

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

MAR 08 2024

WV Department of  
Environmental Protection

API 47 - 061 - 01919 County Monongalia District Clay  
Quad Grant Town Pad Name Sullivan Field/Pool Name \_\_\_\_\_  
Farm name Alan Sullivan Well Number 7H  
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 4385303.3 Easting 566698.7  
Landing Point of Curve Northing 4385741.4 Easting 567383.5  
Bottom Hole Northing 4388876.6 Easting 565223.9

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

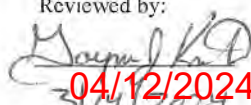
Mud Type(s) and Additive(s)  
Synthetic Based Mud - Horizontal Section: BIO-BASE 365, CALCIUM CHLORIDE POWDER, G-SEAL PLUS, HRP, LIME, M-I WATE (BARITE),  
M-I-X II MEDIUM, MEGADRIL P SYSTEM, MEGADRIL P SYSTEM RENTAL, MEGAMUL, SAFE-CARB 250, VERSATHIN HF, VERSAWET, VG-PLUS, VINSEAL MEDIUM, WALNUT NUT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

Date permit issued 12/19/2022 Date drilling commenced 3/30/2023 Date drilling ceased 4/13/2023  
Date completion activities began 8/26/2023 Date completion activities ceased 10/2/2023  
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:  
  
04/12/2024

API 47-061 - 01919 Farm name Alan Sullivan Well number 7H

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"	1,000'	N	54.5	NA	Y, 5 bbl
Coal							
Intermediate 1	12-1/4"	9-5/8"	2,498'	N	36	NA	Y, 50 bbl
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	21,620'	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%	1,110	15.6	1.14	1,260	CTS	8
Coal							
Intermediate 1	Class A + 1%	1,585	15.6	1.12	1,781	CTS	8
Intermediate 2							
Intermediate 3							
Production	50:50 Class A + Additives	4,215	14.5	1.13	4,743	1,490'	48
Tubing							

Drillers TD (ft) 21,613' Loggers TD (ft) 21,583'  
 Deepest formation penetrated Marcellus Plug back to (ft) NA  
 Plug back procedure \_\_\_\_\_

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Kick off depth (ft) 6,661'

MAR 08 2024

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

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 \_\_\_\_\_

04/12/2024



API 47- 061 - 01919 Farm name Alan Sullivan Well number 7H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
Marcellus	8,220'	TVD 21,613' MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 3,003 psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST 24 hrs

OPEN FLOW Gas 7,751 mcfpd Oil \_\_\_\_\_ bpd NGL \_\_\_\_\_ bpd Water \_\_\_\_\_ bpd  
GAS MEASURED BY  Estimated  Orifice  Pilot

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

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 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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## Sullivan 7H Stimulation Report

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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)	WV Treatment of Environmental Proppant Amount (lbs)	Volume of Flush (bbls)
1	8/27/2023	4,266	8,318	8,379	90	522	7,521	302,947	561
2	8/27/2023	5,440	7,146	9,299	94	457	10,236	456,200	476
3	8/27/2023	5,220	7,195	9,174	94	484	10,142	455,000	472
4	8/27/2023	5,364	7,616	9,043	95	20	9,788	456,464	609
5	8/28/2023	5,018	6,828	9,373	93	17	9,742	455,645	516
6	8/28/2023	4,896	6,192	9,289	95	66	9,864	453,000	535
7	8/28/2023	5,660	6,725	9,291	93	49	9,664	454,000	589
8	8/28/2023	5,590	5,979	9,269	94	20	9,460	456,779	421
9	8/29/2023	5,630	6,586	9,201	93	432	9,431	456,000	559
10	8/30/2023	5,611	7,498	9,327	92	50	10,174	456,900	487
11	8/30/2023	5,547	6,127	9,526	93	225	9,938	457,600	458
12	8/31/2023	5,829	6,586	9,444	93	46	9,650	458,000	467
13	9/1/2023	5,886	7,537	9,586	93	28	9,581	452,500	420
14	9/2/2023	5,986	7,028	9,787	94	28	9,482	456,300	433
15	9/2/2023	5,685	6,966	9,600	94	23	9,422	455,700	415
16	9/3/2023	5,880	4,662	9,482	93	29	9,435	455,400	405
17	9/4/2023	5,705	5,314	9,319	94	13	9,391	455,600	406
18	9/4/2023	5,591	6,977	9,530	94	24	9,458	455,600	410
19	9/5/2023	5,709	6,690	9,510	94	29	9,238	455,900	397
20	9/6/2023	5,330	7,469	9,374	94	5	9,383	455,800	396
21	9/6/2023	5,211	6,959	9,316	94	6	9,443	456,300	393
22	9/7/2023	5,657	6,637	9,110	92	41	10,299	459,800	449
23	9/8/2023	5,204	6,710	9,129	93	41	8,995	455,700	375
24	9/8/2023	6,061	6,027	9,247	94	36	9,065	455,500	384
25	9/9/2023	5,889	5,504	8,951	93	40	8,296	455,400	379
26	9/10/2023	5,482	6,966	9,161	96	16	7,847	455,600	352
27	9/10/2023	6,482	6,379	9,310	94	30	8,737	454,700	370
28	9/11/2023	5,380	6,419	9,161	93	29	8,562	455,600	351
29	9/12/2023	4,710	6,534	9,027	94	12	8,643	454,500	360
30	9/12/2023	5,250	6,458	9,169	94	27	8,651	455,700	347
31	9/13/2023	6,031	6,339	9,150	94	12	8,565	455,700	404
32	9/13/2023	5,258	6,351	9,149	95	29	8,974	455,900	340
33	9/14/2023	5,449	6,290	9,200	94	6	7,597	455,324	374
34	9/14/2023	6,105	6,450	9,201	94	29	9,307	454,900	339
35	9/15/2023	5,384	5,613	8,898	94	10	8,225	456,651	377
36	9/16/2023	5,847	6,689	9,085	94	18	8,277	455,500	369
37	9/16/2023	5,437	5,828	8,988	94	9	8,647	455,700	360
38	9/17/2023	5,326	6,528	8,903	94	14	8,618	455,200	321
39	9/17/2023	5,346	5,367	8,662	94	18	8,601	456,100	316
40	9/18/2023	5,128	6,936	8,763	95	3	8,389	455,500	326
41	9/18/2023	5,063	6,097	8,567	94	6	8,219	455,100	408
42	9/19/2023	5,111	5,703	8,523	94	15	8,572	455,700	305
43	9/19/2023	5,256	5,991	8,362	94	27	8,597	455,000	298
44	9/20/2023	5,263	5,899	8,694	94	9	8,141	455,800	316
45	9/21/2023	5,013	6,512	8,534	95	10	8,716	454,900	294

09/12/2024

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)
46	9/21/2023	5,436	6,161	8,144	94	13	8,503	455,500	290
47	9/22/2023	5,132	6,827	7,873	94	61	8,149	455,800	302
48	9/22/2023	5,087	6,060	8,075	94	28	8,323	456,700	261
49	9/23/2023	5,387	6,625	7,883	94	18	8,109	455,300	274
50	9/24/2023	5,250	5,315	7,773	95	35	8,315	457,000	258
51	9/24/2023	5,185	6,791	7,836	94	26	8,282	456,600	252
52	9/25/2023	4,840	4,249	7,997	94	17	8,076	455,700	257
53	9/25/2023	5,084	6,472	8,180	95	47	8,378	456,800	250
54	9/26/2023	4,937	4,291	7,768	94	11	8,060	456,700	251
55	9/27/2023	4,734	6,769	7,797	94	39	8,494	455,500	225
56	9/27/2023	4,859	6,066	7,768	95	157	7,883	456,400	230
57	9/28/2023	5,120	6,372	7,752	95	97	8,206	455,000	292
58	9/28/2023	5,446	6,778	7,761	95	20	8,990	456,500	220
59	9/29/2023	4,960	6,407	7,758	94	17	8,018	453,800	268
60	9/29/2023	5,159	6,515	7,665	94	46	8,237	458,400	205
61	9/30/2023	4,580	6,713	7,639	94	48	8,103	455,000	276
62	9/30/2023	5,403	6,231	7,644	95	44	8,140	456,600	202
63	10/1/2023	5,164	6,335	7,689	94	25	8,024	455,500	270
64	10/2/2023	5,427	7,519	7,575	94	28	8,097	456,300	199

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Environmental Protection

04/12/2024

Sullivan 7H				
Perforation Report				
Stage Number	Report Date	Total Shots	Cluster 1 Top TD	Cluster 5 Bottom TD
1	8/27/2023	36		21,511
2	8/27/2023	40	21,267	21,309
3	8/27/2023	40	21,267	21,108
4	8/27/2023	40	21,066	20,908
5	8/28/2023	40	20,866	20,707
6	8/28/2023	40	20,665	20,507
7	8/28/2023	40	20,465	20,306
8	8/28/2023	40	20,264	20,106
9	8/29/2023	40	20,064	19,905
10	8/30/2023	40	19,863	19,705
11	8/30/2023	40	19,663	19,504
12	8/31/2023	40	19,462	19,304
13	9/1/2023	40	19,262	19,103
14	9/2/2023	40	19,061	18,903
15	9/2/2023	40	18,861	18,702
16	9/3/2023	40	18,660	18,502
17	9/4/2023	40	18,460	18,301
18	9/4/2023	40	18,259	18,101
19	9/5/2023	40	18,059	17,900
20	9/6/2023	40	17,858	17,700
21	9/6/2023	40	17,658	17,499
22	9/7/2023	40	17,457	17,299
23	9/8/2023	40	17,257	17,098
24	9/8/2023	40	17,056	16,898
25	9/9/2023	40	16,856	16,697
26	9/10/2023	40	16,655	16,497
27	9/10/2023	40	16,455	16,296
28	9/11/2023	40	16,254	16,096
29	9/12/2023	40	16,054	15,895
30	9/12/2023	40	15,853	15,695
31	9/13/2023	40	15,653	15,494
32	9/13/2023	40	15,452	15,294
33	9/14/2023	40	15,251	15,093
34	9/14/2023	40	15,051	14,893
35	9/15/2023	40	14,850	14,692
36	9/16/2023	40	14,650	14,492
37	9/16/2023	40	14,449	14,291
38	9/17/2023	40	14,249	14,091
39	9/17/2023	40	14,048	13,890
40	9/18/2023	40	13,848	13,690
41	9/18/2023	40	13,647	13,489
42	9/19/2023	40	13,447	13,288
43	9/19/2023	40	13,246	13,088
44	9/20/2023	40	13,046	12,887
45	9/21/2023	40	12,845	12,687
46	9/21/2023	40	12,645	12,486
47	9/22/2023	40	12,444	12,286

