435.00	33.06	18.90	5,014.68	1,434.79	520.85	14,448,268.70	1,685,897.71	39.78440362	-80.83810530
5,529.00	34.10	22.68	5,093.00	1,483.37	539.32	14,448,317.28	1,685,916.17	39.78453693	-80.83803925
5,623.00	33.30	21.54	5,171.21	1,531.68	558.95	14,448,365.60	1,685,935.81	39.78466952	-80.83796905
5,737.00	30.55	19.25	5,267.96	1,588.16	580.00	14,448,422.07	1,685,956.85	39.78482451	-80.83789377
5,832.00	26.02	47.64	5,351.97	1,625.18	603.48	14,448,459.09	1,685,980.33	39.78492606	-80.83780997
5,927.00	22.51	74.01	5,438.82	1,644.29	636.46	14,448,478.20	1,686,013.32	39.78497839	-80.83769243
6,021.00	25.01	90.09	5,524.93	1,649.22	673.67	14,448,483.13	1,686,050.53	39.78499174	-80.83755993
6,116.00	25.85	89.04	5,610.73	1,649.54	714.46	14,448,483.45	1,686,091.32	39.78499241	-80.83741473
6,211.00	32.84	94.66	5,693.50	1,647.79	760.91	14,448,481.70	1,686,137.77	39.78498737	-80.83724940

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Survey Report - Geographic

WV Department of
Environmental Protection

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Yoder E-6HM
Project:	Wetzel County, West Virginia (UTM17 NAD83)	TVD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Site:	Yoder	MD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Well:	Yoder E-6HM	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Jul2216dt_v14

