

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

RECEIVED  
Office of Oil and Gas

MAR 08 2024

WV Department of  
Environmental Protection

API 47 - 061 - 01928 County Monongalia District Clay  
Quad Grant Town Pad Name Sullivan Field/Pool Name \_\_\_\_\_  
Farm name Alan Sullivan Well Number 3H-A  
Operator (as registered with the OOG) Northeast Natural Energy LLC  
Address 707 Virginia St. E., Suite 1200 City Charleston State WV Zip 25301

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4385279.5 Easting 566678.0  
Landing Point of Curve Northing 4385394.7 Easting 566880.5  
Bottom Hole Northing 4388453.5 Easting 564772.4

Elevation (ft) 1,476' 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)  
Synthetic Based Mud - Horizontal Section: BIO-BASE 365, CALCIUM CHLORIDE POWDER, G-SEAL PLUS, HRP, LIME, M-I WATE (BARITE),  
M-I-X II MEDIUM, MEGADRIL P SYSTEM, MEGADRIL P SYSTEM RENTAL, MEGAMUL, SAFE-CARB 250, VERSATHIN HF, VERSAWET, VG-PLUS, VINSEAL MEDIUM, WALNUT NUT PLUG MEDIUM

Date permit issued 7/26/2022 Date drilling commenced 5/1/2023 Date drilling ceased 5/18/2023  
Date completion activities began 8/28/2023 Date completion activities ceased 10/4/2023  
Verbal plugging (Y/N) NA Date permission granted \_\_\_\_\_ Granted by \_\_\_\_\_

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

Freshwater depth(s) ft 914' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 2,402' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 894' - 914' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

**APPROVED**

Reviewed by:  
*Maureen K. P.*  
3/14/2024  
**04/12/2024**

API 47-061 - 01928 Farm name Alan Sullivan Well number 3H-A

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	30"	24"	128'	N		NA	
Surface	17-1/2"	13-3/8"	990'	N	54.5	NA	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2,490'	N	36	NA	Y, 37 bbl
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	20,755'	N	20	NA	Y
Tubing							
Packer type and depth set							

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	4,500 PSI Grout						48
Surface	Class A + 2%	1,145	15.6	1.14	1,301	CTS	8
Coal							
Intermediate 1	Class A + 1%	900	15.6	1.13	1,060	CTS	8
Intermediate 2							
Intermediate 3							
Production	50:50 Class A + Additives	3,950	14.5	1.13	4,444	1,864'	48
Tubing							

Drillers TD (ft) 20,770' Loggers TD (ft) 20,740'  
 Deepest formation penetrated Marcellus Plug back to (ft) NA  
 Plug back procedure \_\_\_\_\_

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Kick off depth (ft) 7,337'

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

WV Department of Environmental Protection

Well cored  Yes  No Conventional Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING \_\_\_\_\_  
 Surface: Bow spring centralizers every 3rd joint or approximately 120'  
 Intermediate: Bow spring centralizers every 3rd joint or approximately 120'  
 Production: Rigid body centralizers placed at a minimum of every other joint (~80') from TD 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 \_\_\_\_\_



API 47- 061 - 01928 Farm name Alan Sullivan Well number 3H-A

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	8,184'	TVD	20,770' MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 2,445 psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST 24 hrs

OPEN FLOW Gas 2,755 mcfpd Oil \_\_\_\_\_ bpd NGL \_\_\_\_\_ bpd Water \_\_\_\_\_ bpd  
 GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
See attached	0		0		

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Environmental Protection

Please insert additional pages as applicable.

Drilling Contractor Patterson UTI  
 Address 4000 Town Center Blvd, Suite 240 City Canonsburg State PA Zip 15317

Logging Company Baker Hughes  
 Address 837 Phillippi Pike City Clarksburg State WV Zip 26301

Cementing Company NextTier  
 Address 4000 Town Center Blvd City Canonsburg State PA Zip 15317

Stimulating Company Universal Pressure Pumping  
 Address 2198 University Dr. City Lemont Furnace State PA Zip 15456

Please insert additional pages as applicable.

Completed by Hollie Medley Telephone 304-212-0422  
 Signature Hollie Medley Title Regulatory Manager Date 3/6/24

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

04/12/2024

## Sullivan 3H Stimulation Report

Stage Number	Report Date	ISIP (psi)	Breakdown Pressure (psi)	Avg Treating Pressure (psi)	Avg Treating Rate (BPM)	Pad Volume (bbls)	Total Clean Fluid (Bbls)	Total Proppant Amount (lbs)	Flush Volume (bbls)
1	8/28/2023	4,941	94,444	9,753	94	615	7,684	300,146	481
2	8/29/2023	4,986	7,066	8,913	87	41	9,579	457,300	438
3	8/28/2023	5,465	8,049	9,287	93	435	10,008	455,000	559
4	8/30/2023	5,286	6,959	9,232	92	35	9,863	456,200	532
5	8/31/2023	5,388	5,107	9,324	95	247	9,715	456,700	455
6	8/31/2023	5,338	7,395	9,565	92	10	9,731	457,500	442
7	9/1/2023	5,218	7,036	9,328	94	67	9,687	456,200	447
8	9/2/2023	5,247	3,939	9,005	93	44	9,513	455,815	439
9	9/3/2023	5,501	5,125	9,187	93	22	9,455	455,800	416
10	9/3/2023	5,308	5,221	9,467	94	37	9,471	455,700	424
11	9/4/2023	5,390	7,001	9,215	92	25	9,490	455,700	418
12	9/5/2023	5,715	6,666	9,258	94	28	9,461	455,600	413
13	9/5/2023	5,357	7,180	9,783	94	16	9,516	455,400	412
14	9/6/2023	5,103	5,256	9,497	91	30	9,123	455,700	453
15	9/7/2023	5,544	6,657	9,434	94	8	9,297	456,200	402
16	9/8/2023	5,596	4,722	9,461	94	13	8,834	455,600	455
17	9/8/2023	6,177	7,064	9,369	93	34	9,537	456,200	395
18	9/9/2023	6,215	6,489	9,181	92	40	8,785	455,600	376
19	9/9/2023	6,161	7,276	9,471	93	33	8,270	454,900	2,034
20	9/10/2023	5,255	6,972	9,140	93	27	8,680	455,700	377
21	9/10/2023	5,595	6,804	9,347	94	20	9,050	454,700	379
22	9/11/2023	5,576	6,847	9,266	94	31	8,643	455,800	364
23	9/12/2023	5,622	7,183	9,338	94	11	8,461	455,100	424
24	9/12/2023	4,677	7,084	9,313	94	11	8,485	454,600	364
25	9/13/2023	5,432	6,752	9,003	94	24	8,270	458,000	350
26	9/14/2023	5,453	6,514	8,866	93	20	9,056	455,400	354
27	9/14/2023	5,716	6,145	8,949	93	5	7,655	455,857	434
28	9/15/2023	5,172	6,671	9,054	94	20	8,382	454,900	348
29	9/15/2023	5,890	5,928	8,905	93		8,540	455,800	383
30	9/15/2023	5,312	6,788	9,052	93	19	8,291	455,000	336
31	9/16/2023	5,436	6,164	8,883	93	6	8,476	455,500	346
32	9/17/2023	5,145	6,729	9,326	90	35	8,584	456,200	338
33	9/17/2023	5,207	7,266	8,951	94	20	8,343	454,900	387
34	9/18/2023	5,294	6,646	8,792	94	11	8,544	455,600	334
35	9/19/2023	5,288	6,726	8,821	94	14	9,228	455,000	315
36	9/19/2023	5,597	6,222	8,776	95	15	8,534	455,800	336
37	9/20/2023	5,671	6,941	9,087	95	35	8,506	455,000	306
38	9/20/2023	5,568	6,324	8,813	94	9	8,230	455,600	303
39	9/21/2023	5,387	6,018	8,850	94	15	8,403	455,200	313
40	9/22/2023	5,674	6,964	8,520	93	35	8,334	456,900	285
41	9/22/2023	4,955	7,035	8,568	94	16	8,100	449,200	287

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Stage Number	Report Date	ISIP (psi)	Breakdown Pressure (psi)	Avg Treating Pressure (psi)	Avg Treating Rate (BPM)	Pad Volume (bbls)	Total Clean Fluid (Bbls)	Total Proppant Amount (lbs)	Flush Volume (bbls)
42	9/23/2023	5,003	5,194	7,961	94	65	8,316	455,900	294
43	9/23/2023	5,116	5,721	7,824	94	31	8,375	456,800	269
44	9/24/2023	5,220	6,310	7,831	94	2	8,545	415,388	317
45	9/25/2023	4,701	6,197	7,778	94	38	8,373	456,600	263
46	9/25/2023	4,675	4,158	8,212	94	25	8,204	455,500	233
47	9/26/2023	4,295	7,010	7,941	94	38	8,313	456,600	262
48	9/26/2023	4,533	4,964	7,962	94	23	8,284	456,500	243
49	9/27/2023	4,452	6,561	7,857	94	16	8,018	455,600	229
50	9/27/2023	5,048	6,838	7,791	94	37	8,208	456,700	236
51	9/28/2023	4,975	7,017	7,901	95	210	9,018	454,600	304
52	9/29/2023	4,825	7,243	7,794	95	21	8,121	456,700	231
53	9/29/2023	4,685	6,840	7,777	94	18	8,102	455,200	281
54	9/30/2023	4,897	6,884	7,676	94	20	8,225	456,500	217
55	9/30/2023	5,025	7,169	7,694	94	39	8,299	455,000	286
56	10/1/2023	4,968	6,956	7,553	95	25	8,162	455,900	216
57	10/1/2023	4,712	6,691	7,470	94	8	8,028	454,900	256
58	10/2/2023	5,200	6,613	7,354	92	20	8,152	456,600	149
59	10/2/2023	5,009	7,116	7,504	94	13	7,999	454,700	267
60	10/3/2023	5,111	6,596	7,263	94	24	8,152	456,700	191
61	10/3/2023	5,119	7,033	7,367	94	5	8,003	455,000	254
62	10/4/2023	5,231	7,156	7,197	94	26	8,178	456,600	185
63	10/4/2023	5,484	7,827	7,389	94	17	7,957	455,100	205

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04/12/2024

Sullivan 3H				
Perforation Report				
Stage Number	Report Date	Total Shots	Cluster 1 Top TD	Cluster 5 Bottom TD
1	8/28/2023	40		20,647
2	8/29/2023	40	20,603	20,445
3	8/28/2023	40	20,403	20,245
4	8/30/2023	40	20,203	20,046
5	8/31/2023	40	20,004	19,846
6	8/31/2023	40	19,804	19,646
7	9/1/2023	40	19,604	19,446
8	9/2/2023	40	19,404	19,246
9	9/3/2023	40	19,204	19,047
10	9/3/2023	40	19,005	18,847
11	9/4/2023	40	18,805	18,647
12	9/5/2023	40	18,605	18,447
13	9/5/2023	40	18,405	18,248
14	9/6/2023	40	18,206	18,048
15	9/7/2023	40	18,006	17,848
16	9/8/2023	40	17,806	17,648
17	9/8/2023	40	17,606	17,448
18	9/9/2023	40	17,406	17,249
19	9/9/2023	40	17,207	17,049
20	9/10/2023	40	17,007	16,849
21	9/10/2023	40	16,807	16,649
22	9/11/2023	40	16,607	16,449
23	9/12/2023	40	16,407	16,250
24	9/12/2023	40	16,208	16,050
25	9/13/2023	40	16,008	15,850
26	9/14/2023	40	15,808	15,650
27	9/14/2023	40	15,608	15,450
28	9/15/2023	40	15,408	15,251
29	9/15/2023	40	15,209	15,051
30	9/15/2023	40	15,009	14,851
31	9/16/2023	40	14,809	14,651
32	9/17/2023	40	14,609	14,451
33	9/17/2023	40	14,410	14,252
34	9/18/2023	40	14,210	14,052
35	9/19/2023	40	14,010	13,852
36	9/19/2023	40	13,810	13,652
37	9/20/2023	40	13,610	13,453
38	9/20/2023	40	13,411	13,253
39	9/21/2023	40	13,211	13,053
40	9/22/2023	40	13,011	12,853
41	9/22/2023	40	12,811	12,653
42	9/23/2023	40	12,611	12,454
43	9/23/2023	40	12,412	12,254
44	9/24/2023	40	12,212	12,054
45	9/25/2023	40	12,012	11,854
46	9/25/2023	40	11,812	11,654
47	9/26/2023	40	11,612	11,455