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04/12/2024



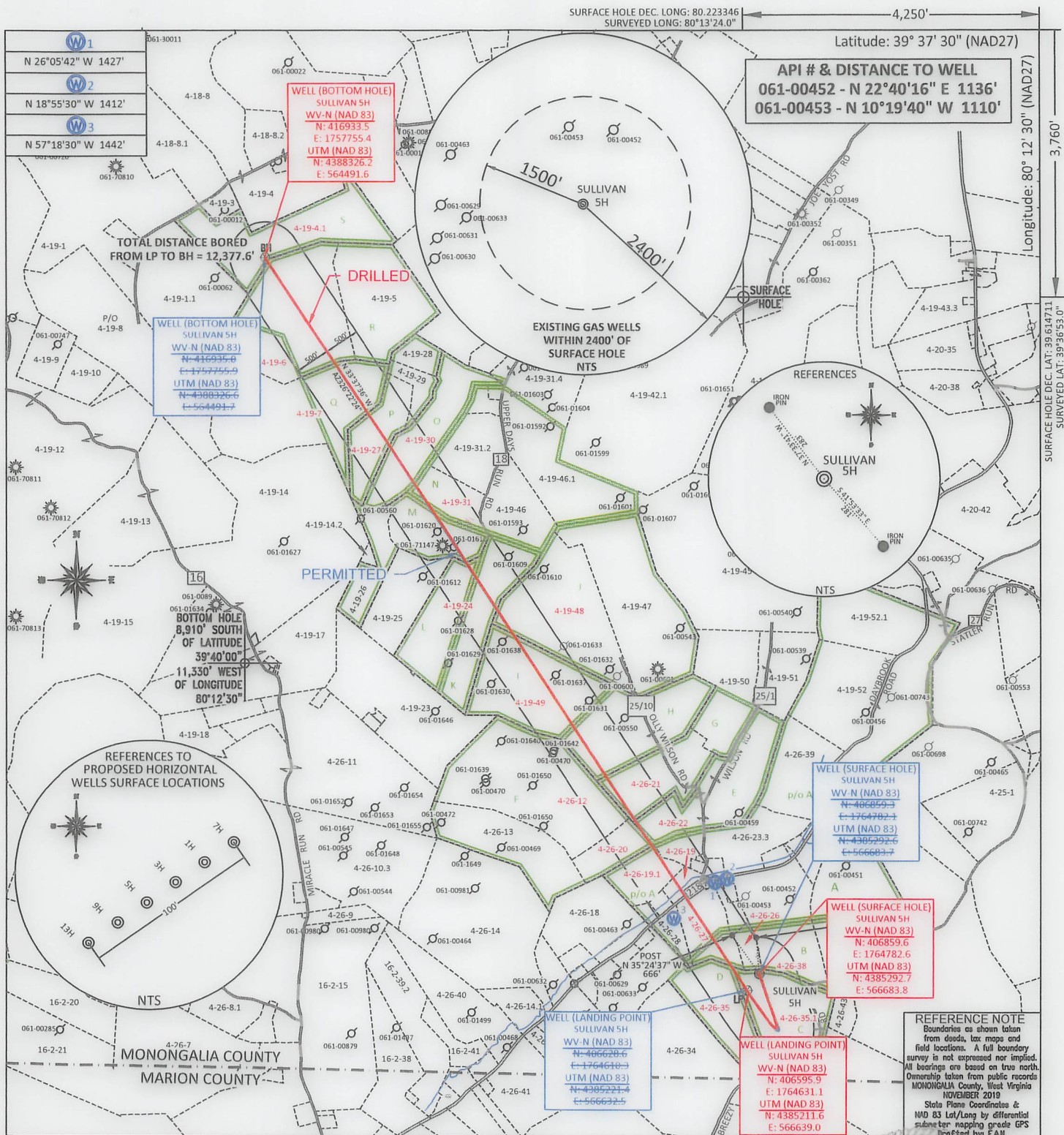
Stage Number	Report Date	Total Shots	Cluster 1 Top TD	Cluster 5 Bottom TD
48	9/22/2023	40	12,244	12,085
49	9/23/2023	40	12,043	11,885
50	9/24/2023	40	11,843	11,684
51	9/24/2023	40	11,642	11,484
52	9/25/2023	40	11,442	11,283
53	9/25/2023	40	11,241	11,083
54	9/26/2023	40	11,041	10,882
55	9/27/2023	40	10,840	10,682
56	9/27/2023	40	10,640	10,481
57	9/28/2023	40	10,439	10,281
58	9/28/2023	40	10,239	10,080
59	9/29/2023	40	10,038	9,880
60	9/29/2023	40	9,838	9,679
61	9/30/2023	40	9,637	9,479
62	9/30/2023	40	9,437	9,278
63	10/1/2023	40	9,236	9,078
64	10/2/2023	40	9,036	8,877

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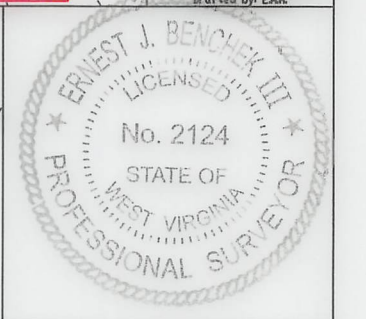
04/12/2024



FILE #: NNE20  
 DRAWING #: 3048  
 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: 1,124.250 +/-

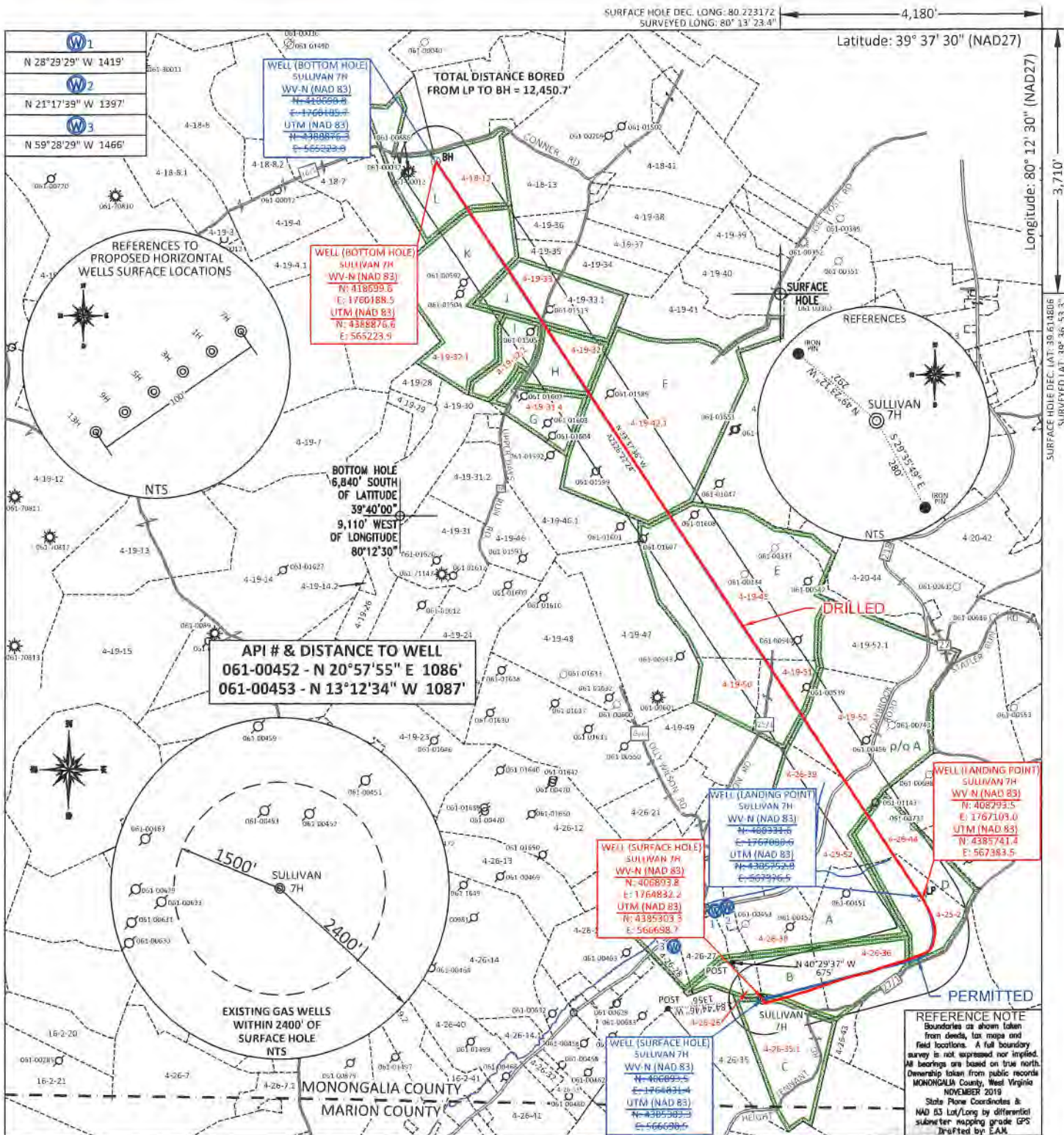
OIL & GAS ROYALTY OWNER: ALAN SULLIVAN ACREAGE: 25.870 +/-

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

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: 8,172' TMD: 20,963'

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



FILE #: NNE20  
 DRAWING #: 3051  
 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. Benckek 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 Disposal  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: \_\_\_\_\_  
 TARGET FORMATION: MARCELLUS  
 WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC  
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200  
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

DATE: FEBRUARY 6, 2024  
 OPERATOR'S WELL #: SULLIVAN 7H AS-DRILLED  
 API WELL #: 47 61 01919  
 STATE COUNTY PERMIT  
 AS-BUILT ELEVATION: 1,476'  
 QUADRANGLE: GRANT TOWN  
 ACREAGE: 843.32 +/-  
 ACREAGE: 25.870 **04/12/2024**  
 DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE   
 PLUG OFF FORMATION  PERFORATE NEW FORMATION  PLUG & ABANDON   
 CLEAN OUT & REPLUG  OTHER CHANGE  (SPECIFY): \_\_\_\_\_  
 DRILLED DEPTH: TVD: 8,220' TMD: 21,613'  
 DESIGNATED AGENT: JOHN ADAMS  
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200  
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

4-18-12	LEE ANN SHUMILOFF
4-19-33	BRYAN D TENNANT
4-19-32	SHERI K CORDER
4-19-45	ROCKY & CATHY J BARR
4-19-51	AMANDA PAULETTE; LINDA JANE; TERESA DARLENE POLANSKY
4-26-44	RODNEY EDWARD & HEATHER ANNE ROBINSON
4-25-2	ORVILLE W BELL JR & RENEE D LOAR
4-26-36	LARRY NOLAN & LINDA MAE PAYTON
4-26-38	ADAM CLAY DARRAH
4-26-35.1	ALAN SULLIVAN
4-26-26	NNE MIDSTREAM LLC
4-19-32.1	JIMMY R & PAMELA K TENNANT; BILLY RAY & ROXANA CAHILL
4-19-32.2	JIMMY RANDALL TENNANT
4-19-31.4	PAMELA K TENNANT
4-19-42.1	THOMAS J & DIANN M ZYRA
4-19-50	ROCKY & CATHY J BARR
4-26-39	ADAM CLAY DARRAH
4-19-52	LARRY F & BRENDA KAY KUHN

LEASE INDEX			
A	WV-061-000160-001-ACT	H	WV-061-004588-002
B	WV-061-000160-001-ACT	I	WV-061-006016-001
C	WV-061-005448-002	J	WV-061-005475-001
D	WV-061-005961-002	K	WV-061-006016-001
E	WV-061-004442-001	L	WV-061-004519-000
F	WV-061-000171-002		
G	WV-061-003931-010		

04/12/2024

FILE #: NEE20

DRAWING #: 3051

SCALE: N/A

DATE: FEBRUARY 5, 2024

OPERATOR'S WELL #: SULLIVAN 7H AS-DRILLED

API WELL #: 47 61 01919  
STATE COUNTY PERMIT

Cement Job Log

# NEXTIER

NexTier Completion Solutions  
3990 Rogerdale Rd., Houston, TX 77042  
(713)325-8000

Customer:	NORTHEAST NATURAL ENERGY LLC	Date:	1-Apr-23	Serv. Supervisor:	Robert Given
Cust. Rep.:	JOSH	Ticket #:	BPA-2304-0003	Serv. Center:	Black Lick - 1571
Well Name:	Sullivan 7H	API Well #:	47-061-01919	County:	Monongalia State: WV
Well Type:	NATURAL GAS	Rig:	PATTERSON 277	Type of Job:	CM-MINE CASING

Materials Furnished by NexTier										
Plugs	Casing Hardware	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	-		
900' - 1050' Mine lb/gal Cement	100 % NCM-956 +1.5 % NAC-110+0.25 PPS NLM-600	365	15.6	50%	1.14	4.79	73.85	414.66	42	
Fresh Water Displacement			8.33			-	156.14	-		
0' - 400' Packer 15.6 lb/gal Cement	100 % NCM-956 +1.5 % NAC-110+0.25 PPS NLM-600	745	15.6	30%	1.14	4.79	150.73	846.36	85	

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Displacement Chemicals:

OPEN HOLE DATA			TUBULAR DATA									
22 in. O.H. 100 to 1,050 ft			13.376 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.	13 3/8/ 54.5#	BTC	1000	J-55	12.615	2730	1130
62.0 °F		69.0 °F										

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
						997.9	954.2	1	

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	147.52 bbl	H2O	8.3 ppg		60	410	750	<300	7.4	50.0 °F	1200
Bumped Plug	Final Differential (psi)	Floata 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	115.00	Y	-	5.00	-	No	1,400.00	No	6.00	No	100	