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,305.00	38.95	107.05	5,769.72	1,637.03	814.69	14,448,470.94	1,686,191.54	39.78495756	-80.83705806
6,400.00	42.86	115.67	5,841.56	1,614.25	872.42	14,448,448.16	1,686,249.28	39.78489471	-80.83685268
6,495.00	46.95	122.43	5,908.87	1,581.61	930.90	14,448,415.52	1,686,307.76	39.78480477	-80.83664474
6,589.00	50.29	122.87	5,971.00	1,543.56	990.28	14,448,377.47	1,686,367.13	39.78469997	-80.83643363
6,684.00	54.33	124.28	6,029.08	1,501.97	1,052.88	14,448,335.88	1,686,429.74	39.78458545	-80.83621106
6,779.00	62.15	128.76	6,079.06	1,453.85	1,117.64	14,448,287.76	1,686,494.49	39.78445297	-80.83598085
6,874.00	67.91	132.89	6,119.16	1,397.53	1,182.71	14,448,231.45	1,686,559.57	39.78429799	-80.83574958
6,968.00	73.27	135.00	6,150.39	1,336.02	1,246.50	14,448,169.93	1,686,623.36	39.78412872	-80.83552293
7,063.00	78.86	139.05	6,173.27	1,268.57	1,309.29	14,448,102.48	1,686,686.14	39.78394318	-80.83529988
7,156.00	84.44	144.32	6,186.78	1,196.41	1,366.27	14,448,030.32	1,686,743.12	39.78374472	-80.83509753
7,250.00	87.65	154.25	6,193.28	1,115.89	1,414.08	14,447,949.81	1,686,790.94	39.78352336	-80.83492785
7,345.00	87.08	151.61	6,197.64	1,031.40	1,457.27	14,447,865.31	1,686,834.12	39.78329109	-80.83477469
7,440.00	85.41	150.21	6,203.87	948.56	1,503.35	14,447,782.48	1,686,880.21	39.78306337	-80.83461120
7,535.00	88.13	151.61	6,209.22	865.69	1,549.46	14,447,699.60	1,686,926.31	39.78283554	-80.83444763
7,630.00	86.90	150.38	6,213.34	782.69	1,595.48	14,447,616.60	1,686,972.33	39.78260735	-80.83428437
7,725.00	89.45	150.12	6,216.36	700.26	1,642.59	14,447,534.17	1,687,019.44	39.78238073	-80.83411721
7,820.00	90.46	149.77	6,216.44	618.03	1,690.17	14,447,451.94	1,687,067.02	39.78215468	-80.83394840
7,914.00	89.98	150.21	6,216.08	536.63	1,737.18	14,447,370.54	1,687,114.04	39.78193090	-80.83378160
8,009.00	88.40	150.91	6,217.42	453.91	1,783.87	14,447,287.82	1,687,160.72	39.78170348	-80.83361596
8,103.00	88.48	151.09	6,219.98	371.73	1,829.42	14,447,205.64	1,687,206.28	39.78147755	-80.83345435
8,197.00	89.27	151.00	6,221.82	289.49	1,874.92	14,447,123.41	1,687,251.78	39.78125148	-80.83329295
8,292.00	90.02	151.09	6,222.41	206.37	1,920.91	14,447,040.28	1,687,297.77	39.78102297	-80.83312980
8,387.00	89.41	149.68	6,222.89	123.78	1,967.86	14,446,957.70	1,687,344.71	39.78079592	-80.83296326
8,482.00	90.42	148.80	6,223.03	42.15	2,016.44	14,446,876.06	1,687,393.30	39.78057148	-80.83279086
8,577.00	88.53	149.33	6,223.90	-39.33	2,065.27	14,446,794.58	1,687,442.13	39.78034747	-80.83261759
8,671.00	89.19	149.94	6,225.77	-120.42	2,112.78	14,446,713.50	1,687,489.64	39.78012453	-80.83244903
8,766.00	89.98	150.56	6,226.46	-202.89	2,159.92	14,446,631.02	1,687,536.78	39.77989779	-80.83228180
8,861.00	88.35	149.51	6,227.84	-285.18	2,207.36	14,446,548.73	1,687,584.22	39.77967156	-80.83211348
