

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

API 47-061-01876 County Monongalia District Battelle
Quad Wadestown Pad Name Phoenix Field/Pool Name _____
Farm name Phoenix Well Number 8H
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 4388188.2 Easting 562456.4
Landing Point of Curve Northing 4387846.0 Easting 562242.3
Bottom Hole Northing 4383414.9 Easting 565302.5

Elevation (ft) 1,503.5' 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 FOR 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 4/19/2021 Date drilling commenced 12/27/2021 Date drilling ceased 1/30/2022
Date completion activities began 4/28/2022 Date completion activities ceased 5/30/2022
Verbal plugging (Y/N) _____ 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 1,240 Open mine(s) (Y/N) depths Y, Federal #2 @1,230
Salt water depth(s) ft 2,760 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1,230 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: _____

02/23/2024

API 47-061 - 01876 Farm name Phoenix Well number 8H

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"	100'	N		NA	Y
Surface	17-1/2"	13-3/8"	1,495	N	54.5	NA	Y, 34 bbl
Coal							
Intermediate 1	12-1/4"	9-5/8"	2,779	N	36	NA	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	26,416	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	4500 psi ready mix						48
Surface	Class A	2,395	15.6	1.19	2,845	CTS	8
Coal							
Intermediate 1	Class A	1,035	15.6	1.19	1,229	CTS	8
Intermediate 2							
Intermediate 3							
Production	50:50 poz	4,890	14.5	1.16	6,662	939'	48
Tubing							

Drillers TD (ft) 26,415' Loggers TD (ft) 26,385'
 Deepest formation penetrated Marcellus Plug back to (ft) _____
 Plug back procedure _____

Kick off depth (ft) 7,403'

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

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____
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 - 01876 Farm name Phoenix Well number 8H

PERFORATION RECORD

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

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

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

Please insert additional pages as applicable.

API 47- 061 - 01876 Farm name Phoenix Well number 8H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>8,225'</u> TVD	<u>8,890'</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3,553 psi Bottom Hole _____ psi DURATION OF TEST 24 hrs

OPEN FLOW Gas 2,125 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 ₂ S, ETC)
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 Pro Frac
 Address 800 Mountain View Drive City Smithfield State PA Zip 15478

Please insert additional pages as applicable.

Completed by Hollie Medley Telephone _____
 Signature *Hollie Medley* Title Regulatory Manager Date 1/10/2024

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

Phoenix 8H Stimulation Report

Stage Number	Report Date	ISIP (psi)	Breakdown Pressure (psi)	Avg Treating Pressure (psi)	Avg Treating Rate (BPM)	Pad Volume (bbls)	Total Clean Fluid (Bbls)	Total Proppant Amount (lbs)	Flush Volume (bbls)
1	4/28/2022	4,893		9,942	81	627	7,801	297,920	587
2	4/28/2022	5,450	6,575	9,742	89	14	10,608	457,499	585
3	4/28/2022	5,938	6,672	9,697	87	730	11,812	456,339	580
4	4/29/2022	5,468	6,443	9,912	90	430	9,789	454,170	588
5	4/29/2022	5,913	7,441	9,899	89	47	9,730	460,460	575
6	4/29/2022	5,390	7,252	9,792	88	18	9,493	457,463	570
7	4/30/2022	5,211	7,862	9,732	88	14	9,407	457,697	557
8	4/30/2022	5,636	7,334	9,900	90	50	9,537	455,780	554
9	4/30/2022	5,440	6,959	9,842	90	70	9,670	453,820	553
10	4/30/2022	5,028	7,721	9,722	89	15	9,858	453,045	545
11	5/1/2022	5,407	7,658	9,700	91	6	9,164	455,260	540
12	5/1/2022	5,378	7,577	9,762	86	34	9,575	454,000	546
13	5/1/2022	5,405	7,354	9,867	86	18	10,335	363,360	537
14	5/1/2022	6,303	6,773	9,819	89	17	11,563	454,520	528
15	5/2/2022	5,728	6,608	9,736	86	32	10,753	455,640	532
16	5/2/2022	5,787	7,051	9,861	91	37	9,725	453,262	532
17	5/3/2022	5,413	7,293	9,718	91	16	9,631	454,480	513
18	5/3/2022	6,394	7,146	9,767	92	28	9,323	452,272	532
19	5/3/2022	4,932	7,918	9,696	92	35	9,619	455,326	532
20	5/4/2022	5,584	7,311	9,495	92	12	9,786	455,500	505
21	5/4/2022	5,533	7,586	9,662	92	26	9,453	455,679	502
22	5/4/2022	5,923	7,965	9,713	91	21	9,570	461,520	495
23	5/5/2022	5,716	8,793	9,785	88	27	9,317	466,960	490
24	5/5/2022	5,637	8,806	9,972	88	35	9,409	455,141	482
25	5/5/2022	5,866	9,060	9,827	88	21	9,447	454,000	479
26	5/6/2022	6,545	8,641	9,781	91	27	9,443	455,340	475
27	5/6/2022	6,252	8,070	9,785	90	31	9,452	455,552	471
28	5/6/2022	6,023	7,383	9,679	92	64	9,596	457,360	466
29	5/7/2022	6,413	7,069	9,203	91	36	9,239	455,567	840
30	5/8/2022	5,590	7,322	9,307	92	37	9,427	456,760	457
31	5/8/2022	5,533	7,752	9,456	92	32	9,600	455,971	534
32	5/8/2022	6,542	8,044	9,522	91	17	9,477	454,100	447
33	5/9/2022	5,815	8,637	9,750	89	32	9,795	447,380	445
34	5/9/2022	5,856	8,256	9,464	90	19	9,446	454,587	534
35	5/9/2022	5,772	7,116	9,260	91	30	9,319	454,580	433
36	5/10/2022	5,416	7,980	9,293	92	30	9,658	456,340	430
37	5/10/2022	5,990	9,234	9,526	91	26	9,256	454,791	431
38	5/10/2022	5,938	8,337	9,587	88	64	9,719	454,360	419
39	5/11/2022	6,110	7,759	9,530	91	13	9,363	455,460	419
40	5/11/2022	5,978	7,673	9,111	92	49	9,352	454,990	425
41	5/11/2022	5,930	8,753	9,311	90	78	9,314	453,840	408
42	5/12/2022	5,809	8,448	9,449	92	32	9,488	489,559	631
43	5/12/2022	5,753	7,935	9,211	92	34	10,010	456,107	411

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44	5/12/2022	5,573	7,681	9,019	91	20	9,340	459,792	395
45	5/13/2022	5,868	7,741	8,891	92	55	9,477	455,192	401
46	5/13/2022	6,163	7,265	9,209	89	29	9,197	457,313	407
47	5/13/2022	5,481	7,853	9,239	92	153	9,600	455,552	385
48	5/14/2022	5,261	8,550	9,357	90	32	9,376	455,112	383
49	5/14/2022	5,754	8,582	9,348	92	30	9,188	453,235	356
50	5/14/2022	5,417	8,601	9,342	92	36	9,500	455,472	375
51	5/15/2022	5,404	8,628	9,614	90	32	10,165	455,532	367
52	5/15/2022	5,830	8,401	9,524	94	31	9,219	455,808	367
53	5/15/2022	5,602	9,185	9,512	90	26	9,222	455,612	367
54	5/16/2022	5,603	8,118	9,359	93	33	9,190	455,440	367
55	5/16/2022	6,333	8,759	9,413	93	30	9,184	455,538	367
56	5/16/2022	5,631	8,507	9,252	92	14	9,133	454,882	367
57	5/17/2022	5,535	8,857	9,291	92	11	9,069	455,440	342
58	5/17/2022	5,630	8,838	9,180	94	26	9,112	448,760	348
59	5/17/2022	5,773	8,497	9,023	94	27	8,871	453,660	338
60	5/17/2022	5,874	8,505	9,038	93	11	9,128	455,240	331
61	5/18/2022	5,694	8,181	8,981	93	14	8,900	451,360	324
62	5/18/2022	6,180	8,304	8,998	94	29	8,950	430,933	331
63	5/18/2022	5,318	8,318	8,884	94	30	9,322	444,180	322
64	5/19/2022	6,176	8,355	8,743	94	14	8,676	457,660	312
65	5/19/2022	6,155	8,405	8,819	94	38	9,110	455,760	316
66	5/19/2022	6,106	8,466	8,896	94	21	8,079	453,680	309
67	5/19/2022	6,114	8,308	9,080	93	16	9,003	453,240	298
68	5/20/2022	5,190	8,875	9,052	93	12	9,278	455,440	295
69	5/20/2022	5,732	8,857	9,179	94	14	9,563	387,960	334
70	5/20/2022	5,224	8,056	8,916	94	13	8,865	458,060	279
71	5/21/2022	5,899	9,283	8,666	94	20	9,460	455,980	277
72	5/21/2022	5,680	8,590	8,776	94	14	9,231	454,940	241
73	5/21/2022	5,601	7,791	8,655	94	13	8,967	458,176	266
74	5/21/2022	5,141	7,707	8,640	93	10	9,092	456,900	265
75	5/22/2022	5,477	7,383	8,648	94	58	8,972	458,620	260
76	5/22/2022	5,957	7,563	8,289	94	32	9,142	454,940	257
77	5/22/2022	5,953	7,405	8,405	94	21	9,063	458,935	251
78	5/23/2022	5,431	7,919	8,479	94	23	8,986	456,860	247
79	5/23/2022	5,837	7,670	8,331	94	72	9,089	448,310	240
80	5/23/2022	5,454	8,398	8,602	94	40	8,878	455,120	235
81	5/24/2022	6,309	8,278	8,674	94	25	9,123	454,530	232
82	5/24/2022	5,602	6,932	8,280	94	32	9,086	456,850	226
83	5/24/2022	5,592	6,900	8,283	94	89	9,068	457,480	222
84	5/24/2022	5,535	8,134	8,620	94	20	9,042	454,900	224
85	5/25/2022	5,502	8,366	8,614	94	43	8,998	458,580	213
86	5/25/2022	5,698	8,138	8,534	94	2	8,354	453,540	209
87	5/25/2022	6,198	8,024	8,660	94	15	8,604	455,492	284
88	5/26/2022	6,090	7,874	8,171	94	19	8,624	455,500	214
89	5/26/2022	5,657	7,131	7,904	95	27	8,500	455,500	200
90	5/27/2022	5,377	8,091	8,287	95	13	8,447	455,630	191

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Phoenix 8H
Perforation Report

Stage Number	Report Date	Total Shots	Cluster 1 Top TD	Cluster 5 Bottom TD
1	4/28/2022			26,305
2	4/28/2022	40	26,261	26,104
3	4/28/2022	40	26,062	25,905
4	4/29/2022	40	25,864	25,707
5	4/29/2022	40	25,665	25,508
6	4/29/2022	40	25,466	25,309
7	4/30/2022	40	25,267	25,110
8	4/30/2022	40	25,069	24,911
9	4/30/2022	40	24,870	24,713
10	4/30/2022	40	24,671	24,514
11	5/1/2022	40	24,472	24,315
12	5/1/2022	40	24,273	24,116
13	5/1/2022	40	24,075	23,918
14	5/1/2022	40	23,876	23,719
15	5/2/2022	40	23,677	23,520
16	5/2/2022	40	23,478	23,321
17	5/3/2022	40	23,279	23,122
18	5/3/2022	40	23,081	22,924
19	5/3/2022	40	22,882	22,725
20	5/4/2022	40	22,683	22,526
21	5/4/2022	40	22,484	22,327
22	5/4/2022	40	22,285	22,128
23	5/5/2022	40	22,087	21,930
24	5/5/2022	40	21,888	21,731
25	5/5/2022	40	21,689	21,532
26	5/6/2022	40	21,490	21,333
27	5/6/2022	40	21,291	21,134
28	5/6/2022	40	21,093	20,936
29	5/7/2022	40	20,894	20,737
30	5/8/2022	40	20,695	20,538
31	5/8/2022	40	20,496	20,339
32	5/8/2022	40	20,298	20,141
33	5/9/2022	40	20,099	19,942
34	5/9/2022	40	19,900	19,743
35	5/9/2022	40	19,701	19,544
36	5/10/2022	40	19,502	19,345
37	5/10/2022	40	19,304	19,147
38	5/10/2022	40	19,105	18,948
39	5/11/2022	40	18,906	18,749
40	5/11/2022	40	18,707	18,550
41	5/11/2022	40	18,508	18,351
42	5/12/2022	40	18,310	18,153
43	5/12/2022	40	18,111	17,954
44	5/12/2022	40	17,912	17,755
45	5/13/2022	40	17,713	17,556
46	5/13/2022	40	17,514	17,357
47	5/13/2022	40	17,316	17,159