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Stage Number	Report Date	Total Shots	Cluster 1 Top TD	Cluster 5 Bottom TD
48	9/26/2023	40	11,413	11,255
49	9/27/2023	40	11,213	11,055
50	9/27/2023	40	11,013	10,855
51	9/28/2023	40	10,813	10,655
52	9/29/2023	40	10,614	10,456
53	9/29/2023	40	10,414	10,256
54	9/30/2023	40	10,214	10,056
55	9/30/2023	40	10,014	9,856
56	10/1/2023	40	9,814	9,657
57	10/1/2023	40	9,615	9,457
58	10/2/2023	40	9,415	9,257
59	10/2/2023	40	9,215	9,057
60	10/3/2023	40	9,015	8,857
61	10/3/2023	40	8,815	8,658
62	10/4/2023	40	8,616	8,458
63	10/4/2023	40	8,416	8,258

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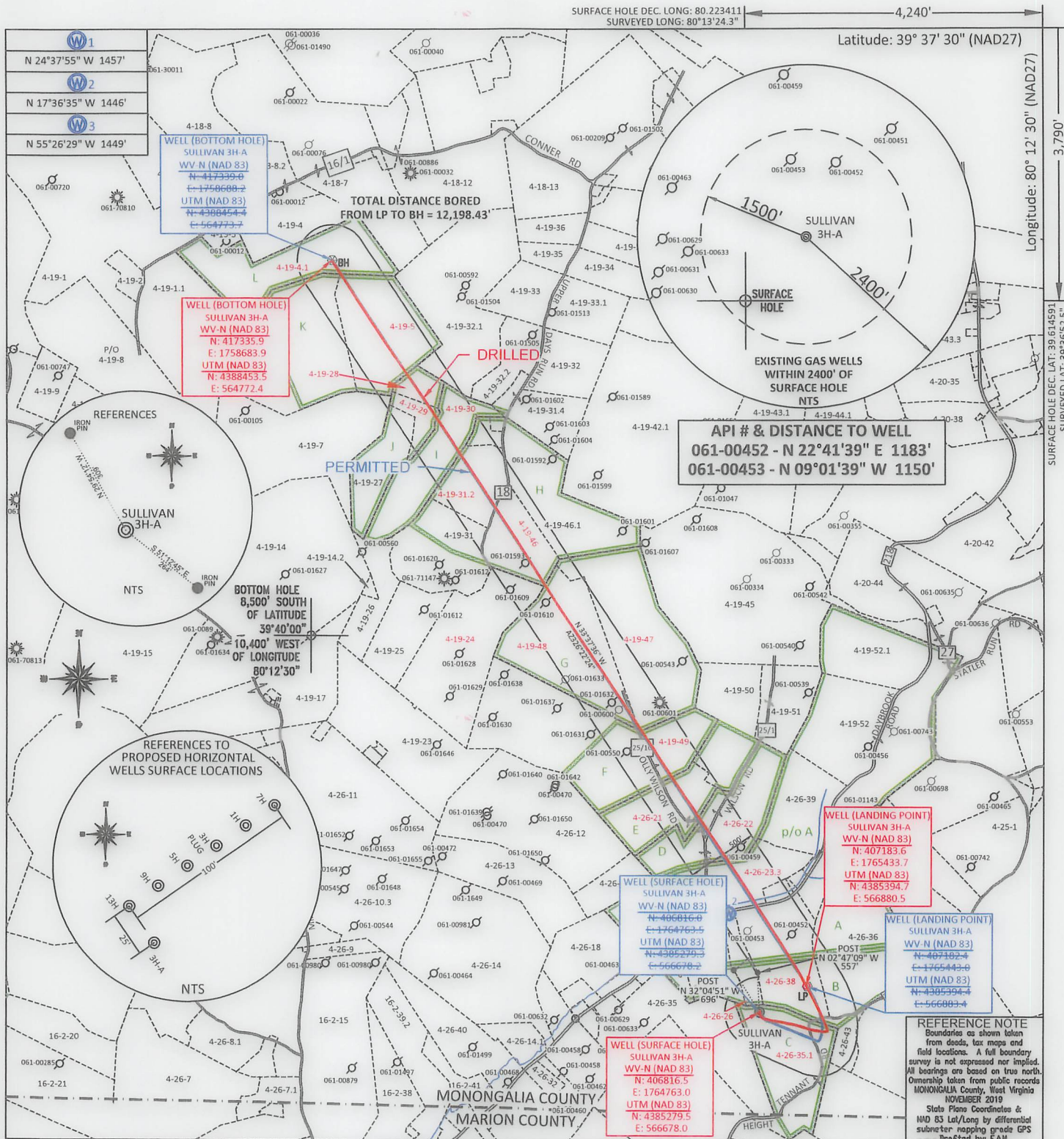
04/12/2024



**Sullivan Completion Lithology**

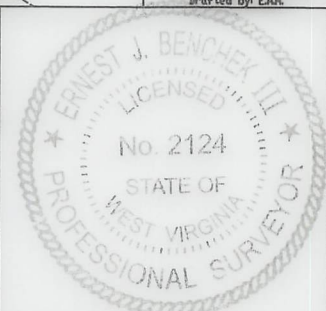
Lithology/Formation	Top Depth in FT TVD	Bottom Depth in FT TVD	Describe rock type and record quantity and type of fluid (freshwater, brine, oil, gas, H2S, etc)
Sand/silt	0	175	Sand/silt
Sand/red shale	175	280	sand with reddish shale
sandstone/shale	280	620	sandstone/shale
Washington coal	530	534	coal
siltstone/sandstone	534	607	
Waynesburg coal	607	614	Waynesburg coal
sandstone/limestone	614	680	sandstone/limestone
siltstone/sandstone	680	715	siltstone/sandstone
sandstone/siltstone	715	750	sandstone/siltstone
Limestone/sandstone/shale	750	767	Limestone/sandstone/shale
Sewickley coal	767	774	Sewickley coal
Limestone	774	893	Limestone
Pittsburgh coal	894	914	Pittsburgh coal
Limestone/siltstone	915	1220	Limestone/siltstone
sandstone/siltstone	1450	1960	sandstone/siltstone
Red Rock/siltstone/limestone	1960	2100	Red Rock/siltstone/limestone
Little Lime	2100	2156	Little Lime
Big Lime	2156	2280	Big Lime
Big Injun	2280	2410	Big Injun
Sand/silt	2410	2790	Sand/silt
Gantz	2790	2800	Gantz
Sand/shale	2800	3040	Sand/shale
Red Rock/siltstone	3040	3135	Red Rock/siltstone
siltstone/sandstone	3135	7393	siltstone/sandstone
Middlesex	7393	7610	Middlesex
Burkett	7610	7793	Burkett
Geneseo	7793	7846	Geneseo
Tully	7846	7905	Tully
Hamilton	7905	8035	Hamilton
Marcellus	8035	TD	Marcellus

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FILE #: NNE20  
 DRAWING #: 3045  
 SCALE: PLAT: 1" = 2000'  
TICK: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: 1/200  
 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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.  
 Signed: \_\_\_\_\_  
 L.L.S. #2124 : Ernest J. Benchek III



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS  
 WVDEP  
 OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25304

Well Type:  Oil  Waste Diposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow

WATERSHED: UPPER MONONGAHELA RIVER  
 COUNTY/DISTRICT: MONONGALIA / CLAY  
 SURFACE OWNER: ALAN SULLIVAN  
 OIL & GAS ROYALTY OWNER: ALAN SULLIVAN  
 LEASE NUMBERS: \_\_\_\_\_

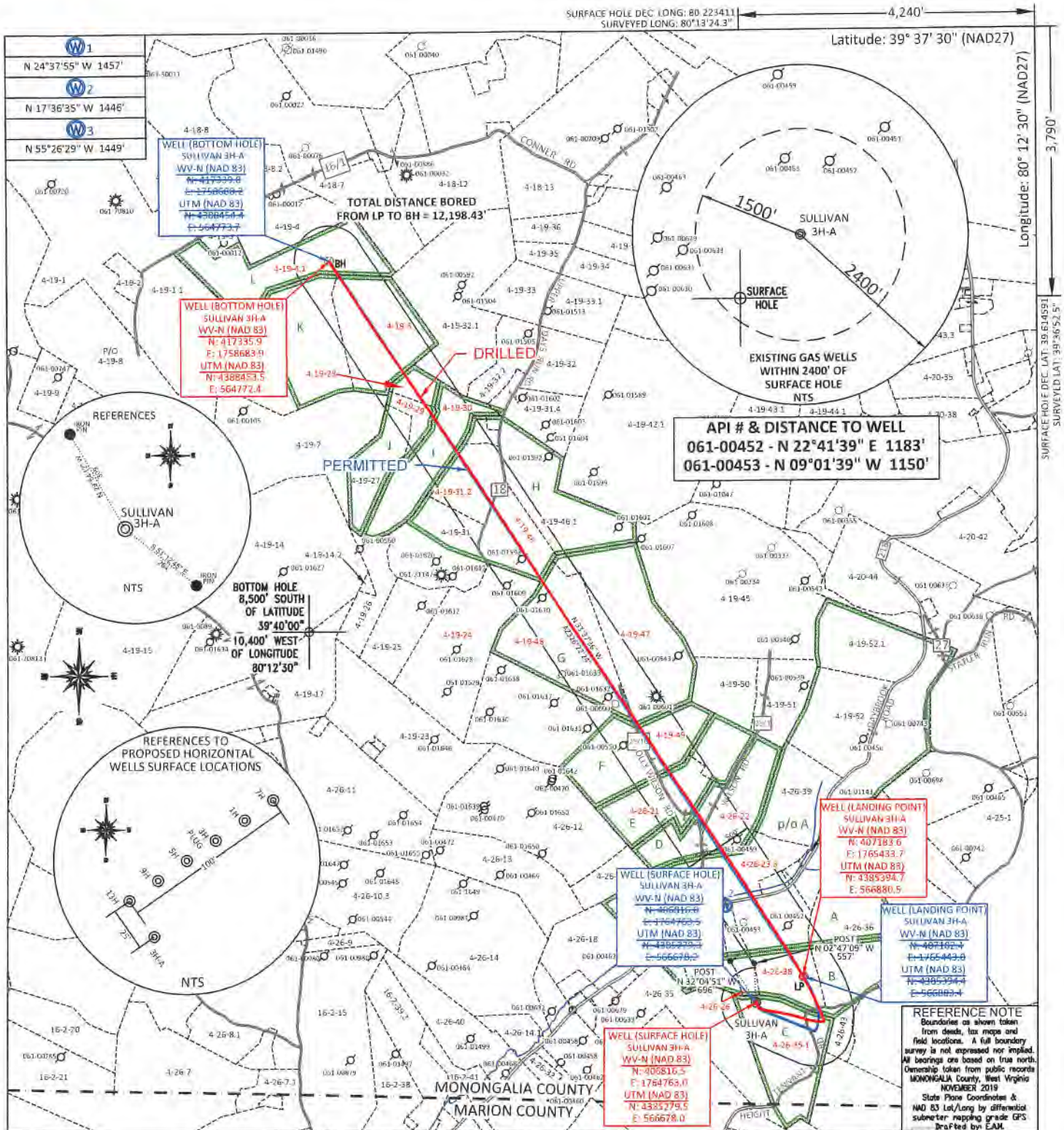
DATE: FEBRUARY 6, 2024  
 OPERATOR'S WELL #: SULLIVAN 3H-A AS-DRILLED  
 API WELL #: 47 61 01928  
 STATE COUNTY PERMIT

