WR-35
Rev. 8/23/13

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

API 47 - 061 - 01737 County Monongalia District Clay
Quad Blacksville Pad Name Fisher Field/Pool Name
Farm name Aaron K. Fisher Well Number 9H
Operator (as registered with the OOG) Northeast Natural Energy LLC
Address 707 Virginia Street 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 4394363.5	Easting 567417.5
Landing Point of Curve	Northing 4394638.0	Easting 567520.1
Bottom Hole	Northing 4396759.5	Easting 565906.6

Elevation (ft) 1,453' 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 12/07/15 Date drilling commenced 8/27/16 Date drilling ceased 10/18/16
Date completion activities began 7/3/17 Date completion activities ceased 7/17/17
Verbal plugging (Y/N) _____ Date permission granted _____ Granted by _____

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

Freshwater depth(s) ft 1,352' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 2,500' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 350';1,930' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed

Reviewed by:
6/11/2018

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API 47- 061 - 01737 Farm name Aaron K. Fisher Well number 9H

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"	40'	N	94.71	N/A	Grouted In
Surface	17-1/2"	13-3/8"	1'429'	N	54.5	N/A	Y 70 Bbls
Coal							
Intermediate 1	12-1/4"	9-5/8"	2'647'	N	40	N/A	Y 4 Bbls
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	17,537'	N	20	N/A	N, EST. 1'647'
Tubing	N/A	2-7/8"	N/A	N	6.5	N/A	N/A
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	-	-	3 Yds	-	-	-
Surface	Class A + 2%	1,202	15.6	1.19	1,431.719	Surface	8
Coal							
Intermediate 1	Class A + 1%	900	15.6	1.19	1,072.385	Surface	8
Intermediate 2							
Intermediate 3							
Production	50:50 + Additives	3,510	14.5	1.15	4,031.271	1,647'	48
Tubing							

Drillers TD (ft) 17,578' Loggers TD (ft) 17,548'
Deepest formation penetrated Marcellus Plug back to (ft)
Plug back procedure

Kick off depth (ft) 6,799'

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

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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

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PERFORATION RECORD

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

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)
						Please	See	Attachment

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Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS			
Marcellus	8,274.87'	TVD	17,578'	MD

Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST □ Flow □ Pump

SHUT-IN PRESSURE Surface 3741 psi Bottom Hole _____ psi DURATION OF TEST 48 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	2517 mcfpd	bpd	bpd	bpd	□ Estimated □ Orifice □ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT 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_2S, ETC)
	0		0		Please See Attachment

Please insert additional pages as applicable.

Drilling Contractor Nabors
Address 82 Old Elkins Rd City Buckhannon State WV Zip 26201

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

Cementing Company C&J Energy Services
Address 380 Southpoint Blvd #210 City Canonsburg State PA Zip 15317

Stimulating Company BJ Services
Address 1036 E. Main St. City Bridgeport State WV Zip 26330

Please insert additional pages as applicable.

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Completed by Hollie Medley Telephone 304-212-0422
Signature Hollie Medley Title Regulatory Manager Date 5-29-18