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48	5/14/2022	40	17,117	16,960
49	5/14/2022	40	16,918	16,761
50	5/14/2022	40	16,719	16,562
51	5/15/2022	40	16,521	16,363
52	5/15/2022	40	16,322	16,165
53	5/15/2022	40	16,123	15,966
54	5/16/2022	40	15,924	15,767
55	5/16/2022	40	15,725	15,568
56	5/16/2022	40	15,527	15,370
57	5/17/2022	40	15,328	15,171
58	5/17/2022	40	15,129	14,972
59	5/17/2022	40	14,930	14,773
60	5/17/2022	40	14,731	14,574
61	5/18/2022	40	14,533	14,376
62	5/18/2022	40	14,334	14,177
63	5/18/2022	40	14,135	13,978
64	5/19/2022	40	13,936	13,779
65	5/19/2022	40	13,737	13,580
66	5/19/2022	40	13,539	13,382
67	5/19/2022	40	13,340	13,183
68	5/20/2022	40	13,141	12,984
69	5/20/2022	40	12,942	12,785
70	5/20/2022	40	12,744	12,586
71	5/21/2022	40	12,545	12,388
72	5/21/2022	40	12,346	12,189
73	5/21/2022	40	12,147	11,990
74	5/21/2022	40	11,948	11,791
75	5/22/2022	40	11,750	11,593
76	5/22/2022	40	11,551	11,394
77	5/22/2022	40	11,352	11,195
78	5/23/2022	40	11,153	10,996
79	5/23/2022	40	10,954	10,797
80	5/23/2022	40	10,756	10,599
81	5/24/2022	40	10,557	10,400
82	5/24/2022	40	10,358	10,201
83	5/24/2022	40	10,159	10,002
84	5/24/2022	40	9,960	9,803
85	5/25/2022	40	9,762	9,605
86	5/25/2022	40	9,563	9,406
87	5/25/2022	40	9,364	9,207
88	5/26/2022	40	9,165	9,008
89	5/26/2022	40	8,967	8,809
90	5/27/2022	40	8,768	8,610

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Cement Job Log



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

Customer: NORTHEAST NATURAL ENERGY LLC	Date: 9-Jan-22	Serv. Supervisor: Robert Given
Cust. Rep.: TROY	Ticket #: BPA-2201-0014	Serv. Center: Black Lick - 1571
Well Name: Phoenix 0H	API Well #: 47-061-01876	County: Monongalia State: WV
Well Type: NATURAL GAS	Rig: PATTERSON 277	Type of Job: CM-SURFACE 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)
6% Gel Spacer	+20.0 PPB NEX-020		8.7		4.62	33.66	25.00	-	
15.6 lb/gal Cement	100% NCM-910 +1.0% NAC-110+0.25 PPS NLM-600	2395	15.6	12%	1.19	5.21	506.68	2,845.01	297
Fresh Water Displacement			8.33			-	225.39	-	
0									

Displacement Chemicals:

OPEN HOLE DATA			TUBULAR DATA									
22 in. O.H. 128 to 1,498 ft			13.375 in. 54.5#, (0 to 1,498 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.							
35.0 °F		64.0 °F				13.375/54.5	BTC	1495	J-55	12.615		1130

PREVIOUS CASING DATA	PERFORATED INTERVAL DATA			CASING EQUIPMENT DEPTHS				
24 in. 97.4# (0 to 128 ft)	TOP	BTM	SPF	SIZE	SHOE	FLOAT	STAGE	ACP
					1495	1451		

WELL FLUID			DISPLACEMENT FLUID			DIFF PRESS	CSG LIFT	MAX PRESS	Mix H2O Chlorides (ppm)	Mix H2O pH	Mix H2O Temp	WATER ON LOG (bbl)
TYPE	DENSITY	VOLUME	TYPE	DENSITY		(psi)	(psi)	(psi)			(°F)	
FRESH WATER	8.3 ppg	214 bbl	FRESH WATER	8.3 ppg		547	562	2500	<300	7	46.0 °F	1600

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 Reoperation	Rathole Length (ft)
Yes	591.00	Y	-	37.00	-	Yes	684.00	No		No	71

Comments/Additional Data/s:

Robert Given Service Supervisor		9-Jan-22 Date
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Cement Job Log



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

Customer: NORTHEAST NATURAL ENERGY LLC	Date: 15-Jan-22	Serv. Supervisor: Ron Stephenson
Cust. Rep.: TROY	Ticket #: BPA-2201-0015	Serv. Center: Black Lick - 1571
Well Name: Phoenix 8H	API Well #: 47-061-01876	County: Monongalia State: WV
Well Type:	Rig: Patterson 277	Type of Job: GM-INTER. 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)
13.5 lb/gal PureScrub Spacer w/Surfactant	+5.0 PPB NFP-703+1.0 GPB NTC-885	25	13.5		5.63	26.76	25.00	140.76	16
15.6 lb/gal Cement	100% NCM-910 +1.0% NAC-110+0.25 PPS NLM-600	1035	15.6	30%	1.19	5.21	218.96	1,229.47	128
Fresh Water Displacement			8.33			-	210.13	-	
0						-		-	
						-		-	
						-		-	
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Displacement Chemicals:									

TUBULAR DATA																
OPEN HOLE DATA						PERFORATED INTERVAL DATA				CASEING EQUIPMENT DEPTHS						
12.25 in. O.H. 1,498 to 2,758 ft						9.625 in. 36#, (0 to 2,758 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.											
20.0 °F		51.0 °F						95/8 36#	BTC	2779	J55	8.921	3520	2020		
PREVIOUS CASING DATA						PERFORATED INTERVAL DATA						CASEING EQUIPMENT DEPTHS				
13.375 in. 54.5# (0 to 1,498 ft)						TOP	BTM	SPF	SIZE	SHOE	FLOAT	STAGE	ACP			
										45	2706					
WELL FLUID			DISPLACEMENT FLUID			DIFF PRESS (psi)	CSG UFT (psi)	MAX PRESS (psi)	Mix H2O Chlorides (ppm)	Mix H2O pH	Mix H2O Temp	WATER ON LOC (bbl)				
TYPE	DENSITY	VOLUME	TYPE	DENSITY												
OBM	12.2 ppg	207 bbl	H2O	8.3 ppg		911	1200	925	<200	8	49.0 °F	3,200				
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	Rothole Length (ft)					
Yes	950.00	Y				Yes	950.00	No	18.00	No	44					

Comments/Additional Details:

<i>Ron Stephenson</i>	15-Jan-22
Service Supervisor	Date

Cement Job Log



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

Customer:	NORTHEAST NATURAL ENERGY LLC	Date:	30-Jan-22	Serv. Supervisor:	Steven Long
Cust. Rep.:	JOSH	Ticket #:	BPA-2201-0030	Serv. Center:	Black Lick - 1871
Well Name:	Phoenix 8H	API Well #:	47-061-01870	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)
13.5 lb/gal PureScrub Spacer w/Surfactant	+7.0 PPB NFP-703+1.0 GPB NTC-885	110	13.5		5.65	26.79	80.00	621.88	70
14.5 lb/gal Cement	50 % NCM-910+50 % NPZ-010 +0.2 % NFP-703+0.15 % NAS-504+0.3 % NRT-213+0.15 % NFL-549+0.1 % NTC-405	4890	14.5		1.16	4.90	1,008.47	5,662.54	570
Sugar Water Displacement	+5.0 PPB NRT-215					-	20.00	-	
Fresh Water Displacement						-	564.05	-	
						-		-	
						-		-	
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						-		-	

Displacement Chemicals:

OPEN HOLE DATA				TUBULAR DATA										
8.75 in. O.H. 2,758 to 8,028 ft 8.5 in. O.H. 8,028 to 26,339 ft				5.5 in. 20#, (0 to 26,339 ft)				SIZE WEIGHT	THRD	DEPTH (ft)	GRADE	ID (in)	BURST (psi)	COLLAPSE (psi)
Ambient Tmp.	Bulk Tmp.	Slurry 1 Tmp.	Slurry 2 Tmp.	Slurry 3 Tmp.	Slurry 4 Tmp.	5.5 20#	BTC	26416.6	P-110	4.778	12640	11080		
11.0 °F		41.1 °F												
PREVIOUS CASING DATA				PERFORATED INTERVAL DATA				CASING EQUIPMENT DEPTHS						
9.625 in. 36# (0 to 2,758 ft)				TOP	BTM	SPF	SIZE	SHOE	FLOAT	STAGE	ACP			
								26414						
WELL FLUID			DISPLACEMENT FLUID			DIFF PRESS (psi)	CSG LIFT (psi)	MAX PRESS (psi)	Mix H2O Chlorides (ppm)	Mix H2O pH	Mix H2O Temp	WATER ON LOC (bbl)		
TYPE	DENSITY	VOLUME	TYPE	DENSITY										
OBM	12.5 ppg	586.5 bbl	H2O	8.4 ppg		4000		6066	< 200	7	36.0 °F	2100		
Bumped Plug	Final Differential (psi)	Floater 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	4,600.00	Y	-	-	2,217	Yes	5,600.00	No	4.00	No	26			

Comments/Additional Details:

Steven Long
30-Jan-22
 Service Supervisor Date

NORTHEAST NATURAL ENERGY, LLC

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

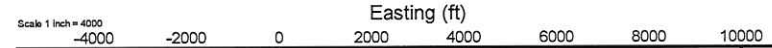
Slot: Slot 08
 Well: Phoenix 8H
 Wellbore: Phoenix 8H PWB



Plot reference wellpath is Phoenix 8H PWP Rev-A.0	Grid System: NAD83 / Lambert West Virginia SP, Northern Zone (4701), US feet
True vertical depths are referenced to Patterson 277 (RKB)	North Reference: Grid north
Reference wellpath measured depths are referenced to Patterson 277 (RKB)	Scale: True distance
Patterson 277 (RKB) to Mean Sea Level: 1531 feet	Coordinates are in feet referenced to Slot
Mean Sea Level to Ground level (At Slot: Slot 08): -1503 feet	Depths are in feet
Offset wellpath MDs are referenced to each path's default MD datum	Created by: manojh on 2022-02-08; Database: WA_MPL_EASTERNUS_Defn

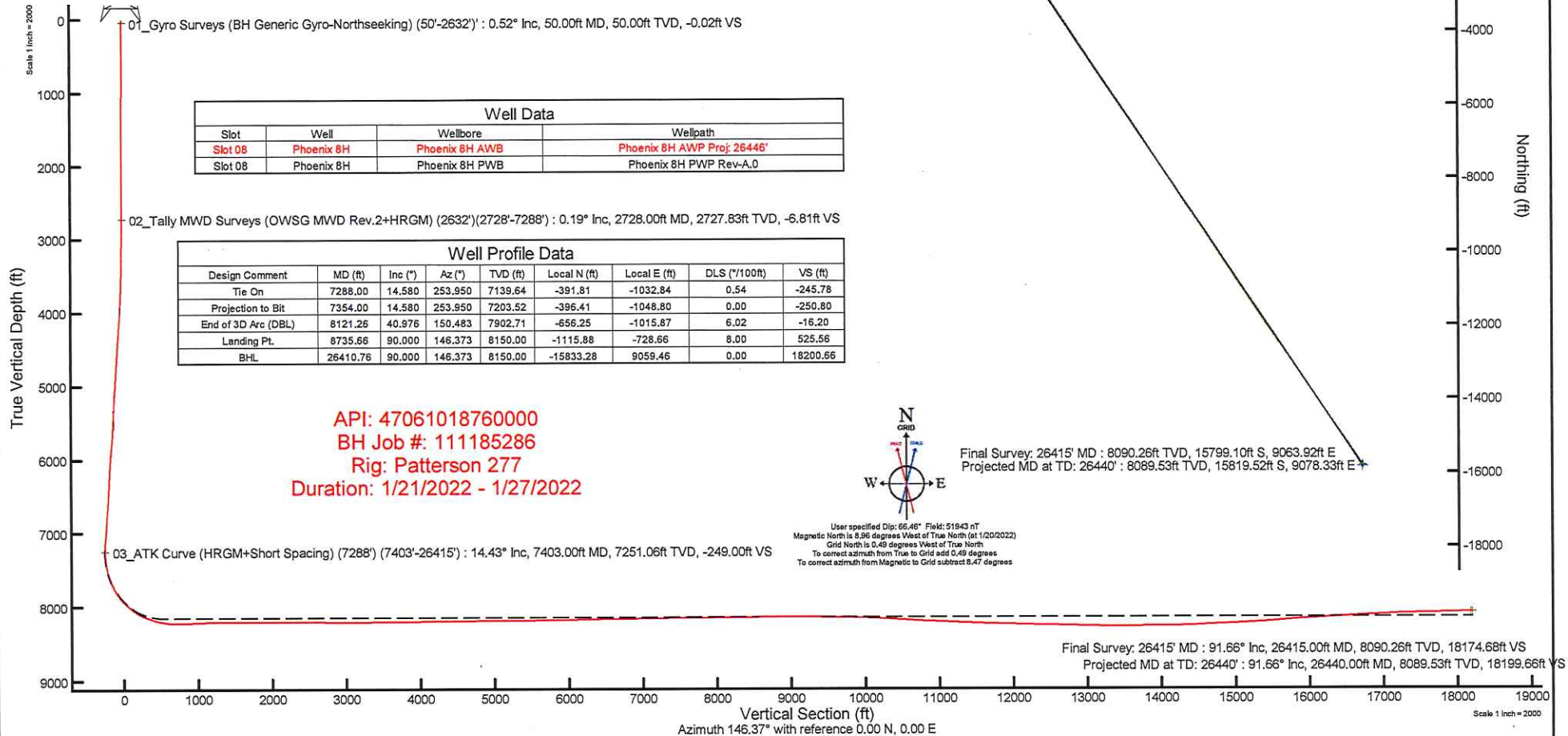
Location Information

Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude		
Phoenix Pad	1751051.980	416616.940	39°38'28.5589"N	80°16'19.8414"W		
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot 08	-24.98	17.35	1751069.330	416591.960	39°38'28.3135"N	80°16'19.6169"W
Patterson 277 (RKB) to Ground level (At Slot: Slot 08)			28ft			
Mean Sea Level to Ground level (At Slot: Slot 08)			-1503ft			
Patterson 277 (RKB) to Mean Sea Level			1531ft			