Comments/Additional Details:

*Robert Given* 1-Apr-23  
Service Supervisor Date

04/12/2024

**Cement Job Log**



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

Customer:	NORTHEAST NATURAL ENERGY LLC	Date:	3-Apr-23	Serv. Supervisor:	Robert Given
Cust. Rep.:	SHORTY/ JPOSH	Ticket #:	BPA-2304-0005	Serv. Center:	Black Lick - 1571
Well Name:	Sullivan 7H	API Well #:	47-061-01919	County:	Monongalia
Well Type:	NATURAL GAS	Rig:	PATTERSON 277	State:	WV
			Type of Job:	CM-INTER. CASING	

**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 (bbis)	Fluid Volume (cuft)	Mix Water (bbis)	
6% Gel Spacer	+20.0 PPB NEX-020		8.7		4.62	33.66	25.00	-		
15.6 lb/gal Cement	100% NCM-956	1585	15.6	30%	1.12	4.81	317.21	1,781.15	182	
Fresh Water Displacement			8.33			-	201.78	-		
0						-		-		
						-		-		
						-		-		
						-		-		
						-		-		

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Displacement Chemicals:

OPEN HOLE DATA			TUBULAR DATA									
22 in. O.H. 1,000 to 1,100 ft 17.5 in. O.H. 1,100 to 1,520 ft			9.625 in. 36#, ( 0 to 2,650 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.							
75.0 °F		70.0 °F				9.625/ 36#	BTC	2501	J-55	8.921	3520	2020

PREVIOUS CASING DATA	PERFORATED INTERVAL DATA				CASING EQUIPMENT DEPTHS			
13.375 in. 54.5# ( 0 to 1,000 ft)	TOP	BTM	SPF	SIZE	SHOE	FLOAT	STAGE	ACP
					2498.9	2454.4	1	

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	190 bbl	H2O	8.3 ppg		945	1237	1600	<500	7.5	63.0 °F	1200

Bumped Plug	Final Differential (psi)	Floats 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 Recirculation	Rathole Length (ft)
Yes	1,100.00	Y	-	50.00	-	Yes	1,550.00	No	3.00	No	49

Comments/Additional Details:

<i>Robert Given</i> Service Supervisor		3-Apr-23 Date
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04/12/2024

**Cement Job Log**



NextTier Completion Solutions  
3990 Rogerdale Rd., Houston, TX 77042  
(713)325-8000

Customer:	NORTHEAST NATURAL ENERGY LLC	Date:	13-Apr-23	Serv. Supervisor:	Anthony Barbara
Cust. Rep.:	Nell/Shorty	Ticket #:	BPA-2304-0014	Serv. Center:	Black Lick - 1671
Well Name:	Sullivan 7H	API Well #:	47-081-01919	County:	Monongalia
Well Type:		Rig:	Patterson 277	State:	WV
				Type of Job:	CM-PROD. CASING

**Materials Furnished by NextTier**

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)
13.6 lb/gal PureScrub Spacer w/ Surfactant	+7.0 PPB NFP-703+5.0 PPB NSU-888+2.0 PPB NRT-221		13.5		5.66	26.44	80.00	-	
14.5 lb/gal Cement	50 % NCM-956+50 % NFZ-010 +0.2 % NFP-703+0.1 % NAS-504+0.3 % NRT-219+0.2 % NFL-549+0.2 % NTC-405	4215	14.5		1.13	4.85	844.82	4,743.66	466
Sugar Water Displacement	+5.0 PPB NRT-215					-	20.00	-	
Fresh Water Displacement						-	468.05	-	

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Displacement Chemicals:

OPEN HOLE DATA			TUBULAR DATA									
8.75 in. O.H. 2,500 to 8,200 ft 8.5 in. O.H. 8,200 to 22,010 ft			5.5 in. 20# ( 0 to 22,010 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.							
80.0 °F	80.0 °F	73.6 °F	76.0 °F			5.5" 20#	BTC	21620	P-110	4.778	12840	11080
PREVIOUS CASING DATA			PERFORATED INTERVAL DATA				CASING EQUIPMENT DEPTHS					
9.625 in. 36# ( 0 to 2,500 ft)			TOP	BTM	SPF	SIZE	SHOE	FLOAT	STAGE	ACP		
							21620	21617				
WELL FLUID			DISPLACEMENT FLUID			DEP 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)	(gal)	(psi)				
OBM	13.6 ppg	480 bbl	H2O	8.3 ppg		2560	14165	5000	<200	7	66.8 °F	1200
Bumped Plug	Final Differential (psi)	Floate Held (Y/N)	PSI Left on Casing	Cement to Surface (bbl)	Top of Cement (ft)	Full Ciro. During Job (Y/N)	Max Pump Pressure (psi)	Casing Rotation	Additional Hrs Charged (hrs)	Casing Reciprocation	Rathole Length (ft)	
Yes	3,100.00	Y			1,480	Yes	4,500.00	No	1.00	No	18	

Comments/Additional Details:  
Job went well other than poor delivery at first with silo.

*Anthony Barbara*  
Service Supervisor

13-Apr-23  
Date

04/12/2024

# NORTHEAST NATURAL ENERGY, LLC

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

Slot: Slot #07  
 Well: Sullivan 7H  
 Wellbore: Sullivan 7H PWB

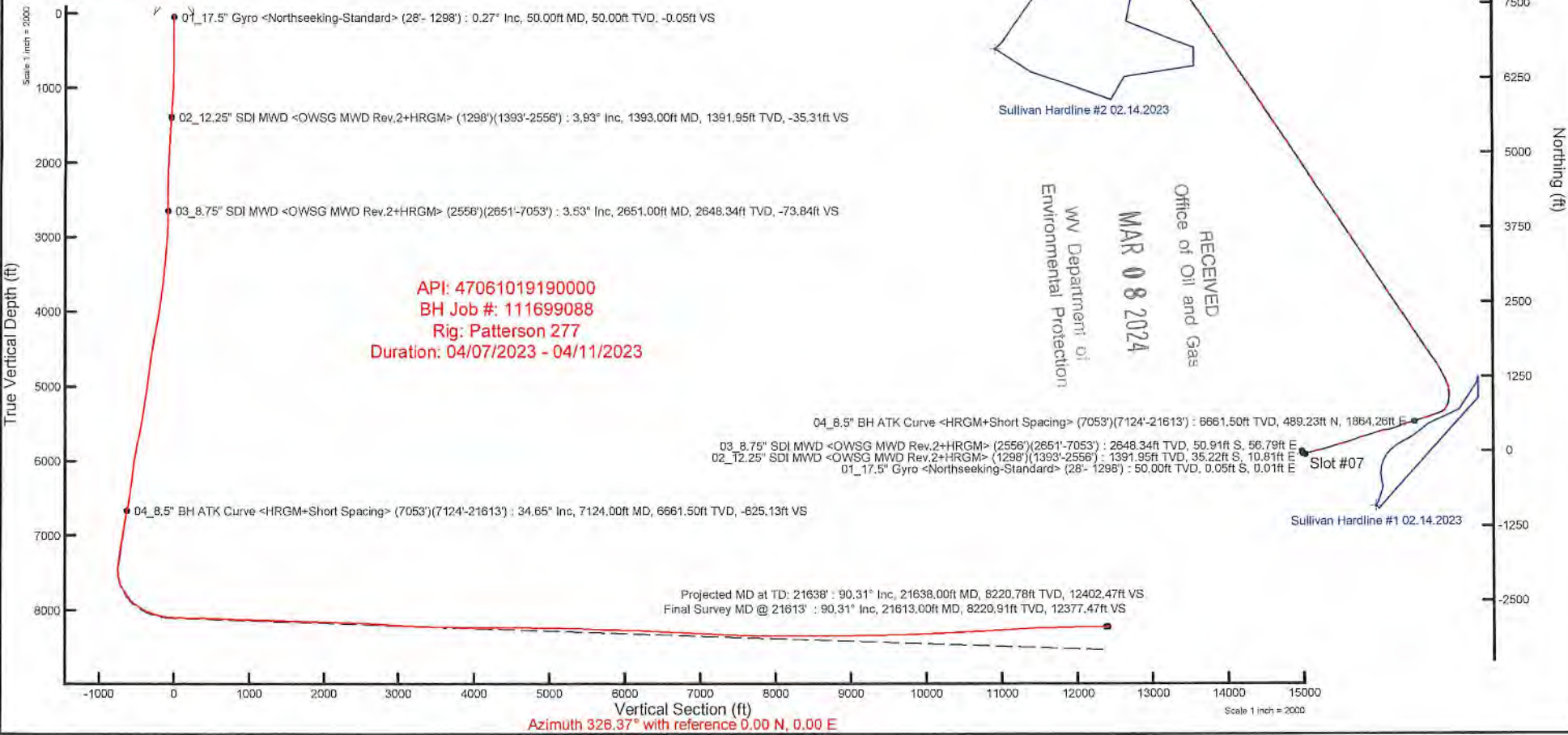


Site Name	Sullivan Pad	State	West Virginia
County	Monongalia	Well Name	Sullivan 7H
Field	Monongalia	Wellbore	Sullivan 7H PWB
Operator	Northeast Natural Energy, LLC	Completion	None
Well Depth	8220.91ft	Well Status	Active
Well Type	Production	Wellhead	None

Facility Name	Grid East (US Ft)	Grid North (US Ft)	Latitude	Longitude
Sullivan Pad	1764815.000	426883.590	39°26'53.4792"N	80°13'22.9021"W
Slot	Local N (ft)	Local E (ft)	Grid East (US Ft)	Grid North (US Ft)
Slot #07	11.40	16.44	1764831.440	426893.450

Design Comment	MD (ft)	Inc (")	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	D.S (°/100ft)	VS (ft)
Top Cn	7053.00	32.650	74.690	9902.40	479.47	1826.15	3.88	-612.15
Projection	7153.00	32.650	74.690	9956.59	493.72	1878.20	0.00	-629.11
Start Tangent	7283.37	31.706	70.133	6796.56	614.65	1944.36	2.00	-648.32
Curve KOP	7594.70	31.706	70.133	7402.12	661.70	2295.99	0.00	-737.25
Landing Pt	9188.01	88.000	226.373	8100.00	1436.17	2249.34	8.00	-48.28
BHL	21647.04	88.000	226.373	8534.81	11806.02	-4646.81	0.00	12403.15

Slot	Well	Wellbore	Wellpath
Slot #07	Sullivan 7H	Sullivan 7H APWB	Sullivan 7H APWB Proj. 21638
Slot #07	Sullivan 7H	Sullivan 7H PWB	Sullivan 7H Rev-A.0







# Actual Wellpath Report

Sullivan 7H AWP Proj: 21638'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 7H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 7H AWB
Slot	Slot #07		

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	4/12/2023 at 11:18:21 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	11.40	16.44	1764831.44	406893.49	39°36'53.5932"N	80°13'22.6932"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 #07)	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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# Actual Wellpath Report

Sullivan 7H AWP Proj: 21638'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 7H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 7H AWB
Slot	Slot #07		