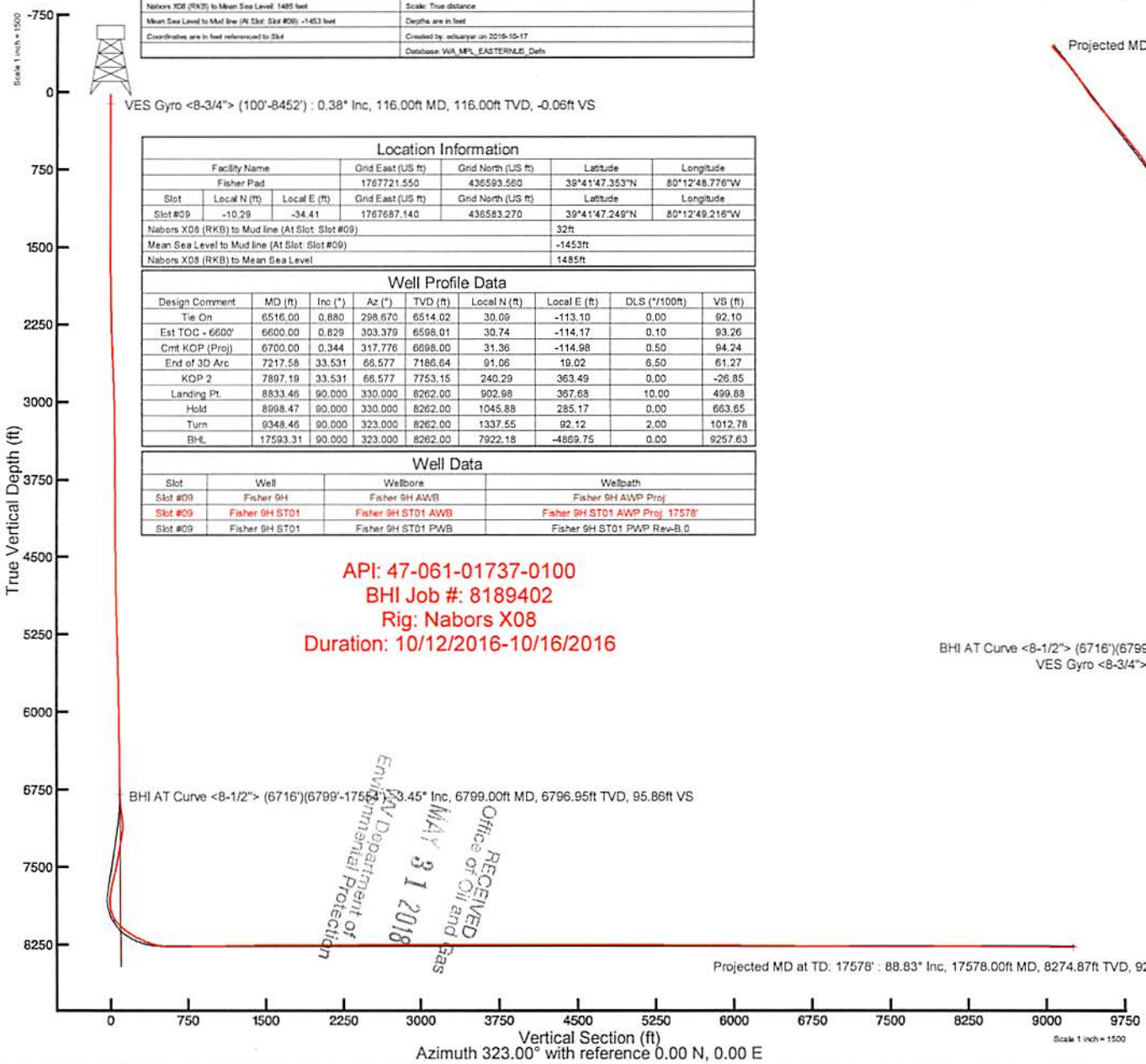
Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