AS-BUILT ELEVATION: 1,476'  
 QUADRANGLE: GRANT TOWN  
 ACREAGE: 836.154 +/-  
 ACREAGE: 25.870 +/-

DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE   
 PLUG OFF FORMATION  PERFORATE NEW FORMATION  PLUG & ABANDON   
 CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY): \_\_\_\_\_

TARGET FORMATION: MARCELLUS  
 DRILLED DEPTH: TVD: 8,184' TMD: 20,745'  
 WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC  
 DESIGNATED AGENT: JOHN ADAMS  
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200  
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200  
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301  
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

04/12/2024



FILE #: NNE20  
 DRAWING #: 3045  
 SCALE: PLAT: 1" = 2000'  
 TICK: 1" = 2000'  
 MINIMUM DEGREE OF ACCURACY: 1/200  
 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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: [Signature]  
 L.L.S. #2124 : Ernest J. Benchek III



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS  
 WVDEP  
 OFFICE OF OIL & GAS  
 601 57TH STREET  
 CHARLESTON, WV 25304

Well Type:  Oil  Waste Diposal  Production  Deep  
 Gas  Liquid Injection  Storage  Shallow

WATERSHED: UPPER MONONGAHELA RIVER AS-BUILT ELEVATION: 1,476'

COUNTY/DISTRICT: MONONGALIA / CLAY QUADRANGLE: GRANT TOWN

SURFACE OWNER: ALAN SULLIVAN ACREAGE: 836.154 +/-

OIL & GAS ROYALTY OWNER: ALAN SULLIVAN ACREAGE: 25.870

LEASE NUMBERS: \_\_\_\_\_

DATE: FEBRUARY 6, 2024

OPERATOR'S WELL #: SULLIVAN 3H-A AS-DRILLED

API WELL #: 47 61 01928  
 STATE COUNTY PERMIT

DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE   
 PLUG OFF FORMATION  PERFORATE NEW FORMATION  PLUG & ABANDON   
 CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY): \_\_\_\_\_

TARGET FORMATION: MARCELLUS DRILLED DEPTH: TVD: 8,184' TMD: 20,745'

WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC DESIGNATED AGENT: JOHN ADAMS  
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200  
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

4-26-38	ADAM CLAY DARRAH
4-26-22	LINDA KAY FOGT
4-26-35.1	ALAN SULLIVAN
4-26-26	NNE MIDSTREAM LLC
4-19-47	JAMES & LINDA A KARUS
4-19-49	MICHAEL J LATOCHA
4-26-23.3	ADAM CLAY DARRAH (LIFE- KERRY L DARRAH)
4-19-48	JAMES & LINDA A KARUS
4-26-21	MARVIN L WILSON II
4-19-4.1	KEMBLE D TATE
4-19-5	JIMMY R & PAMELA K TENNANT; BILLY RAY & ROXANA CAHILL
4-19-28	CAROLYN S PAYTON
4-19-29	JAMES TENNANT
4-19-30	BILLIE & JEFFERSON PRICE
4-19-31.2	ROXANNA D CAHILL
4-19-46	ARLYN W PERKEY
4-19-24	EDITH L DARRAH

LEASE INDEX			
A	WV-061-000160-001-ACT	G	WV-061-001851-0014
B	WV-061-000160-001-ACT	H	WV-061-006350-001
C	WV-061-005448-002	I	WV-061-003931-011
D	WV-061-000160-001-ACT	J	WV-061-003931-011
E	WV-061-000160-001-ACT	K	WV-061-005906-004
F	WV-061-000160-001-ACT	L	WV-061-005876-002

04/12/2024

FILE #: NEE20

DRAWING #: 3045

SCALE: N/A

DATE: FEBRUARY 5, 2024

OPERATOR'S WELL #: SULLIVAN 3H-A AS-DRILLED

API WELL #: 47 61  
STATE COUNTY PERMIT





104 Hellport Loop Rd  
 Bridgeport Wv 26330  
 Office 304-933-3544

**DETAILED TREATMENT LOG**

COMPANY NAME:	NorthEast Natural	SUPERVISOR:	Jason Starcher
FIELD:	Sullivan 3HA	PUMP NUMBER:	CPTK04
WELL #:		COMPANY REP:	

DATE:	Saturday, May 6, 2023	TYPE OF JOB:	Intermediate 9 5/8
-------	-----------------------	--------------	--------------------

TIME (Hr:Min)	PRESSURE (PSI)	Wellhead Pressure	RATE (BPM)	FLUID TYPE	STAGE BBLs	COMMENTS:
1630						Arrived on site
1630						Rig Running casing
2000						Spot truck
2015						rig in
2130						safety meeting
2140						psi test lines
2200	200		5	water	211	pump processed water ahead
2305	200		5	gel	25	pump gel
2320	200		5	water	10	pump water spacer
2330	400		4.5	cement	168	pump cement @ 15.6
1215						release plug
1216	900		5.5	water	189	pump displacement
0115	1500					plug land
0120						release pressure, float held 1/2 bbl back
0123	1000					pressure up to 1000 psi & hold for 15 minutes
0140						release pressure
0200						wash up stack
0230						rig down
0330						leave location
						900 sks Class A 1% Calcium .25 Flake
						yield 1.18 water 5.24 Density 15.6
						37 bbl cement returns to surface

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Cement Job Log

**NEXTIER**

NexTier Completion Solutions  
3990 Rogerdale Rd., Houston, TX 77042  
(713)325-6000

Customer: <b>NORTHEAST NATURAL ENERGY LLC</b>	Date: <b>4-May-23</b>	Serv. Supervisor: <b>Michael Franco</b>
Cust. Rep.:	Ticket #: <b>BPA-2305-0004</b>	Serv. Center: <b>Black Lick - 1571</b>
Well Name: <b>Sullivan 3H-A</b>	API Well #:	County: <b>Monongalia</b> State: <b>WV</b>
Well Type:	Rig: <b>Patterson 277</b>	Type of Job: <b>CM-MINE CASING</b>

Materials Furnished by NexTier

Plugs	Casing Hardware	Physical Slurry Properties							
		Sacks of Cement	Fluid Density (lb/gal)	Excess	Yield (cuft/sk)	Mix Water (gal/sk)	Fluid Volume (bbls)	Fluid Volume (cuft)	Mix Water (bbls)
6% Gel Spacer	+20.0 PPB NEX-020		8.7		4.62	33.66	25.00	-	
Mine 15.6 lb/gal Cement - 900' - 1050'	100% NCM-956 +1.5% NAC-110+0.25 PPS NLM-600	205	15.6	50%	1.14	4.79	41.48	232.89	23
Fresh Water Displacement			8.33			-	156.14	-	
Packer 15.6 lb/gal Cement - 0' - 500'	100% NCM-956 +1.5% NAC-110+0.25 PPS NLM-600	940	15.6	30%	1.14	4.79	190.19	1,067.89	107
						-	-	-	
						-	-	-	

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Displacement Chemicals:

OPEN HOLE DATA				TUBULAR DATA								
22 in. O.H. 100 to 925 ft 17.5 in. O.H. 925 to 1,100 ft			13.375 in. 54.5#, ( 0 to 1,050 ft)			SIZE WEIGHT	THRD	DEPTH (ft)	GRADE	ID (in)	BURST (psi)	COLLAPSE (psi)
Ambient Temp.	Bulk Temp.	Slurry 1 Temp.	Slurry 2 Temp.	Slurry 3 Temp.	Slurry 4 Temp.							
54.0 °F		69.0 °F	67.0 °F			13.375 54.5#	BTC	991'	J-55	12.615	2730	1130

PREVIOUS CASING DATA	PERFORATED INTERVAL DATA				CASING EQUIPMENT DEPTHS			
24 in. 97.4# ( 0 to 100 ft)	TOP	BTM	SPF	SIZE	SHOE	FLOAT	STAGE	ACP
					988	945		

WELL FLUID			DISPLACEMENT FLUID			DIFF PRESS	CSG LIFT	MAX PRESS	Mix H2O Chlorides (ppm)	Mix H2O pH	Mix H2O Temp	WATER ON LOC (bbl)
TYPE	DENSITY	VOLUME	TYPE	DENSITY		(psi)	(psi)	(psi)				
H2O	8.3 ppg	146 bbl	H2O	8.3 ppg		300	334	800	3	7	51.0 °F	1000

Bumped Plug	Final Differential (psi)	Floals Held (Y/N)	PSI Left on Casing	Cement to Surface (bbl)	Top of Cement (ft)	Full Circ. During Job (Y/N)	Max Pump Pressure (psi)	Casing Rotation	Additional Hrs Charged (hrs)	Casing Reciprocation	Rathole Length (ft)
Yes	100.00	Y	-			No	800.00	No	8.00	No	50

Comments/Additional Details:  
Packer set @ 534'

*Michael Franco*  
Service Supervisor

4-May-23  
Date

04/12/2024

# NORTHEAST NATURAL ENERGY, LLC

Location: Monongalia County, WV  
 Field: Monongalia  
 Facility: Sullivan Pad

Slot: Slot #03-A  
 Well: Sullivan 3H-A  
 Wellbore: Sullivan 3H-A PWB

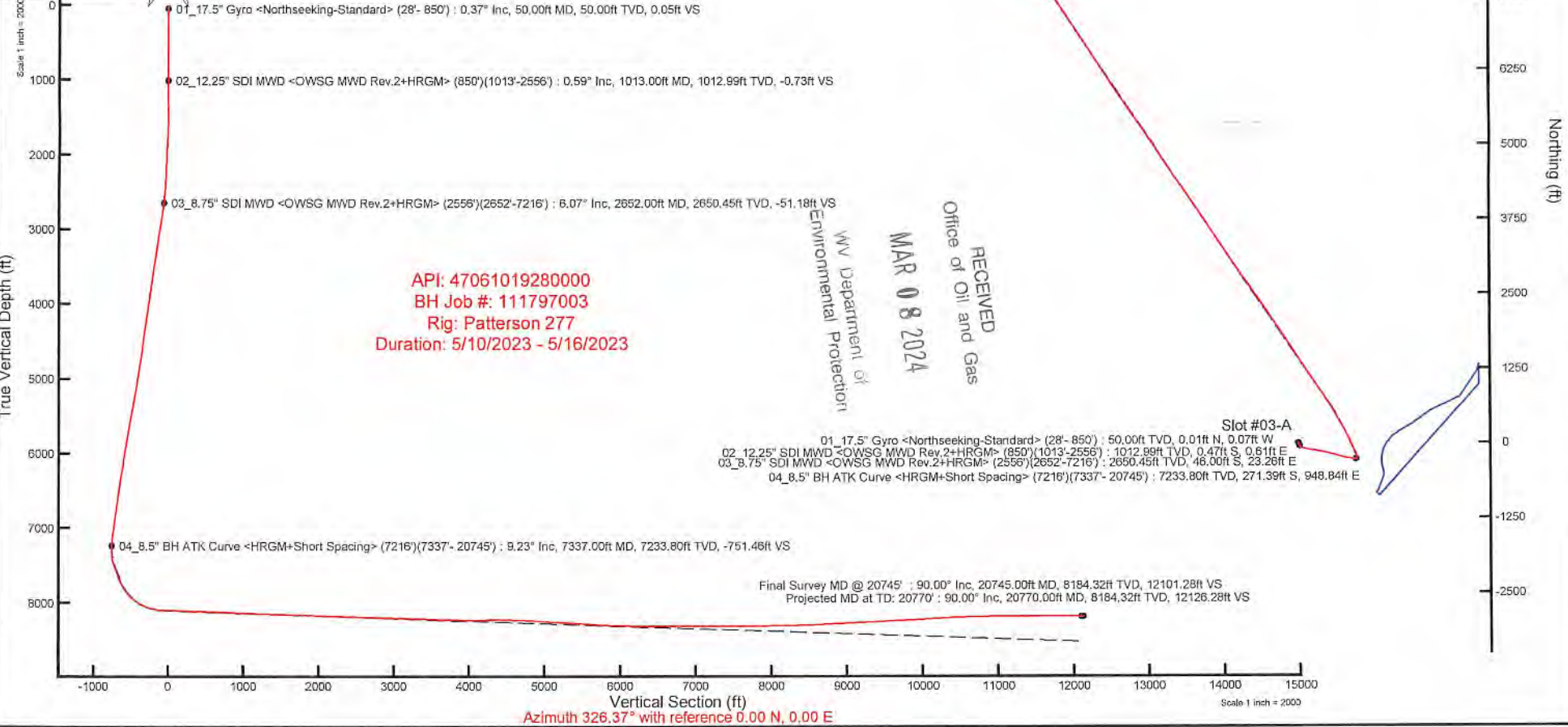


File Name: 2023-05-16_2023-05-16_2023-05-16	Drawn Date: 2023-05-16
File Path: \\server\projects\monongalia\2023-05-16	Drawn By: [Name]
Project Name: Sullivan 3H-A PWB	Drawn Date: 2023-05-16
Drawn Date: 2023-05-16	Drawn By: [Name]
Drawn Date: 2023-05-16	Drawn By: [Name]