8,956.00	88.31	148.89	6,230.61	-366.75	2,255.99	14,446,467.17	1,687,632.84	39.77944730	-80.83194096
9,051.00	88.97	148.89	6,232.86	-448.06	2,305.06	14,446,385.85	1,687,681.91	39.77922374	-80.83176685
9,146.00	89.63	149.33	6,234.02	-529.58	2,353.83	14,446,304.33	1,687,730.68	39.77899961	-80.83159381
9,239.00	90.59	149.68	6,233.85	-609.71	2,401.02	14,446,224.20	1,687,777.87	39.77877930	-80.83142637
9,334.00	89.14	150.12	6,234.07	-691.90	2,448.66	14,446,142.01	1,687,825.52	39.77855334	-80.83125735
9,429.00	89.98	151.00	6,234.80	-774.63	2,495.35	14,446,059.28	1,687,872.21	39.77832591	-80.83109172
9,523.00	88.70	149.59	6,235.88	-856.27	2,541.93	14,445,977.65	1,687,918.78	39.77810146	-80.83092649
9,618.00	89.76	149.51	6,237.16	-938.15	2,590.07	14,445,895.76	1,687,966.92	39.77787632	-80.83075570
9,712.00	87.69	149.94	6,239.25	-1,019.31	2,637.44	14,445,814.60	1,688,014.30	39.77765320	-80.83058762
9,807.00	88.26	149.94	6,242.61	-1,101.48	2,685.00	14,445,732.43	1,688,061.85	39.77742729	-80.83041891
9,902.00	89.10	150.38	6,244.79	-1,183.86	2,732.26	14,445,650.05	1,688,109.11	39.77720080	-80.83025127
9,995.00	89.71	150.91	6,245.76	-1,264.92	2,777.84	14,445,569.00	1,688,154.70	39.77697797	-80.83008956
10,090.00	90.64	151.18	6,245.47	-1,348.04	2,823.83	14,445,485.87	1,688,200.69	39.77674944	-80.82992643
10,185.00	90.42	149.15	6,244.59	-1,430.44	2,871.09	14,445,403.47	1,688,247.95	39.77652290	-80.82975879
10,279.00	88.62	148.89	6,245.38	-1,511.02	2,919.47	14,445,322.89	1,688,296.33	39.77630134	-80.82959114
10,373.00	89.32	148.71	6,247.07	-1,591.42	2,968.16	14,445,242.50	1,688,345.02	39.77608031	-80.82941440
10,467.00	90.29	148.54	6,247.39	-1,671.67	3,017.10	14,445,162.24	1,688,393.95	39.77585965	-80.82924076
10,562.00	89.01	149.59	6,247.97	-1,753.15	3,065.93	14,445,080.76	1,688,442.79	39.77563563	-80.82906751
10,657.00	89.98	149.94	6,248.81	-1,835.22	3,113.77	14,444,998.69	1,688,490.62	39.77540998	-80.82889781
10,752.00	87.91	150.21	6,250.56	-1,917.54	3,161.15	14,444,916.37	1,688,538.00	39.77518367	-80.82872974
10,846.00	88.26	150.74	6,253.70	-1,999.29	3,207.45	14,444,834.63	1,688,584.30	39.77495892	-80.82856552
10,940.00	91.47	150.47	6,253.92	-2,081.17	3,253.58	14,444,752.74	1,688,630.43	39.77473379	-80.82840189
11,033.00	89.49	150.82	6,253.14	-2,162.23	3,299.16	14,444,671.69	1,688,676.02	39.77451096	-80.82824019
11,128.00	90.02	150.38	6,253.55	-2,244.99	3,345.80	14,444,588.92	1,688,722.65	39.77428342	-80.82807478
11,222.00	90.73	150.30	6,252.93	-2,326.67	3,392.31	14,444,507.24	1,688,769.17	39.77405886	-80.82790979
11,316.00	89.27	150.91	6,252.93	-2,408.57	3,438.45	14,444,425.35	1,688,815.31	39.77383370	-80.82774615
11,411.00	90.24	151.61	6,253.34	-2,491.86	3,484.13	14,444,342.05	1,688,860.98	39.77360471	-80.82758415