WELLPATH DATA (240 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	Closure Dist [ft]	Closure Dir [°]	DLS ["/100ft]	Build Rate ["/100ft]	Turn Rate ["/100ft]
0.00†	0.000	167.110	0.00	-1504.00	0.00	0.00	0.00	1764831.44	406893.49	39°36'53.5932"N	80°13'22.6932"W	0.00	0.000	0.00	0.00	0.00
28.00	0.000	167.110	28.00	-1476.00	0.00	0.00	0.00	1764831.44	406893.49	39°36'53.5932"N	80°13'22.6932"W	0.00	0.000	0.00	0.00	0.00
50.00	0.270	167.110	50.00	-1454.00	-0.05	-0.05	0.01	1764831.45	406893.44	39°36'53.5927"N	80°13'22.6931"W	0.05	167.110	1.23	1.23	0.00
100.00	0.260	153.350	100.00	-1404.00	-0.27	-0.27	0.09	1764831.53	406893.22	39°36'53.5906"N	80°13'22.6921"W	0.28	161.602	0.13	-0.02	-27.52
150.00	0.240	158.380	150.00	-1354.00	-0.49	-0.47	0.18	1764831.62	406893.02	39°36'53.5886"N	80°13'22.6909"W	0.50	159.053	0.06	-0.04	10.06
200.00	0.430	132.450	200.00	-1304.00	-0.77	-0.69	0.36	1764831.80	406892.80	39°36'53.5864"N	80°13'22.6886"W	0.78	152.743	0.48	0.38	-51.86
250.00	0.330	168.670	250.00	-1254.00	-1.09	-0.96	0.52	1764831.96	406892.53	39°36'53.5838"N	80°13'22.6865"W	1.09	151.400	0.51	-0.20	72.44
300.00	0.350	163.180	300.00	-1204.00	-1.37	-1.24	0.59	1764832.03	406892.25	39°36'53.5809"N	80°13'22.6855"W	1.38	154.472	0.08	0.04	-10.98
350.00	0.340	160.480	350.00	-1154.00	-1.66	-1.53	0.69	1764832.13	406891.96	39°36'53.5781"N	80°13'22.6843"W	1.68	155.792	0.04	-0.02	-5.40
400.00	0.310	130.730	399.99	-1104.01	-1.93	-1.76	0.84	1764832.28	406891.73	39°36'53.5759"N	80°13'22.6823"W	1.95	154.464	0.34	-0.06	-59.50
450.00	0.510	122.170	449.99	-1054.01	-2.26	-1.97	1.13	1764832.57	406891.52	39°36'53.5739"N	80°13'22.6786"W	2.27	150.080	0.42	0.40	-17.12
500.00	0.540	145.240	499.99	-1004.01	-2.70	-2.28	1.45	1764832.89	406891.21	39°36'53.5708"N	80°13'22.6744"W	2.70	147.449	0.42	0.06	46.14
550.00	0.470	157.660	549.99	-954.01	-3.14	-2.66	1.67	1764833.11	406890.83	39°36'53.5670"N	80°13'22.6717"W	3.14	147.947	0.26	-0.14	24.84
600.00	0.360	140.790	599.99	-904.01	-3.50	-2.97	1.84	1764833.28	406890.52	39°36'53.5640"N	80°13'22.6694"W	3.50	148.193	0.33	-0.22	-33.74
650.00	0.480	152.340	649.99	-854.01	-3.86	-3.28	2.04	1764833.48	406890.21	39°36'53.5609"N	80°13'22.6668"W	3.86	148.117	0.29	0.24	23.10
700.00	0.560	152.960	699.98	-804.02	-4.31	-3.68	2.25	1764833.69	406889.81	39°36'53.5570"N	80°13'22.6641"W	4.31	148.596	0.16	0.16	1.24
750.00	0.680	137.800	749.98	-754.02	-4.85	-4.12	2.56	1764834.00	406889.37	39°36'53.5527"N	80°13'22.6601"W	4.85	148.159	0.40	0.24	-30.32
800.00	0.670	142.220	799.98	-704.02	-5.43	-4.57	2.94	1764834.38	406888.92	39°36'53.5483"N	80°13'22.6552"W	5.43	147.277	0.11	-0.02	8.84
850.00	0.800	145.170	849.97	-654.03	-6.07	-5.09	3.32	1764834.76	406888.40	39°36'53.5432"N	80°13'22.6503"W	6.07	146.913	0.27	0.26	5.90
1109.00	3.510	170.050	1108.77	-395.23	-15.14	-14.38	5.72	1764837.16	406879.11	39°36'53.4515"N	80°13'22.6187"W	15.48	158.319	1.08	1.05	9.61
1204.00	4.470	168.060	1203.54	-300.46	-21.25	-20.87	6.99	1764838.43	406872.62	39°36'53.3875"N	80°13'22.6018"W	22.01	161.490	1.02	1.01	-2.09
1298.00	4.830	166.100	1297.23	-206.77	-28.38	-28.30	8.70	1764840.13	406865.20	39°36'53.3142"N	80°13'22.5792"W	29.60	162.917	0.42	0.38	-2.09
1393.00	3.930	159.290	1391.95	-112.05	-35.31	-35.22	10.81	1764842.25	406858.27	39°36'53.2460"N	80°13'22.5515"W	36.84	162.942	1.09	-0.95	-7.17
1488.00	4.380	151.090	1486.70	-17.30	-42.10	-41.44	13.71	1764845.15	406852.05	39°36'53.1847"N	80°13'22.5138"W	43.65	161.692	0.78	0.47	-8.63
1583.00	4.240	139.190	1581.44	77.44	-49.20	-47.28	17.76	1764849.20	406846.22	39°36'53.1274"N	80°13'22.4614"W	50.50	159.409	0.95	-0.15	-12.53
1679.00	3.200	121.750	1677.24	173.24	-55.16	-51.37	22.36	1764853.80	406842.12	39°36'53.0873"N	80°13'22.4022"W	56.03	156.480	1.59	-1.08	-18.17
1774.00	3.030	112.310	1772.10	268.10	-59.65	-53.72	26.94	1764858.38	406839.77	39°36'53.0644"N	80°13'22.3435"W	60.10	153.370	0.57	-0.18	-9.94
1869.00	3.840	106.220	1866.92	362.92	-64.16	-55.56	32.31	1764863.75	406837.93	39°36'53.0466"N	80°13'22.2746"W	64.28	149.819	0.93	0.85	-6.41
1964.00	3.540	101.770	1961.73	457.73	-68.68	-57.05	38.24	1764869.68	406836.44	39°36'53.0324"N	80°13'22.1987"W	68.68	146.167	0.44	-0.32	-4.68
2059.00	1.950	111.600	2056.62	552.62	-72.10	-58.24	42.61	1764874.05	406835.25	39°36'53.0210"N	80°13'22.1427"W	72.17	143.809	1.74	-1.67	10.35

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# Actual Wellpath Report

Sullivan 7H AWP Proj: 21638'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 7H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 7H AWB
Slot	Slot #07		

WELLPATH DATA (240 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	Closure Dist [ft]	Closure Dir [°]	DLS ["/100ft]	Build Rate ["/100ft]	Turn Rate ["/100ft]
2154.00	0.940	90.280	2151.58	647.58	-73.86	-58.84	44.90	1764876.33	406834.65	39°36'53.0152"N	80°13'22.1135"W	74.02	142.657	1.19	-1.06	-22.44
2249.00	1.020	66.450	2246.57	742.57	-74.44	-58.51	46.45	1764877.89	406834.98	39°36'53.0187"N	80°13'22.0937"W	74.71	141.553	0.43	0.08	-25.08
2344.00	1.360	58.350	2341.55	837.55	-74.63	-57.58	48.19	1764879.62	406835.91	39°36'53.0280"N	80°13'22.0716"W	75.08	140.075	0.40	0.36	-8.53
2439.00	1.610	51.260	2436.52	932.52	-74.55	-56.15	50.19	1764881.62	406837.34	39°36'53.0422"N	80°13'22.0462"W	75.31	138.211	0.33	0.28	-7.46
2475.00	1.620	49.710	2472.50	968.50	-74.45	-55.51	50.97	1764882.41	406837.99	39°36'53.0487"N	80°13'22.0363"W	75.36	137.440	0.12	0.03	-4.31
2556.00	2.210	46.000	2553.46	1049.46	-74.03	-53.68	52.97	1764884.40	406839.81	39°36'53.0669"N	80°13'22.0109"W	75.41	135.384	0.74	0.73	-4.58
2651.00	3.530	59.110	2648.34	1144.34	-73.84	-50.91	56.79	1764888.23	406842.59	39°36'53.0946"N	80°13'21.9623"W	76.27	131.872	1.54	1.39	13.80
2746.00	6.650	64.640	2742.95	1238.95	-74.77	-47.05	64.28	1764895.72	406846.45	39°36'53.1334"N	80°13'21.8670"W	79.66	126.199	3.33	3.29	5.82
2841.00	8.340	68.010	2837.14	1333.14	-76.96	-42.11	75.65	1764907.09	406851.39	39°36'53.1831"N	80°13'21.7223"W	86.58	119.100	1.83	1.77	3.55
2936.00	10.320	72.840	2930.88	1426.88	-80.76	-37.02	90.17	1764921.61	406856.48	39°36'53.2345"N	80°13'21.5372"W	97.47	112.318	2.24	2.08	5.08
3031.00	11.870	77.040	3024.10	1520.10	-86.62	-32.31	107.83	1764939.26	406861.18	39°36'53.2824"N	80°13'21.3121"W	112.56	106.682	1.84	1.63	4.42
3126.00	13.300	77.050	3116.81	1612.81	-93.93	-27.67	128.00	1764959.43	406865.82	39°36'53.3299"N	80°13'21.0549"W	130.95	102.199	1.51	1.51	0.01
3221.00	13.780	77.360	3209.17	1705.17	-101.84	-22.75	149.69	1764981.12	406870.74	39°36'53.3803"N	80°13'20.7782"W	151.41	98.641	0.51	0.51	0.33
3315.00	14.640	74.870	3300.30	1796.30	-109.62	-17.20	172.08	1765003.51	406876.29	39°36'53.4369"N	80°13'20.4927"W	172.94	95.707	1.12	0.91	-2.65
3410.00	15.920	77.290	3391.94	1887.94	-118.08	-11.20	196.38	1765027.81	406882.29	39°36'53.4981"N	80°13'20.1828"W	196.70	93.263	1.51	1.35	2.55
3509.00	16.900	76.640	3486.90	1982.90	-127.92	-4.88	223.62	1765055.05	406888.61	39°36'53.5627"N	80°13'19.8353"W	223.68	91.251	1.01	0.99	-0.66
3603.00	17.940	77.330	3576.59	2072.59	-137.83	1.45	251.04	1765082.47	406894.94	39°36'53.6275"N	80°13'19.4856"W	251.05	89.670	1.13	1.11	0.73
3698.00	20.190	75.910	3666.38	2162.38	-148.55	8.65	281.22	1765112.65	406902.14	39°36'53.7010"N	80°13'19.1007"W	281.36	88.238	2.42	2.37	-1.49
3794.00	21.780	77.430	3756.01	2252.01	-160.49	16.56	314.68	1765146.10	406910.05	39°36'53.7818"N	80°13'18.6741"W	315.11	86.988	1.75	1.66	1.58
3889.00	24.400	74.410	3843.39	2339.39	-172.90	25.67	350.79	1765182.21	406919.16	39°36'53.8747"N	80°13'18.2136"W	351.72	85.815	3.03	2.76	-3.18
3984.00	26.860	72.430	3929.04	2425.04	-184.92	37.42	390.15	1765221.57	406930.91	39°36'53.9940"N	80°13'17.7118"W	391.94	84.521	2.74	2.59	-2.08
4078.00	28.920	71.970	4012.12	2508.12	-196.91	50.87	432.02	1765263.43	406944.36	39°36'54.1302"N	80°13'17.1783"W	435.00	83.284	2.20	2.19	-0.49
4173.00	31.180	71.840	4094.34	2590.34	-209.64	65.65	477.23	1765308.64	406959.13	39°36'54.2799"N	80°13'16.6020"W	481.72	82.168	2.38	2.38	-0.14
4268.00	32.380	75.280	4175.10	2671.10	-224.45	79.78	525.21	1765356.61	406973.26	39°36'54.4233"N	80°13'15.9905"W	531.23	81.363	2.29	1.26	3.62
4363.00	32.550	74.600	4255.26	2751.26	-240.69	93.03	574.45	1765405.85	406986.51	39°36'54.5682"N	80°13'15.3626"W	581.93	80.801	0.42	0.18	-0.72
4461.00	32.310	74.260	4337.98	2833.98	-256.98	107.13	625.07	1765456.48	407000.62	39°36'54.7016"N	80°13'14.7172"W	634.19	80.274	0.31	-0.24	-0.35
4556.00	30.270	71.730	4419.16	2915.16	-271.12	121.53	672.25	1765503.65	407015.01	39°36'54.8476"N	80°13'14.1158"W	683.15	79.753	2.55	-2.15	-2.66
4650.00	29.810	71.640	4500.53	2996.53	-283.55	136.32	716.93	1765548.32	407029.80	39°36'54.9973"N	80°13'13.5465"W	729.77	79.234	0.49	-0.49	-0.10
4744.00	29.720	71.000	4582.13	3078.13	-295.59	151.26	761.13	1765592.53	407044.74	39°36'55.1485"N	80°13'12.9832"W	776.02	78.760	0.35	-0.10	-0.68
4838.00	29.200	72.500	4663.98	3159.98	-307.85	165.74	805.04	1765636.43	407059.22	39°36'55.2951"N	80°13'12.4237"W	821.92	78.366	0.96	-0.55	1.60