Location Information					
Facility Name	Grid East (US Ft)	Grid North (US Ft)	Latitude	Longitude	
Sullivan Pad	17548.15000	40652.000	39°39'53.4792"N	80°13'22.9211"W	
Site	Local E (ft)	Local N (ft)	Grid East (US Ft)	Grid North (US Ft)	Latitude
SKT #03-A	-55.13	-51.49	17547.63810	406815.960	39°39'52.8215"N

Well Profile Data								
Design Comment	MD (ft)	Inc (°)	Ac (°)	TVD (ft)	Local N(ft)	Local E (ft)	ELS (11900)	VS (ft)
Tie Cc	72.1600	11.230	81.110	7114.73	-271.73	927.37	1.08	-739.83
Proprietary	7299.04	11.230	81.110	7195.14	-272.51	943.53	0.00	-749.04
Acid No Be Zone	7599.24	20.775	338.803	7489.19	-222.00	963.70	9.00	-713.03
Curve KOP	7812.66	20.775	338.803	7888.73	-151.41	926.32	0.00	-630.06
Landing Pt	8560.82	88.000	333.000	8100.00	-368.64	676.53	9.00	-71.23
End of Turn	8895.56	88.000	328.281	8111.73	655.80	510.04	2.00	283.57
BH	20767.44	88.000	328.281	8525.98	10523.63	-6075.76	0.00	12127.30

Well Data			
Slot	Well	Wellbore	Wellbath
Slot #03-A	Sullivan 3H-A	Sullivan 3H-A AWB	Sullivan 3H-A AWP Proj: 20770'
Slot #03-A	Sullivan 3H-A	Sullivan 3H-A PWB	Sullivan 3H-A Rev-B.0



Azimuth 326.37° with reference 0.00 N, 0.00 E





# Actual Wellpath Report

Sullivan 3H-A AWP Proj: 20770'

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## REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 3H-A
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 3H-A AWB
Slot	Slot #03-A		

## REPORT SETUP INFORMATION

Projection System	NAD83 / Lambert West Virginia SP, Northern Zone (4701), US feet	Software System	WellArchitect® 6.0
North Reference	Grid	User	Manajohj
Scale	0.999941	Report Generated	5/18/2023 at 11:43:21 AM
Convergence at slot	0.46° West	Database	WA_MPL_EASTERNUS_Defn

## WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-66.13	-51.49	1764763.51	406815.96	39°36'52.8215"N	80°13'23.5533"W
Facility Reference Pt			1764815.00	406882.09	39°36'53.4792"N	80°13'22.9021"W
Field Reference Pt			1777685.71	440640.65	39°42'28.1140"N	80°10'41.6900"W

## WELLPATH DATUM

Calculation method	Minimum curvature	Patterson 277 (RKB) to Facility Vertical Datum	1504.00ft
Horizontal Reference Pt	Slot	Patterson 277 (RKB) to Mean Sea Level	1504.00ft
Vertical Reference Pt	Patterson 277 (RKB)	Patterson 277 (RKB) to Ground Level at Slot (Slot #03-A)	28.00ft
MD Reference Pt	Patterson 277 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	326.37°

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 MAR 08 2024



# Actual Wellpath Report

Sullivan 3H-A AWP Proj: 20770'

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## REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 3H-A
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 3H-A AWB
Slot	Slot #03-A		

## WELLPATH DATA (229 stations) † = interpolated, ‡ = extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	TVDSS [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
0.00†	0.000	281.780	0.00	-1504.00	0.00	0.00	0.00	1764763.51	406815.96	39°36'52.8215"N	80°13'23.5533"W	0.00	0.00	0.00
28.00	0.000	281.780	28.00	-1476.00	0.00	0.00	0.00	1764763.51	406815.96	39°36'52.8215"N	80°13'23.5533"W	0.00	0.00	0.00
50.00	0.370	281.780	50.00	-1454.00	0.05	0.01	-0.07	1764763.44	406815.97	39°36'52.8217"N	80°13'23.5542"W	1.68	1.68	0.00
100.00	0.080	309.880	100.00	-1404.00	0.20	0.07	-0.25	1764763.26	406816.03	39°36'52.8222"N	80°13'23.5566"W	0.60	-0.58	56.20
150.00	0.120	296.590	150.00	-1354.00	0.28	0.12	-0.33	1764763.18	406816.08	39°36'52.8227"N	80°13'23.5575"W	0.09	0.08	-26.58
200.00	0.130	184.850	200.00	-1304.00	0.28	0.08	-0.38	1764763.13	406816.04	39°36'52.8223"N	80°13'23.5582"W	0.41	0.02	-223.48
250.00	0.590	258.630	250.00	-1254.00	0.33	-0.02	-0.64	1764762.87	406815.94	39°36'52.8212"N	80°13'23.5614"W	1.14	0.92	147.56
300.00	0.200	311.630	300.00	-1204.00	0.51	-0.02	-0.95	1764762.56	406815.94	39°36'52.8213"N	80°13'23.5655"W	0.99	-0.78	106.00
350.00	0.270	284.190	350.00	-1154.00	0.69	0.07	-1.13	1764762.38	406816.03	39°36'52.8221"N	80°13'23.5678"W	0.26	0.14	-54.88
400.00	0.280	305.590	400.00	-1104.00	0.89	0.17	-1.35	1764762.16	406816.13	39°36'52.8231"N	80°13'23.5705"W	0.21	0.02	42.80
450.00	0.310	23.680	450.00	-1054.00	1.07	0.36	-1.39	1764762.12	406816.32	39°36'52.8250"N	80°13'23.5711"W	0.74	0.06	156.18
500.00	0.170	74.330	500.00	-1004.00	1.12	0.51	-1.27	1764762.24	406816.47	39°36'52.8265"N	80°13'23.5695"W	0.48	-0.28	101.30
550.00	0.180	181.940	550.00	-954.00	1.04	0.45	-1.20	1764762.31	406816.41	39°36'52.8259"N	80°13'23.5687"W	0.57	0.02	215.22
600.00	0.170	142.070	599.99	-904.01	0.90	0.31	-1.15	1764762.36	406816.27	39°36'52.8245"N	80°13'23.5681"W	0.24	-0.02	-79.74
650.00	0.450	154.960	649.99	-854.01	0.63	0.08	-1.03	1764762.48	406816.04	39°36'52.8222"N	80°13'23.5664"W	0.57	0.56	25.78
700.00	0.290	149.380	699.99	-804.01	0.31	-0.21	-0.88	1764762.63	406815.75	39°36'52.8194"N	80°13'23.5645"W	0.33	-0.32	-11.16
750.00	0.570	141.020	749.99	-754.01	-0.06	-0.51	-0.66	1764762.85	406815.45	39°36'52.8164"N	80°13'23.5617"W	0.57	0.56	-16.72
800.00	0.420	151.230	799.99	-704.01	-0.49	-0.87	-0.41	1764763.10	406815.09	39°36'52.8129"N	80°13'23.5585"W	0.35	-0.30	20.42
850.00	0.220	102.880	849.99	-654.01	-0.74	-1.05	-0.23	1764763.28	406814.91	39°36'52.8112"N	80°13'23.5562"W	0.64	-0.40	-96.70
1013.00	0.590	39.840	1012.99	-491.01	-0.73	-0.47	0.61	1764764.12	406815.49	39°36'52.8169"N	80°13'23.5454"W	0.32	0.23	-38.67
1108.00	1.100	35.390	1107.97	-396.03	-0.27	0.64	1.45	1764764.96	406816.60	39°36'52.8280"N	80°13'23.5348"W	0.54	0.54	-4.69
1204.00	1.580	32.620	1203.95	-300.05	0.60	2.51	2.70	1764766.21	406818.47	39°36'52.8466"N	80°13'23.5191"W	0.50	0.50	-2.89
1299.00	0.940	25.180	1298.92	-205.08	1.53	4.32	3.74	1764767.25	406820.28	39°36'52.8645"N	80°13'23.5060"W	0.69	-0.67	-7.83
1394.00	0.470	133.720	1393.92	-110.08	1.55	4.76	4.35	1764767.86	406820.71	39°36'52.8689"N	80°13'23.4982"W	1.24	-0.49	114.25
1489.00	1.430	195.090	1488.91	-15.09	0.89	3.34	4.32	1764767.83	406819.30	39°36'52.8549"N	80°13'23.4984"W	1.34	1.01	64.60
1584.00	2.310	191.530	1583.86	79.86	-1.74	0.32	3.63	1764767.14	406816.28	39°36'52.8250"N	80°13'23.5069"W	0.93	0.93	-3.75
1679.00	2.380	164.550	1678.78	174.78	-4.97	-3.46	3.78	1764767.28	406812.50	39°36'52.7877"N	80°13'23.5047"W	1.15	0.07	-28.40
1774.00	3.140	146.020	1773.67	269.67	-9.44	-7.52	5.75	1764769.26	406808.45	39°36'52.7477"N	80°13'23.4790"W	1.22	0.80	-19.51
1869.00	3.000	145.970	1868.53	364.53	-14.53	-11.73	8.60	1764772.11	406804.23	39°36'52.7063"N	80°13'23.4422"W	0.15	-0.15	-0.05
1964.00	1.810	156.360	1963.45	459.45	-18.50	-15.17	10.59	1764774.10	406800.79	39°36'52.6725"N	80°13'23.4164"W	1.33	-1.25	10.94

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# Actual Wellpath Report

Sullivan 3H-A AWP Proj: 20770'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 3H-A
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 3H-A AWB
Slot	Slot #03-A		