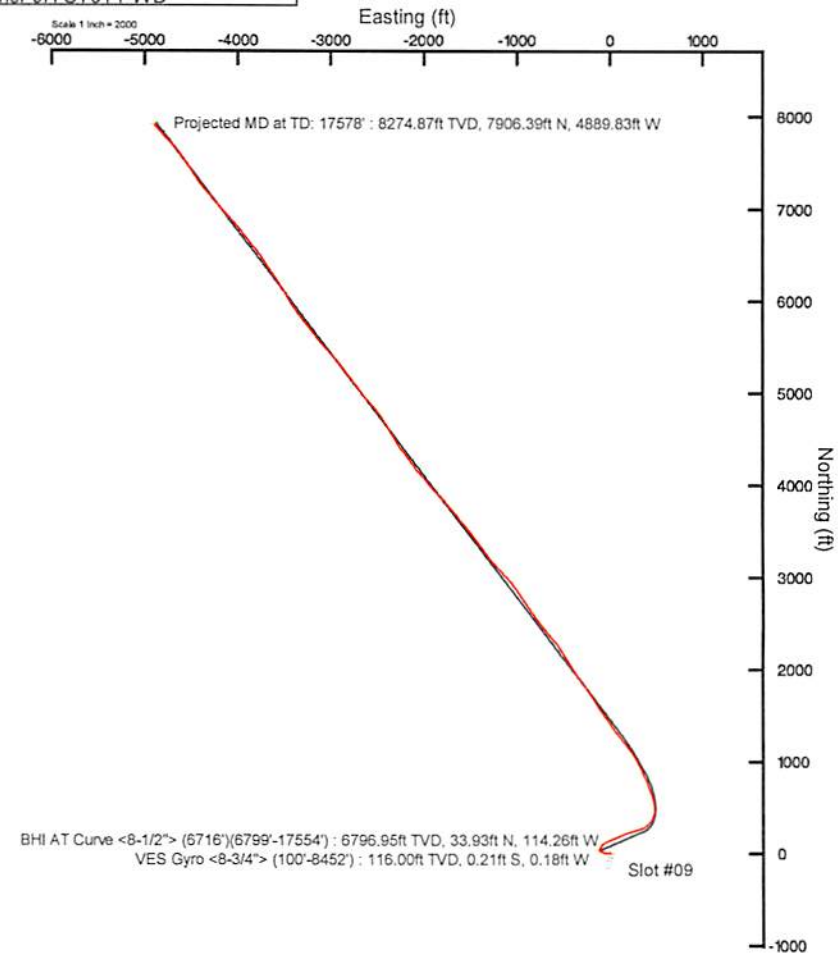
NORTHEAST NATURAL ENERGY, LLC

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

Slot: Slot #09
Well: Fisher 9H ST01
Wellbore: Fisher 9H ST01 PWB

Plot reference wellpath is Fisher 9H ST01 PWP Rev-B.0	Grid System: NAD83 / Lambert West Virginia SP, Northern Zone (4701), US feet
True vertical depths are referenced to Nabors X08 (RKB)	* = Wellpath was transformed from a different geodetic datum
Measured depths are referenced to Nabors X08 (RKB)	North Reference: Grid north
Nabors X08 (RKB) to Mean Sea Level: 1485 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: Slot #09): -1453 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: ecksaryar on 2016-10-17
	Database: WA_MPL_EASTERNUS_Defn





Location Information

Facility Name			Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Fisher Pad			1767721.550	436593.560	39°41'47.353"N	80°12'48.776"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot #09	-10.29	-34.41	1767687.140	436583.270	39°41'47.249"N	80°12'49.216"W
Nabors X08 (RKB) to Mud line (At Slot: Slot #09)					32ft	
Mean Sea Level to Mud line (At Slot: Slot #09)					-1453ft	
Nabors X08 (RKB) to Mean Sea Level					1485ft	

Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	6516.00	0.880	298.670	6514.02	30.09	-113.10	0.00	92.10
Est TOC - 6600'	6600.00	0.829	303.379	6598.01	30.74	-114.17	0.10	93.26
Cmt KOP (Proj)	6700.00	0.344	317.776	6698.00	31.36	-114.98	0.50	94.24
End of 3D Arc	7217.58	33.531	66.577	7186.64	91.06	19.02	6.50	61.27
KOP 2	7897.19	33.531	66.577	7753.15	240.29	363.49	0.00	-26.85
Landing Pt.	8833.46	90.000	330.000	8262.00	902.98	367.68	10.00	499.88
Hold	8998.47	90.000	330.000	8262.00	1045.88	285.17	0.00	663.65
Turn	9348.46	90.000	323.000	8262.00	1337.55	92.12	2.00	1012.78
BHL	17593.31	90.000	323.000	8262.00	7922.18	-4869.75	0.00	9257.63

Well Data

Slot	Well	Wellbore	Wellpath
Slot #09	Fisher 9H	Fisher 9H AWB	Fisher 9H AWP Proj
Slot #09	Fisher 9H ST01	Fisher 9H ST01 AWB	Fisher 9H ST01 AWP Proj: 17578'
Slot #09	Fisher 9H ST01	Fisher 9H ST01 PWB	Fisher 9H ST01 PWP Rev-B.0

API: 47-061-01737-0100
BHI Job #: 8189402
Rig: Nabors X08
Duration: 10/12/2016-10/16/2016

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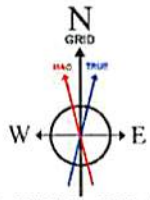

BGGM (1900.0 to 2018.0) Dip: 66.83° Field: 52213.5 nT
Magnetic North is 9.04 degrees West of True North (at 9/29/2016)
Grid North is 0.46 degrees West of True North
To correct azimuth from True to Grid add 0.46 degrees
To correct azimuth from Magnetic to Grid subtract 8.58 degrees