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4933.00	27.780	71.870	4747.47	3243.47	-320.20	179.60	848.18	1765679.57	407073.08	39°36'55.4354"N	80°13'11.8738"W	866.98	78.044	1.53	-1.49	-0.66
5028.00	26.960	71.450	4831.83	3327.83	-331.72	193.34	889.63	1765721.02	407086.82	39°36'55.5745"N	80°13'11.3455"W	910.40	77.739	0.89	-0.86	-0.44
5124.00	26.780	71.040	4917.47	3413.47	-342.86	207.29	930.72	1765762.10	407100.77	39°36'55.7156"N	80°13'10.8220"W	953.52	77.444	0.27	-0.19	-0.43
5218.00	26.830	70.500	5001.37	3497.37	-353.40	221.25	970.74	1765802.12	407114.73	39°36'55.8568"N	80°13'10.3120"W	995.64	77.160	0.26	0.05	-0.57
5312.00	28.110	72.390	5084.77	3580.77	-364.69	235.03	1011.85	1765843.23	407128.51	39°36'55.9962"N	80°13'9.7861"W	1038.79	76.923	1.65	1.36	2.01
5410.00	27.320	73.640	5171.53	3667.53	-377.74	248.35	1055.43	1765886.81	407141.83	39°36'56.1313"N	80°13'9.2326"W	1084.26	76.759	1.00	-0.81	1.28
5506.00	27.740	71.960	5256.66	3752.66	-390.29	261.48	1097.82	1765929.19	407154.95	39°36'56.2644"N	80°13'8.6924"W	1128.53	76.603	0.92	0.44	-1.75
5601.00	30.720	71.830	5339.55	3835.55	-402.70	275.89	1141.90	1765973.27	407169.37	39°36'56.4103"N	80°13'8.1305"W	1174.76	76.417	3.14	3.14	-0.14
5696.00	31.320	72.380	5420.97	3916.97	-415.98	290.94	1188.49	1766019.86	407184.41	39°36'56.5627"N	80°13'7.5367"W	1223.58	76.245	0.70	0.63	0.58
5791.00	31.750	72.260	5501.94	3997.94	-429.63	306.03	1235.83	1766067.20	407199.50	39°36'56.7155"N	80°13'6.9334"W	1273.16	76.092	0.46	0.45	-0.13
5886.00	32.590	75.260	5582.35	4078.35	-444.76	320.15	1284.39	1766115.75	407213.62	39°36'56.8590"N	80°13'6.3144"W	1323.69	76.003	1.90	0.88	3.16
5980.00	31.020	78.860	5662.25	4158.25	-462.22	331.27	1332.64	1766164.00	407224.74	39°36'56.9727"N	80°13'5.6990"W	1373.20	76.040	2.62	-1.67	3.83
6074.00	29.390	79.410	5743.48	4239.48	-480.52	340.19	1379.08	1766210.44	407233.66	39°36'57.0645"N	80°13'5.1065"W	1420.42	76.143	1.76	-1.73	0.59
6169.00	28.190	78.440	5826.74	4322.74	-498.07	348.98	1423.98	1766255.33	407242.44	39°36'57.1549"N	80°13'4.5336"W	1466.12	76.230	1.36	-1.26	-1.02
6264.00	28.180	76.180	5910.47	4406.47	-514.11	358.83	1467.75	1766299.10	407252.30	39°36'57.2557"N	80°13'3.9754"W	1510.97	76.262	1.12	-0.01	-2.38
6362.00	28.070	72.670	5996.91	4492.91	-528.42	371.23	1512.23	1766343.58	407264.69	39°36'57.3817"N	80°13'3.4082"W	1557.13	76.208	1.69	-0.11	-3.58
6457.00	26.390	69.830	6081.38	4577.38	-539.61	385.17	1553.39	1766384.73	407278.63	39°36'57.5227"N	80°13'2.8837"W	1600.43	76.074	2.24	-1.77	-2.99
6551.00	25.760	67.980	6165.81	4661.81	-548.58	400.03	1591.94	1766423.28	407293.49	39°36'57.6726"N	80°13'2.3927"W	1641.43	75.895	1.09	-0.67	-1.97
6646.00	31.260	68.900	6249.26	4745.26	-558.09	416.65	1634.10	1766465.44	407310.12	39°36'57.8403"N	80°13'1.8556"W	1686.38	75.696	5.81	5.79	0.97
6741.00	30.750	71.400	6330.69	4826.69	-569.74	433.28	1680.12	1766511.46	407326.74	39°36'58.0082"N	80°13'1.2693"W	1735.09	75.539	1.46	-0.54	2.63
6836.00	28.180	72.110	6413.40	4909.40	-582.12	447.91	1724.49	1766555.83	407341.38	39°36'58.1564"N	80°13'0.7038"W	1781.71	75.440	2.73	-2.71	0.75
6931.00	27.980	72.180	6497.22	4993.22	-594.28	461.63	1767.05	1766598.39	407355.09	39°36'58.2952"N	80°13'0.1613"W	1826.36	75.359	0.21	-0.21	0.07
7026.00	31.800	73.570	6579.57	5075.57	-607.76	475.53	1812.30	1766643.63	407368.99	39°36'58.4362"N	80°12'59.5847"W	1873.65	75.298	4.09	4.02	1.46
7053.00	32.660	74.690	6602.40	5098.40	-612.15	479.47	1826.15	1766657.47	407372.93	39°36'58.4762"N	80°12'59.4081"W	1888.04	75.289	3.88	3.19	4.15
7124.00	34.650	76.520	6661.50	5157.50	-625.13	489.23	1864.26	1766695.58	407382.69	39°36'58.5757"N	80°12'58.9221"W	1927.38	75.296	3.15	2.80	2.58
7145.00	34.190	75.530	6678.83	5174.83	-629.12	492.10	1875.78	1766707.10	407385.56	39°36'58.6049"N	80°12'58.7752"W	1939.25	75.300	3.45	-2.19	-4.71
7240.00	31.060	71.840	6758.83	5254.83	-644.42	506.41	1924.92	1766756.25	407399.87	39°36'58.7502"N	80°12'58.1486"W	1990.42	75.261	3.90	-3.29	-3.88
7335.00	31.820	71.260	6839.89	5335.89	-657.40	522.09	1971.93	1766803.25	407415.55	39°36'58.9089"N	80°12'57.5496"W	2039.87	75.170	0.86	0.80	-0.61
7430.00	31.770	71.420	6920.63	5416.63	-670.33	538.11	2019.35	1766850.67	407431.57	39°36'59.0709"N	80°12'56.9453"W	2089.82	75.079	0.10	-0.05	0.17
7525.00	31.330	71.210	7001.59	5497.59	-683.15	554.03	2066.44	1766897.75	407447.49	39°36'59.2320"N	80°12'56.3452"W	2139.42	74.991	0.48	-0.46	-0.22

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7621.00	31.700	70.870	7083.43	5579.43	-695.85	570.34	2113.90	1766945.21	407463.79	39°36'59.3969"N	80°12'55.7404"W	2189.49	74.901	0.43	0.39	-0.35
7715.00	31.590	70.680	7163.45	5659.45	-708.12	586.58	2160.46	1766991.77	407480.03	39°36'59.5610"N	80°12'55.1471"W	2238.68	74.810	0.16	-0.12	-0.20
7809.00	31.760	69.510	7243.45	5739.45	-719.83	603.38	2206.87	1767038.18	407496.84	39°36'59.7306"N	80°12'54.5558"W	2287.87	74.708	0.68	0.18	-1.24
7904.00	31.780	69.150	7324.22	5820.22	-731.05	621.04	2253.67	1767084.97	407514.49	39°36'59.9090"N	80°12'53.9596"W	2337.67	74.594	0.20	0.02	-0.38
7999.00	31.690	69.040	7405.01	5901.01	-742.06	638.87	2300.35	1767131.65	407532.32	39°37'0.0888"N	80°12'53.3649"W	2387.42	74.479	0.11	-0.09	-0.12
8095.00	31.600	51.750	7486.91	5982.91	-745.57	663.51	2343.74	1767175.04	407556.96	39°37'0.3358"N	80°12'52.8130"W	2435.85	74.193	9.42	-0.09	-18.01
8189.00	32.950	38.960	7566.48	6062.48	-735.92	698.68	2379.20	1767210.49	407592.13	39°37'0.6861"N	80°12'52.3635"W	2479.66	73.635	7.39	1.44	-13.61
8284.00	35.250	22.550	7645.31	6141.31	-712.88	744.19	2406.02	1767237.31	407637.63	39°37'1.1380"N	80°12'52.0254"W	2518.48	72.813	9.96	2.42	-17.27
8378.00	39.380	12.560	7720.12	6216.12	-677.09	798.42	2422.93	1767254.22	407691.86	39°37'1.6753"N	80°12'51.8148"W	2551.09	71.762	7.79	4.39	-10.63
8473.00	44.040	8.080	7791.04	6287.04	-631.55	860.58	2434.13	1767265.42	407754.01	39°37'2.2904"N	80°12'51.6780"W	2581.78	70.529	5.82	4.91	-4.72
8568.00	48.950	4.740	7856.43	6352.43	-578.77	929.02	2441.74	1767273.03	407822.45	39°37'2.9674"N	80°12'51.5877"W	2612.50	69.169	5.76	5.17	-3.52
8662.00	54.700	352.640	7914.63	6410.63	-516.39	1002.62	2439.75	1767271.04	407896.05	39°37'3.6946"N	80°12'51.6207"W	2637.73	67.660	11.81	6.12	-12.87
8757.00	59.590	344.940	7966.21	6462.21	-442.67	1080.75	2424.11	1767255.40	407974.18	39°37'4.4655"N	80°12'51.8284"W	2654.12	65.971	8.53	5.15	-8.11
8852.00	64.890	337.250	8010.50	6506.50	-361.45	1160.12	2396.78	1767228.07	408053.54	39°37'5.2478"N	80°12'52.1857"W	2662.79	64.171	9.07	5.58	-8.09
8946.00	70.930	332.280	8045.85	6541.85	-275.94	1238.81	2359.61	1767190.90	408132.22	39°37'6.0225"N	80°12'52.6687"W	2665.03	62.300	8.08	6.43	-5.29
9040.00	76.830	331.190	8071.94	6567.94	-185.48	1318.30	2316.85	1767148.15	408211.71	39°37'6.8048"N	80°12'53.2231"W	2665.66	60.360	6.37	6.28	-1.16
9135.00	83.840	330.040	8087.88	6583.88	-92.14	1399.85	2270.92	1767102.22	408293.25	39°37'7.6070"N	80°12'53.8184"W	2651.09	58.349	7.47	7.38	-1.21
9231.00	87.720	325.050	8094.94	6590.94	3.53	1480.59	2219.58	1767050.86	408373.99	39°37'8.4009"N	80°12'54.4829"W	2668.07	56.294	6.57	4.04	-5.20
9325.00	87.050	326.240	8099.23	6595.23	97.42	1558.11	2166.57	1766997.88	408451.50	39°37'9.1629"N	80°12'55.1679"W	2668.66	54.278	1.45	-0.71	1.27
9420.00	88.550	326.090	8102.88	6598.88	192.35	1636.96	2113.71	1766945.03	408530.35	39°37'9.9379"N	80°12'55.8513"W	2673.47	52.244	1.59	1.58	-0.16
9516.00	89.570	326.280	8104.45	6600.45	288.34	1716.71	2060.30	1766891.61	408610.09	39°37'10.7219"N	80°12'56.5421"W	2681.77	50.198	1.08	1.06	0.20
9610.00	89.050	326.310	8105.59	6601.59	382.33	1794.90	2008.14	1766839.46	408688.28	39°37'11.4905"N	80°12'57.2165"W	2693.38	48.209	0.55	-0.55	0.03
9703.00	87.540	326.030	8108.35	6604.35	475.28	1872.12	1956.39	1766787.71	408765.49	39°37'12.2496"N	80°12'57.8857"W	2707.82	46.261	1.65	-1.62	-0.30
9798.00	88.150	326.500	8111.93	6607.93	570.22	1951.07	1903.67	1766734.99	408844.44	39°37'13.0256"N	80°12'58.5674"W	2725.91	44.296	0.81	0.64	0.49
9893.00	87.690	326.470	8115.37	6611.37	665.15	2030.22	1851.25	1766682.57	408923.59	39°37'13.8037"N	80°12'59.2454"W	2747.53	42.360	0.49	-0.48	-0.03
9987.00	87.970	326.160	8118.93	6614.93	759.09	2108.38	1799.15	1766630.48	409001.74	39°37'14.5721"N	80°12'59.9191"W	2771.68	40.475	0.44	0.30	-0.33
10081.00	88.340	326.530	8121.96	6617.96	853.04	2186.58	1747.08	1766578.42	409079.94	39°37'15.3408"N	80°13'0.5924"W	2798.83	38.625	0.56	0.39	0.39
10177.00	88.310	326.680	8124.77	6620.77	948.99	2266.70	1694.27	1766525.60	409160.05	39°37'16.1284"N	80°13'1.2755"W	2829.92	36.777	0.16	-0.03	0.16
10272.00	88.430	326.740	8127.47	6623.47	1043.95	2346.08	1642.14	1766473.48	409239.43	39°37'16.9088"N	80°13'1.9497"W	2863.69	34.990	0.14	0.13	0.06
10367.00	88.280	326.540	8130.19	6626.19	1138.91	2425.39	1589.93	1766421.27	409318.73	39°37'17.6885"N	80°13'2.6251"W	2900.07	33.246	0.26	-0.16	-0.21