Survey Report - Geographic



Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Yoder E-6HM
Project:	Wetzel County, West Virginia (UTM17 NAD83)	TVD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Site:	Yoder	MD Reference:	RKB=1083+26 @ 1109.00usft (Nabors B 28)
Well:	Yoder E-6HM	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Jul2216dt_v14

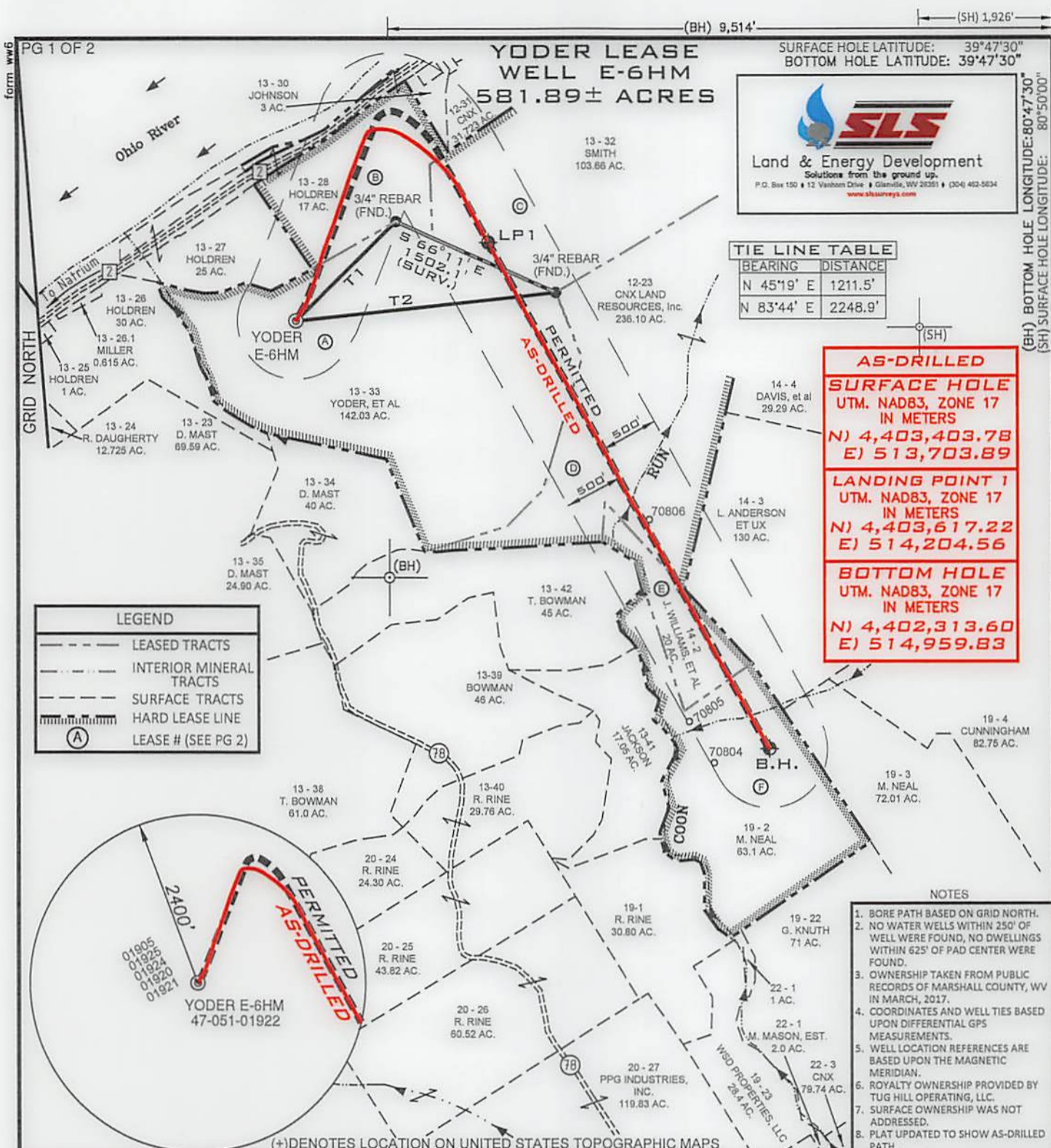
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
11,506.00	89.01	150.12	6,253.96	-2,574.84	3,530.38	14,444,259.08	1,688,907.23	39.77337660	-80.82742012
11,601.00	89.98	151.61	6,254.80	-2,657.81	3,576.63	14,444,176.10	1,688,953.48	39.77314848	-80.82725608
11,696.00	88.31	150.74	6,256.21	-2,741.03	3,622.42	14,444,092.89	1,688,999.28	39.77291970	-80.82709367
11,791.00	89.32	147.75	6,258.18	-2,822.64	3,670.99	14,444,011.27	1,689,047.84	39.77269532	-80.82692139
11,886.00	89.14	147.92	6,259.45	-2,903.05	3,721.56	14,443,930.86	1,689,098.41	39.77247421	-80.82674197
11,980.00	89.54	148.36	6,260.54	-2,982.88	3,771.17	14,443,851.03	1,689,148.02	39.77225471	-80.82656594
12,075.00	90.86	149.07	6,260.21	-3,064.07	3,820.50	14,443,769.85	1,689,197.36	39.77203149	-80.82639094
12,170.00	89.49	149.59	6,259.92	-3,145.77	3,868.96	14,443,688.14	1,689,245.81	39.77180684	-80.82621904
12,265.00	89.63	149.59	6,260.65	-3,227.70	3,917.05	14,443,606.21	1,689,293.90	39.77158158	-80.82604847
12,357.00	90.59	149.86	6,260.47	-3,307.15	3,963.43	14,443,526.76	1,689,340.28	39.77136314	-80.82588396
12,451.00	88.53	149.33	6,261.19	-3,388.22	4,011.00	14,443,445.69	1,689,387.85	39.77114026	-80.82571522
12,546.00	89.45	150.03	6,262.86	-3,470.21	4,058.95	14,443,363.70	1,689,435.80	39.77091483	-80.82554514
12,614.00	90.02	149.94	6,263.18	-3,529.09	4,092.96	14,443,304.82	1,689,469.82	39.77075294	-80.82542449
Survey @ 12614.00 MD 6263.18 TVD									
12,669.00	90.02	149.94	6,263.16	-3,576.69	4,120.51	14,443,257.22	1,689,497.37	39.77062207	-80.82532677
Survey projected to 12669.00 MD 6263.16 TVD									

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
347.00	347.00	0.76	0.31	MWD surveys
12,614.00	6,263.18	-3,529.09	4,092.96	Survey @ 12614.00 MD 6263.18 TVD
12,669.00	6,263.16	-3,576.69	4,120.51	Survey projected to 12669.00 MD 6263.16 TVD

RECEIVED
Office of Oil and Gas

SEP 11 2018

WV Department of
Environmental Protection



(BH) 9,514' (SH) 1,926'

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

SLS
 Land & Energy Development
 Solutions from the ground up.
 P.O. Box 150 • 12 Vaidon Drive • Glenville, WV 26035 • (304) 462-9834
 www.slsurveys.com