Actual Wellpath Report

Fisher 9H ST01 AWP Proj: 17578'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #09
Area	Monongalia County, WV	Well	Fisher 9H ST01
Field	Monongalia	Wellbore	Fisher 9H ST01 AWB
Facility	Fisher Pad	Sidetrack from	Fisher 9H AWP Proj: at 6716.00 MD

REPORT SETUP INFORMATION			
Projection System	NAD83 / Lambert West Virginia SP, Northern Zone (4701), US feet	Software System	WellArchitect® 5.0
North Reference	Grid	User	Edsaryar
Scale	0.999942	Report Generated	10/17/2016 at 12:01:28 PM
Convergence at slot	0.46° West	Database/Source file	WA_MPL_EASTERNUS_Defn/Fisher_9H_ST01_AWP_Proj__17578_.xml

WELLPATH LOCATION	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-10.29	-34.41	1767687.14	436583.27	39°41'47.249"N	80°12'49.216"W
Facility Reference Pt			1767721.55	436593.56	39°41'47.353"N	80°12'48.776"W
Field Reference Pt			1777685.71	440640.65	39°42'28.114"N	80°10'41.690"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Nabors X08 (RKB) to Facility Vertical Datum	1485.00ft
Horizontal Reference Pt	Slot	Nabors X08 (RKB) to Mean Sea Level	1485.00ft
Vertical Reference Pt	Nabors X08 (RKB)	Nabors X08 (RKB) to Mud Line at Slot (Slot #09)	32.00ft
MD Reference Pt	Nabors X08 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	323.00°

Actual Wellpath Report

Fisher 9H ST01 AWP Proj: 17578'

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Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #09
Area	Monongalia County, WV	Well	Fisher 9H ST01
Field	Monongalia	Wellbore	Fisher 9H ST01 AWB
Facility	Fisher Pad	Sidetrack from	Fisher 9H AWP Proj: at 6716.00 MD

