

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

API 47 - 051 - 02412 County Marshall District Franklin
Quad Powhatan Point, WV/OH Pad Name MND23 Field/Pool Name Moundsville
Farm name HG Energy II Appalachia, LLC Well Number MND23 N-6H
Operator (as registered with the OOG) HG Energy II Appalachia, LLC
Address 5260 Dupont Rd. City Parkersburg State WV Zip 26101

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4407243.3 Easting 520043.1
Landing Point of Curve Northing 4407283.0 Easting 520286.9
Bottom Hole Northing 4409387.4 Easting 518732.5

Elevation (ft) 1238 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)
Air/ OBM
Barite, Lime, CaCL, base oil, Gilsonite, Asphalt, clay, Emulsifier, sulfatone, safevert FLG, safevert WA

Date permit issued 9/13/2021 Date drilling commenced 11/1/2021 Date drilling ceased 4/8/2022
Date completion activities began 5/23/2022 Date completion activities ceased 11/11/2022
Verbal plugging (Y/N) _____ Date permission granted _____ Granted by _____

RECEIVED
Office of Oil and Gas
JUN 12 2023

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

Freshwater depth(s) ft Not observed Open mine(s) (Y/N) depths 862-868
Salt water depth(s) ft Not observed Void(s) encountered (Y/N) depths N
Coal depth(s) ft 862,877 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) Y



Reviewed by:
[Signature]
09/15/2023

API 47-051 - 02412 Farm name HG Energy II Appalachia, LLC Well number MND23 N-6H

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	28"	20"	40'	New	94 lbs/ft J-55		Yes
Surface	18.5"	13.375"	1197	New	54.5 lbs/ft J-55		Yes
Coal							
Intermediate 1	12.25"	9.625"	3166	New	40 lbs/ft J55		Yes
Intermediate 2							
Intermediate 3							
Production	8.5	5.5	15590	New	20 lbs/ft P-110		Yes
Tubing	4.67	2.375	7074	New	4.7 lbs/ft J55		not cemented
Packer type and depth set							

Comment Details Conductor: 19.5 bbls cement to surface performed by Lightning Energy Services along with cellars

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	Class A	93				Surface	8
Surface	Class A	1590	15.6	1.19	1892	Surface	8
Coal							
Intermediate 1	Class A	1071	15.6	1.24	1328	Surface	8
Intermediate 2							
Intermediate 3							
Production	Class A	4109	16.0	1.13	4643	Surface	8
Tubing							

Drillers TD (ft) 15621 Loggers TD (ft) _____
 Deepest formation penetrated Marcellus Plug back to (ft) _____
 Plug back procedure _____

Kick off depth (ft) 5720

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 _____

13.375" casing: Bow spring centralizers run on first 2 joints then placed every 3 joints to 100' from surface

9.625" casing: Bow spring centralizers run every joint for first 12 joints then placed every 3 joints to 100' from surface

5.5" casing: Spiral centralizer run every 3 joints from the 1st long joint to the top of the curve (KOP) Spiral centralizer run every 5 joints from the top of curve (KOP) 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 _____

RECEIVED
Office of Oil and Gas
JUN 12 2023
WV Department of
Environmental Protection

