

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 - 01918 County Monongalia District Clay
Quad Grant Town Pad Name Sullivan Field/Pool Name _____
Farm name Alan Sullivan Well Number 5H
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 4385292.7 Easting 566683.8
Landing Point of Curve Northing 4385211.6 Easting 566639.0
Bottom Hole Northing 4388326.2 Easting 564491.6

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

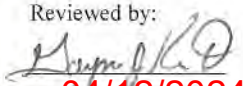
Mud Type(s) and Additive(s)
Synthetic Based Mud - Horizontal Section: BIO-BASE 365, CALCIUM CHLORIDE POWDER, G-SEAL PLUS, HRP, LIME, M-I WATE (BARITE),
M-I-X II MEDIUM, MEGADRIL P SYSTEM, MEGADRIL P SYSTEM RENTAL, MEGAMUL, SAFE-CARB 250, VERSATHIN HF, VERSAWET, VG-PLUS, VINSEAL MEDIUM, WALNUT NUT PLUG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

Date permit issued 12/19/2022 Date drilling commenced 2/26/2023 Date drilling ceased 3/15/2023
Date completion activities began 8/29/2023 Date completion activities ceased 10/5/2023
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 - 01918 Farm name Alan Sullivan Well number 5H

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"	1,503'	N	54.5	NA	Y, 3 bbl
Coal							
Intermediate 1	12-1/4"	9-5/8"	2,498'	N	36	NA	Y, 30 bbl
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	20,962'	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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	4,500 PSI Grout						48
Surface	Class A + 2%	570	15.6	1.14	647	CTS	8
Coal							
Intermediate 1	Class A + 1%	980	15.6	1.13	1,105	CTS	8
Intermediate 2							
Intermediate 3							
Production	50:50 Class A + Additives	3,995	14.5	1.13	4,496	1,854'	48
Tubing							

Drillers TD (ft) 20,963' Loggers TD (ft) 20,933'
 Deepest formation penetrated Marcellus Plug back to (ft) NA
 Plug back procedure _____

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Kick off depth (ft) 7,014'

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 - 01918 Farm name Alan Sullivan Well number 5H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>			
Marcellus	8,172'	TVD	20,963'	MD

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Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 2511 psi Bottom Hole _____ psi DURATION OF TEST 24 hrs

OPEN FLOW Gas Oil NGL Water GAS MEASURED BY
2826 mcfpd _____ bpd _____ bpd _____ bpd Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
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 Title Regulatory Manager Date 3/6/24

Sullivan 5H 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)	Total Proppant Amount (lbs)	Flush Volume (bbls)
1	8/29/2023	4,850	8,226	9,811	92	501	8,738	299,400	465
2	8/29/2023	5,045	7,484	9,408	92	71	9,570	455,900	484
3	8/30/2023	6,205	7,061	9,811	92	37	9,766	453,800	519
4	8/31/2023	5,078	7,564	9,538	95	376	10,157	457,000	453
5	8/31/2023	5,067	4,344	9,593	94	16	9,618	456,800	458
6	9/1/2023	5,356	7,105	9,660	94	17	9,484	456,600	439
7	9/2/2023	5,500	5,032	9,361	93	50	9,495	456,300	441
8	9/3/2023	5,800	7,532	9,764	94	27	9,434	455,600	436
9	9/3/2023	4,662	7,631	9,479	94	23	9,402	455,600	433
10	9/4/2023	5,500	5,074	9,296	91	39	9,366	455,800	422
11	9/5/2023	4,800	7,494	9,648	94	18	9,408	457,000	410
12	9/5/2023	5,375	4,495	9,479	95	113	9,623	455,400	424
13	9/6/2023	4,876	4,330	9,441	88	77	9,065	455,500	462
14	9/7/2023	5,406	4,433	9,594	94	7	9,321	455,700	459
15	9/8/2023	5,257	4,339	9,321	94	12	9,001	455,600	524
16	9/8/2023	5,329	3,661	9,416	94	38	9,177	455,700	403
17	9/9/2023	5,640	7,250	9,495	93	44	8,702	455,600	388
18	9/9/2023	6,257	7,271	9,552	94	11	8,471	455,200	460
19	9/10/2023	5,543	7,196	9,486	94	37	8,830	456,100	386
20	9/11/2023	5,280	4,428	9,614	94	27	9,065	454,600	469
21	9/11/2023	6,855	6,187	9,321	94	36	8,678	454,600	382
22	9/12/2023	5,413	7,211	9,471	93	9	8,191	455,700	368
23	9/12/2023	5,884	6,835	9,505	94	17	8,509	455,400	374
24	9/13/2023	6,063	6,838	9,205	90	25	9,447	457,500	355
25	9/14/2023	5,278	6,890	9,319	94	21	9,063	455,800	438
26	9/14/2023	5,275	6,366	9,243	94	10	7,617	456,971	414
27	9/15/2023	5,560	7,089	9,356	94	38	8,365	455,100	357
28	9/15/2023	6,071	6,632	9,412	93	4	9,747	454,900	352
29	9/16/2023	5,773	7,082	9,163	94	12	8,287	455,887	395
30	9/16/2023	5,824	6,710	9,114	94	29	8,644	454,700	343
31	9/17/2023	5,541	5,974	8,940	92	11	8,469	455,300	346
32	9/17/2023	5,329	7,119	8,897	94	39	8,310	454,600	332
33	9/18/2023	4,889	6,685	8,970	93	4	8,561	455,700	330
34	9/19/2023	5,133	6,968	8,765	94	15	8,213	454,900	325
35	9/19/2023	5,535	6,427	8,984	94	3	8,473	455,100	320
36	9/19/2023	5,462	6,659	9,159	94	22	8,393	455,800	332
37	9/20/2023	5,772	6,981	8,775	93	8	8,423	454,700	311
38	9/21/2023	5,552	5,448	8,777	95	31	8,221	455,500	309
39	9/22/2023	5,511	6,896	8,391	94	53	8,356	456,800	299
40	9/22/2023	5,772	7,240	8,927	93	30	8,947	456,800	286
41	9/23/2023	5,577	6,863	8,501	94	27	8,133	455,500	299
42	9/23/2023	5,243	7,172	8,594	94	30	8,302	456,700	280
43	9/24/2023	5,003	6,438	8,743	94	5	8,640	455,600	296
44	9/25/2023	5,543	5,862	8,225	93	36	8,312	456,600	268
45	9/25/2023	5,588	4,536	8,451	94	42	8,111	455,000	268

9/12/2024

Department of Environmental Protection

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	9/26/2023	5,146	6,619	8,230	94	181	8,556	455,800	284
47	9/26/2023	4,858	7,014	8,303	94	28	8,207	456,500	257
48	9/27/2023	4,340	6,973	8,234	95	32	8,040	455,200	255
49	9/27/2023	5,016	7,133	8,097	94	29	7,815	456,800	237
50	9/28/2023	4,400	6,891	7,994	95	21	8,160	454,700	339
51	9/29/2023	5,255	6,927	7,786	94	34	8,321	456,600	235
52	9/29/2023	4,620	4,549	7,911	94	11	8,113	454,800	263
53	9/30/2023	5,111	7,387	7,869	94	32	8,007	456,400	234
54	9/30/2023	5,144	7,105	7,713	94	10	8,115	454,900	288
55	10/1/2023	5,136	7,460	7,429	95	25	8,134	456,900	220
56	10/1/2023	4,915	7,223	7,566	94	24	8,070	457,800	213
57	10/2/2023	5,099	7,007	7,499	94	32	8,138	455,400	268
58	10/2/2023	5,064	7,410	7,578	95	21	7,978	456,700	205
59	10/3/2023	4,842	7,688	7,377	94	26	8,134	455,400	277
60	10/3/2023	5,207	7,663	7,501	94	13	8,136	455,000	330
61	10/4/2023	5,255	7,585	7,521	94	32	8,095	456,800	198
62	10/4/2023	5,232	7,624	7,503	95	19	7,968	454,900	194
63	10/4/2023	5,207	6,553	7,347	94	28	8,233	455,500	186
64	10/5/2023	5,063	7,513	7,473	94	25	8,115	456,700	277