01_Gyro Surveys (BH Generic Gyro-Northseeking) (50'-2632') : 50.00ft TVD, 0.04ft S, 0.09ft W
 02_Tally MWD Surveys (OWSG MWD Rev.2+HRGM) (2632')(2728'-7288') : 2727.83ft TVD, 1.46ft N, 10.10ft W
 03_ATK Curve (HRGM+Short Spacing) (7288') (7403'-26415') : 7251.06ft TVD, 404.69ft S, 1058.02ft W

Phoenix Hardline #1 (5.19.21)





Actual Wellpath Report

Phoenix 8H AWP Proj: 26446'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Phoenix 8H
Field	Monongalia	API/Legal	
Facility	Phoenix Pad	Wellbore	Phoenix 8H AWB
Slot	Slot 08		

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	2/8/2022 at 4:14:47 PM
Convergence at slot	0.49° 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	-24.98	17.35	1751069.33	416591.96	39°38'28.3135"N	80°16'19.6169"W
Facility Reference Pt			1751051.98	416616.94	39°38'28.5589"N	80°16'19.8414"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	1531.00ft
Horizontal Reference Pt	Slot	Patterson 277 (RKB) to Mean Sea Level	1531.00ft
Vertical Reference Pt	Patterson 277 (RKB)	Patterson 277 (RKB) to Ground Level at Slot (Slot 08)	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	146.37°

REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Phoenix 8H
Field	Monongalia	API/Legal	
Facility	Phoenix Pad	Wellbore	Phoenix 8H AWB
Slot	Slot 08		

WELLPATH DATA (306 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	247.200	0.00	0.00	0.00	0.00	1751069.33	416591.96	39°38'28.3135"N	80°16'19.6169"W	0.00	0.000	0.00	0.00	0.00
28.00	0.000	247.200	28.00	0.00	0.00	0.00	1751069.33	416591.96	39°38'28.3135"N	80°16'19.6169"W	0.00	0.000	0.00	0.00	0.00
50.00	0.520	247.200	50.00	-0.02	-0.04	-0.09	1751069.24	416591.92	39°38'28.3131"N	80°16'19.6181"W	0.10	247.200	2.36	2.36	0.00
100.00	0.450	249.100	100.00	-0.10	-0.20	-0.48	1751068.85	416591.76	39°38'28.3115"N	80°16'19.6231"W	0.52	247.913	0.14	-0.14	3.80
150.00	0.520	259.700	150.00	-0.24	-0.31	-0.89	1751068.44	416591.65	39°38'28.3104"N	80°16'19.6282"W	0.94	250.979	0.23	0.14	21.20
200.00	0.460	271.400	199.99	-0.44	-0.34	-1.32	1751068.01	416591.62	39°38'28.3100"N	80°16'19.6337"W	1.36	255.385	0.23	-0.12	23.40
250.00	0.450	286.300	249.99	-0.71	-0.28	-1.70	1751067.63	416591.68	39°38'28.3106"N	80°16'19.6386"W	1.73	260.575	0.24	-0.02	29.80
300.00	0.460	274.200	299.99	-0.98	-0.21	-2.09	1751067.24	416591.75	39°38'28.3112"N	80°16'19.6436"W	2.10	264.186	0.19	0.02	-24.20
350.00	0.420	270.300	349.99	-1.21	-0.20	-2.48	1751066.85	416591.76	39°38'28.3113"N	80°16'19.6485"W	2.48	265.441	0.10	-0.08	-7.80
400.00	0.460	212.000	399.99	-1.23	-0.37	-2.77	1751066.56	416591.59	39°38'28.3096"N	80°16'19.6522"W	2.79	262.448	0.86	0.08	-116.60
450.00	0.460	222.700	449.99	-1.10	-0.68	-3.01	1751066.32	416591.28	39°38'28.3065"N	80°16'19.6553"W	3.09	257.183	0.17	0.00	21.40
500.00	0.430	267.000	499.99	-1.14	-0.84	-3.33	1751066.00	416591.12	39°38'28.3049"N	80°16'19.6594"W	3.44	255.822	0.67	-0.06	88.60
550.00	0.460	295.400	549.98	-1.41	-0.77	-3.70	1751065.63	416591.19	39°38'28.3056"N	80°16'19.6641"W	3.78	258.313	0.44	0.06	56.80
600.00	0.400	316.600	599.98	-1.76	-0.55	-4.00	1751065.33	416591.41	39°38'28.3077"N	80°16'19.6680"W	4.04	262.138	0.34	-0.12	42.40
650.00	0.460	345.900	649.98	-2.12	-0.23	-4.17	1751065.16	416591.73	39°38'28.3109"N	80°16'19.6702"W	4.18	266.828	0.45	0.12	58.60
700.00	0.460	353.900	699.98	-2.48	0.16	-4.24	1751065.09	416592.12	39°38'28.3148"N	80°16'19.6711"W	4.24	272.203	0.13	0.00	16.00
750.00	0.520	346.200	749.98	-2.88	0.58	-4.32	1751065.01	416592.54	39°38'28.3189"N	80°16'19.6721"W	4.36	277.693	0.18	0.12	-15.40
800.00	0.490	329.500	799.98	-3.30	0.99	-4.48	1751064.85	416592.95	39°38'28.3229"N	80°16'19.6742"W	4.59	282.435	0.30	-0.06	-33.40
850.00	0.560	329.200	849.97	-3.76	1.38	-4.71	1751064.62	416593.34	39°38'28.3268"N	80°16'19.6773"W	4.91	286.341	0.14	0.14	-0.60
900.00	0.520	337.600	899.97	-4.23	1.80	-4.92	1751064.41	416593.76	39°38'28.3309"N	80°16'19.6800"W	5.24	290.094	0.18	-0.08	16.80
950.00	0.570	356.700	949.97	-4.66	2.26	-5.02	1751064.31	416594.22	39°38'28.3354"N	80°16'19.6814"W	5.51	294.211	0.37	0.10	38.20
1000.00	0.610	9.600	999.97	-5.07	2.77	-4.99	1751064.34	416594.73	39°38'28.3405"N	80°16'19.6810"W	5.71	299.013	0.28	0.08	25.80
1050.00	0.670	20.600	1049.96	-5.44	3.31	-4.85	1751064.48	416595.27	39°38'28.3458"N	80°16'19.6792"W	5.87	304.295	0.27	0.12	22.00
1100.00	0.700	351.100	1099.96	-5.89	3.88	-4.79	1751064.54	416595.84	39°38'28.3515"N	80°16'19.6786"W	6.17	309.008	0.70	0.06	-59.00
1150.00	0.800	325.000	1149.96	-6.51	4.47	-5.04	1751064.29	416596.43	39°38'28.3572"N	80°16'19.6818"W	6.74	311.569	0.70	0.20	-52.20
1200.00	0.900	311.700	1199.95	-7.24	5.02	-5.53	1751063.80	416596.98	39°38'28.3626"N	80°16'19.6882"W	7.47	312.198	0.44	0.20	-26.60
1250.00	1.010	310.700	1249.94	-8.05	5.57	-6.16	1751063.17	416597.52	39°38'28.3680"N	80°16'19.6962"W	8.30	312.095	0.22	0.22	-2.00
1300.00	1.350	325.200	1299.93	-9.06	6.34	-6.83	1751062.50	416598.30	39°38'28.3755"N	80°16'19.7049"W	9.32	312.850	0.90	0.68	29.00
1350.00	1.440	321.900	1349.92	-10.27	7.31	-7.55	1751061.78	416599.27	39°38'28.3851"N	80°16'19.7142"W	10.51	314.075	0.24	0.18	-6.60
1400.00	1.200	280.200	1399.91	-11.26	7.90	-8.46	1751060.87	416599.86	39°38'28.3909"N	80°16'19.7258"W	11.57	313.054	1.93	-0.48	-83.40



Actual Wellpath Report

Phoenix 8H AWP Proj: 26446'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Phoenix 8H
Field	Monongalia	API/Legal	
Facility	Phoenix Pad	Wellbore	Phoenix 8H AWB
Slot	Slot 08		

WELLPATH DATA (306 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]
1450.00	0.900	220.100	1449.90	-11.52	7.69	-9.23	1751060.11	416599.65	39°38'28.3888"N	80°16'19.7356"W	12.01	309.827	2.17	-0.60	-120.20
1500.00	0.760	195.000	1499.89	-11.19	7.07	-9.56	1751059.77	416599.03	39°38'28.3826"N	80°16'19.7399"W	11.90	306.484	0.77	-0.28	-50.20
1550.00	0.210	276.300	1549.89	-11.03	6.76	-9.74	1751059.59	416598.72	39°38'28.3795"N	80°16'19.7421"W	11.86	304.770	1.51	-1.10	162.60
1600.00	0.450	292.900	1599.89	-11.25	6.85	-10.01	1751059.32	416598.81	39°38'28.3803"N	80°16'19.7456"W	12.13	304.373	0.51	0.48	33.20
1650.00	0.620	282.800	1649.89	-11.61	6.99	-10.46	1751058.87	416598.94	39°38'28.3816"N	80°16'19.7513"W	12.58	303.742	0.39	0.34	-20.20
1700.00	0.770	252.800	1699.89	-11.90	6.95	-11.04	1751058.29	416598.91	39°38'28.3812"N	80°16'19.7588"W	13.05	302.171	0.78	0.30	-60.00
1750.00	0.780	238.400	1749.88	-12.01	6.67	-11.65	1751057.68	416598.63	39°38'28.3784"N	80°16'19.7666"W	13.43	299.780	0.39	0.02	-28.80
1800.00	0.610	155.400	1799.88	-11.76	6.25	-11.83	1751057.50	416598.21	39°38'28.3742"N	80°16'19.7688"W	13.38	297.836	1.86	-0.34	-166.00
1850.00	0.610	147.400	1849.88	-11.23	5.78	-11.58	1751057.75	416597.74	39°38'28.3697"N	80°16'19.7655"W	12.94	296.536	0.17	0.00	-16.00
1900.00	0.610	143.200	1899.87	-10.69	5.34	-11.28	1751058.06	416597.30	39°38'28.3654"N	80°16'19.7616"W	12.48	295.361	0.09	0.00	-8.40
1950.00	0.630	145.600	1949.87	-10.15	4.90	-10.96	1751058.37	416596.86	39°38'28.3610"N	80°16'19.7575"W	12.01	294.107	0.07	0.04	4.80
2000.00	0.650	149.900	1999.87	-9.60	4.43	-10.66	1751058.67	416596.39	39°38'28.3564"N	80°16'19.7537"W	11.55	292.571	0.10	0.04	8.60
2050.00	0.710	169.200	2049.86	-9.03	3.88	-10.46	1751058.87	416595.84	39°38'28.3510"N	80°16'19.7510"W	11.16	290.360	0.47	0.12	38.60
2100.00	0.720	177.100	2099.86	-8.47	3.26	-10.39	1751058.94	416595.22	39°38'28.3449"N	80°16'19.7500"W	10.89	287.445	0.20	0.02	15.80
2150.00	0.800	213.700	2149.86	-8.07	2.66	-10.57	1751058.76	416594.62	39°38'28.3389"N	80°16'19.7522"W	10.90	284.132	0.97	0.16	73.20
2200.00	0.780	217.600	2199.85	-7.82	2.10	-10.97	1751058.36	416594.06	39°38'28.3333"N	80°16'19.7573"W	11.17	280.841	0.11	-0.04	7.80
2250.00	0.700	260.800	2249.85	-7.84	1.78	-11.48	1751057.85	416593.74	39°38'28.3301"N	80°16'19.7638"W	11.61	278.825	1.10	-0.16	86.40
2300.00	0.500	298.800	2299.84	-8.16	1.84	-11.97	1751057.36	416593.80	39°38'28.3307"N	80°16'19.7701"W	12.11	278.731	0.87	-0.40	76.00
2350.00	0.190	1.200	2349.84	-8.42	2.03	-12.16	1751057.17	416593.99	39°38'28.3325"N	80°16'19.7725"W	12.33	279.461	0.89	-0.62	124.80
2400.00	0.350	38.400	2399.84	-8.54	2.23	-12.06	1751057.27	416594.19	39°38'28.3345"N	80°16'19.7713"W	12.27	280.468	0.46	0.32	74.40
2450.00	0.450	87.300	2449.84	-8.48	2.36	-11.77	1751057.56	416594.32	39°38'28.3358"N	80°16'19.7676"W	12.01	281.326	0.69	0.20	97.80
2500.00	0.500	107.200	2499.84	-8.21	2.30	-11.37	1751057.96	416594.26	39°38'28.3353"N	80°16'19.7624"W	11.60	281.451	0.34	0.10	39.80
2550.00	0.470	97.900	2549.84	-7.91	2.21	-10.96	1751058.38	416594.17	39°38'28.3344"N	80°16'19.7572"W	11.18	281.404	0.17	-0.06	-18.60
2600.00	0.390	83.600	2599.84	-7.69	2.20	-10.58	1751058.75	416594.16	39°38'28.3344"N	80°16'19.7524"W	10.81	281.746	0.27	-0.16	-28.60
2632.00	0.610	150.600	2631.84	-7.47	2.06	-10.39	1751058.94	416594.02	39°38'28.3330"N	80°16'19.7499"W	10.59	281.236	1.82	0.69	209.37
2728.00	0.190	166.510	2727.83	-6.81	1.46	-10.10	1751059.23	416593.42	39°38'28.3271"N	80°16'19.7462"W	10.21	278.246	0.45	-0.44	16.57
2827.00	0.340	211.910	2826.83	-6.54	1.06	-10.22	1751059.11	416593.02	39°38'28.3231"N	80°16'19.7476"W	10.27	275.895	0.25	0.15	45.86
2921.00	2.730	256.790	2920.79	-7.20	0.31	-12.55	1751056.78	416592.27	39°38'28.3155"N	80°16'19.7773"W	12.55	271.401	2.66	2.54	47.74
3015.00	4.140	263.330	3014.62	-9.52	-0.60	-18.10	1751051.23	416591.36	39°38'28.3060"N	80°16'19.8481"W	18.11	268.105	1.55	1.50	6.96
3109.00	5.350	251.200	3108.30	-12.18	-2.41	-25.62	1751043.72	416589.55	39°38'28.2876"N	80°16'19.9441"W	25.73	264.636	1.67	1.29	-12.90