WELLPATH DATA (185 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	220.310	0.00	0.00	0.00	0.00	1767687.14	436583.27	39°41'47.249"N	80°12'49.216"W	0.00	0.000	0.00	0.00	0.00
32.00	0.000	220.310	32.00	0.00	0.00	0.00	1767687.14	436583.27	39°41'47.249"N	80°12'49.216"W	0.00	0.000	0.00	0.00	0.00
116.00	0.380	220.310	116.00	-0.06	-0.21	-0.18	1767686.96	436583.06	39°41'47.247"N	80°12'49.218"W	0.28	220.310	0.45	0.45	-166.30
216.00	0.110	254.160	216.00	-0.10	-0.49	-0.49	1767686.65	436582.78	39°41'47.244"N	80°12'49.222"W	0.69	224.742	0.30	-0.27	33.85
316.00	0.230	297.370	316.00	0.12	-0.43	-0.76	1767686.38	436582.84	39°41'47.245"N	80°12'49.225"W	0.87	240.687	0.17	0.12	43.21
416.00	0.380	238.660	416.00	0.33	-0.51	-1.22	1767685.92	436582.76	39°41'47.244"N	80°12'49.231"W	1.32	247.475	0.33	0.15	-58.71
516.00	0.040	106.560	516.00	0.33	-0.69	-1.47	1767685.67	436582.58	39°41'47.242"N	80°12'49.234"W	1.62	244.902	0.41	-0.34	-132.10
616.00	0.340	193.810	616.00	0.12	-0.99	-1.51	1767685.63	436582.28	39°41'47.239"N	80°12'49.235"W	1.80	236.788	0.34	0.30	87.25
716.00	0.350	274.810	715.99	0.14	-1.25	-1.88	1767685.26	436582.02	39°41'47.236"N	80°12'49.240"W	2.26	236.430	0.45	0.01	81.00
816.00	0.160	224.560	815.99	0.32	-1.32	-2.28	1767684.86	436581.95	39°41'47.236"N	80°12'49.245"W	2.64	239.925	0.28	-0.19	-50.25
916.00	0.290	263.480	915.99	0.43	-1.45	-2.63	1767684.51	436581.82	39°41'47.234"N	80°12'49.249"W	3.01	241.148	0.19	0.13	38.92
1016.00	0.160	312.710	1015.99	0.69	-1.38	-2.99	1767684.15	436581.89	39°41'47.235"N	80°12'49.254"W	3.29	245.129	0.22	-0.13	49.23
1116.00	0.140	186.210	1115.99	0.74	-1.41	-3.10	1767684.04	436581.86	39°41'47.235"N	80°12'49.255"W	3.41	245.540	0.27	-0.02	-126.50
1216.00	0.440	307.930	1215.99	1.02	-1.30	-3.42	1767683.72	436581.97	39°41'47.236"N	80°12'49.259"W	3.66	249.227	0.53	0.30	121.72
1316.00	0.100	345.040	1315.99	1.47	-0.98	-3.74	1767683.40	436582.29	39°41'47.239"N	80°12'49.263"W	3.87	255.382	0.37	-0.34	37.11
1416.00	0.250	238.950	1415.99	1.58	-1.00	-3.95	1767683.19	436582.27	39°41'47.239"N	80°12'49.266"W	4.08	255.741	0.29	0.15	-106.09
1516.00	0.560	281.360	1515.99	1.96	-1.02	-4.62	1767682.52	436582.25	39°41'47.238"N	80°12'49.275"W	4.73	257.537	0.41	0.31	42.41
1616.00	0.730	298.580	1615.98	2.91	-0.62	-5.66	1767681.48	436582.65	39°41'47.242"N	80°12'49.288"W	5.69	263.746	0.26	0.17	17.22
1716.00	0.990	282.370	1715.97	4.15	-0.13	-7.06	1767680.08	436583.14	39°41'47.247"N	80°12'49.306"W	7.06	268.943	0.35	0.26	-16.21
1816.00	1.130	266.160	1815.95	5.34	-0.01	-8.89	1767678.25	436583.26	39°41'47.248"N	80°12'49.329"W	8.89	269.928	0.33	0.14	-16.21
1916.00	1.700	259.960	1915.92	6.55	-0.34	-11.33	1767675.81	436582.93	39°41'47.245"N	80°12'49.361"W	11.34	268.303	0.59	0.57	-6.20
2016.00	2.140	260.400	2015.87	8.08	-0.91	-14.64	1767672.51	436582.36	39°41'47.239"N	80°12'49.403"W	14.66	266.458	0.44	0.44	0.44
2116.00	2.220	260.420	2115.79	9.84	-1.54	-18.39	1767668.75	436581.73	39°41'47.232"N	80°12'49.451"W	18.45	265.214	0.08	0.08	0.02
2216.00	2.380	262.320	2215.71	11.74	-2.14	-22.35	1767664.79	436581.13	39°41'47.226"N	80°12'49.501"W	22.46	264.533	0.18	0.16	1.90
2316.00	2.740	268.080	2315.61	14.13	-2.50	-26.80	1767660.34	436580.77	39°41'47.222"N	80°12'49.558"W	26.92	264.677	0.44	0.36	5.76
2416.00	3.420	276.970	2415.47	17.58	-2.22	-32.15	1767654.99	436581.06	39°41'47.224"N	80°12'49.627"W	32.23	266.059	0.83	0.68	8.89
2516.00	3.730	279.980	2515.27	22.03	-1.29	-38.31	1767648.83	436581.98	39°41'47.233"N	80°12'49.706"W	38.34	268.073	0.36	0.31	3.01
2616.00	3.650	278.020	2615.07	26.66	-0.28	-44.67	1767642.47	436582.99	39°41'47.243"N	80°12'49.787"W	44.67	269.639	0.15	-0.08	-1.96
2716.00	3.660	280.060	2714.86	31.25	0.72	-50.96	1767636.18	436583.99	39°41'47.252"N	80°12'49.868"W	50.97	270.809	0.13	0.01	2.04
2816.00	2.590	279.400	2814.71	35.22	1.65	-56.34	1767630.81	436584.92	39°41'47.261"N	80°12'49.936"W	56.36	271.674	1.07	-1.07	-0.66

Actual Wellpath Report

Fisher 9H ST01 AWP Proj: 17578'