WELLPATH DATA (229 stations)														
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	TVDSS [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
2059.00	1.500	175.610	2058.41	554.41	-21.06	-17.78	11.29	1764774.80	406798.18	39°36'52.6467"N	80°13'23.4072"W	0.67	-0.33	20.26
2154.00	1.940	176.100	2153.37	649.37	-23.54	-20.63	11.49	1764775.00	406795.34	39°36'52.6186"N	80°13'23.4043"W	0.46	0.46	0.52
2250.00	1.950	170.190	2249.31	745.31	-26.45	-23.86	11.88	1764775.39	406792.10	39°36'52.5867"N	80°13'23.3990"W	0.21	0.01	-6.16
2345.00	2.460	158.370	2344.24	840.24	-29.92	-27.34	12.91	1764776.42	406788.62	39°36'52.5523"N	80°13'23.3855"W	0.72	0.54	-12.44
2440.00	3.280	152.300	2439.12	935.12	-34.62	-31.65	14.93	1764778.43	406784.32	39°36'52.5100"N	80°13'23.3593"W	0.92	0.86	-6.39
2556.00	4.440	149.870	2554.86	1050.86	-42.40	-38.47	18.72	1764782.23	406777.49	39°36'52.4429"N	80°13'23.3101"W	1.01	1.00	-2.09
2652.00	6.070	148.190	2650.45	1146.45	-51.18	-46.00	23.26	1764786.77	406769.97	39°36'52.3688"N	80°13'23.2513"W	1.71	1.70	-1.75
2746.00	8.800	147.220	2743.65	1239.65	-63.34	-56.27	29.78	1764793.28	406759.70	39°36'52.2678"N	80°13'23.1670"W	2.91	2.90	-1.03
2841.00	9.780	138.980	2837.41	1333.41	-78.61	-68.46	39.01	1764802.51	406747.50	39°36'52.1480"N	80°13'23.0478"W	1.74	1.03	-8.67
2935.00	10.170	124.220	2930.00	1426.00	-94.22	-79.16	51.11	1764814.62	406736.81	39°36'52.0433"N	80°13'22.8921"W	2.74	0.41	-15.70
3030.00	10.980	111.860	3023.40	1519.40	-109.44	-87.24	66.45	1764829.95	406728.72	39°36'51.9646"N	80°13'22.6953"W	2.53	0.85	-13.01
3125.00	10.700	105.000	3116.71	1612.71	-123.51	-92.89	83.36	1764846.87	406723.07	39°36'51.9101"N	80°13'22.4786"W	1.39	-0.29	-7.22
3220.00	10.270	101.840	3210.12	1706.12	-136.17	-96.92	100.17	1764863.67	406719.05	39°36'51.8717"N	80°13'22.2634"W	0.76	-0.45	-3.33
3315.00	10.690	102.660	3303.54	1799.54	-148.58	-100.58	117.05	1764880.56	406715.38	39°36'51.8368"N	80°13'22.0473"W	0.47	0.44	0.86
3410.00	13.060	108.800	3396.50	1892.50	-163.46	-105.97	135.82	1764899.32	406709.99	39°36'51.7850"N	80°13'21.8070"W	2.82	2.49	6.46
3509.00	12.920	105.610	3492.97	1988.97	-180.71	-112.56	157.06	1764920.56	406703.41	39°36'51.7217"N	80°13'21.5348"W	0.74	-0.14	-3.22
3604.00	11.350	99.110	3585.85	2081.85	-195.10	-116.90	176.52	1764940.02	406699.07	39°36'51.6803"N	80°13'21.2857"W	2.19	-1.65	-6.84
3699.00	12.300	96.830	3678.83	2174.83	-208.01	-119.58	195.80	1764959.30	406696.39	39°36'51.6553"N	80°13'21.0391"W	1.11	1.00	-2.40
3793.00	12.960	97.530	3770.56	2266.56	-221.44	-122.15	216.19	1764979.69	406693.82	39°36'51.6315"N	80°13'20.7783"W	0.72	0.70	0.74
3888.00	11.850	94.250	3863.34	2359.34	-234.44	-124.27	236.48	1764999.98	406691.70	39°36'51.6122"N	80°13'20.5188"W	1.38	-1.17	-3.45
3983.00	12.630	96.970	3956.18	2452.18	-247.19	-126.25	256.52	1765020.01	406689.71	39°36'51.5942"N	80°13'20.2626"W	1.02	0.82	2.86
4078.00	13.120	102.030	4048.79	2544.79	-261.66	-129.76	277.38	1765040.87	406686.21	39°36'51.5612"N	80°13'19.9957"W	1.29	0.52	5.33
4173.00	11.830	96.930	4141.55	2637.55	-275.71	-133.18	297.59	1765061.08	406682.78	39°36'51.5290"N	80°13'19.7371"W	1.78	-1.36	-5.37
4267.00	12.200	101.980	4233.49	2729.49	-289.07	-136.41	316.87	1765080.36	406679.56	39°36'51.4986"N	80°13'19.4904"W	1.19	0.39	5.37
4361.00	11.980	104.130	4325.41	2821.41	-303.39	-140.85	336.05	1765099.54	406675.12	39°36'51.4563"N	80°13'19.2449"W	0.53	-0.23	2.29
4459.00	10.060	101.200	4421.60	2917.60	-316.96	-145.00	354.31	1765117.80	406670.97	39°36'51.4167"N	80°13'19.0112"W	2.04	-1.96	-2.99
4554.00	10.350	103.350	4515.10	3011.10	-329.04	-148.58	370.75	1765134.24	406667.39	39°36'51.3826"N	80°13'18.8007"W	0.50	0.31	2.26
4649.00	11.320	103.410	4608.40	3104.40	-342.11	-152.71	388.12	1765151.61	406663.26	39°36'51.3432"N	80°13'18.5783"W	1.02	1.02	0.06
4744.00	12.730	99.030	4701.32	3197.32	-356.02	-156.52	407.53	1765171.02	406659.45	39°36'51.3071"N	80°13'18.3299"W	1.77	1.48	-4.61
4839.00	12.530	99.530	4794.02	3290.02	-370.17	-159.87	428.03	1765191.52	406656.10	39°36'51.2756"N	80°13'18.0676"W	0.24	-0.21	0.53

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# Actual Wellpath Report

Sullivan 3H-A AWP Proj: 20770'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 3H-A
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 3H-A AWB
Slot	Slot #03-A		

WELLPATH DATA (229 stations)														
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	TVDSS [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
4933.00	12.320	100.740	4885.82	3381.82	-384.15	-163.42	447.94	1765211.42	406652.55	39°36'51.2421"N	80°13'17.8129"W	0.36	-0.22	1.29
5027.00	12.780	102.410	4977.57	3473.57	-398.65	-167.53	467.95	1765231.43	406648.44	39°36'51.2031"N	80°13'17.5568"W	0.62	0.49	1.78
5123.00	13.390	103.990	5071.08	3567.08	-414.51	-172.50	489.10	1765252.58	406643.47	39°36'51.1557"N	80°13'17.2860"W	0.74	0.64	1.65
5218.00	13.490	104.070	5163.48	3659.48	-430.83	-177.85	510.53	1765274.01	406638.12	39°36'51.1045"N	80°13'17.0117"W	0.11	0.11	0.08
5313.00	13.550	104.880	5255.84	3751.84	-447.36	-183.40	532.03	1765295.51	406632.57	39°36'51.0513"N	80°13'16.7364"W	0.21	0.06	0.85
5411.00	13.630	103.290	5351.10	3847.10	-464.39	-189.00	554.36	1765317.84	406626.97	39°36'50.9977"N	80°13'16.4504"W	0.39	0.08	-1.62
5505.00	13.360	104.420	5442.51	3938.51	-480.56	-194.25	575.66	1765339.14	406621.72	39°36'50.9475"N	80°13'16.1778"W	0.40	-0.29	1.20
5600.00	13.800	108.210	5534.85	4030.85	-497.63	-200.53	597.05	1765360.53	406615.44	39°36'50.8872"N	80°13'15.9038"W	1.04	0.46	3.99
5694.00	13.660	108.260	5626.16	4122.16	-515.18	-207.51	618.24	1765381.72	406608.46	39°36'50.8199"N	80°13'15.6323"W	0.15	-0.15	0.05
5789.00	12.260	104.880	5718.74	4214.74	-531.56	-213.62	638.65	1765402.12	406602.36	39°36'50.7612"N	80°13'15.3710"W	1.68	-1.47	-3.56
5884.00	11.870	106.250	5811.65	4307.65	-546.59	-218.94	657.78	1765421.25	406597.03	39°36'50.7101"N	80°13'15.1260"W	0.51	-0.41	1.44
5979.00	12.310	109.220	5904.54	4400.54	-562.13	-225.01	676.72	1765440.19	406590.97	39°36'50.6516"N	80°13'14.8833"W	0.80	0.46	3.13
6074.00	12.390	107.690	5997.34	4493.34	-578.16	-231.44	695.99	1765459.46	406584.54	39°36'50.5896"N	80°13'14.6364"W	0.35	0.08	-1.61
6168.00	10.660	109.980	6089.44	4585.44	-593.03	-237.47	713.77	1765477.24	406578.50	39°36'50.5314"N	80°13'14.4086"W	1.90	-1.84	2.44
6263.00	11.030	104.060	6182.75	4678.75	-606.83	-242.68	730.84	1765494.31	406573.29	39°36'50.4812"N	80°13'14.1899"W	1.28	0.39	-6.23
6361.00	13.220	103.080	6278.56	4774.56	-621.92	-247.50	750.86	1765514.32	406568.48	39°36'50.4352"N	80°13'13.9337"W	2.24	2.23	-1.00
6456.00	12.380	102.000	6371.20	4867.20	-637.11	-252.07	771.40	1765534.86	406563.90	39°36'50.3916"N	80°13'13.6708"W	0.92	-0.88	-1.14
6551.00	11.850	98.380	6464.08	4960.08	-650.91	-255.61	791.01	1765554.47	406560.36	39°36'50.3582"N	80°13'13.4198"W	0.97	-0.56	-3.81
6646.00	11.980	95.570	6557.03	5053.03	-663.67	-257.99	810.47	1765573.93	406557.98	39°36'50.3362"N	80°13'13.1709"W	0.63	0.14	-2.96
6740.00	12.040	96.350	6648.98	5144.98	-676.14	-260.02	829.93	1765593.39	406555.95	39°36'50.3177"N	80°13'12.9221"W	0.18	0.06	0.83
6835.00	12.050	99.570	6741.89	5237.89	-689.29	-262.77	849.55	1765613.01	406553.21	39°36'50.2921"N	80°13'12.6711"W	0.71	0.01	3.39
6930.00	12.360	97.600	6834.74	5330.74	-702.78	-265.76	869.41	1765632.87	406550.22	39°36'50.2641"N	80°13'12.4170"W	0.55	0.33	-2.07
7025.00	12.030	96.790	6927.60	5423.60	-715.90	-268.28	889.32	1765652.77	406547.70	39°36'50.2409"N	80°13'12.1624"W	0.39	-0.35	-0.85
7120.00	11.470	96.270	7020.60	5516.60	-728.38	-270.48	908.54	1765671.99	406545.50	39°36'50.2206"N	80°13'11.9166"W	0.60	-0.59	-0.55
7216.00	11.230	91.110	7114.73	5610.73	-739.83	-271.70	927.37	1765690.83	406544.28	39°36'50.2100"N	80°13'11.6758"W	1.09	-0.25	-5.37
7337.00	9.230	86.790	7233.80	5729.80	-751.46	-271.39	948.84	1765712.30	406544.59	39°36'50.2148"N	80°13'11.4015"W	1.77	-1.65	-3.57
7431.00	10.890	51.510	7326.44	5822.44	-754.53	-265.43	963.34	1765726.79	406550.54	39°36'50.2748"N	80°13'11.2169"W	6.67	1.77	-37.53
7527.00	14.460	349.090	7420.48	5916.48	-742.65	-247.94	968.19	1765731.64	406568.04	39°36'50.4481"N	80°13'11.1567"W	13.97	3.72	-65.02
7622.00	19.720	338.030	7511.28	6007.28	-715.99	-221.40	959.94	1765723.39	406594.57	39°36'50.7097"N	80°13'11.2648"W	6.49	5.54	-11.64
7717.00	21.920	340.760	7600.07	6096.07	-683.11	-189.79	948.10	1765711.55	406626.18	39°36'51.0211"N	80°13'11.4194"W	2.53	2.32	2.87

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# Actual Wellpath Report

Sullivan 3H-A AWP Proj: 20770'

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Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 3H-A AWB
Slot	Slot #03-A		