Actual Wellpath Report

Phoenix 8H AWP Proj: 26446'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Phoenix 8H
Field	Monongalia	API/Legal	
Facility	Phoenix Pad	Wellbore	Phoenix 8H AWB
Slot	Slot 08		

WELLPATH DATA (306 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]	
3203.00	5.980	240.150	3201.84	-13.63	-6.25	-34.01	1751035.32	416585.71	39°38'28.2488"N	80°16'20.0510"W	34.58	259.580	1.34	0.67	-11.76	
3298.00	6.900	240.760	3296.24	-14.39	-11.51	-43.28	1751026.05	416580.46	39°38'28.1961"N	80°16'20.1689"W	44.79	255.114	0.97	0.97	0.64	
3392.00	8.370	244.670	3389.41	-15.81	-17.19	-54.40	1751014.94	416574.77	39°38'28.1390"N	80°16'20.3103"W	57.05	252.461	1.66	1.56	4.16	
3487.00	10.060	244.630	3483.18	-18.00	-23.70	-68.14	1751001.19	416568.26	39°38'28.0734"N	80°16'20.4853"W	72.15	250.819	1.78	1.78	-0.04	
3582.00	11.440	245.100	3576.51	-20.62	-31.23	-84.19	1750985.15	416560.74	39°38'27.9977"N	80°16'20.6896"W	89.79	249.649	1.46	1.45	0.49	
3676.00	12.960	244.780	3668.38	-23.58	-39.64	-102.18	1750967.16	416552.32	39°38'27.9130"N	80°16'20.9186"W	109.60	248.795	1.62	1.62	-0.34	
3774.00	15.220	244.230	3763.43	-26.95	-49.92	-123.71	1750945.63	416542.04	39°38'27.8097"N	80°16'21.1927"W	133.40	248.024	2.31	2.31	-0.56	
3868.00	16.640	244.820	3853.82	-30.61	-61.01	-147.00	1750922.34	416530.95	39°38'27.6981"N	80°16'21.4892"W	159.16	247.460	1.52	1.51	0.63	
3963.00	16.860	245.780	3944.79	-34.86	-72.45	-171.87	1750897.47	416519.51	39°38'27.5829"N	80°16'21.8059"W	186.52	247.143	0.37	0.23	1.01	
4058.00	17.280	250.060	4035.61	-40.46	-82.91	-197.70	1750871.64	416509.05	39°38'27.4773"N	80°16'22.1349"W	214.39	247.247	1.39	0.44	4.51	
4152.00	17.180	247.730	4125.39	-46.49	-92.94	-223.67	1750845.67	416499.03	39°38'27.3760"N	80°16'22.4658"W	242.21	247.437	0.74	-0.11	-2.48	
4247.00	16.170	251.030	4216.39	-52.61	-102.55	-249.17	1750820.18	416489.41	39°38'27.2788"N	80°16'22.7906"W	269.45	247.629	1.46	-1.06	3.47	
4342.00	16.440	252.390	4307.57	-59.66	-110.92	-274.49	1750794.86	416481.05	39°38'27.1940"N	80°16'23.1134"W	296.06	247.996	0.49	0.28	1.43	
4436.00	16.850	250.350	4397.63	-66.63	-119.53	-300.00	1750769.35	416472.44	39°38'27.1068"N	80°16'23.4385"W	322.94	248.277	0.76	0.44	-2.17	
4531.00	16.680	247.000	4488.60	-72.47	-129.48	-325.52	1750743.83	416462.48	39°38'27.0062"N	80°16'23.7636"W	350.33	248.308	1.03	-0.18	-3.53	
4625.00	16.130	248.240	4578.77	-77.64	-139.60	-350.06	1750719.29	416452.37	39°38'26.9042"N	80°16'24.0762"W	376.87	248.259	0.69	-0.59	1.32	
4720.00	16.030	248.890	4670.06	-83.20	-149.21	-374.56	1750694.80	416442.76	39°38'26.8071"N	80°16'24.3882"W	403.18	248.279	0.22	-0.11	0.68	
4819.00	15.990	249.390	4765.22	-89.24	-158.94	-400.07	1750669.28	416433.03	39°38'26.7088"N	80°16'24.7133"W	430.48	248.334	0.15	-0.04	0.51	
4914.00	15.660	248.730	4856.62	-94.93	-168.19	-424.27	1750645.09	416423.78	39°38'26.6153"N	80°16'25.0215"W	456.39	248.375	0.40	-0.35	-0.69	
5009.00	15.890	245.800	4948.04	-99.80	-178.18	-448.08	1750621.28	416413.80	39°38'26.5146"N	80°16'25.3248"W	482.20	248.315	0.87	0.24	-3.08	
5104.00	17.110	249.720	5039.13	-105.16	-188.35	-473.05	1750596.31	416403.62	39°38'26.4119"N	80°16'25.6429"W	509.17	248.289	1.74	1.28	4.13	
5198.00	16.450	251.890	5129.13	-111.92	-197.28	-498.67	1750570.69	416394.69	39°38'26.3215"N	80°16'25.9694"W	536.28	248.416	0.97	-0.70	2.31	
5293.00	15.500	249.140	5220.46	-118.32	-205.98	-523.32	1750546.04	416385.99	39°38'26.2334"N	80°16'26.2835"W	562.40	248.515	1.28	-1.00	-2.89	
5388.00	15.220	249.920	5312.06	-124.05	-214.78	-546.89	1750522.47	416377.19	39°38'26.1444"N	80°16'26.5839"W	587.56	248.558	0.37	-0.29	0.82	
5483.00	15.490	247.970	5403.67	-129.52	-223.82	-570.36	1750499.00	416368.15	39°38'26.0530"N	80°16'26.8829"W	612.71	248.574	0.61	0.28	-2.05	
5579.00	15.380	245.540	5496.21	-134.13	-233.90	-593.84	1750475.53	416358.07	39°38'25.9514"N	80°16'27.1818"W	638.24	248.501	0.68	-0.11	-2.53	
5673.00	15.380	246.540	5586.85	-138.31	-244.03	-616.62	1750452.75	416347.95	39°38'25.8494"N	80°16'27.4719"W	663.15	248.409	0.28	0.00	1.06	
5767.00	15.830	250.260	5677.38	-143.59	-253.32	-640.12	1750429.25	416338.66	39°38'25.7556"N	80°16'27.7713"W	688.42	248.409	1.17	0.48	3.96	
5862.00	16.010	253.530	5768.74	-150.57	-261.41	-664.88	1750404.49	416330.56	39°38'25.6735"N	80°16'28.0869"W	714.42	248.537	0.96	0.19	3.44	
5957.00	16.560	252.950	5859.93	-158.30	-269.09	-690.39	1750378.99	416322.88	39°38'25.5954"N	80°16'28.4121"W	740.98	248.705	0.60	0.58	-0.61	

REFERENCE WELLPATH IDENTIFICATION			
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Field	Monongalia	API/Legal	
Facility	Phoenix Pad	Wellbore	Phoenix 8H AWB
Slot	Slot 08		

WELLPATH DATA (306 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]
6051.00	17.460	251.300	5949.82	-165.75	-277.54	-716.55	1750352.82	416314.43	39°38'25.5097"N	80°16'28.7456"W	768.42	248.827	1.09	0.96	-1.76
6150.00	18.290	248.810	6044.04	-172.93	-287.92	-745.10	1750324.27	416304.06	39°38'25.4047"N	80°16'29.1094"W	798.80	248.873	1.14	0.84	-2.52
6245.00	17.810	247.570	6134.36	-178.96	-298.85	-772.43	1750296.94	416293.13	39°38'25.2943"N	80°16'29.4576"W	828.23	248.849	0.65	-0.51	-1.31
6340.00	15.870	245.100	6225.29	-183.75	-309.87	-797.65	1750271.73	416282.11	39°38'25.1833"N	80°16'29.7786"W	855.72	248.770	2.18	-2.04	-2.60
6434.00	13.610	245.510	6316.19	-187.46	-319.86	-819.37	1750250.01	416272.12	39°38'25.0827"N	80°16'30.0552"W	879.59	248.675	2.41	-2.40	0.44
6528.00	13.090	253.410	6407.65	-192.34	-327.49	-839.64	1750229.74	416264.49	39°38'25.0056"N	80°16'30.3135"W	901.25	248.693	2.02	-0.55	8.40
6623.00	14.100	253.250	6499.99	-198.85	-333.89	-861.03	1750208.35	416258.09	39°38'24.9405"N	80°16'30.5862"W	923.50	248.804	1.06	1.06	-0.17
6718.00	15.230	249.930	6591.90	-205.14	-341.51	-883.83	1750185.55	416250.47	39°38'24.8633"N	80°16'30.8768"W	947.52	248.874	1.48	1.19	-3.49
6813.00	16.900	248.830	6683.18	-211.04	-350.78	-908.43	1750160.95	416241.20	39°38'24.7696"N	80°16'31.1902"W	973.80	248.886	1.79	1.76	-1.16
6908.00	17.680	250.040	6773.89	-217.43	-360.69	-934.87	1750134.52	416231.29	39°38'24.6694"N	80°16'31.5270"W	1002.04	248.902	0.90	0.82	1.27
7002.00	16.370	249.300	6863.77	-223.77	-370.25	-960.68	1750108.71	416221.73	39°38'24.5727"N	80°16'31.8559"W	1029.56	248.923	1.41	-1.39	-0.79
7098.00	15.820	252.810	6956.01	-230.50	-378.90	-985.83	1750083.56	416213.09	39°38'24.4851"N	80°16'32.1765"W	1056.14	248.976	1.16	-0.57	3.66
7193.00	14.540	255.970	7047.69	-238.17	-385.62	-1009.78	1750059.62	416206.37	39°38'24.4167"N	80°16'32.4818"W	1080.90	249.099	1.60	-1.35	3.33
7288.00	14.580	253.950	7139.64	-245.78	-391.81	-1032.84	1750036.56	416200.17	39°38'24.3534"N	80°16'32.7759"W	1104.66	249.225	0.54	0.04	-2.13
7403.00	14.430	231.770	7251.06	-249.00	-404.69	-1058.02	1750011.37	416187.29	39°38'24.2240"N	80°16'33.0964"W	1132.78	249.068	4.80	-0.13	-19.29
7497.00	13.700	214.830	7342.28	-243.97	-421.08	-1073.59	1749995.81	416170.90	39°38'24.0607"N	80°16'33.2935"W	1153.21	248.584	4.43	-0.78	-18.02
7592.00	13.560	192.950	7434.67	-232.18	-441.19	-1082.51	1749986.88	416150.80	39°38'23.8613"N	80°16'33.4054"W	1168.97	247.826	5.40	-0.15	-23.03
7687.00	16.600	175.470	7526.43	-212.65	-465.59	-1083.94	1749985.46	416126.40	39°38'23.6200"N	80°16'33.4209"W	1179.70	246.755	5.72	3.20	-18.40
7781.00	21.260	157.350	7615.40	-184.15	-494.74	-1076.30	1749993.09	416097.25	39°38'23.3326"N	80°16'33.3201"W	1184.57	245.313	7.93	4.96	-19.28
7876.00	23.540	157.870	7703.23	-148.65	-528.21	-1062.52	1750006.87	416063.78	39°38'23.0029"N	80°16'33.1403"W	1186.58	243.567	2.41	2.40	0.55
7971.00	29.960	155.530	7788.02	-106.59	-567.42	-1045.53	1750023.86	416024.58	39°38'22.6169"N	80°16'32.9188"W	1189.58	241.511	6.85	6.76	-2.46
8064.00	37.170	153.830	7865.46	-55.74	-613.83	-1023.49	1750045.90	415978.17	39°38'22.1601"N	80°16'32.6319"W	1193.45	239.047	7.82	7.75	-1.83
8158.00	44.210	151.450	7936.70	5.14	-668.18	-995.27	1750074.12	415923.82	39°38'21.6255"N	80°16'32.2652"W	1198.76	236.124	7.67	7.49	-2.53
8253.00	49.690	149.430	8001.53	74.35	-728.51	-960.99	1750108.40	415863.50	39°38'21.0322"N	80°16'31.8204"W	1205.91	232.835	5.97	5.77	-2.13
8348.00	55.140	148.860	8059.45	149.52	-793.10	-922.38	1750147.00	415798.91	39°38'20.3971"N	80°16'31.3197"W	1216.47	229.310	5.76	5.74	-0.60
8443.00	62.440	148.480	8108.64	230.65	-862.45	-880.15	1750189.23	415729.56	39°38'19.7153"N	80°16'30.7723"W	1232.27	225.582	7.69	7.68	-0.40
8538.00	68.390	146.810	8148.15	316.98	-935.38	-833.92	1750235.46	415656.64	39°38'18.9986"N	80°16'30.1733"W	1253.14	221.718	6.46	6.26	-1.76
8633.00	73.140	147.270	8179.44	406.64	-1010.62	-785.14	1750284.24	415581.40	39°38'18.2592"N	80°16'29.5415"W	1279.76	217.843	5.02	5.00	0.48
8728.00	78.580	147.780	8202.64	498.71	-1088.31	-735.70	1750333.68	415503.72	39°38'17.4956"N	80°16'28.9010"W	1313.65	214.059	5.75	5.73	0.54
8822.00	82.250	147.890	8218.29	591.35	-1166.76	-686.37	1750383.01	415425.27	39°38'16.7246"N	80°16'28.2618"W	1353.67	210.467	3.91	3.90	0.12