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 7H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 7H AWB
Slot	Slot #07		

WELLPATH DATA (240 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	Closure Dist [ft]	Closure Dir [°]	DLS ["/100ft]	Build Rate ["/100ft]	Turn Rate ["/100ft]
10462.00	88.400	326.540	8132.95	8628.95	1233.87	2504.62	1537.57	1766368.91	409397.95	39°37'18.4673"N	80°13'3.3022"W	2938.91	31.546	0.13	0.13	0.00
10556.00	88.400	326.570	8135.57	8631.57	1327.84	2583.02	1485.78	1766317.13	409476.35	39°37'19.2380"N	80°13'3.9720"W	2979.86	29.908	0.03	0.00	0.03
10651.00	87.870	326.380	8138.66	8634.66	1422.79	2662.17	1433.34	1766264.69	409555.50	39°37'20.0161"N	80°13'4.6502"W	3023.51	28.298	0.59	-0.56	-0.20
10745.00	88.120	326.570	8141.95	8637.95	1516.73	2740.49	1381.46	1766212.81	409633.81	39°37'20.7860"N	80°13'5.3213"W	3068.99	26.752	0.33	0.27	0.20
10840.00	88.250	326.390	8144.96	8640.96	1611.68	2819.65	1329.02	1766160.38	409712.97	39°37'21.5642"N	80°13'5.9994"W	3117.17	25.237	0.23	0.14	-0.19
10934.00	88.340	326.680	8147.76	8643.76	1705.64	2898.03	1277.21	1766108.57	409791.34	39°37'22.3347"N	80°13'6.6696"W	3166.99	23.784	0.32	0.10	0.31
11029.00	88.460	326.620	8150.41	8646.41	1800.60	2977.36	1225.00	1766056.37	409870.66	39°37'23.1145"N	80°13'7.3448"W	3219.52	22.364	0.14	0.13	-0.06
11124.00	88.060	326.550	8153.29	8649.29	1895.55	3056.62	1172.71	1766004.08	409949.92	39°37'23.8937"N	80°13'8.0212"W	3273.86	20.990	0.43	-0.42	-0.07
11219.00	88.610	326.780	8156.05	8652.05	1990.51	3135.95	1120.53	1765951.90	410029.25	39°37'24.6736"N	80°13'8.6962"W	3323.13	19.663	0.63	0.58	0.24
11314.00	88.460	326.740	8158.48	8654.48	2085.48	3215.38	1068.47	1765899.85	410108.68	39°37'25.4545"N	80°13'9.3695"W	3388.26	18.382	0.16	-0.16	-0.04
11408.00	88.490	326.770	8160.99	8656.99	2179.44	3293.97	1016.96	1765848.34	410187.26	39°37'26.2270"N	80°13'10.0359"W	3447.38	17.157	0.05	0.03	0.03
11503.00	88.310	326.410	8163.64	8659.64	2274.41	3373.24	964.67	1765796.05	410266.52	39°37'27.0063"N	80°13'10.7122"W	3508.47	15.959	0.42	-0.19	-0.38
11598.00	87.050	326.190	8167.48	8663.48	2369.33	3452.21	912.00	1765743.39	410345.49	39°37'27.7826"N	80°13'11.3934"W	3570.65	14.798	1.35	-1.33	-0.23
11692.00	87.200	326.860	8172.20	8668.20	2463.21	3530.52	860.22	1765691.61	410423.79	39°37'28.5524"N	80°13'12.0631"W	3633.81	13.693	0.73	0.16	0.71
11787.00	87.140	326.850	8176.89	8672.89	2558.09	3609.96	808.34	1765639.73	410503.23	39°37'29.3334"N	80°13'12.7343"W	3699.36	12.621	0.06	-0.06	-0.01
11882.00	87.200	326.570	8181.58	8677.58	2652.97	3689.28	756.26	1765587.66	410582.54	39°37'30.1131"N	80°13'13.4079"W	3765.99	11.585	0.30	0.06	-0.29
11976.00	86.330	326.650	8186.88	8682.88	2746.82	3767.64	704.61	1765536.01	410660.90	39°37'30.8834"N	80°13'14.0760"W	3832.96	10.593	0.93	-0.93	0.09
12072.00	86.340	327.160	8193.02	8688.02	2842.62	3847.90	652.30	1765483.70	410741.15	39°37'31.6724"N	80°13'14.7528"W	3902.80	9.621	0.53	0.01	0.53
12167.00	86.360	326.710	8199.07	8695.07	2937.42	3927.35	600.58	1765431.98	410820.60	39°37'32.4535"N	80°13'15.4220"W	3973.01	8.694	0.47	0.02	-0.47
12262.00	86.460	325.850	8205.02	8701.02	3032.23	4006.21	547.94	1765379.35	410899.46	39°37'33.2287"N	80°13'16.1027"W	4043.51	7.788	0.91	0.11	-0.91
12356.00	87.350	326.480	8210.09	8706.09	3126.09	4084.18	495.68	1765327.09	410977.42	39°37'33.9951"N	80°13'16.7786"W	4114.15	6.920	1.16	0.95	0.67
12452.00	87.630	326.730	8214.30	8710.30	3222.00	4164.25	442.89	1765274.30	411057.49	39°37'34.7822"N	80°13'17.4614"W	4187.74	6.071	0.39	0.29	0.26
12546.00	87.970	325.310	8217.90	8713.90	3315.93	4242.14	390.39	1765221.81	411135.37	39°37'35.5478"N	80°13'18.1403"W	4260.07	5.258	1.55	0.36	-1.51
12641.00	88.920	326.420	8220.48	8718.48	3410.89	4320.74	337.11	1765168.53	411213.97	39°37'36.3204"N	80°13'18.8294"W	4333.87	4.461	1.54	1.00	1.17
12735.00	88.740	326.520	8222.40	8718.40	3504.87	4399.08	285.20	1765116.62	411292.30	39°37'37.0905"N	80°13'19.5009"W	4408.32	3.709	0.22	-0.19	0.11
12830.00	88.370	326.260	8224.80	8720.80	3599.84	4478.18	232.63	1765064.05	411371.39	39°37'37.8679"N	80°13'20.1809"W	4484.21	2.974	0.48	-0.39	-0.27
12925.00	89.350	326.780	8226.69	8722.69	3694.82	4557.40	180.23	1765011.66	411450.61	39°37'38.6467"N	80°13'20.8586"W	4560.96	2.265	1.17	1.03	0.55
13020.00	89.410	326.700	8227.72	8723.72	3789.81	4636.83	128.13	1764959.56	411530.04	39°37'39.4275"N	80°13'21.5326"W	4638.60	1.583	0.11	0.06	-0.08
13115.00	89.420	326.450	8228.69	8724.69	3884.80	4716.11	75.80	1764907.24	411609.32	39°37'40.2069"N	80°13'22.2095"W	4716.72	0.921	0.26	0.01	-0.26
13210.00	89.200	326.350	8229.83	8725.83	3979.79	4795.24	23.24	1764854.68	411688.43	39°37'40.9847"N	80°13'22.8895"W	4795.29	0.278	0.25	-0.23	-0.11

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 7H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 7H AWB
Slot	Slot #07		