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northeast NATURAL ENERGY

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #09
Area	Monongalia County, WV	Well	Fisher 9H ST01
Field	Monongalia	Wellbore	Fisher 9H ST01 AWB
Facility	Fisher Pad	Sidetrack from	Fisher 9H AWP Proj: at 6716.00 MD

WELLPATH DATA (185 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]
2916.00	2.060	280.930	2914.63	38.19	2.36	-60.33	1767626.81	436585.63	39°41'47.267"N	80°12'49.988"W	60.38	272.237	0.53	-0.53	1.53
3016.00	1.480	280.270	3014.58	40.47	2.93	-63.37	1767623.78	436586.20	39°41'47.273"N	80°12'50.026"W	63.43	272.645	0.58	-0.58	-0.66
3116.00	1.270	279.630	3114.55	42.23	3.34	-65.73	1767621.42	436586.61	39°41'47.277"N	80°12'50.057"W	65.81	272.912	0.21	-0.21	-0.64
3216.00	0.970	272.140	3214.53	43.57	3.56	-67.67	1767619.48	436586.83	39°41'47.279"N	80°12'50.082"W	67.76	273.012	0.33	-0.30	-7.49
3316.00	0.820	268.790	3314.52	44.52	3.58	-69.23	1767617.92	436586.85	39°41'47.279"N	80°12'50.102"W	69.32	272.957	0.16	-0.15	-3.35
3416.00	0.490	283.670	3414.51	45.27	3.66	-70.36	1767616.78	436586.93	39°41'47.279"N	80°12'50.116"W	70.45	272.980	0.37	-0.33	14.88
3516.00	0.780	315.800	3514.51	46.27	4.25	-71.25	1767615.89	436587.52	39°41'47.285"N	80°12'50.127"W	71.38	273.415	0.45	0.29	32.13
3616.00	0.790	294.940	3614.50	47.56	5.03	-72.35	1767614.80	436588.30	39°41'47.293"N	80°12'50.142"W	72.52	273.977	0.28	0.01	-20.86
3716.00	0.390	309.560	3714.49	48.50	5.54	-73.24	1767613.91	436588.81	39°41'47.298"N	80°12'50.153"W	73.45	274.324	0.42	-0.40	14.62
3816.00	0.710	330.030	3814.49	49.44	6.29	-73.81	1767613.34	436589.56	39°41'47.305"N	80°12'50.160"W	74.08	274.872	0.37	0.32	20.47
3916.00	0.520	291.570	3914.48	50.45	6.99	-74.54	1767612.60	436590.26	39°41'47.312"N	80°12'50.170"W	74.87	275.361	0.44	-0.19	-38.46
4016.00	0.550	331.560	4014.48	51.31	7.58	-75.19	1767611.95	436590.85	39°41'47.318"N	80°12'50.178"W	75.57	275.759	0.37	0.03	39.99
4116.00	0.540	291.660	4114.48	52.18	8.18	-75.86	1767611.29	436591.45	39°41'47.324"N	80°12'50.187"W	76.30	276.154	0.37	-0.01	-39.90
4216.00	0.470	334.360	4214.47	52.99	8.72	-76.47	1767610.67	436591.99	39°41'47.329"N	80°12'50.195"W	76.97	276.508	0.37	-0.07	42.70