Actual Wellpath Report

Phoenix 8H AWP Proj: 26446'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Phoenix 8H
Field	Monongalia	API/Legal	
Facility	Phoenix Pad	Wellbore	Phoenix 8H AWB
Slot	Slot 08		

WELLPATH DATA (306 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]
8917.00	89.540	147.850	8225.09	686.01	-1246.95	-636.00	1750433.37	415345.09	39°38'15.9364"N	80°16'27.6092"W	1399.78	207.024	7.67	7.67	-0.04
9011.00	90.580	148.170	8224.99	779.97	-1326.67	-586.21	1750483.16	415265.37	39°38'15.1527"N	80°16'26.9639"W	1450.41	203.839	1.16	1.11	0.34
9106.00	91.820	147.780	8223.00	874.91	-1407.19	-535.84	1750533.52	415184.85	39°38'14.3612"N	80°16'26.3113"W	1505.76	200.846	1.37	1.31	-0.41
9200.00	92.710	147.340	8219.28	968.82	-1486.46	-485.46	1750583.90	415105.59	39°38'13.5822"N	80°16'25.6586"W	1563.73	198.086	1.06	0.95	-0.47
9307.00	92.030	145.770	8214.86	1075.72	-1575.66	-426.54	1750642.82	415016.39	39°38'12.7056"N	80°16'24.8957"W	1632.38	195.147	1.60	-0.64	-1.47
9402.00	91.260	146.030	8212.13	1170.68	-1654.30	-373.30	1750696.05	414937.76	39°38'11.9331"N	80°16'24.2065"W	1695.89	192.716	0.86	-0.81	0.27
9497.00	90.520	146.030	8210.65	1265.66	-1733.07	-320.23	1750749.12	414858.99	39°38'11.1591"N	80°16'23.5195"W	1762.41	190.469	0.78	-0.78	0.00
9592.00	90.060	145.890	8210.17	1360.66	-1811.79	-267.05	1750802.30	414780.28	39°38'10.3856"N	80°16'22.8311"W	1831.37	188.385	0.51	-0.48	-0.15
9688.00	90.000	145.910	8210.12	1456.65	-1891.29	-213.23	1750856.12	414700.79	39°38'9.6046"N	80°16'22.1345"W	1903.27	186.432	0.07	-0.06	0.02
9782.00	89.940	145.620	8210.17	1550.65	-1969.00	-160.34	1750909.00	414623.08	39°38'8.8411"N	80°16'21.4500"W	1975.52	184.656	0.32	-0.06	-0.31
9876.00	89.970	145.710	8210.25	1644.64	-2046.62	-107.32	1750962.01	414545.46	39°38'8.0785"N	80°16'20.7638"W	2049.43	183.002	0.10	0.03	0.10
9971.00	89.910	145.710	8210.35	1739.64	-2125.11	-53.80	1751015.53	414466.98	39°38'7.3074"N	80°16'20.0711"W	2125.79	181.450	0.06	-0.06	0.00
10066.00	89.910	145.790	8210.50	1834.63	-2203.64	-0.34	1751068.99	414388.46	39°38'6.5359"N	80°16'19.3791"W	2203.64	180.009	0.08	0.00	0.08
10162.00	90.060	145.500	8210.52	1930.62	-2282.89	53.84	1751123.16	414309.21	39°38'5.7572"N	80°16'18.6780"W	2283.52	178.649	0.34	0.16	-0.30
10256.00	90.150	145.760	8210.35	2024.61	-2360.48	106.90	1751176.23	414231.63	39°38'4.9950"N	80°16'17.9912"W	2362.90	177.407	0.29	0.10	0.28
10351.00	89.910	145.430	8210.30	2119.61	-2438.86	160.58	1751229.90	414153.25	39°38'4.2249"N	80°16'17.2965"W	2444.14	176.233	0.43	-0.25	-0.35
10447.00	89.940	145.740	8210.42	2215.60	-2518.06	214.84	1751284.16	414074.06	39°38'3.4469"N	80°16'16.5943"W	2527.20	175.123	0.32	0.03	0.32
10540.00	89.910	145.630	8210.55	2308.59	-2594.87	267.27	1751336.58	413997.25	39°38'2.6922"N	80°16'15.9158"W	2608.60	174.119	0.12	-0.03	-0.12
10635.00	89.750	145.320	8210.83	2403.58	-2673.14	321.11	1751390.42	413918.99	39°38'1.9233"N	80°16'15.2191"W	2692.35	173.150	0.37	-0.17	-0.33
10733.00	89.780	145.530	8211.23	2501.56	-2753.83	376.72	1751446.03	413838.30	39°38'1.1306"N	80°16'14.4994"W	2779.48	172.210	0.22	0.03	0.21
10828.00	89.290	145.800	8212.00	2596.55	-2832.27	430.30	1751499.61	413759.86	39°38'0.3599"N	80°16'13.8060"W	2864.77	171.361	0.59	-0.52	0.28
10923.00	88.860	144.370	8213.53	2691.51	-2910.16	484.67	1751553.97	413681.98	39°37'59.5947"N	80°16'13.1026"W	2950.24	170.545	1.57	-0.45	-1.51
11018.00	89.200	145.630	8215.14	2786.47	-2987.97	539.15	1751608.45	413604.18	39°37'58.8304"N	80°16'12.3978"W	3036.22	169.772	1.37	0.36	1.33
11113.00	89.630	145.880	8216.11	2881.46	-3066.49	592.61	1751661.90	413525.66	39°37'58.0589"N	80°16'11.7059"W	3123.23	169.062	0.52	0.45	0.26
11208.00	89.660	145.640	8216.70	2976.45	-3145.03	646.06	1751715.35	413447.13	39°37'57.2873"N	80°16'11.0142"W	3210.70	168.392	0.25	0.03	-0.25
11303.00	90.030	145.070	8216.96	3071.44	-3223.18	700.07	1751769.35	413368.98	39°37'56.5195"N	80°16'10.3154"W	3298.33	167.746	0.72	0.39	-0.60
11397.00	91.230	146.170	8215.92	3165.42	-3300.75	753.14	1751822.42	413291.41	39°37'55.7574"N	80°16'9.6285"W	3385.59	167.147	1.73	1.28	1.17
11492.00	89.940	145.950	8214.95	3260.41	-3379.56	806.18	1751875.46	413212.61	39°37'54.9831"N	80°16'8.9420"W	3474.39	166.583	1.38	-1.36	-0.23
11587.00	91.170	146.530	8214.03	3355.40	-3458.54	858.97	1751928.24	413133.64	39°37'54.2071"N	80°16'8.2587"W	3563.61	166.052	1.43	1.29	0.61
11682.00	91.690	147.170	8211.66	3450.37	-3538.05	910.90	1751980.17	413054.13	39°37'53.4257"N	80°16'7.5863"W	3653.43	165.562	0.87	0.55	0.67



Actual Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Phoenix 8H
Field	Monongalia	API/Legal	
Facility	Phoenix Pad	Wellbore	Phoenix 8H AWB
Slot	Slot 08		

WELLPATH DATA (306 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]
11777.00	89.850	145.650	8210.39	3545.36	-3617.17	963.45	1752032.72	412975.01	39°37'52.6482"N	80°16'6.9060"W	3743.28	165.085	2.51	-1.94	-1.60
11872.00	90.980	146.040	8209.70	3640.35	-3695.78	1016.78	1752086.05	412896.40	39°37'51.8758"N	80°16'6.2158"W	3833.10	164.617	1.26	1.19	0.41
11967.00	89.230	146.610	8209.52	3735.34	-3774.84	1069.46	1752138.72	412817.35	39°37'51.0990"N	80°16'5.5339"W	3923.41	164.182	1.94	-1.84	0.60
12063.00	91.170	146.410	8209.19	3831.34	-3854.90	1122.43	1752191.69	412737.30	39°37'50.3123"N	80°16'4.8482"W	4014.98	163.766	2.03	2.02	-0.21
12158.00	90.310	146.640	8207.96	3926.33	-3934.13	1174.82	1752244.08	412658.07	39°37'49.5336"N	80°16'4.1699"W	4105.80	163.373	0.94	-0.91	0.24
12253.00	90.460	147.240	8207.32	4021.32	-4013.75	1226.64	1752295.90	412578.46	39°37'48.7512"N	80°16'3.4989"W	4197.00	163.006	0.65	0.16	0.63
12348.00	90.860	146.170	8206.23	4116.31	-4093.15	1278.79	1752348.04	412499.06	39°37'47.9709"N	80°16'2.8238"W	4288.26	162.650	1.20	0.42	-1.13
12443.00	90.770	146.870	8204.88	4211.30	-4172.38	1331.19	1752400.44	412419.84	39°37'47.1924"N	80°16'2.1454"W	4379.59	162.305	0.74	-0.09	0.74
12538.00	90.150	146.840	8204.12	4306.29	-4251.92	1383.13	1752452.37	412340.30	39°37'46.4107"N	80°16'1.4729"W	4471.22	161.981	0.65	-0.65	-0.03
12633.00	90.220	145.890	8203.81	4401.29	-4331.01	1435.75	1752504.99	412261.21	39°37'45.6335"N	80°16'0.7918"W	4562.79	161.659	1.00	0.07	-1.00
12728.00	90.680	146.660	8203.06	4496.29	-4410.02	1488.49	1752557.73	412182.21	39°37'44.8571"N	80°16'0.1091"W	4654.45	161.349	0.94	0.48	0.81
12823.00	90.280	146.470	8202.27	4591.28	-4489.30	1540.83	1752610.07	412102.94	39°37'44.0781"N	80°15'59.4315"W	4746.36	161.057	0.47	-0.42	-0.20
12918.00	90.650	146.420	8201.50	4686.28	-4568.46	1593.34	1752662.57	412023.78	39°37'43.3001"N	80°15'58.7518"W	4838.34	160.773	0.39	0.39	-0.05
13013.00	90.710	146.530	8200.37	4781.27	-4647.65	1645.81	1752715.04	411944.59	39°37'42.5219"N	80°15'58.0727"W	4930.45	160.500	0.13	0.06	0.12
13106.00	90.060	146.500	8199.74	4874.27	-4725.21	1697.12	1752766.34	411867.03	39°37'41.7597"N	80°15'57.4085"W	5020.74	160.244	0.70	-0.70	-0.03
13201.00	90.770	146.260	8199.06	4969.27	-4804.32	1749.71	1752818.94	411787.93	39°37'40.9824"N	80°15'56.7277"W	5113.02	159.989	0.79	0.75	-0.25
13297.00	90.430	146.760	8198.05	5065.26	-4884.38	1802.68	1752871.90	411707.88	39°37'40.1957"N	80°15'56.0420"W	5206.42	159.742	0.63	-0.35	0.52
13392.00	90.520	146.990	8197.26	5160.25	-4963.94	1854.59	1752923.81	411628.33	39°37'39.4138"N	80°15'55.3699"W	5299.07	159.514	0.26	0.09	0.24
13487.00	90.400	146.060	8196.50	5255.25	-5043.18	1906.99	1752976.21	411549.09	39°37'38.6351"N	80°15'54.6916"W	5391.68	159.287	0.99	-0.13	-0.98
13582.00	90.400	146.550	8195.84	5350.25	-5122.21	1959.69	1753028.90	411470.06	39°37'37.8585"N	80°15'54.0095"W	5484.29	159.064	0.52	0.00	0.52
13678.00	90.430	146.630	8195.14	5446.24	-5202.35	2012.55	1753081.76	411389.93	39°37'37.0710"N	80°15'53.3252"W	5578.06	158.851	0.09	0.03	0.08
13773.00	90.800	146.710	8194.12	5541.24	-5281.72	2064.75	1753133.95	411310.57	39°37'36.2910"N	80°15'52.6496"W	5670.95	158.648	0.40	0.39	0.08
13868.00	90.550	146.870	8193.00	5636.23	-5361.19	2116.78	1753185.98	411231.09	39°37'35.5099"N	80°15'51.9760"W	5763.95	158.454	0.31	-0.26	0.17
13964.00	91.110	146.690	8191.61	5732.22	-5441.50	2169.37	1753238.56	411150.80	39°37'34.7208"N	80°15'51.2952"W	5857.99	158.264	0.61	0.58	-0.19
14058.00	90.060	146.610	8190.65	5826.21	-5520.01	2221.04	1753290.23	411072.29	39°37'33.9492"N	80°15'50.6263"W	5950.09	158.082	1.12	-1.12	-0.09
14154.00	90.460	146.350	8190.22	5922.21	-5600.05	2274.05	1753343.24	410992.26	39°37'33.1627"N	80°15'49.9401"W	6044.16	157.899	0.50	0.42	-0.27
14249.00	90.800	146.820	8189.17	6017.20	-5679.34	2326.36	1753395.55	410912.97	39°37'32.3835"N	80°15'49.2629"W	6137.33	157.725	0.61	0.36	0.49
14345.00	91.260	145.720	8187.45	6113.18	-5759.16	2379.66	1753448.85	410833.15	39°37'31.5991"N	80°15'48.5731"W	6231.43	157.550	1.24	0.48	-1.15
14440.00	90.650	146.440	8185.86	6208.17	-5837.98	2432.67	1753501.85	410754.33	39°37'30.8246"N	80°15'47.8872"W	6324.55	157.379	0.99	-0.64	0.76
14535.00	91.600	146.810	8184.00	6303.15	-5917.30	2484.92	1753554.10	410675.02	39°37'30.0451"N	80°15'47.2109"W	6417.89	157.220	1.07	1.00	0.39