WELLPATH DATA (229 stations)														
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	TVDSS [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
7812.00	22.110	334.680	7688.16	6184.16	-648.24	-156.89	934.61	1765698.06	406659.08	39°36'51.3453"N	80°13'11.5951"W	2.41	0.20	-6.40
7907.00	30.260	335.390	7773.34	6269.34	-606.84	-118.90	916.96	1765680.42	406697.07	39°36'51.7193"N	80°13'11.8245"W	8.59	8.58	0.75
8001.00	37.750	335.240	7851.21	6347.21	-554.94	-71.17	895.02	1765668.47	406744.80	39°36'52.1893"N	80°13'12.1098"W	7.97	7.97	-0.16
8095.00	46.640	336.530	7920.78	6416.78	-492.75	-13.58	869.30	1765632.76	406802.38	39°36'52.7564"N	80°13'12.4442"W	9.50	9.46	1.37
8190.00	55.170	335.090	7980.63	6476.63	-420.08	53.59	838.07	1765602.53	406869.55	39°36'53.4178"N	80°13'12.8374"W	9.06	8.98	-1.52
8285.00	63.970	331.020	8028.72	6524.72	-338.81	126.46	801.88	1765565.34	406942.41	39°36'54.1349"N	80°13'13.3200"W	9.97	9.26	-4.28
8379.00	72.620	332.370	8063.45	6559.45	-251.94	203.29	760.54	1765524.00	407019.24	39°36'54.8910"N	80°13'13.8562"W	9.30	9.20	1.44
8474.00	80.570	332.190	8085.46	6581.46	-160.10	285.03	717.59	1765481.05	407100.97	39°36'55.6954"N	80°13'14.4134"W	8.37	8.37	-0.19
8569.00	88.180	328.410	8094.77	6590.77	-65.86	367.06	670.77	1765434.24	407183.00	39°36'56.5024"N	80°13'15.0200"W	8.93	8.01	-3.98
8663.00	87.780	331.310	8098.08	6594.08	27.90	448.30	623.61	1765387.08	407264.23	39°36'57.3014"N	80°13'15.6310"W	3.11	-0.43	3.09
8758.00	87.970	329.610	8101.60	6597.60	122.58	530.89	576.80	1765340.28	407346.82	39°36'58.1139"N	80°13'16.2376"W	1.80	0.20	-1.79
8853.00	87.970	329.380	8104.97	6600.97	217.38	612.69	528.61	1765292.09	407428.61	39°36'58.9185"N	80°13'16.8618"W	0.24	0.00	-0.24
8948.00	88.210	327.790	8108.13	6604.13	312.26	693.71	479.12	1765242.60	407509.63	39°36'59.7153"N	80°13'17.5024"W	1.69	0.25	-1.67
9043.00	88.400	326.970	8110.94	6606.94	407.20	773.69	427.93	1765191.42	407589.61	39°37'0.5017"N	80°13'18.1647"W	0.89	0.20	-0.86
9138.00	87.440	326.490	8114.39	6610.39	502.13	853.07	375.85	1765139.34	407668.98	39°37'1.2820"N	80°13'18.8384"W	1.13	-1.01	-0.51
9232.00	87.970	326.880	8118.16	6614.16	596.06	931.56	324.27	1765087.76	407747.46	39°37'2.0536"N	80°13'19.5056"W	0.70	0.56	0.41
9325.00	88.180	327.200	8121.28	6617.28	689.00	1009.54	273.70	1765037.19	407825.44	39°37'2.8203"N	80°13'20.1598"W	0.41	0.23	0.34
9420.00	87.720	326.540	8124.68	6620.68	783.93	1089.05	221.81	1764985.31	407904.94	39°37'3.6019"N	80°13'20.8310"W	0.85	-0.48	-0.69
9516.00	87.510	327.140	8128.67	6624.67	879.85	1169.35	169.34	1764932.84	407985.23	39°37'4.3912"N	80°13'21.5097"W	0.66	-0.22	0.63
9610.00	87.170	326.820	8133.04	6629.04	973.74	1248.08	118.18	1764881.68	408063.96	39°37'5.1653"N	80°13'22.1716"W	0.50	-0.36	-0.34
9704.00	87.480	326.830	8137.42	6633.42	1067.63	1326.67	66.80	1764830.30	408142.55	39°37'5.9379"N	80°13'22.8362"W	0.33	0.33	0.01
9799.00	88.030	327.090	8141.14	6637.14	1162.55	1406.25	15.04	1764778.55	408222.12	39°37'6.7202"N	80°13'23.5058"W	0.64	0.58	0.27
9894.00	88.310	326.740	8144.18	6640.18	1257.50	1485.80	-36.79	1764726.72	408301.67	39°37'7.5023"N	80°13'24.1763"W	0.47	0.29	-0.37
9989.00	88.340	327.000	8146.95	6642.95	1352.46	1565.32	-88.69	1764674.82	408381.19	39°37'8.2840"N	80°13'24.8477"W	0.28	0.03	0.27
10084.00	87.910	327.280	8150.06	6646.06	1447.40	1645.08	-140.21	1764623.31	408460.94	39°37'9.0681"N	80°13'25.5142"W	0.54	-0.45	0.29
10179.00	88.150	327.250	8153.33	6649.33	1542.33	1724.95	-191.55	1764571.97	408540.80	39°37'9.8533"N	80°13'26.1785"W	0.25	0.25	-0.03
10273.00	87.940	327.200	8156.54	6652.54	1636.26	1803.94	-242.41	1764521.12	408619.78	39°37'10.6299"N	80°13'26.8365"W	0.23	-0.22	-0.05
10368.00	88.000	325.780	8159.90	6655.90	1731.20	1883.09	-294.82	1764468.71	408698.94	39°37'11.4080"N	80°13'27.5144"W	1.50	0.06	-1.49
10463.00	87.940	325.890	8163.27	6659.27	1826.14	1961.65	-348.14	1764415.39	408777.49	39°37'12.1801"N	80°13'28.2038"W	0.13	-0.06	0.12
10557.00	87.780	326.270	8166.78	6662.78	1920.07	2039.60	-400.56	1764362.98	408855.43	39°37'12.9463"N	80°13'28.8817"W	0.44	-0.17	0.40

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Sullivan 3H-A AWP Proj: 20770'

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WELLPATH DATA (229 stations)														
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	TVDSS [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
10652.00	88.000	326.260	8170.27	6666.27	2015.01	2118.55	-453.28	1764310.26	408934.38	39°37'13.7223"N	80°13'29.5636"W	0.23	0.23	-0.01
10747.00	88.120	326.090	8173.49	6669.49	2109.95	2197.42	-506.13	1764257.41	409013.25	39°37'14.4976"N	80°13'30.2471"W	0.22	0.13	-0.18
10842.00	88.030	326.020	8176.68	6672.68	2204.90	2276.19	-559.15	1764204.40	409092.01	39°37'15.2718"N	80°13'30.9327"W	0.12	-0.09	-0.07
10937.00	87.970	326.340	8180.00	6676.00	2299.84	2355.06	-611.99	1764151.56	409170.88	39°37'16.0471"N	80°13'31.6161"W	0.34	-0.06	0.34
11030.00	87.810	325.530	8183.42	6679.42	2392.77	2432.05	-664.05	1764099.50	409247.86	39°37'16.8038"N	80°13'32.2893"W	0.89	-0.17	-0.87
11125.00	88.210	326.170	8186.72	6682.72	2487.71	2510.62	-717.35	1764046.21	409326.43	39°37'17.5760"N	80°13'32.9785"W	0.79	0.42	0.67
11220.00	88.610	326.120	8189.36	6685.36	2582.67	2589.49	-770.25	1763993.31	409405.29	39°37'18.3511"N	80°13'33.6627"W	0.42	0.42	-0.05
11314.00	88.150	325.370	8192.01	6688.01	2676.63	2667.15	-823.14	1763940.42	409482.95	39°37'19.1144"N	80°13'34.3466"W	0.94	-0.49	-0.80
11410.00	89.020	325.900	8194.38	6690.38	2772.59	2746.37	-877.31	1763886.26	409562.16	39°37'19.8930"N	80°13'35.0470"W	1.06	0.91	0.55
11504.00	88.460	325.780	8196.45	6692.45	2866.56	2824.13	-930.08	1763833.49	409639.92	39°37'20.6573"N	80°13'35.7294"W	0.61	-0.60	-0.13
11599.00	88.060	325.600	8199.34	6695.34	2961.51	2902.57	-983.60	1763779.97	409718.35	39°37'21.4281"N	80°13'36.4215"W	0.46	-0.42	-0.19
11694.00	87.910	325.620	8202.68	6698.68	3056.45	2980.91	-1037.23	1763726.35	409796.69	39°37'22.1981"N	80°13'37.1149"W	0.16	-0.16	0.02
11789.00	88.150	325.620	8205.94	6701.94	3151.38	3059.27	-1090.84	1763672.74	409875.04	39°37'22.9682"N	80°13'37.8081"W	0.25	0.25	0.00
11884.00	89.110	326.100	8208.21	6704.21	3246.35	3137.88	-1144.14	1763619.44	409953.64	39°37'23.7408"N	80°13'38.4974"W	1.13	1.01	0.51
11979.00	88.210	325.780	8210.43	6706.43	3341.32	3216.55	-1197.34	1763566.24	410032.31	39°37'24.5140"N	80°13'39.1854"W	1.01	-0.95	-0.36
12074.00	86.670	326.250	8214.68	6710.68	3436.22	3295.23	-1250.40	1763513.18	410110.99	39°37'25.2873"N	80°13'39.8717"W	1.70	-1.62	0.52
12169.00	88.060	326.030	8219.04	6715.04	3531.12	3374.03	-1303.28	1763460.31	410189.78	39°37'26.0619"N	80°13'40.5555"W	1.48	1.46	-0.23
12263.00	88.650	326.170	8221.74	6717.74	3625.07	3452.02	-1355.68	1763407.91	410267.77	39°37'26.8284"N	80°13'41.2333"W	0.65	0.63	0.15
12358.00	87.720	326.250	8224.75	6720.75	3720.03	3530.93	-1408.49	1763355.11	410346.68	39°37'27.6040"N	80°13'41.9163"W	0.98	-0.98	0.08
12453.00	89.540	327.720	8227.02	6723.02	3814.99	3610.56	-1460.23	1763303.37	410426.30	39°37'28.3869"N	80°13'42.5858"W	2.46	1.92	1.55
12548.00	89.450	325.880	8227.86	6723.86	3909.98	3690.05	-1512.25	1763251.35	410505.78	39°37'29.1682"N	80°13'43.2588"W	1.94	-0.09	-1.94
12642.00	89.540	326.040	8228.69	6724.69	4003.97	3767.94	-1564.86	1763198.74	410583.67	39°37'29.9338"N	80°13'43.9393"W	0.20	0.10	0.17
12737.00	89.480	325.630	8229.50	6725.50	4098.96	3846.54	-1618.21	1763145.40	410662.27	39°37'30.7063"N	80°13'44.6292"W	0.44	-0.06	-0.43
12832.00	91.720	326.680	8228.51	6724.51	4193.95	3925.43	-1671.12	1763092.50	410741.15	39°37'31.4817"N	80°13'45.3135"W	2.60	2.36	1.11
12927.00	90.520	326.220	8226.65	6722.65	4288.93	4004.59	-1723.61	1763040.01	410820.30	39°37'32.2598"N	80°13'45.9925"W	1.35	-1.26	-0.48
13021.00	90.770	326.050	8225.59	6721.59	4382.92	4082.64	-1775.98	1762987.63	410898.35	39°37'33.0269"N	80°13'46.6700"W	0.32	0.27	-0.18
13115.00	89.420	326.060	8225.44	6721.44	4476.92	4160.62	-1828.47	1762935.15	410976.32	39°37'33.7933"N	80°13'47.3488"W	1.44	-1.44	0.01
13210.00	88.280	325.980	8227.34	6723.34	4571.90	4239.38	-1881.56	1762882.07	411055.08	39°37'34.5674"N	80°13'48.0354"W	1.20	-1.20	-0.08
13306.00	87.470	325.410	8230.90	6726.90	4667.82	4318.62	-1935.62	1762828.00	411134.32	39°37'35.3462"N	80°13'48.7346"W	1.03	-0.84	-0.59
13401.00	88.250	326.220	8234.45	6730.45	4762.75	4397.15	-1988.96	1762774.67	411212.84	39°37'36.1180"N	80°13'49.4245"W	1.18	0.82	0.85

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Sullivan 3H-A AWP Proj: 20770'

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Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 3H-A
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 3H-A AWB
Slot	Slot #03-A		