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Sullivan 5H				
Perforation Report				
Stage Number	Report Date	Total Shots	Cluster 1 Top TD	Cluster 5 Bottom TD
1	8/29/2023	36		20,854
2	8/29/2023	40	20,810	20,653
3	8/30/2023	40	20,611	20,453
4	8/31/2023	40	20,412	20,254
5	8/31/2023	40	20,212	20,055
6	9/1/2023	40	20,013	19,856
7	9/2/2023	40	19,814	19,656
8	9/3/2023	40	19,615	19,457
9	9/3/2023	40	19,415	19,258
10	9/4/2023	40	19,216	19,059
11	9/5/2023	40	19,017	18,859
12	9/5/2023	40	18,818	18,660
13	9/6/2023	40	18,618	18,461
14	9/7/2023	40	18,419	18,262
15	9/8/2023	40	18,220	18,062
16	9/8/2023	40	18,021	17,863
17	9/9/2023	40	17,821	17,664
18	9/9/2023	40	17,622	17,465
19	9/10/2023	40	17,423	17,265
20	9/11/2023	40	17,224	17,066
21	9/11/2023	40	17,024	16,867
22	9/12/2023	40	16,825	16,668
23	9/12/2023	40	16,626	16,468
24	9/13/2023	40	16,427	16,269
25	9/14/2023	40	16,227	16,070
26	9/14/2023	40	16,028	15,871
27	9/15/2023	40	15,829	15,671
28	9/15/2023	40	15,630	15,472
29	9/16/2023	40	15,430	15,273
30	9/16/2023	40	15,231	15,074
31	9/17/2023	40	15,032	14,874
32	9/17/2023	40	14,833	14,675
33	9/18/2023	40	14,633	14,476
34	9/19/2023	40	14,434	14,277
35	9/19/2023	40	14,235	14,077
36	9/19/2023	40	14,036	13,878
37	9/20/2023	40	13,836	13,679
38	9/21/2023	40	13,637	13,480
39	9/22/2023	40	13,438	13,280
40	9/22/2023	40	13,239	13,081
41	9/23/2023	40	13,039	12,882
42	9/23/2023	40	12,840	12,683
43	9/24/2023	40	12,641	12,483
44	9/25/2023	40	12,442	12,284
45	9/25/2023	40	12,242	12,085
46	9/26/2023	40	12,043	11,886
47	9/26/2023	40	11,844	11,686

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Stage Number	Report Date	Total Shots	Cluster 1 Top TD	Cluster 5 Bottom TD
48	9/27/2023	40	11,645	11,487
49	9/27/2023	40	11,445	11,288
50	9/28/2023	40	11,246	11,089
51	9/29/2023	40	11,047	10,889
52	9/29/2023	40	10,848	10,690
53	9/30/2023	40	10,648	10,491
54	9/30/2023	40	10,449	10,292
55	10/1/2023	40	10,250	10,092
56	10/1/2023	40	10,051	9,893
57	10/2/2023	40	9,851	9,694
58	10/2/2023	40	9,652	9,495
59	10/3/2023	40	9,453	9,295
60	10/3/2023	40	9,254	9,096
61	10/4/2023	40	9,054	8,897
62	10/4/2023	40	8,855	8,698
63	10/4/2023	40	8,656	8,498
64	10/5/2023	40	8,457	8,299

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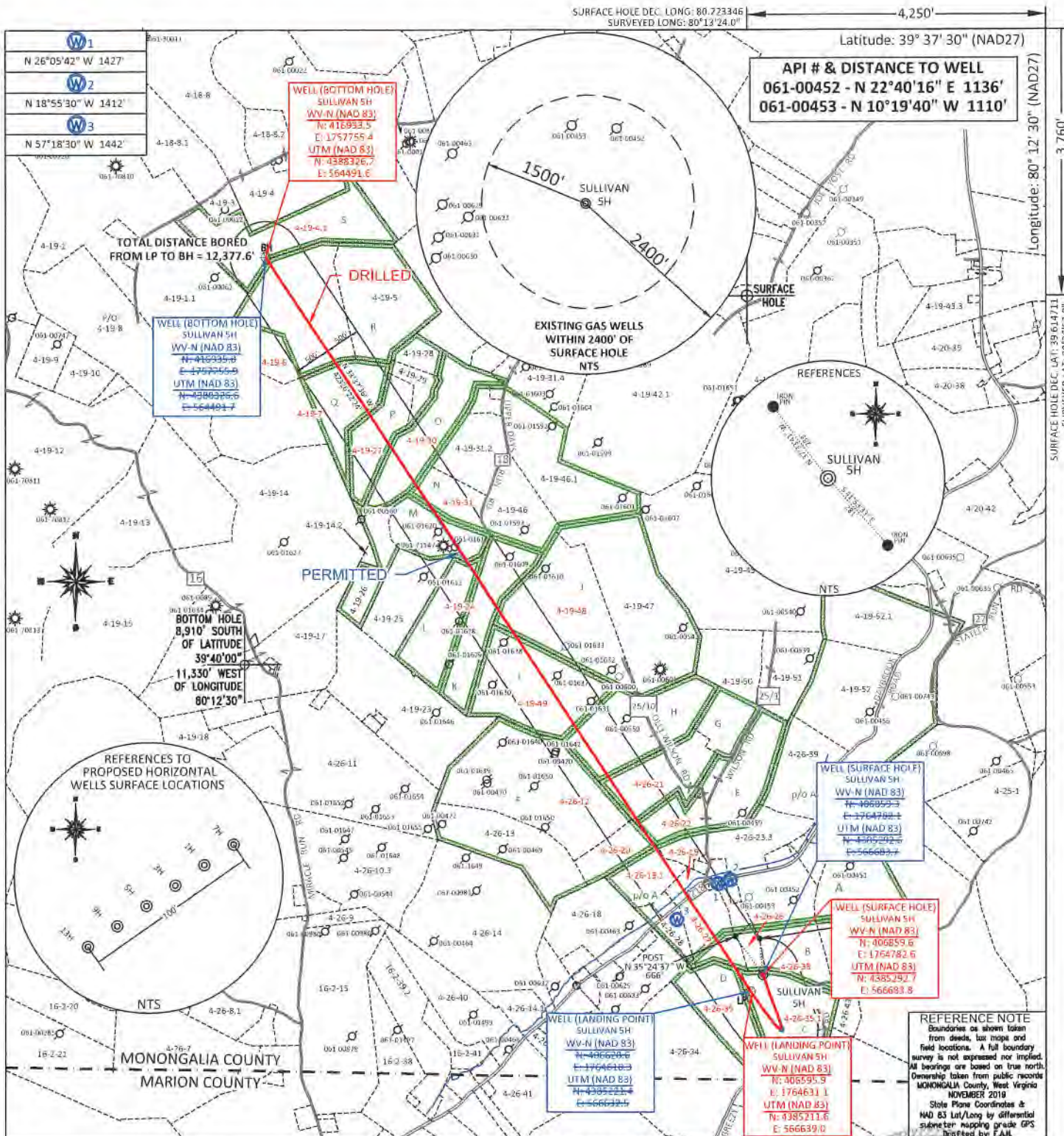
WV Department of
Environmental Protection

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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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 WV Department of
 Environmental Protection



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: _____

DATE: FEBRUARY 6, 2024

OPERATOR'S WELL #: SULLIVAN 5H AS-DRILLED

API WELL #: 47 61 01918
 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: 8,172' 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

4-26-35	RANDY LEE & TRINA TENNANT
4-19-30	BILLIE & JEFFERSON PRICE
4-19-27	JAMES TENNANT
4-19-31	JIMMY R & PAMELA K TENNANT; BILLY RAY & ROXANA CAHILL
4-19-48	JAMES F & LINDA KARUS
4-26-38	ADAM CLAY DARRAH
4-19-49	MICHAEL J LATOCHA
4-26-21	MARVIN L WILSON II
4-26-22	LINDA KAY FOGT
4-26-19	LINDA R PARKER
4-26-19.1	SANDRA L LONG
4-19-24	EDITH L DARRAH
4-26-27	NNE MIDSTREAM LLC
4-26-12	KENNETH W & RUTH E ALBERT
4-26-35.1	ALAN SULLIVAN
4-26-26	NNE MIDSTREAM LLC
4-26-20	KENNETH W & RUTH E ALBERT
4-19-6	JIMMY R & PAMELA K TENNANT; RAY & ROXANA CAHILL
4-19-7	STEPHEN R WILSON, ET AL
4-19-4.1	KEMBLE D TATE

LEASE INDEX			
A	WV-061-000160-001-ACT	K	WV-061-003931-001
B	WV-061-000160-001-ACT	L	WV-061-003931-011
C	WV-061-005448-002	M	WV-061-003931-011
D	WV-061-000160-001-ACT	N	WV-061-006350-001
E	WV-061-000160-001-ACT	O	WV-061-003931-011
F	WV-061-005998-001	P	WV-061-003931-011
G	WV-061-000160-001-ACT	Q	WV-061-005906-004
H	WV-061-000160-001-ACT	R	WV-061-005906-004
I	WV-061-000160-001-ACT	S	WV-061-005876-002
J	WV-061-001851-0014		

04/12/2024

FILE #: NEE20
DRAWING #: 3048
SCALE: N/A

DATE: FEBRUARY 5, 2024
OPERATOR'S WELL #: SULLIVAN 5H AS-DRILLED
API WELL #: 47 61 01918
STATE COUNTY PERMIT



Actual Wellpath Report

Sullivan 5H AWP Proj: 20988'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 5H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 5H AWB
Slot	Slot #05		

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	3/13/2023 at 11:21:11 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	-22.80	-32.86	1764782.14	406859.29	39°36'53.2513"N	80°13'23.3197"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 #05)	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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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 5H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 5H AWB
Slot	Slot #05		