Actual Wellpath Report

Phoenix 8H AWP Proj: 26446'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Phoenix 8H
Field	Monongalia	API/Legal	
Facility	Phoenix Pad	Wellbore	Phoenix 8H AWB
Slot	Slot 08		

WELLPATH DATA (306 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]
14631.00	91.380	145.980	8181.50	6399.11	-5997.23	2538.03	1753607.21	410595.10	39°37'29.2596"N	80°15'46.5234"W	6512.17	157.062	0.89	-0.23	-0.86
14726.00	90.550	146.540	8179.90	6494.10	-6076.22	2590.79	1753659.96	410516.12	39°37'28.4835"N	80°15'45.8406"W	6605.50	156.907	1.05	-0.87	0.59
14822.00	91.420	146.710	8178.25	6590.08	-6156.37	2643.59	1753712.76	410435.97	39°37'27.6958"N	80°15'45.1571"W	6699.96	156.761	0.92	0.91	0.18
14917.00	90.710	146.730	8176.49	6685.06	-6235.78	2695.71	1753764.88	410356.56	39°37'26.9154"N	80°15'44.4825"W	6793.51	156.621	0.75	-0.75	0.02
15012.00	90.490	145.030	8175.49	6780.05	-6314.42	2749.00	1753818.16	410277.93	39°37'26.1427"N	80°15'43.7930"W	6886.86	156.474	1.80	-0.23	-1.79
15107.00	90.550	145.960	8174.63	6875.04	-6392.70	2802.81	1753871.97	410199.65	39°37'25.3736"N	80°15'43.0968"W	6980.14	156.325	0.98	0.06	0.98
15203.00	91.350	146.860	8173.04	6971.02	-6472.66	2855.91	1753925.07	410119.70	39°37'24.5878"N	80°15'42.4095"W	7074.71	156.192	1.25	0.83	0.94
15298.00	90.710	145.670	8171.33	7066.00	-6551.65	2908.66	1753977.81	410040.71	39°37'23.8116"N	80°15'41.7269"W	7168.29	156.061	1.42	-0.67	-1.25
15393.00	90.740	146.240	8170.13	7160.99	-6630.36	2961.84	1754030.99	409962.01	39°37'23.0382"N	80°15'41.0388"W	7261.83	155.929	0.60	0.03	0.60
15488.00	91.050	146.430	8168.64	7255.98	-6709.41	3014.50	1754083.64	409882.96	39°37'22.2613"N	80°15'40.3573"W	7355.50	155.806	0.38	0.33	0.20
15584.00	90.460	146.910	8167.38	7351.97	-6789.62	3067.24	1754136.38	409802.76	39°37'21.4731"N	80°15'39.6746"W	7450.29	155.689	0.79	-0.61	0.50
15679.00	90.150	147.720	8166.87	7446.95	-6869.57	3118.54	1754187.68	409722.81	39°37'20.6873"N	80°15'39.0104"W	7544.29	155.584	0.91	-0.33	0.85
15774.00	90.620	147.720	8166.23	7541.93	-6949.89	3169.27	1754238.41	409642.50	39°37'19.8978"N	80°15'38.3534"W	7638.41	155.486	0.49	0.49	0.00
15869.00	91.020	148.490	8164.87	7636.87	-7030.54	3219.46	1754288.60	409561.86	39°37'19.1050"N	80°15'37.7033"W	7732.62	155.396	0.91	0.42	0.81
15964.00	90.740	147.310	8163.42	7731.82	-7111.00	3269.94	1754339.07	409481.39	39°37'18.3140"N	80°15'37.0495"W	7826.80	155.305	1.28	-0.29	-1.24
16060.00	90.740	147.430	8162.18	7827.80	-7191.84	3321.70	1754390.83	409400.56	39°37'17.5194"N	80°15'36.3793"W	7921.89	155.209	0.12	0.00	0.12
16154.00	90.620	147.460	8161.06	7921.78	-7271.07	3372.28	1754441.40	409321.34	39°37'16.7407"N	80°15'35.7244"W	8015.03	155.118	0.13	-0.13	0.03
16249.00	90.740	147.980	8159.93	8016.75	-7351.38	3423.01	1754492.13	409241.03	39°37'15.9512"N	80°15'35.0675"W	8109.24	155.032	0.56	0.13	0.55
16344.00	90.430	147.430	8158.96	8111.71	-7431.68	3473.76	1754542.88	409160.74	39°37'15.1619"N	80°15'34.4102"W	8203.47	154.947	0.66	-0.33	-0.58
16439.00	90.740	147.910	8157.99	8206.68	-7511.95	3524.57	1754593.68	409080.47	39°37'14.3729"N	80°15'33.7524"W	8297.71	154.864	0.60	0.33	0.51
16535.00	90.310	147.000	8157.11	8302.66	-7592.87	3576.21	1754645.32	408999.56	39°37'13.5775"N	80°15'33.0837"W	8392.91	154.780	1.05	-0.45	-0.95
16630.00	90.890	147.920	8156.12	8397.64	-7672.95	3627.30	1754696.41	408919.48	39°37'12.7903"N	80°15'32.4221"W	8487.14	154.698	1.14	0.61	0.97
16725.00	90.620	146.490	8154.87	8492.62	-7752.80	3678.75	1754747.86	408839.64	39°37'12.0055"N	80°15'31.7560"W	8581.32	154.615	1.53	-0.28	-1.51
16821.00	90.770	146.690	8153.70	8588.61	-7832.93	3731.61	1754800.71	408759.51	39°37'11.2180"N	80°15'31.0720"W	8676.39	154.527	0.26	0.16	0.21
16915.00	90.180	146.500	8152.92	8682.61	-7911.40	3783.36	1754852.46	408681.05	39°37'10.4469"N	80°15'30.4022"W	8769.49	154.442	0.66	-0.63	-0.20
17011.00	90.580	146.570	8152.29	8778.60	-7991.48	3836.29	1754905.39	408600.97	39°37'9.6599"N	80°15'29.7171"W	8864.59	154.357	0.42	0.42	0.07
17106.00	90.550	146.090	8151.35	8873.60	-8070.54	3888.96	1754958.05	408521.92	39°37'8.8829"N	80°15'29.0356"W	8958.66	154.272	0.51	-0.03	-0.51
17201.00	90.310	146.630	8150.64	8968.59	-8149.63	3941.59	1755010.68	408442.83	39°37'8.1057"N	80°15'28.3546"W	9052.76	154.189	0.62	-0.25	0.57
17297.00	89.720	147.360	8150.61	9064.59	-8230.13	3993.88	1755062.96	408362.33	39°37'7.3145"N	80°15'27.6777"W	9148.01	154.114	0.98	-0.61	0.76
17391.00	90.370	146.810	8150.54	9158.58	-8309.04	4044.96	1755114.04	408283.42	39°37'6.5389"N	80°15'27.0165"W	9241.31	154.043	0.91	0.69	-0.59



Actual Wellpath Report

Phoenix 8H AWP Proj: 26446'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Phoenix 8H
Field	Monongalia	API/Legal	
Facility	Phoenix Pad	Wellbore	Phoenix 8H AWB
Slot	Slot 08		