WELLPATH DATA (229 stations)														
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	TVDSS [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
13496.00	86.150	326.110	8239.09	6735.09	4857.63	4475.96	-2041.79	1762721.84	411291.65	39°37'36.8926"N	80°13'50.1078"W	2.21	-2.21	-0.12
13590.00	85.840	325.900	8245.66	6741.66	4951.40	4553.71	-2094.22	1762669.42	411369.39	39°37'37.6567"N	80°13'50.7859"W	0.40	-0.33	-0.22
13685.00	86.270	326.270	8252.19	6748.19	5046.17	4632.36	-2147.10	1762616.54	411448.03	39°37'38.4298"N	80°13'51.4699"W	0.60	0.45	0.39
13780.00	86.830	325.810	8257.91	6753.91	5141.00	4711.01	-2200.07	1762563.57	411526.68	39°37'39.2028"N	80°13'52.1551"W	0.76	0.59	-0.48
13876.00	87.100	326.140	8262.99	6758.99	5236.86	4790.46	-2253.72	1762509.93	411606.13	39°37'39.9837"N	80°13'52.8489"W	0.44	0.28	0.34
13971.00	86.240	325.560	8268.51	6764.51	5331.89	4868.95	-2306.96	1762456.70	411684.61	39°37'40.7550"N	80°13'53.5374"W	1.09	-0.91	-0.61
14066.00	86.000	325.560	8274.94	6770.94	5426.47	4947.12	-2360.56	1762403.10	411762.77	39°37'41.5232"N	80°13'54.2306"W	0.25	-0.25	0.00
14161.00	86.340	326.070	8281.28	6777.28	5521.25	5025.53	-2413.82	1762349.84	411841.18	39°37'42.2938"N	80°13'54.9195"W	0.64	0.36	0.54
14255.00	86.270	326.100	8287.34	6783.34	5615.05	5103.37	-2466.16	1762297.51	411919.02	39°37'43.0589"N	80°13'55.5965"W	0.08	-0.07	0.03
14350.00	86.270	326.040	8293.52	6789.52	5709.85	5182.03	-2519.07	1762244.59	411997.67	39°37'43.8320"N	80°13'56.2809"W	0.06	0.00	-0.06
14446.00	86.860	326.020	8299.27	6795.27	5805.68	5261.50	-2572.61	1762191.05	412077.14	39°37'44.6131"N	80°13'56.9735"W	0.61	0.61	-0.02
14541.00	88.650	325.910	8302.99	6798.99	5900.60	5340.16	-2625.74	1762137.93	412155.80	39°37'45.3862"N	80°13'57.6607"W	1.89	1.88	-0.12
14636.00	88.800	325.920	8305.11	6801.11	5995.57	5418.82	-2678.97	1762084.70	412234.45	39°37'46.1593"N	80°13'58.3492"W	0.16	0.16	0.01
14731.00	88.890	325.660	8307.02	6803.02	6090.55	5497.37	-2732.37	1762031.31	412313.00	39°37'46.9312"N	80°13'59.0399"W	0.29	0.09	-0.27
14826.00	89.110	326.170	8308.68	6804.68	6185.53	5576.04	-2785.60	1761978.08	412391.66	39°37'47.7044"N	80°13'59.7284"W	0.58	0.23	0.54
14921.00	89.970	326.040	8309.44	6805.44	6280.52	5654.89	-2838.58	1761925.10	412470.51	39°37'48.4794"N	80°14'0.4137"W	0.92	0.91	-0.14
15016.00	89.940	325.990	8309.52	6805.52	6375.52	5733.66	-2891.68	1761872.01	412549.27	39°37'49.2536"N	80°14'1.1006"W	0.06	-0.03	-0.05
15111.00	89.880	326.050	8309.67	6805.67	6470.52	5812.44	-2944.78	1761818.91	412628.05	39°37'50.0278"N	80°14'1.7874"W	0.09	-0.06	0.06
15207.00	89.720	326.800	8310.00	6806.00	6566.52	5892.42	-2997.87	1761765.83	412708.02	39°37'50.8140"N	80°14'2.4743"W	0.80	-0.17	0.78
15302.00	89.940	326.880	8310.29	6806.29	6661.52	5971.95	-3049.83	1761713.87	412787.55	39°37'51.5957"N	80°14'3.1467"W	0.25	0.23	0.08
15397.00	89.910	326.640	8310.41	6806.41	6756.51	6051.41	-3101.90	1761661.80	412867.00	39°37'52.3767"N	80°14'3.8205"W	0.25	-0.03	-0.25
15492.00	90.060	327.520	8310.43	6806.43	6851.50	6131.15	-3153.53	1761610.17	412946.74	39°37'53.1607"N	80°14'4.4887"W	0.94	0.16	0.93
15587.00	88.920	327.380	8311.28	6807.28	6946.48	6211.23	-3204.64	1761559.06	413026.81	39°37'53.9479"N	80°14'5.1503"W	1.21	-1.20	-0.15
15682.00	89.200	326.750	8312.84	6808.84	7041.46	6290.95	-3256.29	1761507.42	413106.52	39°37'54.7315"N	80°14'5.8187"W	0.73	0.29	-0.66
15777.00	90.060	326.560	8313.45	6809.45	7136.46	6370.31	-3308.50	1761455.21	413185.88	39°37'55.5116"N	80°14'6.4944"W	0.93	0.91	-0.20
15872.00	90.090	327.090	8313.33	6809.33	7231.45	6449.82	-3360.49	1761403.23	413265.39	39°37'56.2932"N	80°14'7.1671"W	0.56	0.03	0.56
15967.00	89.880	326.830	8313.35	6809.35	7326.45	6529.46	-3412.28	1761351.43	413345.02	39°37'57.0760"N	80°14'7.8374"W	0.35	-0.22	-0.27
16062.00	90.220	327.190	8313.27	6809.27	7421.44	6609.14	-3464.01	1761299.71	413424.70	39°37'57.8593"N	80°14'8.5069"W	0.52	0.36	0.38
16157.00	90.180	327.030	8312.94	6808.94	7516.43	6688.91	-3515.60	1761248.13	413504.46	39°37'58.6435"N	80°14'9.1746"W	0.17	-0.04	-0.17
16252.00	90.340	326.870	8312.51	6808.51	7611.43	6768.54	-3567.41	1761196.32	413584.09	39°37'59.4262"N	80°14'9.8451"W	0.24	0.17	-0.17

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# Actual Wellpath Report

Sullivan 3H-A AWP Proj: 20770'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 3H-A
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 3H-A AWB
Slot	Slot #03-A		

WELLPATH DATA (229 stations)														
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	TVDSS [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
16347.00	90.150	327.120	8312.10	6808.10	7706.42	6848.21	-3619.16	1761144.58	413663.75	39°38'0.2094"N	80°14'10.5148"W	0.33	-0.20	0.26
16442.00	91.290	326.530	8310.91	6806.91	7801.41	6927.72	-3671.13	1761092.60	413743.25	39°38'0.9909"N	80°14'11.1875"W	1.35	1.20	-0.62
16537.00	91.020	326.410	8308.99	6804.99	7896.39	7006.89	-3723.60	1761040.14	413822.42	39°38'1.7691"N	80°14'11.8664"W	0.31	-0.28	-0.13
16631.00	90.830	327.140	8307.47	6803.47	7990.37	7085.51	-3775.10	1760988.64	413901.04	39°38'2.5419"N	80°14'12.5328"W	0.80	-0.20	0.78
16726.00	90.650	326.840	8306.25	6802.25	8085.36	7165.17	-3826.85	1760936.90	413980.69	39°38'3.3250"N	80°14'13.2026"W	0.37	-0.19	-0.32
16820.00	91.320	327.020	8304.63	6800.63	8179.34	7243.93	-3878.13	1760885.62	414059.45	39°38'4.0992"N	80°14'13.8663"W	0.74	0.71	0.19
16915.00	91.350	326.870	8302.42	6798.42	8274.31	7323.54	-3929.93	1760833.82	414139.05	39°38'4.8817"N	80°14'14.5368"W	0.16	0.03	-0.16
17010.00	90.920	325.430	8300.54	6796.54	8369.29	7402.41	-3982.84	1760780.91	414217.92	39°38'5.6569"N	80°14'15.2213"W	1.58	-0.45	-1.52
17105.00	91.390	326.330	8298.62	6794.62	8464.27	7481.05	-4036.12	1760727.64	414296.55	39°38'6.4296"N	80°14'15.9105"W	1.07	0.49	0.95
17200.00	92.990	325.750	8294.99	6790.99	8559.19	7559.78	-4089.14	1760674.62	414375.28	39°38'7.2035"N	80°14'16.5965"W	1.79	1.68	-0.61
17296.00	93.450	325.970	8289.60	6785.60	8655.04	7639.11	-4142.94	1760620.83	414454.60	39°38'7.9831"N	80°14'17.2924"W	0.53	0.48	0.23
17391.00	92.920	325.690	8284.32	6780.32	8749.88	7717.59	-4196.21	1760567.56	414533.08	39°38'8.7543"N	80°14'17.9816"W	0.63	-0.56	-0.29
17487.00	92.190	325.820	8280.04	6776.04	8845.78	7796.87	-4250.18	1760513.59	414612.35	39°38'9.5334"N	80°14'18.6797"W	0.77	-0.76	0.14
17582.00	92.890	326.030	8275.83	6771.83	8940.69	7875.48	-4303.35	1760460.42	414690.96	39°38'10.3060"N	80°14'19.3676"W	0.77	0.74	0.22
17677.00	92.590	325.630	8271.29	6767.29	9035.57	7953.99	-4356.65	1760407.13	414769.46	39°38'11.0775"N	80°14'20.0570"W	0.53	-0.32	-0.42
17772.00	93.080	326.070	8266.59	6762.59	9130.45	8032.51	-4409.91	1760353.87	414847.98	39°38'11.8492"N	80°14'20.7461"W	0.69	0.52	0.46
17868.00	92.520	325.360	8261.90	6757.90	9226.33	8111.74	-4463.92	1760299.86	414927.20	39°38'12.6278"N	80°14'21.4448"W	0.94	-0.58	-0.74
17963.00	92.890	326.070	8257.42	6753.42	9321.22	8190.14	-4517.38	1760246.41	415005.60	39°38'13.3983"N	80°14'22.1363"W	0.84	0.39	0.75
18059.00	92.770	326.160	8252.68	6748.68	9417.10	8269.74	-4570.84	1760192.95	415085.19	39°38'14.1805"N	80°14'22.8280"W	0.16	-0.13	0.09
18154.00	93.140	326.020	8247.78	6743.78	9511.97	8348.48	-4623.76	1760140.03	415163.92	39°38'14.9544"N	80°14'23.5128"W	0.42	0.39	-0.15
18249.00	93.020	326.340	8242.68	6738.68	9606.83	8427.29	-4676.56	1760087.23	415242.73	39°38'15.7289"N	80°14'24.1960"W	0.36	-0.13	0.34
18345.00	92.990	326.180	8237.64	6733.64	9702.70	8507.01	-4729.81	1760033.99	415322.45	39°38'16.5124"N	80°14'24.8860"W	0.17	-0.03	-0.17
18440.00	92.310	325.750	8233.25	6729.25	9797.60	8585.65	-4782.93	1759980.88	415401.08	39°38'17.2853"N	80°14'25.5721"W	0.85	-0.72	-0.45
18536.00	93.140	325.720	8228.69	6724.69	9893.48	8664.90	-4836.91	1759926.89	415480.33	39°38'18.0641"N	80°14'26.2706"W	0.87	0.86	-0.03
18631.00	93.260	325.870	8223.38	6719.38	9988.33	8743.34	-4890.24	1759873.57	415558.77	39°38'18.8350"N	80°14'26.9604"W	0.20	0.13	0.16
18727.00	93.510	326.120	8217.72	6713.72	10084.16	8822.79	-4943.83	1759819.98	415638.21	39°38'19.6157"N	80°14'27.6538"W	0.37	0.26	0.26
18822.00	93.420	325.770	8211.97	6707.97	10178.98	8901.35	-4996.93	1759766.88	415716.76	39°38'20.3878"N	80°14'28.3409"W	0.38	-0.09	-0.37
18917.00	93.020	324.070	8206.64	6702.64	10273.80	8978.97	-5051.44	1759712.38	415794.38	39°38'21.1504"N	80°14'29.0458"W	1.84	-0.42	-1.79
19012.00	93.300	325.990	8201.40	6697.40	10368.62	9056.69	-5105.81	1759658.02	415872.10	39°38'21.9141"N	80°14'29.7489"W	2.04	0.29	2.02
19108.00	91.750	326.480	8197.17	6693.17	10464.53	9136.42	-5159.11	1759604.72	415951.82	39°38'22.6977"N	80°14'30.4386"W	1.69	-1.61	0.51