09/15/2023

HG Energy II Appalachia, LLC
MND23 N-6H
Perforation Record

Stage #	Perf Date	Perforations From Depth	Perforations to Depth	Number of Perforations	Formation
Sleeve/1	10/15/2022	15537	15510	2	Marcellus
2	10/15/2022	15476	15308	28	Marcellus
3	10/16/2022	15280	15112	28	Marcellus
4	10/16/2022	15084	14916	28	Marcellus
5	10/17/2022	14888	14720	28	Marcellus
6	10/17/2022	14692	14524	28	Marcellus
7	10/18/2022	14496	14328	28	Marcellus
8	10/18/2022	14300	14132	28	Marcellus
9	10/18/2022	14104	13936	28	Marcellus
10	10/19/2022	13908	13740	28	Marcellus
11	10/19/2022	13712	13544	28	Marcellus
12	10/19/2022	13516	13348	28	Marcellus
13	10/20/2022	13320	13152	28	Marcellus
14	10/21/2022	13124	12956	28	Marcellus
15	10/21/2022	12928	12760	28	Marcellus
16	10/22/2022	12732	12564	28	Marcellus
17	10/22/2022	12536	12368	28	Marcellus
18	10/23/2022	12340	12172	28	Marcellus
19	10/23/2022	12144	11976	28	Marcellus
20	10/23/2022	11948	11780	28	Marcellus
21	10/24/2022	11752	11584	28	Marcellus
22	10/24/2022	11556	11388	28	Marcellus
23	10/25/2022	11360	11192	28	Marcellus
24	10/25/2022	11164	10996	28	Marcellus
25	10/25/2022	10968	10800	28	Marcellus
26	10/26/2022	10772	10604	28	Marcellus
27	10/26/2022	10576	10408	28	Marcellus
28	10/26/2022	10380	10212	28	Marcellus
29	10/27/2022	10184	10016	28	Marcellus
30	10/27/2022	9989	9821	28	Marcellus
31	10/27/2022	9795	9627	28	Marcellus
32	10/28/2022	9601	9433	28	Marcellus
33	10/28/2022	9407	9239	28	Marcellus
34	10/29/2022	9213	9045	28	Marcellus
35	10/29/2022	9019	8851	28	Marcellus
36	10/29/2022	8825	8657	28	Marcellus
37A	10/29/2022	8631	8463	28	Marcellus
37B	10/30/2022	8631	8433	53	Marcellus
38	10/30/2022	8405	8253	28	Marcellus
39	10/30/2022	8225	8075	28	Marcellus
40A	10/31/2022	8049	7881	28	Marcellus
40B	10/31/2022	8049	7851	53	Marcellus
41	10/31/2022	7855	7687	28	Marcellus
42	10/31/2022	7661	7493	28	Marcellus
43	11/1/2022	7467	7299	28	Marcellus
44	11/1/2022	7273	7105	28	Marcellus

RECEIVED
Office of Oil and Gas
JUN 12 2023
WV Department of
Environmental Protection