WELLPATH DATA (221 stations) † = interpolated, ‡ = extrapolated station															
MD [ft]	Inclination [°]	Azimuth [°]	TVD [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	353.280	0.00	0.00	0.00	0.00	1764782.14	406859.29	39°36'53.2513"N	80°13'23.3197"W	0.00	0.000	0.00	0.00	0.00
28.00	0.000	353.280	28.00	0.00	0.00	0.00	1764782.14	406859.29	39°36'53.2513"N	80°13'23.3197"W	0.00	0.000	0.00	0.00	0.00
100.00	0.290	353.280	100.00	0.16	0.18	-0.02	1764782.12	406859.47	39°36'53.2530"N	80°13'23.3200"W	0.18	353.280	0.40	0.40	0.00
200.00	0.280	3.150	200.00	0.58	0.68	-0.04	1764782.10	406859.97	39°36'53.2579"N	80°13'23.3202"W	0.68	356.825	0.05	-0.01	9.87
300.00	0.140	343.850	300.00	0.90	1.04	-0.06	1764782.08	406860.33	39°36'53.2615"N	80°13'23.3205"W	1.04	356.797	0.15	-0.14	-19.30
400.00	0.410	338.190	400.00	1.36	1.49	-0.22	1764781.92	406860.78	39°36'53.2659"N	80°13'23.3227"W	1.50	351.397	0.27	0.27	-5.66
500.00	0.130	9.860	500.00	1.80	1.93	-0.34	1764781.80	406861.22	39°36'53.2703"N	80°13'23.3242"W	1.96	350.058	0.31	-0.28	31.67
600.00	0.370	123.010	599.99	1.58	1.87	-0.05	1764782.09	406861.16	39°36'53.2697"N	80°13'23.3205"W	1.87	358.518	0.44	0.24	113.15
700.00	0.560	123.950	699.99	0.83	1.42	0.63	1764782.77	406860.71	39°36'53.2653"N	80°13'23.3118"W	1.55	23.880	0.19	0.19	0.94
800.00	0.480	133.790	799.99	-0.03	0.86	1.34	1764783.48	406860.15	39°36'53.2598"N	80°13'23.3027"W	1.59	57.364	0.12	-0.08	9.84
900.00	0.540	137.300	899.98	-0.90	0.22	1.96	1764784.10	406859.51	39°36'53.2536"N	80°13'23.2947"W	1.97	83.612	0.07	0.06	3.51
1000.00	0.570	135.810	999.98	-1.86	-0.48	2.62	1764784.76	406858.81	39°36'53.2467"N	80°13'23.2861"W	2.67	100.447	0.03	0.03	-1.49
1100.00	0.710	141.830	1099.97	-2.96	-1.33	3.35	1764785.49	406857.96	39°36'53.2384"N	80°13'23.2767"W	3.61	111.598	0.16	0.14	6.02
1200.00	0.810	140.820	1199.96	-4.28	-2.36	4.18	1764786.32	406856.93	39°36'53.2282"N	80°13'23.2660"W	4.80	119.459	0.10	0.10	-1.01
1300.00	0.980	151.560	1299.95	-5.84	-3.66	5.04	1764787.18	406855.63	39°36'53.2155"N	80°13'23.2550"W	6.23	126.023	0.24	0.17	10.74
1365.00	0.940	151.140	1364.94	-6.92	-4.62	5.56	1764787.70	406854.67	39°36'53.2061"N	80°13'23.2482"W	7.23	129.720	0.06	-0.06	-0.65
1584.00	0.770	165.990	1583.92	-10.10	-7.62	6.78	1764788.92	406851.67	39°36'53.1765"N	80°13'23.2323"W	10.20	138.327	0.13	-0.08	6.78
1680.00	0.310	15.160	1679.92	-10.54	-7.99	7.01	1764789.15	406851.30	39°36'53.1728"N	80°13'23.2294"W	10.63	138.769	1.10	-0.48	-157.11
1775.00	1.200	2.350	1774.91	-9.56	-6.75	7.11	1764789.25	406852.54	39°36'53.1851"N	80°13'23.2281"W	9.81	133.506	0.95	0.94	-13.48
1870.00	1.410	2.830	1869.88	-7.82	-4.59	7.21	1764789.35	406854.70	39°36'53.2065"N	80°13'23.2271"W	8.55	122.478	0.22	0.22	0.51
1965.00	1.730	335.350	1964.85	-5.46	-2.12	6.67	1764788.81	406857.17	39°36'53.2308"N	80°13'23.2342"W	7.00	107.630	0.85	0.34	-28.93
2060.00	2.140	314.740	2059.79	-2.31	0.43	4.81	1764786.95	406859.72	39°36'53.2559"N	80°13'23.2582"W	4.83	84.878	0.84	0.43	-21.69
2155.00	2.500	306.130	2154.72	1.37	2.90	1.88	1764784.02	406862.19	39°36'53.2801"N	80°13'23.2960"W	3.46	32.952	0.53	0.38	-9.06
2250.00	3.040	301.990	2249.61	5.61	5.46	-1.93	1764780.21	406864.75	39°36'53.3050"N	80°13'23.3449"W	5.79	340.534	0.61	0.57	-4.36
2345.00	2.280	295.800	2344.50	9.53	7.61	-5.77	1764776.37	406866.90	39°36'53.3261"N	80°13'23.3942"W	9.55	322.862	0.85	-0.80	-6.52
2440.00	0.910	267.410	2439.46	11.55	8.40	-8.22	1764773.92	406867.69	39°36'53.3337"N	80°13'23.4256"W	11.76	315.624	1.62	-1.44	-29.88
2555.99	0.790	220.540	2555.44	11.81	7.75	-9.66	1764772.48	406867.04	39°36'53.3271"N	80°13'23.4440"W	12.39	308.748	0.59	-0.10	-40.41
2650.99	1.030	222.410	2650.43	11.42	6.63	-10.66	1764771.48	406865.92	39°36'53.3159"N	80°13'23.4566"W	12.55	301.855	0.25	0.25	1.97
2745.99	0.390	176.410	2745.42	10.94	5.67	-11.22	1764770.92	406864.96	39°36'53.3064"N	80°13'23.4636"W	12.57	296.823	0.85	-0.67	-48.42
2840.99	0.360	55.250	2840.42	10.66	5.52	-10.95	1764771.19	406864.81	39°36'53.3049"N	80°13'23.4602"W	12.27	296.746	0.69	-0.03	-127.54

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 5H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 5H AWB
Slot	Slot #05		