WELLPATH DATA (240 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	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
13304.00	89.480	326.070	8230.91	6726.91	4073.79	4873.35	-29.04	1764802.40	411766.54	39°37'41.7525"N	80°13'23.5656"W	4873.44	359.659	0.42	0.30	-0.30
13399.00	89.600	326.620	8231.68	6727.68	4168.78	4952.43	-81.68	1764749.76	411845.61	39°37'42.5298"N	80°13'24.2465"W	4953.10	359.055	0.59	0.13	0.58
13493.00	90.280	326.360	8231.77	6727.77	4262.78	5030.80	-133.58	1764697.87	411923.98	39°37'43.3002"N	80°13'24.9178"W	5032.58	358.479	0.77	0.72	-0.28
13588.00	90.580	326.480	8231.06	6727.06	4357.78	5109.95	-186.12	1764645.33	412003.12	39°37'44.0782"N	80°13'25.5975"W	5113.33	357.914	0.34	0.32	0.13
13683.00	89.290	326.430	8231.17	6727.17	4452.78	5189.12	-238.62	1764592.84	412082.29	39°37'44.8565"N	80°13'26.2766"W	5194.61	357.367	1.36	-1.36	-0.05
13778.00	89.910	327.030	8231.83	6727.83	4547.77	5268.55	-290.73	1764540.73	412161.72	39°37'45.6373"N	80°13'26.9508"W	5276.56	356.841	0.91	0.65	0.63
13873.00	89.320	326.270	8232.47	6728.47	4642.77	5347.90	-342.96	1764488.50	412241.06	39°37'46.4173"N	80°13'27.6264"W	5358.89	356.331	1.01	-0.62	-0.80
13967.00	89.170	326.210	8233.71	6729.71	4736.76	5426.04	-395.19	1764436.28	412319.20	39°37'47.1854"N	80°13'28.3020"W	5440.42	355.834	0.17	-0.16	-0.06
14062.00	89.230	326.460	8235.04	6731.04	4831.75	5505.10	-447.85	1764383.62	412398.26	39°37'47.9625"N	80°13'28.9831"W	5523.29	355.349	0.27	0.06	0.26
14157.00	89.450	326.390	8236.13	6732.13	4926.75	5584.25	-500.38	1764331.09	412477.40	39°37'48.7405"N	80°13'29.6627"W	5606.62	354.880	0.24	0.23	-0.07
14253.00	88.680	326.650	8237.70	6733.70	5022.73	5664.31	-553.33	1764278.14	412557.45	39°37'49.5275"N	80°13'30.3477"W	5691.27	354.421	0.85	-0.80	0.27
14348.00	89.050	326.730	8239.58	6735.58	5117.71	5743.69	-605.49	1764225.99	412636.82	39°37'50.3078"N	80°13'31.0226"W	5775.51	353.982	0.40	0.39	0.08
14443.00	88.800	326.430	8241.36	6737.36	5212.69	5822.96	-657.81	1764173.68	412716.10	39°37'51.0871"N	80°13'31.6993"W	5860.00	353.555	0.41	-0.26	-0.32
14538.00	88.120	326.440	8243.91	6739.91	5307.66	5902.09	-710.31	1764121.17	412795.22	39°37'51.8649"N	80°13'32.3786"W	5944.68	353.138	0.72	-0.72	0.01
14632.00	88.830	326.290	8246.41	6742.41	5401.62	5980.33	-762.36	1764069.13	412873.45	39°37'52.6339"N	80°13'33.0518"W	6028.73	352.735	0.77	0.76	-0.16
14728.00	87.050	325.780	8249.87	6745.87	5497.56	6059.89	-815.95	1764015.54	412953.01	39°37'53.4159"N	80°13'33.7451"W	6114.58	352.331	1.93	-1.85	-0.53
14823.00	86.400	326.110	8255.29	6751.29	5592.40	6138.47	-869.07	1763962.43	413031.59	39°37'54.1883"N	80°13'34.4320"W	6199.69	351.942	0.77	-0.68	0.35
14918.00	87.290	326.760	8260.52	6756.52	5687.25	6217.51	-921.51	1763909.99	413110.62	39°37'54.9652"N	80°13'35.1104"W	6285.43	351.569	1.16	0.94	0.68
15013.00	88.650	326.270	8263.89	6759.89	5782.19	6296.69	-973.89	1763857.61	413189.80	39°37'55.7435"N	80°13'35.7881"W	6371.56	351.208	1.52	1.43	-0.52
15108.00	88.620	325.780	8266.15	6762.15	5877.16	6375.45	-1026.96	1763804.54	413268.55	39°37'56.5176"N	80°13'36.4745"W	6457.63	350.849	0.52	-0.03	-0.52
15203.00	89.230	325.730	8267.93	6763.93	5972.14	6453.97	-1080.41	1763751.09	413347.06	39°37'57.2893"N	80°13'37.1658"W	6543.78	350.497	0.64	0.64	-0.05
15298.00	89.260	326.460	8269.18	6765.18	6067.13	6532.81	-1133.40	1763698.11	413425.90	39°37'58.0642"N	80°13'37.8512"W	6630.40	350.158	0.77	0.03	0.77
15394.00	87.750	326.250	8271.69	6767.69	6163.09	6612.70	-1186.57	1763644.94	413505.78	39°37'58.8495"N	80°13'38.5390"W	6718.31	349.827	1.59	-1.57	-0.22
15488.00	87.010	326.280	8275.98	6771.98	6256.99	6690.79	-1238.72	1763592.80	413583.87	39°37'59.6170"N	80°13'39.2136"W	6804.49	349.511	0.79	-0.79	0.03
15584.00	86.060	325.980	8281.79	6777.79	6352.82	6770.35	-1292.12	1763539.40	413663.42	39°38'00.3990"N	80°13'39.9044"W	6892.55	349.195	1.04	-0.99	-0.31
15680.00	87.660	325.770	8287.05	6783.05	6448.67	6849.70	-1345.89	1763485.63	413742.77	39°38'01.1789"N	80°13'40.5999"W	6980.67	348.884	1.68	1.67	-0.22
15774.00	87.010	326.120	8291.42	6787.42	6542.56	6927.49	-1398.47	1763433.05	413820.56	39°38'01.9435"N	80°13'41.2800"W	7067.24	348.587	0.79	-0.69	0.37
15869.00	88.250	326.490	8295.34	6791.34	6637.48	7006.46	-1451.13	1763380.40	413899.52	39°38'02.7197"N	80°13'41.9612"W	7155.16	348.299	1.36	1.31	0.39
15964.00	87.200	326.270	8299.12	6795.12	6732.40	7085.51	-1503.69	1763327.84	413978.56	39°38'03.4967"N	80°13'42.6412"W	7243.31	348.018	1.13	-1.11	-0.23
16059.00	87.570	326.450	8303.45	6799.45	6827.30	7164.52	-1556.26	1763275.27	414057.57	39°38'04.2733"N	80°13'43.3213"W	7331.59	347.745	0.43	0.39	0.19

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MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	TVDS [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
16154.00	87.020	326.540	8307.93	8803.93	6922.20	7243.64	-1608.64	1763222.89	414136.69	39°38'5.0510"N	80°13'43.9990"W	7420.11	347.479	0.59	-0.58	0.09
16249.00	87.110	326.340	8312.80	8808.80	7017.07	7322.70	-1661.09	1763170.45	414215.74	39°38'5.8282"N	80°13'44.6776"W	7508.74	347.219	0.23	0.09	-0.21
16344.00	86.820	326.120	8317.99	8813.99	7111.93	7401.56	-1713.82	1763117.73	414294.59	39°38'6.6032"N	80°13'45.3597"W	7597.38	346.963	0.57	-0.52	-0.23
16439.00	86.800	326.110	8323.44	8819.44	7206.77	7480.29	-1766.70	1763064.85	414373.32	39°38'7.3771"N	80°13'46.0437"W	7686.09	346.711	0.19	0.19	-0.01
16534.00	88.340	326.900	8327.47	8823.47	7301.68	7559.44	-1819.08	1763012.48	414452.47	39°38'8.1551"N	80°13'46.7214"W	7775.23	346.470	1.82	1.62	0.88
16629.00	87.720	326.460	8330.74	8826.74	7396.62	7638.78	-1871.23	1762960.33	414531.80	39°38'8.9349"N	80°13'47.3962"W	7864.63	346.236	0.80	-0.65	-0.46
16724.00	88.060	326.370	8334.24	8830.24	7491.56	7717.86	-1923.74	1762907.81	414610.88	39°38'9.7123"N	80°13'48.0757"W	7954.01	346.004	0.37	0.36	-0.09
16820.00	87.870	326.340	8337.65	8833.65	7587.50	7797.73	-1976.90	1762854.66	414690.74	39°38'10.4973"N	80°13'48.7634"W	8044.42	345.774	0.20	-0.20	-0.03
16914.00	88.370	326.550	8340.73	8836.73	7681.45	7876.02	-2028.83	1762802.74	414769.03	39°38'11.2669"N	80°13'49.4353"W	8133.14	345.555	0.58	0.53	0.22
17009.00	88.370	326.460	8343.43	8839.43	7775.41	7955.22	-2081.23	1762750.33	414848.22	39°38'12.0453"N	80°13'50.1133"W	8222.96	345.339	0.09	0.00	-0.09
17103.00	88.520	326.040	8345.98	8841.98	7870.37	8033.35	-2133.44	1762698.13	414926.34	39°38'12.8132"N	80°13'50.7887"W	8311.81	345.127	0.47	0.16	-0.45
17198.00	89.880	326.510	8347.31	8843.31	7965.36	8112.35	-2186.18	1762645.40	415005.34	39°38'13.5898"N	80°13'51.4710"W	8401.76	344.918	1.51	1.43	0.49
17293.00	91.260	326.280	8346.36	8842.36	8060.35	8191.47	-2238.75	1762592.83	415084.45	39°38'14.3674"N	80°13'52.1513"W	8491.89	344.714	1.47	1.45	-0.24
17388.00	92.710	326.250	8343.07	8839.07	8155.29	8270.42	-2291.48	1762540.10	415163.40	39°38'15.1434"N	80°13'52.8334"W	8582.00	344.514	1.53	1.53	-0.03
17483.00	89.690	326.770	8341.08	8837.08	8250.26	8349.62	-2343.88	1762487.70	415242.60	39°38'15.9219"N	80°13'53.5114"W	8672.37	344.320	3.23	-3.18	0.55
17578.00	89.750	326.890	8341.55	8837.55	8345.26	8429.14	-2395.86	1762435.73	415322.11	39°38'16.7036"N	80°13'54.1841"W	8763.02	344.133	0.14	0.06	0.13
17673.00	89.050	326.590	8342.54	8838.54	8440.25	8508.57	-2447.95	1762383.64	415401.54	39°38'17.4844"N	80°13'54.8563"W	8853.72	343.949	0.80	-0.74	-0.32
17768.00	90.220	326.650	8343.15	8839.15	8535.25	8587.90	-2500.22	1762331.37	415480.86	39°38'18.2642"N	80°13'55.5346"W	8944.45	343.768	1.23	1.23	0.06
17864.00	90.740	327.170	8342.34	8838.34	8631.24	8668.33	-2552.63	1762278.97	415561.29	39°38'19.0548"N	80°13'56.2129"W	9036.36	343.591	0.77	0.54	0.54
17959.00	89.880	326.720	8341.83	8837.83	8726.23	8747.95	-2604.45	1762227.15	415640.90	39°38'19.8375"N	80°13'56.8835"W	9127.42	343.421	1.02	-0.91	-0.47
18054.00	90.250	325.250	8341.72	8837.72	8821.22	8826.69	-2657.59	1762174.01	415719.64	39°38'20.6114"N	80°13'57.5710"W	9218.09	343.244	1.60	0.39	-1.55
18150.00	90.430	326.070	8341.15	8837.15	8917.21	8905.96	-2711.74	1762119.87	415798.90	39°38'21.3904"N	80°13'58.2714"W	9309.65	343.065	0.87	0.19	0.85
18245.00	89.850	325.960	8340.92	8836.92	9012.21	8984.73	-2764.84	1762066.77	415877.67	39°38'22.1645"N	80°13'58.9564"W	9400.52	342.895	0.62	-0.61	-0.12
18341.00	90.740	326.580	8340.43	8836.43	9108.21	9064.56	-2818.15	1762013.46	415957.50	39°38'22.9492"N	80°13'59.6481"W	9492.54	342.730	1.13	0.93	0.65
18436.00	90.310	326.970	8339.56	8835.56	9203.20	9144.03	-2870.20	1761961.42	416036.96	39°38'23.7304"N	80°14'0.3217"W	9583.91	342.574	0.61	-0.45	0.41
18532.00	91.200	326.640	8338.29	8834.29	9299.19	9224.36	-2922.75	1761908.87	416117.28	39°38'24.5200"N	80°14'1.0019"W	9676.32	342.419	0.99	0.93	-0.34
18626.00	91.170	326.320	8336.35	8832.35	9393.17	9302.71	-2974.65	1761856.97	416195.63	39°38'25.2901"N	80°14'1.6734"W	9766.72	342.268	0.34	-0.03	-0.34
18722.00	91.540	326.340	8334.08	8830.08	9489.14	9382.58	-3027.86	1761803.77	416275.50	39°38'26.0751"N	80°14'2.3619"W	9859.04	342.115	0.39	0.39	0.02
18818.00	91.170	326.060	8331.81	8827.81	9585.12	9462.33	-3081.25	1761750.38	416355.24	39°38'26.8590"N	80°14'3.0527"W	9951.37	341.963	0.48	-0.39	-0.29
18913.00	91.480	326.590	8329.61	8825.61	9680.09	9541.37	-3133.91	1761697.72	416434.28	39°38'27.6358"N	80°14'3.7341"W	10042.86	341.817	0.65	0.33	0.56

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# Actual Wellpath Report

Sullivan 7H AWP Proj: 21638'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 7H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 7H AWB
Slot	Slot #07		