09/15/2023

HG Energy II Appalachia, LLC

MND23 N-6H

Stimulation Record

Stage #	Date	Ave pump rate (BPM)	Ave Treatment Press (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Proppant (LBS)	Water (BBLs)
Sleeve/1	10/15/2022	89.0	7523	7801	3341	270000	7,613
2	10/15/2022	108.0	8,272	5,485	3,878	635000	13,393
3	10/16/2022	101.0	7,544	5,560	4,842	562000	11,856
4	10/16/2022	107.0	8,040	3,701	4,302	663300	11,970
5	10/17/2022	104.0	8,029	5,383	4,470	661000	9,451
6	10/17/2022	99.0	7,719	5,636	5,625	661000	10,194
7	10/18/2022	108.0	7,885	5,276	5,126	661000	10,685
8	10/18/2022	100.0	7,559	5,401	4,917	661000	9,523
9	10/18/2022	103.0	7,710	5,580	4,541	661000	9,560
10	10/19/2022	106.0	7,908	5,543	4,227	679500	9,129
11	10/19/2022	98.0	7,645	5,347	5,118	630000	9,169
12	10/19/2022	105.0	7,671	4,546	5,081	620000	10,839
13	10/20/2022	100.0	7,444	5,208	4,535	590300	13,727
14	10/21/2022	100.0	7,541	5,138	4,646	588000	10,731
15	10/21/2022	102.0	7,367	4,763	4,969	620000	9,400
16	10/22/2022	97.5	7,177	6,227	5,153	632700	10,181
17	10/22/2022	100.0	7,452	5,627	4,838	669200	9,941
18	10/23/2022	98.0	6,935	5,201	4,322	578200	8,859
19	10/23/2022	101.0	7,253	5,528	4,745	620300	11,551
20	10/23/2022	101.0	7,085	5,532	5,079	620200	8,926
21	10/24/2022	102.0	7,211	5,534	4,793	620300	9,181
22	10/24/2022	92.0	7,068	5,586	4,939	620200	10,835
23	10/25/2022	94.0	7,378	5,603	4,926	620300	10,616
24	10/25/2022	103.0	6,939	5,162	4,884	620200	9,458
25	10/25/2022	104.0	7,557	5,266	4,753	620200	10,476
26	10/26/2022	103.0	7,405	5,482	4,736	620300	11,721
27	10/26/2022	103.0	7,389	5,523	5,506	630200	9,530
28	10/26/2022	104.0	7,339	5,253	4,816	610300	8,479
29	10/27/2022	104.0	7,120	5,376	5,102	620300	9,738
30	10/27/2022	102.0	7,362	5,263	4,668	625000	11,834
31	10/27/2022	99.0	7,239	5,089	5,058	620000	10,441
32	10/28/2022	104.0	6,860	4,868	5,275	620000	9,207
33	10/28/2022	102.0	6,954	5,301	5,046	620000	9,540
34	10/29/2022	104.0	7,339	5,103	5,414	620000	9,635
35	10/29/2022	105.0	6,706	4,924	4,925	620000	9,259
36	10/29/2022	108.0	6,750	5,185	4,872	620000	9,038
37A	10/29/2022	35.0	7,771	4,923	4,579	1200	2,259
37B	10/30/2022	103.0	6,570	4,892	4,170	620000	9,364
38	10/30/2022	104.0	6,665	4,944	4,467	590000	10,269
39	10/30/2022	107.0	7,007	5,213	5,475	620000	8,934
40A	10/31/2022	58.0	7,431	5,171	4,871	6000	3,483
40B	10/31/2022	108.0	6,576	4,953	3,902	614000	9,457
41	10/31/2022	103.0	7,250	5,673	4,449	620000	11,117
42	10/31/2022	107.0	7,061	5,272	4,917	601900	10,057
43	11/1/2022	109.0	6,865	5,288	5,056	620000	10,077
44	11/1/2022	105.0	6,639	5,825	4,681	629200	9,761

RECEIVED
Office of Oil and Gas
JUN 12 2023
WV Department of
Environmental Protection

HG Energy II Appalachia, LLC

MND23 N6H

Lithology Information

Actual Tops MND23 N6H				
GI	1238			
PD110	1265			
Rev B.0				
	Top		Base	
Formation	MD	TVD	MD	TVD
Pittsburgh Co	862	862	868	868
Coal	877	877	880	880
Surface casin	1197	set	1229	drill to
Big lime	1960	1960	2050	2049
Big Injun	2050	2049	2132	2131
Pocono Big li	2132	2131	2240	2239
5th Sand/we	2412	2411	2430	2429
berea	2586	2585	2631	2630
gordon	2835	2834	2853	2852
50'	2938	2936	2969	2968
Casing	3166	set	3206	drill to
speechley	3540	3547	3616	3612
Benson	5187	5065	5196	5073
Alexander	5221	5094	5543	5367
Rhinestreet	6156	5926	6519	6250
Cashaqua	6519	6250	6623	6327
Middlesex	6623	6327	6659	6351
West River	6659	6351	6760	6413
Burket	6760	6413	6789	6428
Tully	6789	6428	6878	6469
Hamilton	6878	6469	7030	6514
Marcellus	7030	6514	15621	6420