WELLPATH DATA (306 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]
17486.00	89.260	146.820	8150.84	9253.57	-8388.55	4096.95	1755166.03	408203.92	39°37'5.7575"N	80°15'26.3435"W	9335.56	153.969	1.17	-1.17	0.01
17582.00	88.400	146.510	8152.80	9349.55	-8468.74	4149.70	1755218.77	408123.74	39°37'4.9694"N	80°15'25.6609"W	9430.77	153.895	0.95	-0.90	-0.32
17677.00	88.680	146.510	8155.22	9444.52	-8547.94	4202.10	1755271.17	408044.54	39°37'4.1911"N	80°15'24.9828"W	9524.96	153.822	0.29	0.29	0.00
17772.00	89.600	146.610	8156.65	9539.51	-8627.20	4254.44	1755323.51	407965.29	39°37'3.4121"N	80°15'24.3054"W	9619.20	153.750	0.97	0.97	0.11
17866.00	89.510	146.870	8157.38	9633.50	-8705.80	4306.00	1755375.06	407886.69	39°37'2.6396"N	80°15'23.6382"W	9712.50	153.682	0.29	-0.10	0.28
17961.00	89.320	146.540	8158.35	9728.50	-8785.20	4358.14	1755427.21	407807.29	39°37'1.8593"N	80°15'22.9633"W	9806.80	153.615	0.40	-0.20	-0.35
18056.00	88.460	145.310	8160.19	9823.47	-8863.88	4411.36	1755480.42	407728.63	39°37'1.0862"N	80°15'22.2748"W	9900.93	153.541	1.58	-0.91	-1.29
18152.00	87.880	146.350	8163.26	9919.42	-8943.26	4465.25	1755534.31	407649.25	39°37'0.3061"N	80°15'21.5777"W	9996.02	153.468	1.24	-0.60	1.08
18247.00	88.090	146.530	8166.60	10014.36	-9022.38	4517.73	1755586.79	407570.13	39°36'59.5286"N	80°15'20.8985"W	10090.25	153.402	0.29	0.22	0.19
18342.00	87.850	146.380	8169.96	10109.30	-9101.51	4570.20	1755639.25	407491.01	39°36'58.7510"N	80°15'20.2197"W	10184.50	153.337	0.30	-0.25	-0.16
18437.00	87.290	145.760	8173.99	10204.21	-9180.26	4623.17	1755692.22	407412.26	39°36'57.9771"N	80°15'19.5342"W	10278.66	153.270	0.88	-0.59	-0.65
18533.00	87.200	146.940	8178.60	10300.10	-9260.08	4676.31	1755745.35	407332.45	39°36'57.1927"N	80°15'18.8467"W	10373.86	153.206	1.23	-0.09	1.23
18628.00	86.310	146.930	8183.98	10394.94	-9339.56	4728.06	1755797.10	407252.97	39°36'56.4115"N	80°15'18.1770"W	10468.14	153.150	0.94	-0.94	-0.01
18723.00	86.800	146.200	8189.69	10489.77	-9418.70	4780.30	1755849.34	407173.84	39°36'55.6338"N	80°15'17.5008"W	10562.35	153.091	0.92	0.52	-0.77
18818.00	86.210	146.710	8195.48	10584.59	-9497.73	4832.70	1755901.74	407094.81	39°36'54.8571"N	80°15'16.8228"W	10656.54	153.032	0.82	-0.62	0.54
18913.00	86.430	146.610	8201.58	10679.39	-9576.93	4884.81	1755953.84	407015.62	39°36'54.0787"N	80°15'16.1485"W	10750.76	152.976	0.25	0.23	-0.11
19009.00	87.170	146.750	8206.94	10775.24	-9657.02	4937.46	1756006.49	406935.53	39°36'53.2915"N	80°15'15.4672"W	10846.04	152.920	0.78	0.77	0.15
19104.00	87.910	146.470	8211.02	10870.15	-9736.27	4989.69	1756058.72	406856.29	39°36'52.5127"N	80°15'14.7913"W	10940.38	152.866	0.83	0.78	-0.29
19199.00	88.240	146.400	8214.21	10965.10	-9815.38	5042.19	1756111.21	406777.18	39°36'51.7352"N	80°15'14.1120"W	11034.74	152.810	0.36	0.35	-0.07
19295.00	87.410	146.520	8217.85	11061.03	-9895.34	5095.19	1756164.21	406697.22	39°36'50.9494"N	80°15'13.4262"W	11130.08	152.756	0.87	-0.86	0.13
19390.00	87.350	146.250	8222.19	11155.93	-9974.37	5147.73	1756216.74	406618.20	39°36'50.1727"N	80°15'12.7464"W	11224.40	152.702	0.29	-0.06	-0.28
19485.00	87.440	146.480	8226.51	11250.83	-10053.39	5200.29	1756269.31	406539.19	39°36'49.3962"N	80°15'12.0663"W	11318.73	152.649	0.26	0.09	0.24
19580.00	87.690	146.420	8230.55	11345.75	-10132.49	5252.75	1756321.76	406460.09	39°36'48.6188"N	80°15'11.3876"W	11413.09	152.597	0.27	0.26	-0.06
19675.00	87.780	146.710	8234.30	11440.67	-10211.71	5305.05	1756374.06	406380.88	39°36'47.8403"N	80°15'10.7108"W	11507.50	152.548	0.32	0.09	0.31
19770.00	87.630	146.900	8238.11	11535.59	-10291.14	5357.02	1756426.02	406301.45	39°36'47.0596"N	80°15'10.0382"W	11601.95	152.501	0.25	-0.16	0.20
19866.00	87.630	146.650	8242.08	11631.51	-10371.38	5409.58	1756478.58	406221.22	39°36'46.2710"N	80°15'9.3581"W	11697.39	152.454	0.26	0.00	-0.26
19961.00	88.680	146.980	8245.13	11726.45	-10450.84	5461.55	1756530.54	406141.76	39°36'45.4900"N	80°15'8.6856"W	11791.89	152.409	1.16	1.11	0.35
20056.00	88.150	146.310	8247.76	11821.42	-10530.16	5513.76	1756582.75	406062.44	39°36'44.7104"N	80°15'8.0100"W	11886.37	152.363	0.90	-0.56	-0.71
20152.00	88.430	146.620	8250.63	11917.37	-10610.15	5566.77	1756635.76	405982.46	39°36'43.9243"N	80°15'7.3241"W	11981.83	152.316	0.44	0.29	0.32
20247.00	88.280	146.690	8253.35	12012.33	-10689.47	5618.97	1756687.96	405903.14	39°36'43.1447"N	80°15'6.6486"W	12076.33	152.271	0.17	-0.16	0.07

REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Phoenix 8H
Field	Monongalia	API/Legal	
Facility	Phoenix Pad	Wellbore	Phoenix 8H AWB
Slot	Slot 08		

WELLPATH DATA (306 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]
20343.00	88.370	145.740	8256.16	12108.29	-10769.23	5672.33	1756741.31	405823.39	39°36'42.3609"N	80°15'5.9583"W	12171.75	152.223	0.99	0.09	-0.99
20438.00	88.460	146.470	8258.79	12203.25	-10848.05	5725.29	1756794.27	405744.57	39°36'41.5863"N	80°15'5.2732"W	12266.18	152.176	0.77	0.09	0.77
20533.00	88.280	146.770	8261.49	12298.21	-10927.35	5777.54	1756846.51	405665.28	39°36'40.8069"N	80°15'4.5972"W	12360.70	152.134	0.37	-0.19	0.32
20629.00	88.830	146.630	8263.91	12394.18	-11007.56	5830.22	1756899.20	405585.07	39°36'40.0186"N	80°15'3.9154"W	12456.24	152.092	0.59	0.57	-0.15
20724.00	88.710	146.660	8265.95	12489.16	-11086.89	5882.45	1756951.42	405505.75	39°36'39.2389"N	80°15'3.2397"W	12550.79	152.051	0.13	-0.13	0.03
20819.00	89.750	146.720	8267.23	12584.14	-11166.28	5934.61	1757003.58	405426.37	39°36'38.4587"N	80°15'2.5647"W	12645.37	152.010	1.10	1.09	0.06
20914.00	89.420	146.600	8267.91	12679.14	-11245.64	5986.82	1757055.79	405347.01	39°36'37.6787"N	80°15'1.8892"W	12739.96	151.971	0.37	-0.35	-0.13
21010.00	87.570	146.110	8270.44	12775.10	-11325.53	6039.99	1757108.95	405267.12	39°36'36.8936"N	80°15'1.2013"W	12835.46	151.929	1.99	-1.93	-0.51
21105.00	88.310	146.940	8273.85	12870.04	-11404.72	6092.35	1757161.31	405187.94	39°36'36.1153"N	80°15'0.5238"W	12929.98	151.889	1.17	0.78	0.87
21200.00	87.970	146.580	8276.93	12964.99	-11484.13	6144.40	1757213.35	405108.53	39°36'35.3347"N	80°14'59.8504"W	13024.55	151.852	0.52	-0.36	-0.38
21296.00	89.750	147.350	8278.84	13060.96	-11564.59	6196.72	1757265.67	405028.07	39°36'34.5439"N	80°14'59.1733"W	13120.18	151.816	2.02	1.85	0.80
21391.00	88.250	146.900	8280.50	13155.93	-11644.36	6248.28	1757317.23	404948.31	39°36'33.7598"N	80°14'58.5060"W	13214.85	151.782	1.65	-1.58	-0.47
21486.00	88.620	145.540	8283.10	13250.90	-11723.30	6301.08	1757370.02	404869.38	39°36'32.9841"N	80°14'57.8230"W	13309.37	151.743	1.48	0.39	-1.43
21581.00	90.090	145.950	8284.17	13345.88	-11801.81	6354.55	1757423.49	404790.87	39°36'32.2126"N	80°14'57.1315"W	13403.84	151.700	1.61	1.55	0.43
21677.00	90.370	145.400	8283.78	13441.87	-11881.09	6408.68	1757477.62	404711.60	39°36'31.4335"N	80°14'56.4314"W	13499.31	151.658	0.64	0.29	-0.57
21772.00	91.290	146.130	8282.40	13536.86	-11959.62	6462.12	1757531.05	404633.07	39°36'30.6619"N	80°14'55.7403"W	13593.80	151.616	1.24	0.97	0.77
21867.00	90.060	145.600	8281.29	13631.84	-12038.25	6515.42	1757584.35	404554.45	39°36'29.8892"N	80°14'55.0509"W	13688.32	151.577	1.41	-1.29	-0.56
21962.00	90.430	145.240	8280.88	13726.83	-12116.46	6569.34	1757638.27	404476.24	39°36'29.1207"N	80°14'54.3537"W	13782.78	151.534	0.54	0.39	-0.38
22058.00	90.310	145.640	8280.26	13822.81	-12195.52	6623.80	1757692.72	404397.19	39°36'28.3439"N	80°14'53.6495"W	13878.23	151.492	0.44	-0.12	0.42
22153.00	90.400	147.090	8279.67	13917.81	-12274.61	6676.42	1757745.34	404318.10	39°36'27.5666"N	80°14'52.9688"W	13972.85	151.457	1.53	0.09	1.53
22248.00	90.280	145.240	8279.11	14012.80	-12353.52	6729.31	1757798.23	404239.20	39°36'26.7911"N	80°14'52.2847"W	14067.44	151.422	1.95	-0.13	-1.95
22343.00	91.080	145.910	8277.98	14107.79	-12431.87	6783.01	1757851.92	404160.85	39°36'26.0212"N	80°14'51.5902"W	14161.95	151.382	1.10	0.84	0.71
22438.00	91.050	145.780	8276.21	14202.77	-12510.47	6836.34	1757905.25	404082.25	39°36'25.2488"N	80°14'50.9006"W	14256.49	151.346	0.14	-0.03	-0.14
22534.00	91.720	145.850	8273.89	14298.73	-12589.86	6890.26	1757959.17	404002.87	39°36'24.4686"N	80°14'50.2032"W	14352.02	151.309	0.70	0.70	0.07
22629.00	92.120	145.800	8270.71	14393.67	-12668.42	6943.59	1758012.50	403924.32	39°36'23.6967"N	80°14'49.5134"W	14446.53	151.273	0.42	0.42	-0.05
22724.00	92.650	145.640	8266.76	14488.59	-12746.85	6997.05	1758065.96	403845.89	39°36'22.9260"N	80°14'48.8221"W	14541.01	151.237	0.58	0.56	-0.17
22820.00	92.930	145.900	8262.08	14584.47	-12826.12	7050.99	1758119.89	403766.62	39°36'22.1469"N	80°14'48.1245"W	14636.46	151.201	0.40	0.29	0.27
22915.00	92.710	145.920	8257.41	14679.35	-12904.70	7104.17	1758173.07	403688.05	39°36'21.3747"N	80°14'47.4367"W	14730.94	151.167	0.23	-0.23	0.02
23010.00	92.590	145.900	8253.02	14774.24	-12983.29	7157.36	1758226.26	403609.46	39°36'20.6024"N	80°14'46.7488"W	14825.44	151.133	0.13	-0.13	-0.02
23105.00	92.490	145.970	8248.81	14869.15	-13061.91	7210.52	1758279.41	403530.84	39°36'19.8298"N	80°14'46.0613"W	14919.96	151.100	0.13	-0.11	0.07

Actual Wellpath Report

Phoenix 8H AWP Proj: 26446'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Phoenix 8H
Field	Monongalia	API/Legal	
Facility	Phoenix Pad	Wellbore	Phoenix 8H AWP
Slot	Slot 08		