WELLPATH DATA (221 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [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]
2935.99	0.370	151.030	2935.42	10.36	5.42	-10.56	1764771.58	406864.71	39°36'53.3040"N	80°13'23.4552"W	11.87	297.178	0.57	0.01	100.82
3030.99	0.140	180.610	3030.42	9.96	5.04	-10.41	1764771.73	406864.33	39°36'53.3002"N	80°13'23.4533"W	11.57	295.817	0.27	-0.24	31.14
3125.99	0.470	155.880	3125.42	9.48	4.57	-10.25	1764771.89	406863.86	39°36'53.2956"N	80°13'23.4512"W	11.23	294.001	0.37	0.35	-26.03
3220.99	0.530	161.560	3220.42	8.67	3.79	-9.96	1764772.18	406863.08	39°36'53.2880"N	80°13'23.4473"W	10.65	290.857	0.08	0.06	5.98
3314.99	0.670	161.420	3314.41	7.72	2.86	-9.64	1764772.50	406862.15	39°36'53.2788"N	80°13'23.4432"W	10.08	288.519	0.15	0.15	-0.15
3413.99	0.540	171.390	3413.40	6.74	1.85	-9.39	1764772.75	406861.14	39°36'53.2688"N	80°13'23.4399"W	9.57	281.147	0.17	-0.13	10.07
3508.99	0.420	34.000	3508.40	6.47	1.70	-9.13	1764773.01	406860.99	39°36'53.2673"N	80°13'23.4365"W	9.28	280.527	0.94	-0.13	-144.62
3602.99	0.290	168.600	3602.40	6.38	1.75	-8.89	1764773.25	406861.04	39°36'53.2678"N	80°13'23.4334"W	9.06	281.130	0.70	-0.14	143.19
3697.99	0.370	177.240	3697.40	5.89	1.21	-8.83	1764773.31	406860.50	39°36'53.2625"N	80°13'23.4326"W	8.91	277.784	0.10	0.08	9.09
3793.99	0.890	172.050	3793.39	4.95	0.16	-8.71	1764773.43	406859.45	39°36'53.2521"N	80°13'23.4310"W	8.71	271.043	0.54	0.54	-5.41
3888.99	0.500	131.420	3888.39	3.89	-0.85	-8.29	1764773.85	406858.44	39°36'53.2422"N	80°13'23.4256"W	8.34	264.173	0.64	-0.41	-42.77
3983.99	0.410	47.140	3983.39	3.54	-0.89	-7.73	1764774.41	406858.40	39°36'53.2419"N	80°13'23.4184"W	7.79	263.440	0.65	-0.09	-88.72
4078.99	0.520	26.610	4078.38	3.81	-0.27	-7.29	1764774.85	406859.02	39°36'53.2480"N	80°13'23.4129"W	7.30	267.857	0.21	0.12	-21.61
4172.99	0.380	20.320	4172.38	4.21	0.40	-6.99	1764775.15	406859.69	39°36'53.2547"N	80°13'23.4091"W	7.00	273.280	0.16	-0.15	-6.69
4267.99	0.550	5.740	4267.38	4.74	1.15	-6.84	1764775.30	406860.44	39°36'53.2621"N	80°13'23.4072"W	6.93	279.545	0.22	0.16	-15.35
4366.99	0.430	333.470	4366.37	5.48	1.96	-6.96	1764775.18	406861.24	39°36'53.2700"N	80°13'23.4088"W	7.23	285.697	0.30	-0.12	-32.60
4461.99	0.390	302.220	4461.37	6.13	2.45	-7.39	1764774.75	406861.74	39°36'53.2748"N	80°13'23.4144"W	7.78	288.318	0.24	-0.04	-32.89
4555.99	0.770	282.940	4555.37	6.88	2.76	-8.28	1764773.86	406862.05	39°36'53.2779"N	80°13'23.4257"W	8.72	288.434	0.45	0.40	-20.51
4650.99	0.670	191.210	4650.36	6.95	2.36	-9.01	1764773.13	406861.65	39°36'53.2738"N	80°13'23.4350"W	9.31	284.663	1.09	-0.11	-96.56
4744.99	1.840	152.800	4744.34	5.06	0.48	-8.42	1764773.72	406859.77	39°36'53.2553"N	80°13'23.4274"W	8.44	273.228	1.47	1.24	-40.86
4838.99	3.710	142.030	4838.22	0.53	-3.26	-5.86	1764776.28	406856.03	39°36'53.2185"N	80°13'23.3943"W	6.71	240.882	2.06	1.99	-11.46
4933.99	5.490	149.330	4932.92	-7.08	-9.60	-1.65	1764780.49	406849.69	39°36'53.1563"N	80°13'23.3398"W	9.74	189.768	1.97	1.87	7.68
5028.99	7.050	150.940	5027.34	-17.43	-18.60	3.50	1764785.64	406840.69	39°36'53.0677"N	80°13'23.2731"W	18.93	169.351	1.65	1.64	1.69
5123.99	8.400	152.540	5121.48	-30.14	-29.86	9.53	1764791.67	406829.44	39°36'52.9570"N	80°13'23.1949"W	31.34	162.298	1.44	1.42	1.68
5218.99	10.160	153.800	5215.23	-45.35	-43.53	16.43	1764798.57	406815.76	39°36'52.8223"N	80°13'23.1053"W	46.53	159.323	1.86	1.85	1.33
5315.99	12.030	155.110	5310.42	-63.82	-60.38	24.46	1764806.60	406798.91	39°36'52.6565"N	80°13'23.0009"W	65.15	157.946	1.95	1.93	1.35
5410.99	13.530	157.580	5403.06	-84.51	-79.63	32.87	1764815.01	406779.66	39°36'52.4669"N	80°13'22.8915"W	86.15	157.573	1.88	1.58	2.60
5505.99	15.770	160.940	5494.97	-107.91	-102.11	41.32	1764823.46	406757.18	39°36'52.2454"N	80°13'22.7812"W	110.16	157.968	2.52	2.36	3.54
5601.99	19.520	166.050	5586.44	-135.65	-130.02	49.45	1764831.59	406729.28	39°36'51.9703"N	80°13'22.6744"W	139.11	159.176	4.22	3.91	5.32
5696.99	22.990	163.320	5674.97	-168.35	-163.21	58.61	1764840.74	406696.09	39°36'51.6430"N	80°13'22.5541"W	173.41	160.247	3.80	3.65	-2.87

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Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 5H AWB
Slot	Slot #05		

WELLPATH DATA (221 stations)																
MD [ft]	Inclination [°]	Azimuth [°]	TVD [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]	
5791.99	23.680	160.290	5762.20	-204.61	-198.94	70.37	1764852.50	406660.36	39°36'51.2908"N	80°13'22.4001"W	211.02	160.521	1.46	0.73	-3.19	
5885.99	23.870	160.600	5848.22	-241.37	-234.65	83.05	1764865.18	406624.66	39°36'50.9389"N	80°13'22.2344"W	248.91	160.509	0.24	0.20	0.33	
5980.99	23.850	161.430	5935.10	-278.55	-270.98	95.55	1764877.69	406588.32	39°36'50.5808"N	80°13'22.0709"W	287.34	160.577	0.35	-0.02	0.87	
6074.99	22.940	161.520	6021.37	-314.58	-306.37	107.41	1764889.54	406552.93	39°36'50.2320"N	80°13'21.9157"W	324.66	160.680	0.97	-0.97	0.10	
6169.99	22.040	159.960	6109.15	-349.78	-340.68	119.39	1764901.52	406518.63	39°36'49.8939"N	80°13'21.7592"W	360.99	160.688	1.14	-0.95	-1.64	
6266.99	21.350	158.930	6199.28	-384.71	-374.26	131.97	1764914.10	406485.06	39°36'49.5631"N	80°13'21.5949"W	396.84	160.576	0.81	-0.71	-1.06	
6361.99	20.680	158.040	6287.96	-418.01	-405.95	144.46	1764926.59	406453.36	39°36'49.2509"N	80°13'21.4321"W	430.89	160.411	0.78	-0.71	-0.94	
6457.99	19.820	157.060	6378.02	-450.61	-436.66	157.14	1764939.28	406422.66	39°36'48.9484"N	80°13'21.2669"W	464.08	160.207	0.96	-0.90	-1.02	
6551.99	19.810	158.300	6466.46	-481.85	-466.14	169.25	1764951.38	406393.18	39°36'48.6581"N	80°13'21.1092"W	495.91	160.045	0.45	-0.01	1.32	
6646.99	20.940	158.400	6555.51	-514.21	-496.88	181.45	1764963.58	406362.44	39°36'48.3552"N	80°13'20.9502"W	528.97	159.939	1.19	1.19	0.11	
6741.99	21.640	159.390	6644.03	-547.88	-529.06	193.86	1764975.99	406330.26	39°36'48.0382"N	80°13'20.7882"W	563.46	159.876	0.83	0.74	1.04	
6835.99	21.720	161.730	6731.38	-581.54	-561.80	205.42	1764987.54	406297.53	39°36'47.7155"N	80°13'20.6372"W	598.17	159.915	0.92	0.09	2.49	
6930.99	21.800	162.750	6819.61	-615.41	-595.34	216.16	1764998.29	406263.99	39°36'47.3849"N	80°13'20.4965"W	633.36	160.045	0.41	0.08	1.07	
7025.99	22.640	163.550	6907.56	-649.80	-629.72	226.57	1765008.69	406229.61	39°36'47.0460"N	80°13'20.3600"W	669.24	160.212	0.94	0.88	0.84	
7142.00	22.920	160.590	7014.52	-693.04	-672.44	240.40	1765022.52	406186.89	39°36'46.6249"N	80°13'20.1789"W	714.12	160.328	1.02	0.24	-2.55	
7238.00	19.640	164.070	7103.97	-726.54	-705.60	251.04	1765033.17	406153.74	39°36'46.2980"N	80°13'20.0395"W	748.93	160.415	3.66	-3.42	3.62	
7333.00	13.870	175.840	7194.92	-751.69	-732.34	256.26	1765038.38	406127.00	39°36'46.0342"N	80°13'19.9701"W	775.88	160.714	7.02	-6.07	12.39	
7428.00	8.640	200.920	7288.12	-765.76	-750.38	254.53	1765036.66	406108.96	39°36'45.8557"N	80°13'19.9903"W	792.37	161.263	7.42	-5.51	26.40	
7523.00	8.650	257.750	7382.20	-767.29	-758.58	244.99	1765027.11	406100.76	39°36'45.7740"N	80°13'20.1114"W	797.15	162.102	8.64	0.01	59.82	
7618.00	11.970	293.970	7475.75	-756.36	-756.09	228.98	1765011.11	406103.25	39°36'45.7973"N	80°13'20.3161"W	790.00	163.151	7.49	3.49	38.13	
7712.00	16.620	309.050	7566.84	-735.28	-743.65	209.62	1764991.75	406115.69	39°36'45.9187"N	80°13'20.5648"W	772.62	164.258	6.30	4.95	16.04	
7806.00	23.080	313.650	7655.21	-704.43	-722.44	185.82	1764967.95	406136.90	39°36'46.1265"N	80°13'20.8711"W	745.95	165.575	7.07	6.87	4.89	
7901.00	29.410	323.800	7740.42	-662.91	-690.71	158.53	1764940.66	406168.62	39°36'46.4378"N	80°13'21.2231"W	708.67	167.074	8.15	6.66	10.68	
7995.00	35.450	323.060	7819.72	-612.59	-650.26	128.49	1764910.62	406209.07	39°36'46.8352"N	80°13'21.6111"W	662.83	168.823	6.44	6.43	-0.79	
8090.00	42.810	322.280	7893.37	-552.80	-602.64	92.13	1764874.27	406256.68	39°36'47.3029"N	80°13'22.0805"W	609.65	171.308	7.76	7.75	-0.82	
8184.00	51.770	322.860	7957.06	-483.96	-547.84	50.21	1764832.35	406311.49	39°36'47.8412"N	80°13'22.6217"W	550.13	174.763	9.54	9.53	0.62	
8279.00	59.320	323.740	8010.77	-405.79	-485.06	3.46	1764785.60	406374.26	39°36'48.4579"N	80°13'23.2256"W	485.07	179.592	7.98	7.95	0.93	
8373.00	68.650	324.070	8051.95	-321.48	-416.87	-46.25	1764735.90	406442.45	39°36'49.1278"N	80°13'23.8677"W	419.43	186.331	9.93	9.93	0.35	
8468.00	77.910	325.610	8079.26	-230.64	-342.55	-98.56	1764683.59	406516.76	39°36'49.8581"N	80°13'24.5438"W	356.45	196.051	9.87	9.75	1.62	
8564.00	85.900	326.560	8092.76	-135.67	-263.74	-151.54	1764630.61	406595.57	39°36'50.6328"N	80°13'25.2289"W	304.17	209.881	8.38	8.32	0.99	