4316.00	0.560	289.880	4314.47	53.80	9.26	-77.11	1767610.04	436592.53	39°41'47.334"N	80°12'50.203"W	77.66	276.847	0.40	0.09	-44.48
4416.00	0.420	319.130	4414.47	54.58	9.70	-77.81	1767609.34	436592.97	39°41'47.339"N	80°12'50.212"W	78.41	277.108	0.28	-0.14	29.25
4516.00	0.740	281.410	4514.46	55.42	10.11	-78.68	1767608.46	436593.38	39°41'47.343"N	80°12'50.223"W	79.33	277.320	0.48	0.32	-37.72
4616.00	0.490	298.550	4614.45	56.30	10.44	-79.69	1767607.45	436593.71	39°41'47.346"N	80°12'50.236"W	80.37	277.463	0.31	-0.25	17.14
4716.00	1.220	291.660	4714.44	57.59	11.04	-81.06	1767606.09	436594.31	39°41'47.352"N	80°12'50.254"W	81.80	277.754	0.74	0.73	-6.89
4816.00	0.870	290.150	4814.43	59.14	11.69	-82.76	1767604.39	436594.96	39°41'47.358"N	80°12'50.275"W	83.58	278.041	0.35	-0.35	-1.51
4916.00	1.400	297.760	4914.41	60.88	12.52	-84.55	1767602.59	436595.79	39°41'47.366"N	80°12'50.298"W	85.47	278.424	0.55	0.53	7.61
5016.00	1.320	300.860	5014.38	63.06	13.68	-86.62	1767600.52	436596.95	39°41'47.377"N	80°12'50.325"W	87.69	278.976	0.11	-0.08	3.10
5116.00	1.730	293.000	5114.34	65.43	14.86	-89.00	1767598.15	436598.13	39°41'47.389"N	80°12'50.356"W	90.23	279.481	0.46	0.41	-7.86
5216.00	1.770	305.720	5214.30	68.21	16.35	-91.64	1767595.50	436599.62	39°41'47.403"N	80°12'50.390"W	93.09	280.118	0.39	0.04	12.72
5316.00	1.510	298.990	5314.26	70.89	17.89	-94.05	1767593.10	436601.16	39°41'47.418"N	80°12'50.421"W	95.74	280.772	0.32	-0.26	-6.73
5416.00	1.800	300.470	5414.21	73.54	19.33	-96.55	1767590.59	436602.60	39°41'47.432"N	80°12'50.453"W	98.47	281.320	0.29	0.29	1.48
5516.00	1.620	312.720	5514.17	76.39	21.08	-98.95	1767588.20	436604.35	39°41'47.449"N	80°12'50.484"W	101.17	282.029	0.41	-0.18	12.25
5616.00	1.240	311.240	5614.14	78.84	22.76	-100.80	1767586.35	436606.03	39°41'47.466"N	80°12'50.507"W	103.34	282.722	0.38	-0.38	-1.48
5716.00	1.040	299.040	5714.12	80.73	23.91	-102.41	1767584.74	436607.18	39°41'47.477"N	80°12'50.528"W	105.16	283.142	0.31	-0.20	-12.20
5816.00	1.100	297.510	5814.10	82.42	24.79	-104.05	1767583.10	436608.06	39°41'47.486"N	80°12'50.549"W	106.96	283.403	0.07	0.06	-1.53