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WELLPATH DATA (229 stations) † = interpolated, ‡ = extrapolated station														
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	TVDSS [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
19203.00	91.350	324.430	8194.60	6690.60	10559.47	9214.64	-5212.96	1759550.87	416030.03	39°38'23.4663"N	80°14'31.1352"W	2.20	-0.42	-2.16
19298.00	91.420	326.010	8192.30	6688.30	10654.42	9292.64	-5267.13	1759496.70	416108.03	39°38'24.2327"N	80°14'31.8359"W	1.66	0.07	1.66
19394.00	91.290	325.480	8190.03	6686.03	10750.39	9371.96	-5321.15	1759442.69	416187.35	39°38'25.0122"N	80°14'32.5348"W	0.57	-0.14	-0.55
19489.00	91.080	326.860	8188.07	6684.07	10845.37	9450.86	-5374.03	1759389.81	416266.24	39°38'25.7876"N	80°14'33.2190"W	1.47	-0.22	1.45
19584.00	90.890	325.650	8186.44	6682.44	10940.35	9529.84	-5426.79	1759337.05	416345.22	39°38'26.5639"N	80°14'33.9018"W	1.29	-0.20	-1.27
19679.00	90.800	326.870	8185.04	6681.04	11035.34	9608.83	-5479.55	1759284.30	416424.20	39°38'27.3402"N	80°14'34.5845"W	1.29	-0.09	1.28
19774.00	90.550	326.810	8183.92	6679.92	11130.33	9688.35	-5531.51	1759232.34	416503.72	39°38'28.1218"N	80°14'35.2571"W	0.27	-0.26	-0.06
19869.00	90.430	326.880	8183.10	6679.10	11225.32	9767.89	-5583.46	1759180.39	416583.25	39°38'28.9035"N	80°14'35.9296"W	0.15	-0.13	0.07
19964.00	89.450	325.330	8183.20	6679.20	11320.32	9846.74	-5636.44	1759127.42	416662.09	39°38'29.6785"N	80°14'36.6151"W	1.93	-1.03	-1.63
20060.00	90.150	326.860	8183.54	6679.54	11416.31	9926.41	-5689.99	1759073.87	416741.76	39°38'30.4615"N	80°14'37.3081"W	1.75	0.73	1.59
20154.00	90.180	325.940	8183.27	6679.27	11510.31	10004.70	-5742.01	1759021.86	416820.05	39°38'31.2309"N	80°14'37.9813"W	0.98	0.03	-0.98
20249.00	89.660	327.110	8183.40	6679.40	11605.31	10083.94	-5794.40	1758969.46	416899.29	39°38'32.0098"N	80°14'38.6595"W	1.35	-0.55	1.23
20344.00	90.030	326.900	8183.66	6679.66	11700.30	10163.62	-5846.14	1758917.73	416978.96	39°38'32.7929"N	80°14'39.3292"W	0.45	0.39	-0.22
20439.00	89.910	326.540	8183.71	6679.71	11795.30	10243.04	-5898.27	1758865.60	417058.37	39°38'33.5735"N	80°14'40.0040"W	0.40	-0.13	-0.38
20534.00	89.290	326.460	8184.37	6680.37	11890.30	10322.26	-5950.70	1758813.18	417137.59	39°38'34.3521"N	80°14'40.6826"W	0.66	-0.65	-0.08
20630.00	90.430	327.250	8184.61	6680.61	11986.29	10402.64	-6003.19	1758760.69	417217.96	39°38'35.1422"N	80°14'41.3620"W	1.44	1.19	0.82
20723.00	89.940	326.740	8184.31	6680.31	12079.28	10480.63	-6053.84	1758710.04	417295.95	39°38'35.9088"N	80°14'42.0179"W	0.76	-0.53	-0.55
20745.00	90.000	327.030	8184.32	6680.32	12101.28	10499.05	-6065.86	1758698.02	417314.37	39°38'36.0899"N	80°14'42.1735"W	1.35	0.27	1.32
20770.00‡	90.000	327.030	8184.32	6680.32	12126.28	10520.03	-6079.47	1758684.41	417335.34	39°38'36.2960"N	80°14'42.3496"W	0.00	0.00	0.00

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# Actual Wellpath Report

Sullivan 3H-A AWP Proj: 20770'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 3H-A
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 3H-A AWB
Slot	Slot #03-A		

HOLE & CASING SECTIONS - Ref Wellbore: Sullivan 3H-A AWB Ref Wellpath: Sullivan 3H-A AWP Proj: 20770'									
String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
32in Open Hole	28.00	100.00	72.00	28.00	100.00	0.00	0.00	0.07	-0.25
24in Conductor	28.00	100.00	72.00	28.00	100.00	0.00	0.00	0.07	-0.25
22in Open Hole	100.00	1030.00	930.00	100.00	1029.98	0.07	-0.25	-0.33	0.73
13.375in Casing Surface	28.00	1000.00	972.00	28.00	999.99	0.00	0.00	-0.57	0.53
12.25in Open Hole	1030.00	2680.00	1650.00	1029.98	2678.27	-0.33	0.73	-48.67	24.94
9.625in Casing Intermediate	28.00	2650.00	2622.00	28.00	2648.46	0.00	0.00	-45.82	23.15
8.75in Open Hole	2680.00	7299.00	4619.00	2678.27	7196.33	-48.67	24.94	-271.65	942.55
8.5in Open Hole	7299.00	20770.00	13471.00	7196.33	8184.32	-271.65	942.55	10520.03	-6079.47
5.5in Casing Production	28.00	20740.00	20712.00	28.00	8184.32	0.00	0.00	10494.86	-6063.14

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# Actual Wellpath Report

Sullivan 3H-A AWP Proj: 20770'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 3H-A
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 3H-A AWB
Slot	Slot #03-A		

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Sullivan 3H-A LP Rev-1	8100.00	366.44	679.53	1765443.00	407182.38	39°36'56.4969"N	80°13'14.9080"W	point
Sullivan 3H-A BHL Rev-0	8275.00	10523.63	-6075.70	1758688.18	417338.95	39°38'36.3320"N	80°14'42.3018"W	point
Sullivan 3H-A LP Rev-0	8275.00	366.44	679.53	1765443.00	407182.38	39°36'56.4969"N	80°13'14.9080"W	point
Sullivan 3H-A BHL Rev-1	8525.98	10523.63	-6075.70	1758688.18	417338.95	39°38'36.3320"N	80°14'42.3018"W	point
Sullivan Hardline #1 02.14.2023	9500.00	-838.54	1293.64	1766057.07	405977.47	39°36'44.6371"N	80°13'6.9378"W	polygon
2D Polygon: dimensions not calculated								

WELLPATH COMPOSITION - Ref Wellbore: Sullivan 3H-A AWB Ref Wellpath: Sullivan 3H-A AWP Proj: 20770'					
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	Survey Date
28.00	850.00	BH Generic gyro - northseeking (Standard)	01 17.5" Gyro <Northseeking-Standard> (28'- 850')	Sullivan 3H-A AWB	5/9/2023
850.00	2556.00	OWSG MWD rev2 + HRGM	02 12.25" SDI MWD <OWSG MWD Rev.2+HRGM> (850')(1013'-2556')	Sullivan 3H-A AWB	5/9/2023
2556.00	7216.00	OWSG MWD rev2 + HRGM	03 8.75" SDI MWD <OWSG MWD Rev.2+HRGM> (2556')(2652'-7216')	Sullivan 3H-A AWB	5/9/2023
7216.00	20770.00	BH AutoTrak Curve/eXpress (2019) (HRGM, Short spacing)	04 8.5" BH ATK Curve <HRGM+Short Spacing> (7216')(7337'- 20745')	Sullivan 3H-A AWB	5/9/2023

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 3H-A
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 3H-A AWB
Slot	Slot #03-A		

COMMENTS
<p><b>Wellpath general comments</b>            API: 47061019280000            BH Job #: 111797003            Rig: Patterson 277            Duration: 5/10/2023 - 5/16/2023</p> <p>01_17.5" Gyro &lt;Northseeking-Standard&gt; (28'- 850')            02_12.25" SDI MWD &lt;OWSG MWD Rev.2+HRGM&gt; (850')(1013'-2556')            03_8.75" SDI MWD &lt;OWSG MWD Rev.2+HRGM&gt; (2556')(2652'-7216')            04_8.5" BH ATK Curve &lt;HRGM+Short Spacing&gt; (7216')(7337'- 20745')</p> <p>Final Survey MD @ 20745'            Projected MD at TD: 20770'</p>

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	08/28/2023
Job End Date:	10/04/2023
State:	West Virginia
County:	Monongalia
API Number:	47-061-01901-00-00
Operator Name:	Northeast Natural Energy LLC
Well Name and Number:	Sullivan 3H-A
Latitude:	39.614675
Longitude:	-80.223212
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	8224.88679389313
Total Base Water Volume (gal)*:	23368128
Total Base Non Water Volume:	0



Water Source	Percent
Groundwater, < 1000TDS	100.00%

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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
CIA-12	Universal Pressure Pumping	Acid corrosion inhibitor					
Clearal 268	Chemstream	Biocide					
Hydrochloric Acid (7.5%)	Universal Pressure Pumping	Acidizing					
Sand (100 Mesh Proppant)	Universal Pressure Pumping	Proppant					
Sand (40/70 White Proppant)	Universal Pressure Pumping	Proppant					
StimStream FR 9800	Chemstream	Friction Reducer					
StimStream SC 405	Chemstream	Scale Control					
Water	Operator	Carrier Fluid					

Items above are Trade Names. Items below are the individual ingredients.

04/12/2024

			Water	7732-18-5	100.00000	87.18728	None
			Crystalline silica, quartz	14808-60-7	100.00000	11.33608	None
			Crystalline silica, quartz	14808-60-7	100.00000	1.22623	None
			Hydrochloric acid	7647-01-0	15.00000	0.02370	None
			Water	7732-18-5	80.00000	0.01738	
			Water	7732-18-5	70.00000	0.01510	
			Butene Homopolymer	9003-29-6	25.00000	0.01224	
			Alkanes, C16-20-iso-	90622-59-6	25.00000	0.01224	None
			Glutaraldehyde	111-30-8	20.00000	0.00435	None
			Diethylenetriamine penta (methylene phosphonic acid) (DTPMP)	15827-60-8	10.00000	0.00216	
			2 Phosphobutane 1,2,4 tricarboxylic acid	37971-36-1	10.00000	0.00216	None
			Citric Acid	77-92-9	10.00000	0.00216	
			alcohols, C12-18, ethoxylated	68213-23-0	3.00000	0.00147	
			Quaternary Ammonium Compounds	68424-85-1	3.00000	0.00065	
			Didecyl dimethyl ammonium chloride	7173-51-5	3.00000	0.00065	
			Ethanol	64-17-5	1.50000	0.00033	
			Ethylene glycol	107-21-1	45.00000	0.00007	None
			Glycol Ether EB	111-76-2	45.00000	0.00007	
			N,N-Dimethylformamide	68-12-2	20.00000	0.00003	
			Tar bases,quinoline derivs.,benzyl chloride-quaternized	72480-70-7	20.00000	0.00003	
			Water	7732-18-5	15.00000	0.00002	
			Cinnamaldehyde	104-55-2	10.00000	0.00002	
			Nonylphenol ethoxylated	127087-87-0	10.00000	0.00002	
			Alcohols, C6-12	68603-15-6	10.00000	0.00002	

\* 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%

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)

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