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 5H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 5H AWB
Slot	Slot #05		

WELLPATH DATA (221 stations)															
MD [ft]	Inclination [°]	Azimuth [°]	TVD [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]
8658.00	88.340	326.850	8097.49	-41.80	-185.27	-203.07	1764579.08	406674.03	39°36'51.4041"N	80°13'25.8954"W	274.89	227.624	2.61	2.60	0.31
8751.00	87.140	326.120	8101.15	51.13	-107.80	-254.38	1764527.78	406751.50	39°36'52.1657"N	80°13'26.5590"W	276.28	247.034	1.51	-1.29	-0.78
8846.00	87.410	326.390	8105.67	146.02	-28.89	-307.09	1764475.07	406830.40	39°36'52.9413"N	80°13'27.2407"W	308.45	264.625	0.40	0.28	0.28
8941.00	87.970	326.300	8109.50	240.94	50.12	-359.70	1764422.46	406909.41	39°36'53.7179"N	80°13'27.9210"W	363.17	277.932	0.60	0.59	-0.09
9035.00	88.490	327.090	8112.40	334.89	128.64	-411.29	1764370.88	406987.92	39°36'54.4898"N	80°13'28.5883"W	430.94	287.369	1.01	0.56	0.84
9129.00	87.690	325.990	8115.54	428.84	207.02	-463.08	1764319.08	407066.30	39°36'55.2803"N	80°13'29.2582"W	507.25	294.087	1.45	-0.85	-1.17
9225.00	87.910	326.360	8119.22	524.77	286.71	-516.48	1764265.69	407145.98	39°36'56.0436"N	80°13'29.9487"W	590.73	299.036	0.45	0.23	0.39
9320.00	88.000	326.120	8122.61	619.71	365.64	-569.24	1764212.93	407224.91	39°36'56.8194"N	80°13'30.6310"W	676.56	302.714	0.27	0.09	-0.25
9415.00	87.600	326.240	8126.26	714.64	444.51	-622.08	1764160.10	407303.77	39°36'57.5946"N	80°13'31.3143"W	764.57	305.548	0.44	-0.42	0.13
9510.00	87.940	326.350	8129.96	809.56	523.48	-674.76	1764107.42	407382.74	39°36'58.3709"N	80°13'31.9956"W	854.01	307.804	0.38	0.36	0.12
9604.00	88.090	326.470	8133.21	903.51	601.74	-726.73	1764055.45	407460.99	39°36'59.1401"N	80°13'32.6678"W	943.52	309.625	0.20	0.16	0.13
9699.00	87.110	326.350	8137.19	998.42	680.80	-779.24	1764002.95	407540.05	39°36'59.9173"N	80°13'33.3469"W	1034.75	311.143	1.04	-1.03	-0.13
9793.00	87.320	325.550	8141.76	1092.31	758.59	-831.81	1763950.38	407617.84	39°37'0.6819"N	80°13'34.0267"W	1125.78	312.364	0.88	0.22	-0.85
9888.00	87.690	326.030	8145.89	1187.21	837.08	-885.17	1763897.02	407696.32	39°37'1.4533"N	80°13'34.7166"W	1218.29	313.401	0.64	0.39	0.51
9983.00	87.510	326.360	8149.87	1282.13	915.95	-937.98	1763844.22	407775.18	39°37'2.2285"N	80°13'35.3996"W	1311.02	314.319	0.40	-0.19	0.35
10077.00	87.820	326.400	8153.70	1376.05	994.16	-989.98	1763792.22	407853.39	39°37'2.9973"N	80°13'36.0722"W	1403.01	315.121	0.33	0.33	0.04
10172.00	87.940	326.960	8157.21	1470.98	1073.49	-1042.13	1763740.07	407932.71	39°37'3.7771"N	80°13'36.7467"W	1496.14	315.849	0.60	0.13	0.59
10267.00	87.660	326.440	8160.86	1565.91	1152.83	-1094.25	1763687.96	408012.05	39°37'4.5570"N	80°13'37.4209"W	1589.47	316.493	0.62	-0.29	-0.55
10362.00	87.970	326.480	8164.48	1660.84	1231.96	-1146.70	1763635.51	408091.17	39°37'5.3348"N	80°13'38.0994"W	1683.05	317.053	0.33	0.33	0.04
10456.00	87.200	325.950	8168.44	1754.78	1310.01	-1198.93	1763583.29	408169.22	39°37'6.1020"N	80°13'38.7748"W	1775.83	317.535	0.99	-0.82	-0.56
10551.00	87.720	325.760	8172.65	1849.66	1388.58	-1252.20	1763530.02	408247.77	39°37'6.8740"N	80°13'39.4636"W	1869.79	317.956	0.58	0.55	-0.20
10646.00	88.210	326.600	8176.03	1944.60	1467.44	-1305.04	1763477.18	408326.64	39°37'7.6493"N	80°13'40.1470"W	1963.80	318.352	1.02	0.52	0.88
10740.00	87.970	326.440	8179.16	2038.55	1545.79	-1356.86	1763425.36	408404.99	39°37'8.4195"N	80°13'40.8174"W	2056.83	318.724	0.31	-0.26	-0.17
10835.00	88.980	326.660	8181.69	2133.51	1625.03	-1409.21	1763373.02	408484.22	39°37'9.1984"N	80°13'41.4945"W	2150.95	319.069	1.09	1.06	0.23
10930.00	88.580	325.990	8183.71	2228.49	1704.07	-1461.87	1763320.36	408563.26	39°37'9.9753"N	80°13'42.1756"W	2245.20	319.375	0.82	-0.42	-0.71
11025.00	88.950	326.190	8185.76	2323.46	1782.89	-1514.86	1763267.37	408642.08	39°37'10.7500"N	80°13'42.8609"W	2339.55	319.647	0.44	0.39	0.21
11120.00	89.260	326.380	8187.24	2418.45	1861.91	-1567.58	1763214.65	408721.08	39°37'11.5266"N	80°13'43.5428"W	2433.93	319.905	0.38	0.33	0.20
11215.00	88.430	326.030	8189.16	2513.43	1940.84	-1620.41	1763161.82	408800.01	39°37'12.3025"N	80°13'44.2261"W	2528.36	320.141	0.95	-0.87	-0.37
11310.00	89.140	326.130	8191.17	2608.41	2019.65	-1673.42	1763108.83	408878.82	39°37'13.0771"N	80°13'44.9116"W	2622.84	320.356	0.75	0.75	0.11
11404.00	89.110	326.260	8192.61	2702.40	2097.75	-1725.71	1763056.54	408956.91	39°37'13.8447"N	80°13'45.5879"W	2716.36	320.658	0.14	-0.03	0.14

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Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 5H AWB
Slot	Slot #05		