TIE LINE TABLE

BEARING	DISTANCE
N 45°19' E	1211.5'
N 83°44' E	2248.9'

AS-DRILLED

SURFACE HOLE
 UTM. NAD83, ZONE 17
 IN METERS
 N) 4,403,403.78
 E) 513,703.89

LANDING POINT 1
 UTM. NAD83, ZONE 17
 IN METERS
 N) 4,403,617.22
 E) 514,204.56

BOTTOM HOLE
 UTM. NAD83, ZONE 17
 IN METERS
 N) 4,402,313.60
 E) 514,959.83

LEGEND

- LEASED TRACTS
- INTERIOR MINERAL TRACTS
- SURFACE TRACTS
- HARD LEASE LINE
- LEASE # (SEE PG 2)

- NOTES**
- BORE PATH BASED ON GRID NORTH.
 - NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
 - OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2017.
 - COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
 - WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
 - ROYALTY OWNERSHIP PROVIDED BY TUG HILL OPERATING, LLC.
 - SURFACE OWNERSHIP WAS NOT ADDRESSED.
 - PLAT UPDATED TO SHOW AS-DRILLED PATH.

FILE NUMBER **8836**

DRAWING NUMBER **8836ADYE6HM.dwg**

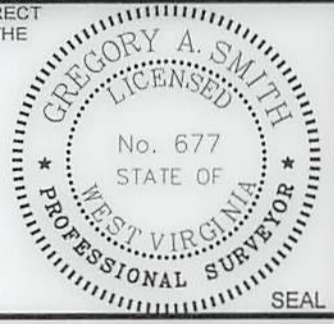
SCALE **1" = 1200'**

MINIMUM DEGREE OF ACCURACY **1/2500**

PROVEN SOURCE OF ELEVATION **SUBMETER MAPPING GRADE GPS**

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

P.S. 677
Gregory A. Smith



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

DATE: **JULY 17, 2018**

OPERATORS WELL NO. **YODER E-6HM (AS-DRILLED)**

API WELL NO. **47-051-01922**

STATE COUNTY PERMIT

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

LOCATION ELEVATION **1084'** WATERSHED (HUC 10) **FRENCH CREEK - OHIO RIVER**

DISTRICT **FRANKLIN** COUNTY **MARSHALL**

QUADRANGLE **POWHATAN POINT 7.5'** LEASE NUMBER **SEE ATTACHED PG 2 OF 2**

SURFACE OWNER **NATHAN D. YODER, et al** ACREAGE **142.03**

OIL & GAS ROYALTY OWNER **NATHAN D. YODER, et al - SEE PAGE 2** LEASE ACREAGE **581.89**

PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___
 PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) ___

TARGET FORMATION **MARCELLUS** ESTIMATED DEPTH **TVD 6,263' TMD:12,669'**

WELL OPERATOR **TUG HILL OPERATING, LLC** DESIGNATED AGENT **DIANNA STAMPER CT CORPORATION SYSTEM**

ADDRESS **1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107** ADDRESS **5400 D BIG TYLER ROAD CHARLESTON, WV 25313**

(BH) 9,514' (SH) 1,926'

(BH) BOTTOM HOLE LONGITUDE: 80°47'30"
 (SH) SURFACE HOLE LONGITUDE: 80°50'00"

(SH) 4,113'

(BH) 7,694'

COUNTY NAME

PERMIT

YODER LEASE
WELL E-6HM
281.8± ACRES

SLZ
Land & Energy Development
Solutions from the ground up.
P.O. Box 107 12 Waverly Drive • Graham, WV 26342 • (206) 682-8824

TITLE TABLE

BEARING	DISTANCE
N 83°44' E	2248.9'
N 45°19' E	1271.5'

AS-DRIILLED
SURFACE HOLE
UTM. NAD83, ZONE 17
IN METERS
(N) 4,403,403.78
(E) 213,203.89

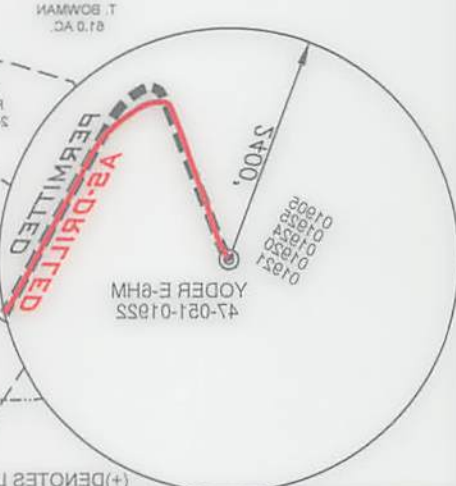
AS-DRIILLED
LANDING POINT 1
UTM. NAD83, ZONE 17
IN METERS
(N) 4,403,617.22
(E) 214,204.26