WELLPATH DATA (306 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]
23201.00	92.590	145.880	8244.55	14965.05	-13141.35	7264.26	1758333.14	403451.41	39°36'19.0491"N	80°14'45.3664"W	15015.48	151.067	0.14	0.10	-0.09
23296.00	92.550	145.790	8240.29	15059.95	-13219.88	7317.55	1758386.44	403372.89	39°36'18.2775"N	80°14'44.6771"W	15109.99	151.034	0.10	-0.04	-0.09
23391.00	93.200	145.900	8235.53	15154.83	-13298.40	7370.82	1758439.70	403294.38	39°36'17.5059"N	80°14'43.9883"W	15204.48	151.002	0.69	0.68	0.12
23486.00	93.140	146.480	8230.28	15249.68	-13377.21	7423.60	1758492.48	403215.57	39°36'16.7313"N	80°14'43.3056"W	15299.01	150.972	0.61	-0.06	0.61
23582.00	93.230	146.230	8224.94	15345.53	-13457.00	7476.71	1758545.58	403135.78	39°36'15.9471"N	80°14'42.6187"W	15394.55	150.943	0.28	0.09	-0.26
23677.00	93.630	145.820	8219.26	15440.36	-13535.64	7529.70	1758598.57	403057.14	39°36'15.1743"N	80°14'41.9333"W	15489.03	150.913	0.60	0.42	-0.43
23772.00	94.780	146.200	8212.29	15535.10	-13614.20	7582.67	1758651.54	402978.60	39°36'14.4023"N	80°14'41.2483"W	15583.43	150.884	1.27	1.21	0.40
23867.00	94.430	145.840	8204.67	15629.79	-13692.72	7635.59	1758704.46	402900.08	39°36'13.6306"N	80°14'40.5638"W	15677.78	150.854	0.53	-0.37	-0.38
23962.00	94.530	145.870	8197.24	15724.50	-13771.10	7688.75	1758757.61	402821.70	39°36'12.8603"N	80°14'39.8764"W	15772.14	150.824	0.11	0.11	0.03
24058.00	94.060	145.690	8190.05	15820.22	-13850.26	7742.59	1758811.45	402742.55	39°36'12.0825"N	80°14'39.1802"W	15867.50	150.794	0.52	-0.49	-0.19
24153.00	92.680	146.160	8184.47	15915.05	-13928.81	7795.72	1758864.58	402664.00	39°36'11.3105"N	80°14'38.4931"W	15961.99	150.765	1.53	-1.45	0.49
24248.00	93.140	146.090	8179.65	16009.93	-14007.59	7848.61	1758917.45	402585.23	39°36'10.5364"N	80°14'37.8092"W	16056.56	150.738	0.49	0.48	-0.07
24343.00	93.290	146.000	8174.32	16104.78	-14086.26	7901.58	1758970.43	402506.56	39°36'9.7632"N	80°14'37.1240"W	16151.09	150.710	0.18	0.16	-0.09
24438.00	93.450	146.400	8168.74	16199.61	-14165.07	7954.34	1759023.18	402427.76	39°36'8.9887"N	80°14'36.4417"W	16245.64	150.684	0.45	0.17	0.42
24533.00	93.420	146.020	8163.04	16294.44	-14243.88	8007.08	1759075.92	402348.95	39°36'8.2141"N	80°14'35.7596"W	16340.18	150.658	0.40	-0.03	-0.40
24629.00	93.790	145.950	8157.01	16390.25	-14323.29	8060.68	1759129.51	402269.54	39°36'7.4337"N	80°14'35.0665"W	16435.67	150.631	0.39	0.39	-0.07
24724.00	93.730	145.640	8150.78	16485.04	-14401.69	8113.97	1759182.80	402191.15	39°36'6.6632"N	80°14'34.3774"W	16530.13	150.603	0.33	-0.06	-0.33
24819.00	93.260	145.750	8144.99	16579.86	-14480.02	8167.41	1759236.24	402112.82	39°36'5.8935"N	80°14'33.6864"W	16624.61	150.575	0.51	-0.49	0.12
24914.00	93.270	145.910	8139.58	16674.70	-14558.50	8220.68	1759289.50	402034.36	39°36'5.1223"N	80°14'32.9976"W	16719.13	150.548	0.17	0.01	0.17
25009.00	92.580	145.830	8134.73	16769.57	-14637.03	8273.91	1759342.73	401955.83	39°36'4.3505"N	80°14'32.3092"W	16813.69	150.522	0.73	-0.73	-0.08
25105.00	92.430	145.810	8130.53	16865.47	-14716.37	8327.79	1759396.61	401876.49	39°36'3.5708"N	80°14'31.6125"W	16909.28	150.495	0.16	-0.16	-0.02
25200.00	92.590	145.590	8126.37	16960.38	-14794.78	8381.27	1759450.09	401798.09	39°36'2.8003"N	80°14'30.9210"W	17003.86	150.468	0.29	0.17	-0.23
25295.00	93.080	145.970	8121.67	17055.25	-14873.23	8434.63	1759503.45	401719.64	39°36'2.0293"N	80°14'30.2310"W	17098.43	150.442	0.65	0.52	0.40
25390.00	92.800	145.440	8116.80	17150.12	-14951.61	8488.09	1759556.90	401641.26	39°36'1.2591"N	80°14'29.5399"W	17192.98	150.416	0.63	-0.29	-0.56
25486.00	92.680	146.010	8112.21	17246.01	-15030.85	8542.09	1759610.90	401562.03	39°36'0.4804"N	80°14'28.8416"W	17288.55	150.390	0.61	-0.12	0.59
25581.00	90.770	145.520	8109.35	17340.95	-15109.35	8595.51	1759664.32	401483.53	39°35'59.7090"N	80°14'28.1509"W	17383.19	150.365	2.08	-2.01	-0.52
25676.00	91.320	145.860	8107.62	17435.93	-15187.81	8649.05	1759717.85	401405.08	39°35'58.9380"N	80°14'27.4587"W	17477.86	150.340	0.68	0.58	0.36
25771.00	91.540	146.230	8105.25	17530.90	-15266.58	8702.10	1759770.89	401326.31	39°35'58.1638"N	80°14'26.7728"W	17572.57	150.316	0.45	0.23	0.39
25867.00	90.830	145.780	8103.26	17626.88	-15346.16	8755.76	1759824.55	401246.74	39°35'57.3817"N	80°14'26.0788"W	17668.28	150.293	0.88	-0.74	-0.47
25962.00	91.050	145.770	8101.70	17721.86	-15424.70	8809.19	1759877.98	401168.21	39°35'56.6099"N	80°14'25.3881"W	17762.97	150.269	0.23	0.23	-0.01

Actual Wellpath Report

Phoenix 8H AWP Proj: 26446'

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REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Phoenix 8H
Field	Monongalia	API/Legal	
Facility	Phoenix Pad	Wellbore	Phoenix 8H AWB
Slot	Slot 08		

WELLPATH DATA (306 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]
26057.00	90.770	145.680	8100.20	17816.84	-15503.19	8862.68	1759931.47	401089.72	39°35'55.8386"N	80°14'24.6964"W	17857.66	150.245	0.31	-0.29	-0.09
26152.00	91.820	145.870	8098.05	17911.81	-15581.72	8916.10	1759984.88	401011.19	39°35'55.0668"N	80°14'24.0058"W	17952.35	150.221	1.12	1.11	0.20
26248.00	91.630	145.960	8095.16	18007.76	-15661.19	8969.87	1760038.65	400931.73	39°35'54.2858"N	80°14'23.3104"W	18048.03	150.198	0.22	-0.20	0.09
26343.00	91.720	145.960	8092.38	18102.72	-15739.88	9023.03	1760091.81	400853.04	39°35'53.5125"N	80°14'22.6231"W	18142.74	150.176	0.09	0.09	0.00
26415.00	91.660	144.790	8090.26	18174.68	-15799.10	9063.92	1760132.70	400793.83	39°35'52.9306"N	80°14'22.0945"W	18214.45	150.157	1.63	-0.08	-1.62
26440.00‡	91.660	144.790	8089.53	18199.66	-15819.52	9078.33	1760147.10	400773.41	39°35'52.7300"N	80°14'21.9083"W	18239.33	150.150	0.00	0.00	0.00

HOLE & CASING SECTIONS - Ref Wellbore: Phoenix 8H AWB Ref Wellpath: Phoenix 8H AWP Proj: 26446'

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	1528.00	1500.00	28.00	1527.89	0.00	0.00	6.82	-9.66
13.375in Casing Surface	28.00	1498.00	1470.00	28.00	1497.89	0.00	0.00	7.10	-9.56
12.25in Open Hole	1528.00	2724.00	1196.00	1527.89	2723.83	6.82	-9.66	1.48	-10.11
9.625in Casing Intermediate	28.00	2694.00	2666.00	28.00	2693.83	0.00	0.00	1.61	-10.16
8.75in Open Hole	2724.00	7354.00	4630.00	2723.83	7203.58	1.48	-10.11	-398.02	-1047.94
8.5in Open Hole	7354.00	26440.00	19086.00	7203.58	8089.53	-398.02	-1047.94	-15819.52	9078.33
5.5in Casing Production	28.00	26410.00	26382.00	28.00	8090.40	0.00	0.00	-15795.01	9061.04

Actual Wellpath Report

Phoenix 8H AWP Proj: 26446'

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REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Phoenix 8H
Field	Monongalia	API/Legal	
Facility	Phoenix Pad	Wellbore	Phoenix 8H AWB
Slot	Slot 08		

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Phoenix 8H BHL Rev-9	8150.00	-15833.28	9059.46	1760128.23	400759.65	39°35'52.5924"N	80°14'22.1479"W	point
Phoenix 8H LP Rev-6	8150.00	-1115.88	-728.66	1750340.71	415476.15	39°38'17.2238"N	80°16'28.8080"W	point
Phoenix Hardline #1 (5.19.21)	8528.00	-787.64	6047.91	1757116.87	415804.37	39°38'21.0362"N	80°15'2.2251"W	polygon
2D Polygon: dimensions not calculated								

WELLPATH COMPOSITION - Ref Wellbore: Phoenix 8H AWB Ref Wellpath: Phoenix 8H AWP Proj: 26446'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	Survey Date
28.00	2632.00	BH Generic gyro - northseeking (Standard)	01 Gyro Surveys [BH Generic Gyro-Northseeking] (50'-2632')	Phoenix 8H AWB	1/19/2022
2632.00	7288.00	OWSG MWD rev2 + HRGM	02 Tally MWD Surveys [OWSG MWD Rev.2+HRGM] (2632')(7288'-7288')	Phoenix 8H AWB	1/19/2022
7288.00	26440.00	BH AutoTrak Curve/eXpress (2019) (HRGM, Short spacing)	03 ATK Curve [HRGM+Short Spacing] (7288') (7403'-26415')	Phoenix 8H AWB	1/19/2022



Actual Wellpath Report

Phoenix 8H AWP Proj: 26446'

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REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Well	Phoenix 8H
Field	Monongalia	API/Legal	
Facility	Phoenix Pad	Wellbore	Phoenix 8H AWB
Slot	Slot 08		

COMMENTS

Wellpath general comments

API: 47061018760000

BH Job #: 111185286

Rig: Patterson 277

Duration: 1/21/2022 - 1/27/2022

01_Gyro Surveys (BH Generic Gyro-Northseeking) (50'-2632)'

02_Tally MWD Surveys (OWSG MWD Rev.2+HRGM) (2632')(2728'-7288')

03_ATK Curve (HRGM+Short Spacing) (7288') (7403'-26415')

Final Survey: 26415' MD

Projected MD at TD: 26440'

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/28/2022
Job End Date:	5/27/2022
State:	West Virginia
County:	Monongalia
API Number:	47-061-01876-00-00
Operator Name:	Northeast Natural Energy LLC
Well Name and Number:	Phoenix 8H
Latitude:	39.64120600
Longitude:	-80.27211900
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	8,198
Total Base Water Volume (gal):	35,396,508
Total Base Non Water Volume:	0



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
Water	Northeast Natural Energy	Carrier/Base Fluid	Water	7732-18-5	100.00000	87.62010	None
Sand (100 Mesh Proppant)	ProFrac	Proppant	Silica Substrate	14808-60-7	100.00000	9.35287	None
Sand (40/70 White Proppant)	ProFrac	Proppant	Silica Substrate	14808-60-7	100.00000	2.73037	None
Hydrochloric Acid (7.5%)	CNR	Acidizing	Water	7732-18-5	85.00000	0.16050	None
			Hydrochloric Acid (Hydrogen Chloride)	7647-01-0	37.00000	0.06986	None
StimSTREAM FR 9800	Chemstream	Friction Reducer	alkanes, C16-20-iso-	90622-59-6	25.00000	0.01505	None
			Butene, homopolymer	9003-29-6	25.00000	0.01505	None
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00181	None
Clearal 268	Chemstream	Biocide	Non-hazardous substances	Proprietary	80.00000	0.02136	None

			Glutaraldehyde	111-30-8	20.00000	0.00534	None
			Didecyl dimethyl ammonium chloride	7173-51-5	3.00000	0.00080	None
			Quaternary Ammonium Compounds	68424-85-1	3.00000	0.00080	None
			Ethanol	64-17-5	1.50000	0.00040	None
StimSTREAM SC 405	Chemstream	Scale Control					
			Non-Hazardous Substances	Proprietary	70.00000	0.01383	None
			2-Phosphono-1,2,4-butanetricarboxylic acid (PBTC)	37971-36-1	10.00000	0.00198	None
			Diethylenetriamine penta (methylene phosphonic acid) (DTPMP)	15827-60-8	10.00000	0.00198	None
			Citric Acid	77-92-9	10.00000	0.00198	None
ProHib 100	CNR	Acid Inhibitor					
			2-Butoxyethanol	111-76-2	60.00000	0.00039	None
			Proprietary material	Proprietary	30.00000	0.00020	None
			Proprietary non-ionic surfactant	Proprietary	20.00000	0.00013	None
			Proprietary ethoxylated alcohol	Proprietary	10.00000	0.00007	None
			Proprietary corrosion inhibitor	Proprietary	10.00000	0.00007	None
ProFE 105	CNR	Iron Control					
			Citric Acid	77-92-9	20.00000	0.00010	None
			Acetic Acid	64-19-7	5.00000	0.00003	None
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
Other Chemical(s)	Listed Above	See Trade Name(s) List					
			Water	7732-18-5	85.00000	0.16050	
			Non-hazardous substances	Proprietary	80.00000	0.02136	
			Butene, homopolymer	9003-29-6	25.00000	0.01505	
			Non-Hazardous Substances	Proprietary	70.00000	0.01383	
			Diethylenetriamine penta (methylene phosphonic acid) (DTPMP)	15827-60-8	10.00000	0.00198	
			Citric Acid	77-92-9	10.00000	0.00198	
			Ethoxylated alcohols (C12-18)	68213-23-0	3.00000	0.00181	
			Quaternary Ammonium Compounds	68424-85-1	3.00000	0.00080	
			Didecyl dimethyl ammonium chloride	7173-51-5	3.00000	0.00080	
			Ethanol	64-17-5	1.50000	0.00040	
			Proprietary material	Proprietary	30.00000	0.00020	
			Proprietary non-ionic surfactant	Proprietary	20.00000	0.00013	
			Proprietary corrosion inhibitor	Proprietary	10.00000	0.00007	
			Proprietary ethoxylated alcohol	Proprietary	10.00000	0.00007	
			Acetic Acid	64-19-7	5.00000	0.00003	