WELLPATH DATA (221 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [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]
11500.00	88.860	327.060	8194.31	2798.38	2177.94	-1778.46	1763003.79	409037.09	39°37'14.6330"N	80°13'46.2703"W	2811.82	320.766	0.87	-0.26	0.83
11594.00	88.250	325.640	8196.68	2892.35	2256.16	-1830.53	1762951.72	409115.31	39°37'15.4018"N	80°13'46.9438"W	2905.36	320.946	1.64	-0.65	-1.51
11689.00	88.860	327.260	8199.08	2987.31	2335.31	-1883.01	1762899.24	409194.45	39°37'16.1798"N	80°13'47.6227"W	2999.90	321.120	1.82	0.64	1.71
11783.00	89.020	326.900	8200.81	3081.29	2414.20	-1934.09	1762848.17	409273.34	39°37'16.9553"N	80°13'48.2836"W	3093.39	321.301	0.42	0.17	-0.38
11878.00	86.890	326.590	8204.20	3176.22	2493.59	-1886.15	1762796.11	409352.72	39°37'17.7357"N	80°13'48.9571"W	3187.91	321.463	2.27	-2.24	-0.33
11973.00	87.750	325.920	8208.65	3271.12	2572.49	-2038.86	1762743.40	409431.62	39°37'18.5113"N	80°13'49.6390"W	3282.48	321.601	1.15	0.91	-0.71
12068.00	88.680	326.670	8211.61	3366.07	2651.48	-2091.55	1762690.71	409510.61	39°37'19.2877"N	80°13'50.3205"W	3377.12	321.733	1.26	0.98	0.79
12163.00	88.740	326.130	8213.74	3461.04	2730.59	-2144.11	1762638.16	409589.71	39°37'20.0653"N	80°13'51.0004"W	3471.79	321.860	0.57	0.06	-0.57
12258.00	89.750	326.180	8215.00	3556.03	2809.48	-2197.02	1762585.26	409668.60	39°37'20.8407"N	80°13'51.6847"W	3566.52	321.975	1.06	1.06	0.05
12352.00	89.940	326.860	8215.25	3650.03	2887.89	-2248.87	1762533.41	409747.00	39°37'21.6113"N	80°13'52.3555"W	3660.23	322.091	0.75	0.20	0.72
12447.00	89.970	326.400	8215.32	3745.03	2967.23	-2301.13	1762481.15	409826.33	39°37'22.3912"N	80°13'53.0315"W	3754.94	322.206	0.49	0.03	-0.48
12541.00	90.220	326.810	8215.17	3839.03	3045.71	-2352.86	1762429.42	409904.81	39°37'23.1626"N	80°13'53.7008"W	3848.67	322.313	0.51	0.27	0.44
12636.00	90.580	326.700	8214.51	3934.03	3125.15	-2404.94	1762377.34	409984.25	39°37'23.9436"N	80°13'54.3746"W	3943.39	322.420	0.40	0.38	-0.12
12731.00	90.890	326.340	8213.29	4029.02	3204.39	-2457.35	1762324.94	410063.48	39°37'24.7224"N	80°13'55.0525"W	4038.15	322.517	0.50	0.33	-0.38
12826.00	88.830	326.320	8213.52	4124.01	3283.44	-2510.01	1762272.28	410142.53	39°37'25.4995"N	80°13'55.7338"W	4132.94	322.604	2.17	-2.17	-0.02
12921.00	89.350	326.390	8215.03	4219.00	3362.52	-2562.64	1762219.66	410221.60	39°37'26.2767"N	80°13'56.4146"W	4227.73	322.688	0.55	0.55	0.07
13015.00	87.010	326.600	8218.01	4312.95	3440.86	-2614.50	1762167.80	410299.94	39°37'27.0467"N	80°13'57.0855"W	4321.47	322.771	2.50	-2.49	0.22
13110.00	87.040	326.340	8222.94	4407.82	3519.94	-2666.90	1762115.40	410379.02	39°37'27.8240"N	80°13'57.7634"W	4416.15	322.850	0.28	0.03	-0.27
13205.00	87.070	326.090	8227.82	4502.69	3598.79	-2719.66	1762062.65	410457.86	39°37'28.5991"N	80°13'58.4459"W	4510.86	322.921	0.26	0.03	-0.26
13301.00	87.140	326.210	8232.67	4598.57	3678.42	-2773.07	1762009.24	410537.48	39°37'29.3817"N	80°13'59.1367"W	4606.59	322.988	0.14	0.07	0.12
13396.00	85.180	325.210	8239.05	4693.34	3756.73	-2826.46	1761955.85	410615.79	39°37'30.1512"N	80°13'59.8272"W	4701.26	323.043	2.33	-2.08	-1.05
13491.00	84.270	326.610	8247.80	4787.93	3835.06	-2879.48	1761902.83	410694.12	39°37'30.9211"N	80°14'0.5129"W	4795.74	323.100	1.74	-0.94	1.47
13586.00	86.300	326.690	8255.61	4882.60	3914.15	-2931.53	1761850.79	410773.20	39°37'31.6985"N	80°14'1.1863"W	4890.24	323.168	2.14	2.14	0.08
13680.00	86.300	326.640	8261.68	4976.41	3992.52	-2983.08	1761799.25	410851.56	39°37'32.4688"N	80°14'1.8533"W	4983.87	323.234	0.05	0.00	-0.05
13776.00	86.400	326.620	8267.78	5072.21	4072.53	-3035.77	1761746.55	410931.57	39°37'33.2553"N	80°14'2.5351"W	5079.51	323.298	0.11	0.10	-0.02
13871.00	85.810	326.570	8274.24	5166.99	4151.65	-3087.96	1761694.37	411010.69	39°37'34.0330"N	80°14'3.2102"W	5174.14	323.359	0.62	-0.62	-0.05
13966.00	87.630	326.710	8279.68	5261.83	4230.87	-3140.11	1761642.22	411089.90	39°37'34.8117"N	80°14'3.8850"W	5268.82	323.418	1.92	1.92	0.15
14061.00	89.720	326.220	8281.87	5356.80	4310.03	-3192.57	1761589.76	411169.05	39°37'35.5897"N	80°14'4.5638"W	5363.66	323.471	2.26	2.20	-0.52
14156.00	89.820	326.680	8282.25	5451.80	4389.20	-3245.08	1761537.26	411248.22	39°37'36.3679"N	80°14'5.2430"W	5458.53	323.523	0.50	0.11	0.48
14251.00	88.400	326.370	8283.73	5546.78	4468.43	-3297.47	1761484.87	411327.45	39°37'37.1467"N	80°14'5.9209"W	5553.39	323.575	1.53	-1.49	-0.33