AS-DRIILLED
BOTTOM HOLE
UTM. NAD83, ZONE 17
IN METERS
(N) 4,402,313.60
(E) 214,229.83

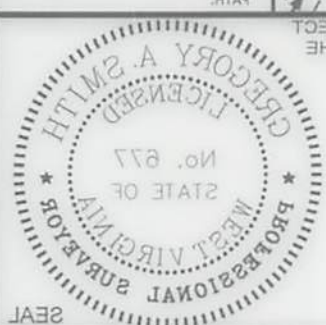
LEGEND

- LEASSED TRACTS
- INTERIOR MINERAL TRACTS
- SURFACE TRACTS
- HARD LEASE LINE
- LEASE # (SEE PG 2)

- NOTES
- BORE PATH BASED ON GRID NORTH.
 - NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 852' OF PAD CENTER WERE FOUND.
 - OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2017.
 - COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
 - WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
 - ROYALTY OWNERSHIP PROVIDED BY TUG HILL OPERATING, LLC.
 - SURFACE OWNERSHIP WAS NOT ADDRESSED.
 - PLAT UPDATED TO SHOW AS-DRIILLED PATH.



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



Gregory A. Smith



FILE NUMBER	8836
DRAWING NUMBER	8836ADYEE6HM.dwg
SCALE	1" = 1200'
MINIMUM DEGREE OF ACCURACY	1/2500
PROVEN SOURCE OF ELEVATION	SUBMETER MAPPING
GRADE GPS	

WDEP
OFFICE OF OIL & GAS
801 57TH STREET, SE
CHARLESTON, WV 25304

DATE: JULY 17, 2018
OPERATORS WELL NO. YODER E-6HM (AS-DRIILLED)
API WELL NO. 47-051-0122

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

LOCATION ELEVATION 1084' WATERSHED (HUC 10) FRENCH CREEK - OHIO RIVER
DISTRICT FRANKLIN COUNTY MARSHALL
QUADRANGLE POWHATAN POINT 7.5' LEASE NUMBER SEE ATTACHED PG 2 OF 2

SURFACE OWNER NATHAN D. YODER, et al ACREAGE 142.03
OIL & GAS ROYALTY OWNER NATHAN D. YODER, et al - SEE PAGE 2 LEASE ACREAGE 281.89
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE (SPECIFY) _____
PLUG & ABANDON CLEAN OUT & REPLUG

TARGET FORMATION MARCELLUS
WELL OPERATOR TUG HILL OPERATING, LLC
DESIGNATED AGENT CT CORPORATION SYSTEM
DIANNA STAMPER
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 CHARLESTON, WV 25313
5400 D BIG TYLER ROAD
ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