09/15/2023

AS DRILLED PLAT

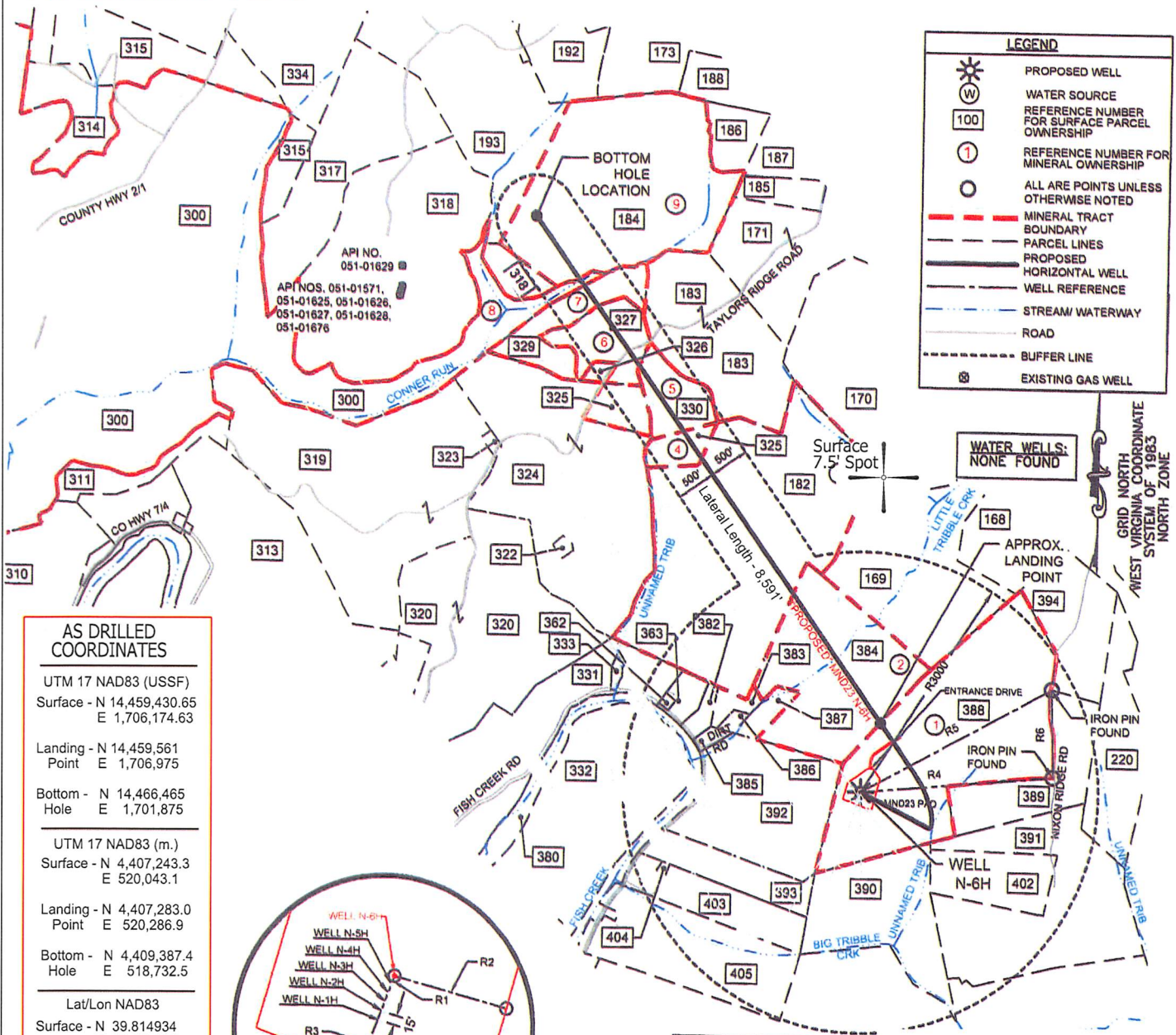
4,497' to Top Hole

8,778' to Bottom Hole

39° 50' 00"

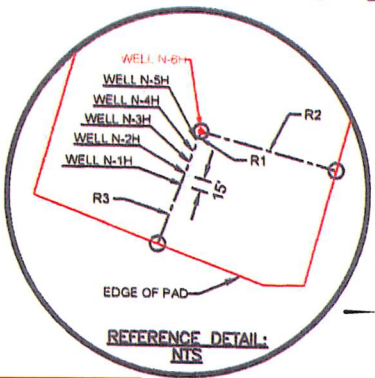
80° 45' 00"
14,857' to Bottom Hole
(Referenced to 39°52'30")