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Slot	Slot #05		

WELLPATH DATA (221 stations)															
MD (ft)	Inclination (°)	Azimuth (°)	TVD (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)
14347.00	88.890	327.330	8286.00	5642.75	4548.78	-3349.95	1761432.40	411407.79	39°37'37.9365"N	80°14'6.6000"W	5649.21	323.630	1.12	0.51	1.00
14442.00	88.650	326.510	8288.04	5737.72	4628.36	-3401.79	1761380.56	411487.37	39°37'38.7188"N	80°14'7.2708"W	5744.03	323.685	0.90	-0.25	-0.86
14536.00	88.490	325.780	8290.39	5831.69	4706.40	-3454.14	1761328.21	411565.40	39°37'39.4858"N	80°14'7.9480"W	5837.92	323.724	0.79	-0.17	-0.78
14632.00	89.110	326.420	8292.40	5927.67	4786.06	-3507.67	1761274.69	411645.06	39°37'40.2687"N	80°14'8.6405"W	5933.81	323.763	0.93	0.65	0.67
14728.00	88.250	326.470	8294.61	6023.64	4866.04	-3560.72	1761221.64	411725.04	39°37'41.0549"N	80°14'9.3268"W	6029.68	323.805	0.90	-0.90	0.05
14822.00	89.750	328.150	8296.25	6117.61	4945.14	-3611.47	1761170.89	411804.12	39°37'41.8324"N	80°14'9.9838"W	6123.49	323.859	2.40	1.60	1.79
14918.00	87.630	325.910	8298.44	6213.57	5025.65	-3663.70	1761118.67	411884.63	39°37'42.6238"N	80°14'10.6596"W	6219.31	323.908	3.21	-2.21	-2.33
15012.00	89.540	326.390	8300.76	6307.53	5103.69	-3716.04	1761066.33	411962.66	39°37'43.3908"N	80°14'11.3367"W	6313.20	323.941	2.10	2.03	0.51
15107.00	90.090	326.730	8301.07	6402.53	5182.96	-3768.39	1761013.98	412041.93	39°37'44.1700"N	80°14'12.0141"W	6408.11	323.980	0.68	0.58	0.36
15202.00	89.910	326.880	8301.07	6497.53	5262.46	-3820.40	1760961.97	412121.42	39°37'44.9514"N	80°14'12.6871"W	6502.99	324.021	0.25	-0.19	0.16
15297.00	90.280	326.620	8300.91	6592.53	5341.90	-3872.49	1760909.89	412200.87	39°37'45.7324"N	80°14'13.3612"W	6597.89	324.061	0.48	0.39	-0.27
15392.00	90.550	326.910	8300.23	6687.52	5421.36	-3924.55	1760857.83	412280.32	39°37'46.5134"N	80°14'14.0349"W	6692.78	324.099	0.42	0.28	0.31
15487.00	91.020	326.200	8298.92	6782.51	5500.62	-3976.91	1760805.48	412359.58	39°37'47.2925"N	80°14'14.7123"W	6787.68	324.133	0.90	0.49	-0.75
15583.00	90.460	326.380	8297.68	6878.50	5580.47	-4030.18	1760752.21	412439.42	39°37'48.0773"N	80°14'15.4016"W	6883.61	324.163	0.61	-0.58	0.19
15677.00	90.830	326.510	8296.68	6972.50	5658.80	-4082.13	1760700.26	412517.75	39°37'48.8472"N	80°14'16.0738"W	6977.53	324.194	0.42	0.39	0.14
15772.00	89.750	326.640	8296.15	7067.49	5738.09	-4134.46	1760647.93	412597.03	39°37'49.6265"N	80°14'16.7509"W	7072.44	324.226	1.15	-1.14	0.14
15868.00	90.120	326.440	8296.25	7163.49	5818.18	-4187.39	1760595.00	412677.11	39°37'50.4137"N	80°14'17.4358"W	7168.37	324.257	0.44	0.39	-0.21
15962.00	91.570	326.690	8294.87	7257.48	5896.61	-4239.18	1760543.22	412755.54	39°37'51.1846"N	80°14'18.1059"W	7262.28	324.287	1.57	1.54	0.27
16057.00	92.060	326.610	8291.86	7352.43	5975.93	-4291.38	1760491.02	412834.85	39°37'51.9642"N	80°14'18.7814"W	7357.15	324.317	0.52	0.52	-0.08
16151.00	92.460	326.530	8288.15	7446.36	6054.32	-4343.13	1760439.28	412913.24	39°37'52.7347"N	80°14'19.4510"W	7451.01	324.346	0.43	0.43	-0.09
16246.00	91.570	327.380	8284.81	7541.29	6133.90	-4394.90	1760387.51	412992.81	39°37'53.5169"N	80°14'20.1210"W	7545.85	324.379	1.30	-0.94	0.89
16341.00	91.510	327.070	8282.26	7636.25	6213.75	-4446.30	1760336.11	413072.66	39°37'54.3019"N	80°14'20.7864"W	7640.70	324.414	0.33	-0.06	-0.33
16436.00	91.260	326.560	8279.96	7731.22	6293.23	-4498.29	1760284.13	413152.13	39°37'55.0831"N	80°14'21.4592"W	7735.59	324.444	0.60	-0.26	-0.54
16531.00	90.220	326.370	8278.74	7826.21	6372.41	-4550.76	1760231.65	413231.31	39°37'55.8614"N	80°14'22.1382"W	7830.52	324.468	1.11	-1.09	-0.20
16626.00	91.450	325.660	8277.35	7921.19	6451.17	-4603.86	1760178.56	413310.07	39°37'56.6354"N	80°14'22.8251"W	7925.47	324.487	1.49	1.29	-0.75
16721.00	92.650	325.470	8273.95	8016.12	6529.47	-4657.54	1760124.88	413388.36	39°37'57.4049"N	80°14'23.5195"W	8020.39	324.499	1.28	1.26	-0.20
16816.00	92.090	325.620	8270.02	8111.03	6607.74	-4711.24	1760071.18	413466.62	39°37'58.1740"N	80°14'24.2141"W	8115.30	324.512	0.61	-0.59	0.16
16912.00	92.090	325.580	8266.52	8206.96	6686.90	-4765.45	1760016.99	413545.78	39°37'58.9519"N	80°14'24.9151"W	8211.22	324.524	0.04	0.00	-0.04
17008.00	92.370	325.980	8262.79	8302.88	6766.22	-4819.39	1759963.04	413625.09	39°37'59.7314"N	80°14'25.6130"W	8307.12	324.539	0.51	0.29	0.42
17103.00	92.740	324.950	8258.55	8397.77	6844.40	-4873.19	1759909.24	413703.27	39°38'0.4996"N	80°14'26.3089"W	8402.01	324.549	1.15	0.39	-1.08

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Sullivan 5H AWP Proj: 20988'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 5H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 5H AWB
Slot	Slot #05		

WELLPATH DATA (221 stations)															
MD [ft]	Inclination [°]	Azimuth [°]	TVD [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]
17198.00	92.650	326.570	8254.09	8492.66	6922.84	-4926.59	1759855.86	413781.71	39°38'1.2705"N	80°14'26.9996"W	8496.88	324.563	1.71	-0.09	1.71
17389.00	93.050	326.170	8244.59	8683.42	7081.68	-5032.24	1759750.21	413940.54	39°38'2.8316"N	80°14'28.3666"W	8687.55	324.602	0.30	0.21	-0.21
17484.00	93.360	326.720	8239.28	8778.27	7160.72	-5084.66	1759697.79	414019.58	39°38'3.6085"N	80°14'29.0451"W	8782.36	324.622	0.66	0.33	0.58
17580.00	93.080	326.530	8233.89	8874.12	7240.77	-5137.39	1759645.06	414099.61	39°38'4.3952"N	80°14'29.7274"W	8878.15	324.644	0.35	-0.29	-0.20
17675.00	93.020	326.720	8228.83	8968.98	7319.99	-5189.58	1759592.88	414178.83	39°38'5.1739"N	80°14'30.4028"W	8972.96	324.665	0.21	-0.06	0.20
17770.00	93.140	326.380	8223.73	9063.84	7399.14	-5241.87	1759540.59	414257.97	39°38'5.9518"N	80°14'31.0795"W	9067.77	324.685	0.38	0.13	-0.36
17866.00	93.140	326.380	8218.47	9159.70	7478.96	-5294.94	1759487.52	414337.79	39°38'6.7363"N	80°14'31.7663"W	9163.58	324.702	0.00	0.00	0.00
17961.00	93.050	326.500	8213.34	9254.56	7558.01	-5347.38	1759435.09	414416.83	39°38'7.5132"N	80°14'32.4449"W	9258.40	324.720	0.16	-0.09	0.13
18057.00	92.920	326.620	8208.34	9350.43	7637.54	-5400.91	1759381.56	414496.36	39°38'8.2949"N	80°14'33.1374"W	9354.24	324.734	0.93	-0.14	-0.92
18152.00	93.020	326.020	8203.42	9445.30	7716.03	-5454.21	1759328.27	414574.85	39°38'9.0662"N	80°14'33.8270"W	9449.10	324.745	0.43	0.11	0.42
18247.00	93.050	326.310	8198.39	9540.16	7794.83	-5507.03	1759275.45	414653.64	39°38'9.8406"N	80°14'34.5104"W	9543.94	324.759	0.31	0.03	0.31
18343.00	93.080	326.570	8193.25	9636.03	7874.71	-5560.02	1759222.46	414733.52	39°38'10.6257"N	80°14'35.1962"W	9639.76	324.776	0.27	0.03	0.27
18438.00	93.020	326.430	8188.20	9730.89	7953.82	-5612.38	1759170.10	414812.62	39°38'11.4032"N	80°14'35.8738"W	9734.58	324.792	0.16	-0.06	-0.15
18533.00	91.600	326.010	8184.37	9825.81	8032.71	-5665.16	1759117.33	414891.51	39°38'12.1786"N	80°14'36.5568"W	9829.47	324.806	1.56	-1.49	-0.44
18629.00	91.660	326.210	8181.64	9921.77	8112.37	-5718.67	1759063.82	414971.17	39°38'12.9615"N	80°14'37.2491"W	9925.41	324.819	0.22	0.06	0.21
18723.00	91.570	326.090	8178.99	10015.73	8190.41	-5771.00	1759011.49	415049.20	39°38'13.7284"N	80°14'37.9264"W	10019.34	324.831	0.16	-0.10	-0.13
18819.00	91.600	326.040	8176.33	10111.69	8270.03	-5824.58	1758957.92	415128.81	39°38'14.5108"N	80°14'38.6195"W	10115.29	324.843	0.06	0.03	-0.05
18914.00	91.510	326.400	8173.76	10206.66	8348.96	-5877.38	1758905.12	415207.74	39°38'15.2866"N	80°14'39.3028"W	10210.22	324.856	0.39	-0.09	0.38
19010.00	91.880	326.720	8170.92	10302.62	8429.03	-5930.26	1758852.25	415287.81	39°38'16.0736"N	80°14'39.9872"W	10306.14	324.872	0.51	0.39	0.33
19105.00	91.420	325.970	8168.18	10397.58	8508.08	-5982.88	1758799.62	415366.84	39°38'16.8504"N	80°14'40.6682"W	10401.07	324.885	0.93	-0.48	-0.79
19200.00	90.370	326.390	8166.70	10492.56	8586.99	-6035.75	1758746.76	415445.75	39°38'17.6259"N	80°14'41.3523"W	10496.03	324.897	1.19	-1.11	0.44
19295.00	90.150	326.310	8166.27	10587.56	8666.07	-6088.39	1758694.12	415524.83	39°38'18.4032"N	80°14'42.0335"W	10591.00	324.910	0.25	-0.23	-0.08
19390.00	90.430	326.470	8165.79	10682.56	8745.19	-6140.98	1758641.54	415603.94	39°38'19.1807"N	80°14'42.7141"W	10685.97	324.923	0.34	0.29	0.17
19485.00	90.430	326.420	8165.07	10777.56	8824.35	-6193.48	1758589.03	415683.10	39°38'19.9588"N	80°14'43.3936"W	10780.93	324.936	0.05	0.00	-0.05
19579.00	90.150	326.050	8164.60	10871.55	8902.50	-6245.73	1758536.79	415761.24	39°38'20.7268"N	80°14'44.0697"W	10874.91	324.948	0.49	-0.30	-0.39
19675.00	90.310	325.940	8164.21	10967.55	8982.08	-6299.42	1758483.11	415840.82	39°38'21.5088"N	80°14'44.7644"W	10970.89	324.957	0.20	0.17	-0.11
19770.00	90.800	326.350	8163.29	11062.55	9060.97	-6352.34	1758430.19	415919.70	39°38'22.2841"N	80°14'45.4492"W	11065.86	324.967	0.67	0.52	0.43
19865.00	89.940	326.100	8162.68	11157.54	9139.93	-6405.15	1758377.38	415998.66	39°38'23.0602"N	80°14'46.1327"W	11160.84	324.978	0.94	-0.91	-0.26
19960.00	89.350	326.430	8163.27	11252.54	9218.93	-6457.91	1758324.63	416077.66	39°38'23.8366"N	80°14'46.8154"W	11255.81	324.989	0.71	-0.62	0.35
20055.00	89.510	326.190	8164.21	11347.54	9297.97	-6510.60	1758271.94	416156.70	39°38'24.6134"N	80°14'47.4974"W	11350.78	325.000	0.30	0.17	-0.25