WELLPATH DATA (240 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	Closure Dist [ft]	Closure Dir [°]	DLS ["/100ft]	Build Rate ["/100ft]	Turn Rate ["/100ft]
19009.00	91.910	326.670	8326.77	8822.77	9776.05	9621.51	-3186.69	1761644.94	416514.41	39°38'28.4235"N	80°14'4.4171"W	10135.50	341.675	0.46	0.45	0.08
19104.00	92.310	326.810	8323.27	8819.27	9870.98	9700.89	-3238.76	1761592.88	416593.79	39°38'29.2038"N	80°14'5.0910"W	10227.26	341.538	0.45	0.42	-0.15
19199.00	92.370	326.430	8319.39	8815.39	9965.90	9780.15	-3290.98	1761540.66	416673.05	39°38'29.9829"N	80°14'5.7668"W	10319.01	341.402	0.40	0.06	-0.40
19295.00	92.530	327.070	8315.29	8811.29	10061.81	9860.36	-3343.57	1761488.08	416753.25	39°38'30.7714"N	80°14'6.4474"W	10411.83	341.269	0.69	0.17	0.67
19390.00	92.370	326.560	8311.23	8807.23	10156.72	9939.81	-3395.51	1761436.14	416832.89	39°38'31.5528"N	80°14'7.1196"W	10503.77	341.139	0.54	-0.17	-0.52
19485.00	93.050	326.500	8306.74	8802.74	10251.61	10018.97	-3447.83	1761383.83	416911.85	39°38'32.3304"N	80°14'7.7967"W	10595.63	341.010	0.72	0.72	-0.08
19581.00	92.460	325.880	8302.12	8798.12	10347.50	10098.64	-3501.18	1761330.47	416991.52	39°38'33.1135"N	80°14'8.4871"W	10688.35	340.879	0.89	-0.61	-0.65
19675.00	92.990	326.480	8297.65	8793.65	10441.39	10176.65	-3553.44	1761278.22	417069.52	39°38'33.8801"N	80°14'9.1633"W	10779.20	340.752	0.65	0.56	0.54
19771.00	92.680	326.090	8292.91	8788.91	10537.27	10256.41	-3606.66	1761225.00	417149.27	39°38'34.6640"N	80°14'9.8519"W	10872.07	340.626	0.52	-0.32	-0.41
19866.00	93.010	326.260	8288.19	8784.19	10632.16	10335.23	-3659.48	1761172.19	417228.09	39°38'35.4387"N	80°14'10.5353"W	10963.97	340.502	0.39	0.35	0.18
19962.00	92.530	325.290	8283.55	8779.55	10728.04	10414.51	-3713.41	1761118.26	417307.36	39°38'36.2179"N	80°14'11.2330"W	11056.74	340.376	1.13	-0.50	-1.01
20056.00	93.640	326.060	8278.49	8774.49	10821.89	10492.03	-3766.34	1761065.33	417384.87	39°38'36.9796"N	80°14'11.9177"W	11147.55	340.253	1.44	1.18	0.82
20152.00	93.570	326.310	8272.46	8768.46	10917.70	10571.63	-3819.66	1761012.02	417464.47	39°38'37.7620"N	80°14'12.6077"W	11240.51	340.135	0.27	-0.07	0.26
20247.00	93.110	326.050	8266.92	8762.92	11012.54	10650.42	-3872.44	1760959.23	417543.26	39°38'38.5364"N	80°14'13.2907"W	11332.57	340.019	0.56	-0.48	-0.27
20342.00	93.670	326.310	8251.30	8757.30	11107.37	10729.21	-3925.23	1760906.45	417622.04	39°38'39.3107"N	80°14'13.9737"W	11424.68	339.905	0.65	0.59	0.27
20437.00	93.570	326.350	8255.30	8751.30	11202.18	10808.11	-3977.79	1760853.89	417700.94	39°38'40.0862"N	80°14'14.6539"W	11516.86	339.794	0.11	-0.11	0.04
20531.00	92.960	326.340	8249.95	8745.95	11296.03	10886.23	-4029.80	1760801.89	417779.05	39°38'40.8540"N	80°14'15.3269"W	11608.15	339.687	0.65	-0.65	-0.01
20627.00	93.660	327.000	8244.41	8740.41	11391.87	10966.30	-4082.46	1760749.23	417859.14	39°38'41.6411"N	80°14'16.0085"W	11701.55	339.581	1.00	0.73	0.69
20722.00	92.680	325.960	8239.15	8735.15	11486.72	11045.38	-4134.84	1760696.85	417938.20	39°38'42.4183"N	80°14'16.6864"W	11793.95	339.477	1.50	-1.03	-1.09
20817.00	90.710	326.180	8236.35	8732.35	11581.67	11124.17	-4187.84	1760643.86	418016.99	39°38'43.1926"N	80°14'17.3722"W	11886.34	339.370	2.00	-2.07	0.23
20912.00	90.980	326.360	8234.94	8730.94	11676.66	11203.17	-4240.59	1760591.11	418095.97	39°38'43.9690"N	80°14'18.0548"W	11978.88	339.268	0.34	0.28	0.19
21007.00	91.350	326.570	8233.01	8729.01	11771.64	11282.34	-4293.06	1760538.65	418175.14	39°38'44.7472"N	80°14'18.7338"W	12071.51	339.168	0.45	0.39	0.22
21101.00	91.940	326.790	8230.31	8726.31	11865.60	11360.85	-4344.67	1760487.04	418253.65	39°38'45.5189"N	80°14'19.4019"W	12163.27	339.072	0.67	0.63	0.23
21195.00	91.600	326.460	8227.41	8723.41	11959.55	11439.81	-4396.36	1760435.35	418332.10	39°38'46.2901"N	80°14'20.0709"W	12255.03	338.977	0.50	-0.36	-0.35
21291.00	91.690	325.980	8224.65	8720.65	12055.51	11519.07	-4449.71	1760382.00	418411.26	39°38'47.0740"N	80°14'20.7613"W	12348.64	338.879	0.51	0.09	-0.50
21386.00	90.890	325.380	8222.52	8718.52	12150.48	11597.51	-4503.26	1760328.46	418490.29	39°38'47.8449"N	80°14'21.4541"W	12441.13	338.779	1.05	-0.84	-0.63
21481.00	90.310	326.090	8221.52	8717.52	12245.47	11676.02	-4556.74	1760274.98	418568.79	39°38'48.6164"N	80°14'22.1461"W	12533.69	338.681	0.97	-0.61	0.75
21576.00	90.220	326.210	8221.08	8717.08	12340.47	11754.92	-4609.66	1760222.08	418647.69	39°38'49.3918"N	80°14'22.8308"W	12626.44	338.588	0.16	-0.09	0.13
21613.00	90.310	326.450	8220.91	8716.91	12377.47	11785.71	-4630.17	1760201.55	418678.48	39°38'49.6944"N	80°14'23.0953"W	12662.60	338.552	0.69	0.24	0.65
21638.00	90.310	326.450	8220.78	8716.78	12402.47	11806.54	-4643.89	1760187.74	418699.31	39°38'49.8992"N	80°14'23.2751"W	12687.04	338.528	0.00	0.00	0.00

HOLE & CASING SECTIONS - Ref Wellbore: Sullivan 7H AWB Ref Wellpath: Sullivan 7H AWP Proj: 21638'									
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]
17.5in Open Hole	28.00	1505.00	1477.00	28.00	1503.65	0.00	0.00	-42.56	14.36
13.375in Casing Surface	28.00	1475.00	1447.00	28.00	1473.74	0.00	0.00	-40.56	13.24
12.25in Open Hole	1505.00	2680.00	1175.00	1503.65	2677.27	-42.56	14.36	-49.91	58.56
9.625in Casing Intermediate	28.00	2650.00	2622.00	28.00	2647.34	0.00	0.00	-50.94	56.74
8.75in Open Hole	2680.00	7139.00	4459.00	2677.27	6673.87	-49.26	58.56	491.26	1872.50
8.5in Open Hole	7139.00	21638.00	14499.00	6673.87	8220.78	-491.26	1872.50	11806.54	-4643.99
5.5in Casing Production	28.00	21608.00	21580.00	28.00	8220.94	0.00	0.00	-11781.54	-4627.41

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Sullivan 7H LP Rev-1	8100.00	1438.17	2248.34	1767080.64	408331.57	39°37'7.9840"N	80°12'54.0981"W	point
Sullivan 7H BHL Rev-1	8534.81	11806.02	-4646.01	1760185.72	418698.79	39°38'49.8938"N	80°14'23.3009"W	point
Sullivan Hardline #1 02.14.2023	9500.00	-918.07	-1225.71	1766057.07	405977.47	39°36'44.6371"N	80°13'6.9378"W	polygon
2D Polygon: dimensions not calculated								
Sullivan Hardline #2 02.14.2023	9500.00	6738.97	-5063.88	1759767.88	413632.04	39°37'59.7842"N	80°14'28.1033"W	polygon
2D Polygon: dimensions not calculated								

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# Actual Wellpath Report

Sullivan 7H AWP Proj: 21638'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 7H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 7H AWB
Slot	Slot #07		

WELLPATH COMPOSITION - Ref Wellbore: Sullivan 7H AWB Ref Wellpath: Sullivan 7H AWP Proj: 21638'					
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	Survey Date
28.00	1298.00	BH Generic gyro - northseeking (Standard)	01 17.5" Gyro <Northseeking-Standard> (28'- 1298')	Sullivan 7H AWB	4/6/2023
1298.00	2556.00	OWSG MWD rev2 + HRGM	02 12.25" SDI MWD <OWSG MWD Rev.2+HRGM> (1298')(1393'-2556')	Sullivan 7H AWB	4/6/2023
2556.00	7053.00	OWSG MWD rev2 + HRGM	03 8.75" SDI MWD <OWSG MWD Rev.2+HRGM> (2556')(2651'-7053')	Sullivan 7H AWB	4/6/2023
7053.00	21638.00	BH AutoTrak Curve/eXpress (2019) (HRGM, Short spacing)	04 8.5" BH ATK Curve <HRGM+Short Spacing> (7053')(7124'-21613')	Sullivan 7H AWB	4/6/2023

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 7H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 7H AWB
Slot	Slot #07		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
50.00	0.270	167.110	50.00	01_17.5" Gyro <Northseeking-Standard> (28'- 1298')
1393.00	3.930	159.290	1391.95	02_12.25" SDI MWD <OWSG MWD Rev.2+HRGM> (1298')(1393'-2556')
2651.00	3.530	59.110	2648.34	03_8.75" SDI MWD <OWSG MWD Rev.2+HRGM> (2556')(2651'-7053')
7124.00	34.650	76.520	6661.50	04_8.5" BH ATK Curve <HRGM+Short Spacing> (7053')(7124'-21613')
21613.00	90.310	326.450	8220.91	Final Survey MD @ 21613'
21638.00	90.310	326.450	8220.78	Projected MD at TD: 21638'

COMMENTS
<p><b>Wellpath general comments</b>            API: 47061019190000            BH Job #: 111699088            Rig: Patterson 277            Duration: 04/07/2023 - 04/11/2023</p> <p>01_17.5" Gyro &lt;Northseeking-Standard&gt; (28'- 1298')            02_12.25" SDI MWD &lt;OWSG MWD Rev.2+HRGM&gt; (1298')(1393'-2556')            03_8.75" SDI MWD &lt;OWSG MWD Rev.2+HRGM&gt; (2556')(2651'-7053')            04_8.5" BH ATK Curve &lt;HRGM+Short Spacing&gt; (7053')(7124'-21613')</p> <p>Final Survey MD @ 21613'            Projected MD at TD: 21638'</p>

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	08/26/2023
Job End Date:	10/02/2023
State:	West Virginia
County:	Monongalia
API Number:	47-061-01919-00-00
Operator Name:	Northeast Natural Energy LLC
Well Name and Number:	Sullivan 7H
Latitude:	39.614887
Longitude:	-80.222968
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	8245.43857142858
Total Base Water Volume (gal)*:	24679578
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					
Other Chemical(s)	Listed Above	See Trade Name(s)					
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					

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Water	Operator	Carrier Fluid				RECEIVED Office of Oil and Gas APR 08 2024	
Items above are Trade Names. Items below are the individual ingredients.							
			Water	7732-18-5	100.00000	WV Department of Environmental Protection	None
			Crystalline silica, quartz	14808-60-7	100.00000	11.11378	None
			Crystalline silica, quartz	14808-60-7	100.00000	1.20375	None
			Hydrochloric acid	7647-01-0	15.00000	0.02526	None
			Water	7732-18-5	80.00000	0.01708	
			Water	7732-18-5	70.00000	0.01433	
			Butene Homopolymer	9003-29-6	25.00000	0.01272	
			Alkanes, C16-20-iso-	90622-59-6	25.00000	0.01272	None
			Glutaraldehyde	111-30-8	20.00000	0.00427	None
			Diethylenetriamine penta (methylene phosphonic acid) (DTPMP)	15827-60-8	10.00000	0.00205	
			2 Phosphobutane 1,2,4 tricarboxylic acid	37971-36-1	10.00000	0.00205	None
			Citric Acid	77-92-9	10.00000	0.00205	
			alcohols, C12-18, ethoxylated	68213-23-0	3.00000	0.00153	
			Quaternary Ammonium Compounds	68424-85-1	3.00000	0.00064	
			Didecyl dimethyl ammonium chloride	7173-51-5	3.00000	0.00064	
			Ethanol	64-17-5	1.50000	0.00032	
			Ethylene glycol	107-21-1	45.00000	0.00008	None
			Glycol Ether EB	111-76-2	45.00000	0.00008	
			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	0.00003	
			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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