6,729' to Top Hole



LEGEND	
	PROPOSED WELL
	WATER SOURCE
	REFERENCE NUMBER FOR SURFACE PARCEL OWNERSHIP
	REFERENCE NUMBER FOR MINERAL OWNERSHIP
	ALL ARE POINTS UNLESS OTHERWISE NOTED
	MINERAL TRACT BOUNDARY
	PARCEL LINES
	PROPOSED HORIZONTAL WELL
	WELL REFERENCE
	STREAM/WATERWAY
	ROAD
	BUFFER LINE
	EXISTING GAS WELL

AS DRILLED COORDINATES	
UTM 17 NAD83 (USSF)	
Surface - N	14,459,430.65
E	1,706,174.63
Landing - N 14,459,561	
Point	E 1,706,975
Bottom - N 14,466,465	
Hole	E 1,701,875
UTM 17 NAD83 (m.)	
Surface - N	4,407,243.3
E	520,043.1
Landing - N 4,407,283.0	
Point	E 520,286.9
Bottom - N 4,409,387.4	
Hole	E 518,732.5
Lat/Lon NAD83	
Surface - N	39.814934
E	80.765824
Landing - N 39.815286	
Point	E 80.762974
Bottom - N 39.834282	
Hole	E 80.781074



LINE TABLE		
LINE	BEARING	DISTANCE
R1	N15°36'10"E	15.00'
R2	N75°01'49"W	188.33'
R3	N20°19'49"E	159.61'
R4	S84°39'25"W	2435.51'
R5	S61°07'26"W	2734.27'
R6	N01°36'10"W	1094.04'



(SIGNED) *[Signature]*
TIMOTHY P. ROUSH PS 793

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

- NOTES ON PLAT**
- The purpose of this plat is to show coordinates for the subject well as drilled.
 - The drawing shown hereon is from the original drilling permit application plat dated 6/4/19 prepared by Adam J. Westfall, W.Va. PS #2269.
 - As drilled Landing Point, Bottom Hole Location and lateral length are calculated from gyro measurements taken while drilling the well.
 - Latitude/Longitude offset measurements are referenced to NAD 1927.

- DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

FILE NO. _____
SCALE: 1" = 2,000'
MINIMUM DEGREE OF ACCURACY: Sub-Meter
PROVEN SOURCE OF ELEVATION: DGPS Survey



WEST VIRGINIA
Department of Environmental Protection
Office of Oil and Gas
601 57th Street
Charleston, West Virginia 25301

DATE: November 9, 2022
WELL NAME: MND23 N-6H
API WELL NO.: 47 - 051 - 02412
State County Permit

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

LOCATION: ELEVATION 1,237' WATERSHED Big Tribble Creek
DISTRICT: Franklin COUNTY: Marshall QUADRANGLE: Powhatan Point 7.5'
SURFACE OWNER: HG Energy II, Appalachia ACREAGE: 126.6 Ac.
OIL & GAS ROYALTY OWNER: Charles W. Miller et al. LEASE ACREAGE: 190.4 Ac. LEASE NO. _____
PROPOSED WORK: DRILL _____ CONVERT _____ DRILL DEEPER _____ REDRILL _____ FRACTURE OR STIMULATE _____ PLUG OFF OLD FORMATION _____
PERFORATE NEW FORMATION _____ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) Show As Drilled Coordinates and Lateral Length
PLUG AND ABANDON _____ CLEAN OUT AND REPLUG _____ TARGET FORMATION Marcellus Shale ESTIMATED DEPTH 6,420' TVD 15,621' TMD

WELL OPERATOR: HG Energy II Appalachia, LLC. DESIGNATED AGENT: Diane White
ADDRESS: 5260 DuPont Road ADDRESS: 5260 DuPont Road
Parkersburg, WV 26101 Parkersburg, WV 26101

09/15/2023