YODER E-6HM
WELL PLAT LEASE INFORMATION

LEASE NO.	TAG	PARCEL	Oil & Gas Royalty Owner	DEED BOOK / PG	
10*14701	A	5-13-33	ROSEITA THORNTON	885	600
10*14702	A	5-13-33	NATHAN D. YODER	708	71
10*14942	B	5-13-28	AARON PAUL HOLDREN	720	132
10*14652	B	5-13-28	CANDICE GUTIERREZ	842	388
10*14644	B	5-13-28	CHERYL HILL	809	517
10*14651	B	5-13-28	DAVID V CALDWELL	842	386
10*14649	B	5-13-28	DONALD GARY GROVES II	842	382
10*14639	B	5-13-28	GARY PARSONS	794	521
10*14638	B	5-13-28	HUGH YOHO	794	478
10*14647	B	5-13-28	JAMES W ROBINSON III	836	102
10*14635	B	5-13-28	KATHY JO RUNYON & ROBERT PATRICK KIRWIN	775	21
10*14654	B	5-13-28	KATHY JO RUNYON & ROBERT PATRICK KIRWIN	854	607
10*14637	B	5-13-28	KIMBERLY S. DENNY	794	511
10*14653	B	5-13-28	KRISTIN DOUGLAS	842	390
10*14641	B	5-13-28	LORA LANGLEY	800	621
10*14648	B	5-13-28	LORI ANN ROBINSON	836	104
10*14643	B	5-13-28	MARTHA RENEE ROBINSON	809	541
10*14642	B	5-13-28	MARY B. FERRIS BY REBECCA R. F	808	457
10*14645	B	5-13-28	RANDY BERISFORD	810	328
10*14640	B	5-13-28	SHERRI SNYDER	799	545
10*14650	B	5-13-28	TIMOTHY DWIGHT GROVES	842	384
10*14636	B	5-13-28	WANDA RIDING	794	503
10*16609	C	5-13-32	C PATRICIA WOBIG	521	691
10*16610	C	5-13-32	RICHARD B SMITH SR AND EVELYN MARIE SMITH	521	691
10*14699	D	5-12-23	CNX GAS COMPANY LLC AND NOBLE	833	514
10*14908	E	5-14-2	MICHAEL WILLIAMS	816	14
10*14909	E	5-14-2	JULIA GRIEWANK	816	346
10*14040	F	5-19-2	MILTON R NEAL AND LUNDA L NEAL	665	498
10*14041	F	5-19-2	SHIBEN ESTATES INC	718	496

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

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

ADDRESS FORK MOUTH TX 78101
 1350 SOUTH UNIVERSITY DRIVE, SUITE 200
 MET OPERATOR THE HITT OPERATING, LLC

ADDRESS CHARLESTON WA 98113
 2400 D BIG LAGER ROAD
 DESIGNATED AGENT CI CORPORATION SYSTEM
 DANNIA STAMBER

10*1404J	E	2-12-5	ZHIBEN ESTATES INC	178	422
10*14040	E	2-12-5	MIGTON B NEAL AND GINA G NEAL	222	428
10*14042	E	2-14-5	LUCIA BRILMANIK	872	342
10*14048	E	2-14-5	MICHAEL WILLIAMS	872	14
10*14049	D	2-15-53	CIH GAS COMPANY LLC AND NOBLE	833	214
10*14050	C	2-13-55	ZMITH RICHARD B ZMITH SR AND ELEGY MARIE	251	221
10*14052	C	2-13-55	C PATRICIA MOBLE	251	221
10*14053	B	2-13-58	WANDA BIRDIE	124	203
10*14054	B	2-13-58	TIMOTHY DWIGHT SPOLES	845	384
10*14055	B	2-13-58	ZHEVRI ZHAYDER	122	242
10*14056	B	2-13-58	HANDY BEVIGFORD	810	358
10*14057	B	2-13-58	MARY B FERRIS BY REBECCA B F	808	421
10*14058	B	2-13-58	MARTHA BELEE ROBINSON	802	241
10*14059	B	2-13-58	GORI ANN ROBINSON	832	104
10*14061	B	2-13-58	GOVA GANDELA	800	251
10*14063	B	2-13-58	KRISTIN DONGLAZ	845	320
10*14064	B	2-13-58	KIMBERLY Z DENNY	124	211
10*14064	B	2-13-58	KATHY LO BULLION & ROBERT PATRICK KIRWIN	824	201
10*14065	B	2-13-58	KATHY LO BULLION & ROBERT PATRICK KIRWIN	112	51
10*14066	B	2-13-58	JAMES W ROBINSON III	832	105
10*14068	B	2-13-58	HUGH LOHO	124	418
10*14069	B	2-13-58	GARY PARSONS	124	251
10*14070	B	2-13-58	DAVID GARY SPOLES II	845	385
10*14071	B	2-13-58	DAVID A CALDWELL	845	382
10*14074	B	2-13-58	CHEVY HITT	802	211
10*14075	B	2-13-58	CANDICE GULLIERVES	845	388
10*14076	B	2-13-58	AARON PAUL HODGREN	150	135
10*14077	A	2-13-33	MATHAN D YODER	108	11
10*14078	A	2-13-33	ROSEITA THORNTON	882	200
LEAZE NO.	DATE	PURCHASER	OLI & GAS HOLDING COMPANY	DEED BOOK \ 22	

MET GREAT LEASE INFORMATION
 YODER E-AM