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Sullivan 5H AWP Proj: 20988'

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REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 5H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 5H AWB
Slot	Slot #05		

WELLPATH DATA (221 stations) † = interpolated, ‡ = extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [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]
20149.00	89.450	326.220	8165.07	11441.53	9376.09	-6562.88	1758219.66	416234.80	39°38'25.3811"N	80°14'48.1740"W	11444.76	325.010	0.07	-0.06	0.03
20243.00	89.750	326.390	8165.72	11535.53	9454.29	-6615.03	1758167.51	416313.01	39°38'26.1496"N	80°14'48.8488"W	11538.73	325.020	0.37	0.32	0.18
20339.00	89.720	326.610	8166.17	11631.53	9534.35	-6668.02	1758114.53	416393.05	39°38'26.9364"N	80°14'49.5346"W	11634.70	325.032	0.23	-0.03	0.23
20434.00	89.480	326.370	8166.83	11726.52	9613.55	-6720.46	1758062.09	416472.26	39°38'27.7149"N	80°14'50.2135"W	11729.67	325.044	0.36	-0.25	-0.25
20529.00	89.420	326.380	8167.74	11821.52	9692.66	-6773.07	1758009.49	416551.35	39°38'28.4923"N	80°14'50.8943"W	11824.64	325.055	0.06	-0.06	0.01
20624.00	89.690	326.440	8168.48	11916.52	9771.79	-6825.62	1757956.93	416630.48	39°38'29.2700"N	80°14'51.5745"W	11919.61	325.066	0.29	0.28	0.06
20720.00	89.200	326.180	8169.41	12012.51	9851.66	-6878.87	1757903.69	416710.35	39°38'30.0550"N	80°14'52.2637"W	12015.58	325.076	0.58	-0.51	-0.27
20815.00	89.320	326.220	8170.64	12107.50	9930.60	-6931.72	1757850.85	416789.28	39°38'30.8307"N	80°14'52.9475"W	12110.55	325.084	0.13	0.13	0.04
20910.00	89.540	326.090	8171.58	12202.50	10009.50	-6984.62	1757797.94	416868.17	39°38'31.6061"N	80°14'53.6322"W	12205.53	325.093	0.27	0.23	-0.14
20963.00	89.510	326.740	8172.02	12255.50	10053.65	-7013.94	1757768.63	416912.32	39°38'32.0400"N	80°14'54.0117"W	12258.52	325.098	1.23	-0.06	1.23
20988.00‡	89.510	326.740	8172.23	12280.50	10074.55	-7027.65	1757754.92	416933.23	39°38'32.2455"N	80°14'54.1892"W	12283.50	325.102	0.00	0.00	0.00

HOLE & CASING SECTIONS - Ref Wellbore: Sullivan 5H AWB Ref Wellpath: Sullivan 5H AWP Proj: 20988'

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	1504.93	0.00	0.00	-6.57	6.46
13.375in Casing Surface	28.00	1475.00	1447.00	28.00	1474.93	0.00	0.00	-6.16	6.30
12.25in Open Hole	1505.00	2680.00	1175.00	1504.93	2679.44	-6.57	6.46	6.27	-10.96
9.625in Casing Intermediate	28.00	2650.00	2622.00	28.00	2649.44	0.00	0.00	6.64	-10.65
8.75in Open Hole	2680.00	7203.00	4523.00	2679.44	7071.13	6.27	-10.96	-694.00	247.58
8.5in Open Hole	7203.00	20988.00	13785.00	7071.13	8172.23	-694.00	247.58	10074.55	-7027.65
5.5in Casing Production	28.00	20958.00	20930.00	28.00	8171.98	0.00	0.00	10049.47	-7011.20

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REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 5H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 5H AWB
Slot	Slot #05		

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Sullivan 5H LP Rev-1	8100.00	-230.70	-171.81	1764610.34	406628.60	39°36'50.9576"N	80°13'25.4913"W	point
Sullivan 5H BHL Rev-2	8532.26	10076.30	-7026.69	1757755.89	416934.97	39°38'32.2628"N	80°14'54.1770"W	point
Sullivan Hardline #1 02.14.2023	9500.00	-881.87	1275.01	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	6773.17	-5014.57	1759767.88	413632.04	39°37'59.7842"N	80°14'28.1083"W	polygon
2D Polygon: dimensions not calculated								

WELLPATH COMPOSITION - Ref Wellbore: Sullivan 5H AWB Ref Wellpath: Sullivan 5H AWP Proj: 20988'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	Survey Date
28.00	1365.00	BH Generic gyro - northseeking (Standard)	01 17.5" Gyro <Northseeking-Standard> (28'- 1365')	Sullivan 5H AWB	3/6/2023
1365.00	2555.99	OWSG MWD rev2 + HRGM	02 12.25" SDI MWD <OWSG MWD Rev.2+HRGM> (1365')(1584'-2555')	Sullivan 5H AWB	3/6/2023
2555.99	7025.99	OWSG MWD rev2 + HRGM	03 8.75" SDI MWD <OWSG MWD Rev.2+HRGM> (2555')(2650'-7025')	Sullivan 5H AWB	3/6/2023
7025.99	20988.00	BH AutoTrak Curve/eXpress (2019) (HRGM, Short spacing)	04 8.5" BH ATK Curve <HRGM+Short Spacing> (7025')(7142'-20963')	Sullivan 5H AWB	3/6/2023

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Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Sullivan 5H
Field	Monongalia	API/Legal	
Facility	Sullivan Pad	Wellbore	Sullivan 5H AWB
Slot	Slot #05		

COMMENTS
<p>Wellpath general comments API: 47061019180000 BH Job #: 111699079 Rig: Patterson 277 Duration: 3/7/2023 - 3/12/2023</p> <p>01_17.5" Gyro <Northseeking-Standard> (28'- 1365') 02_12.25" SDI MWD <OWSG MWD Rev.2+HRGM> (1365')(1584'-2555') 03_8.75" SDI MWD <OWSG MWD Rev.2+HRGM> (2555')(2650'-7025') 04_8.5" BH ATK Curve <HRGM+Short Spacing> (7025')(7142'-20963')</p> <p>Final Survey MD @ 20963' Projected MD at TD: 20988'</p>

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Hydraulic Fracturing Fluid Product Component Information Disclosure



Job Start Date:	08/29/2023
Job End Date:	10/05/2023
State:	West Virginia
County:	Monongalia
API Number:	47-061-01918-00-00
Operator Name:	Northeast Natural Energy LLC
Well Name and Number:	Sullivan 5H
Latitude:	39.614794
Longitude:	-80.223143
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	8210.11730769231
Total Base Water Volume (gal)*:	24057936
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					

04/12/2024

Water	Operator	Carrier Fluid					
Items above are Trade Names. Items below are the individual ingredients.							
			Water	7732-18-5	100.00000	87.16133	None
			Crystalline silica, quartz	14808-60-7	100.00000	11.35597	None
			Crystalline silica, quartz	14808-60-7	100.00000	1.24029	None
			Hydrochloric acid	7647-01-0	15.00000	0.02276	None
			Water	7732-18-5	80.00000	0.01711	
			Water	7732-18-5	70.00000	0.01466	
			Butene Homopolymer	9003-29-6	25.00000	0.01206	
			Alkanes, C16-20-iso-	90622-59-6	25.00000	0.01206	None
			Glutaraldehyde	111-30-8	20.00000	0.00428	None
			Diethylenetriamine penta (methylene phosphonic acid) (DTPMP)	15827-60-8	10.00000	0.00209	
			2 Phosphobutane 1,2,4 tricarboxylic acid	37971-36-1	10.00000	0.00209	None
			Citric Acid	77-92-9	10.00000	0.00209	
			alcohols, C12-18, ethoxylated	68213-23-0	3.00000	0.00145	
			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	0.00007	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)

04/12/2024