Actual Wellpath Report

Fisher 9H ST01 AWP Proj: 17578'

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Field	Monongalia	Wellbore	Fisher 9H ST01 AWB
Facility	Fisher Pad	Sidetrack from	Fisher 9H AWP Proj: at 6716.00 MD

WELLPATH DATA (185 stations)

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5916.00	1.150	295.180	5914.08	84.18	25.66	-105.81	1767581.34	436608.93	39°41'47.494"N	80°12'50.572"W	108.88	283.634	0.07	0.05	-2.33
6016.00	1.050	304.650	6014.06	85.93	26.61	-107.47	1767579.67	436609.88	39°41'47.503"N	80°12'50.593"W	110.72	283.908	0.21	-0.10	9.47
6116.00	0.790	314.420	6114.05	87.48	27.62	-108.72	1767578.43	436610.88	39°41'47.513"N	80°12'50.609"W	112.17	284.252	0.30	-0.26	9.77
6216.00	0.680	307.030	6214.04	88.74	28.46	-109.68	1767577.46	436611.72	39°41'47.521"N	80°12'50.622"W	113.32	284.544	0.14	-0.11	-7.39
6316.00	0.620	299.820	6314.04	89.80	29.08	-110.63	1767576.52	436612.35	39°41'47.528"N	80°12'50.634"W	114.39	284.729	0.10	-0.06	-7.21
6416.00	0.790	285.680	6414.03	90.85	29.54	-111.76	1767575.39	436612.81	39°41'47.532"N	80°12'50.648"W	115.60	284.804	0.24	0.17	-14.14
6516.00	0.880	298.670	6514.02	92.10	30.09	-113.10	1767574.05	436613.36	39°41'47.537"N	80°12'50.665"W	117.03	284.900	0.21	0.09	12.99
6616.00	0.820	304.340	6614.01	93.47	30.86	-114.36	1767572.78	436614.13	39°41'47.545"N	80°12'50.682"W	118.45	285.103	0.10	-0.06	5.67
6716.00	0.260	325.800	6714.00	94.38	31.46	-115.08	1767572.07	436614.72	39°41'47.551"N	80°12'50.691"W	119.30	285.287	0.59	-0.56	21.46
6799.00	3.450	21.720	6796.95	95.86	33.93	-114.26	1767572.88	436617.20	39°41'47.575"N	80°12'50.681"W	119.19	286.540	3.99	3.84	67.37
6894.00	10.550	20.860	6891.18	101.98	44.73	-110.10	1767577.04	436628.00	39°41'47.682"N	80°12'50.629"W	118.84	292.109	7.47	7.47	-0.91
6988.00	16.940	27.030	6982.45	112.57	64.99	-100.80	1767586.34	436648.26	39°41'47.883"N	80°12'50.512"W	119.94	302.810	6.97	6.80	6.56
7083.00	26.140	44.250	7070.80	121.84	92.39	-79.85	1767607.30	436675.66	39°41'48.156"N	80°12'50.246"W	122.12	319.166	11.66	9.68	18.13
7177.00	33.850	64.970	7152.37	119.55	118.41	-41.52	1767645.63	436701.67	39°41'48.416"N	80°12'49.759"W	125.48	340.678	13.63	8.20	22.04
7272.00	35.240	68.620	7230.63	106.68	139.60	7.99	1767695.13	436722.86	39°41'48.629"N	80°12'49.128"W	139.83	3.274	2.62	1.46	3.84
7367.00	35.920	66.130	7307.89	92.97	160.87	58.99	1767746.13	436744.13	39°41'48.843"N	80°12'48.477"W	171.35	20.139	1.68	0.72	-2.62
7462.00	35.890	66.100	7384.84	80.33	183.43	109.93	1767797.07	436766.69	39°41'49.070"N	80°12'47.828"W	213.85	30.936	0.04	-0.03	-0.03
7557.00	35.680	67.990	7461.91	66.85	205.09	161.08	1767848.21	436788.35	39°41'49.288"N	80°12'47.176"W	260.79	38.146	1.18	-0.22	1.99
7651.00	35.930	72.770	7538.16	50.43	223.54	212.85	1767899.97	436806.80	39°41'49.475"N	80°12'46.515"W	308.66	43.596	2.99	0.27	5.09
7746.00	32.870	75.320	7616.54	31.21	238.33	264.42	1767951.55	436821.59	39°41'49.625"N	80°12'45.857"W	355.98	47.971	3.56	-3.22	2.68
7841.00	33.750	71.710	7695.94	12.95	253.15	314.42	1768001.54	436836.40	39°41'49.775"N	80°12'45.219"W	403.67	51.162	2.28	0.93	-3.80
7935.00	33.380	62.980	7774.31	0.08	273.10	362.28	1768049.40	436856.36	39°41'49.976"N	80°12'44.609"W	453.69	52.989	5.15	-0.39	-9.29
8030.00	34.140	48.850	7853.42	-2.52	302.56	405.70	1768092.82	436885.82	39°41'50.271"N	80°12'44.056"W	506.10	53.285	8.29	0.80	-14.87
8124.00	39.240	34.000	7928.92	9.10	344.68	442.29	1768129.40	436927.93	39°41'50.690"N	80°12'43.592"W	560.73	52.070	10.86	5.43	-15.80
8219.00	46.430	17.420	7998.76	39.04	402.69	469.51	1768156.63	436985.94	39°41'51.265"N	80°12'43.250"W	618.55	49.381	14.03	7.57	-17.45
8313.00	51.350	1.400	8060.78	87.83	472.17	480.65	1768167.77	437055.42	39°41'51.953"N	80°12'43.115"W	673.78	45.510	13.84	5.23	-17.04
8408.00	57.400	348.800	8116.23	153.16	548.79	473.76	1768160.87	437132.03	39°41'52.709"N	80°12'43.210"W	725.00	40.804	12.50	6.37	-13.26
8503.00	62.590	342.820	8163.76	228.96	628.44	453.51	1768140.62	437211.67	39°41'53.495"N	80°12'43.478"W	774.99	35.816	7.71	5.46	-6.29
8597.00	66.760	339.110	8203.97	309.77	708.71	425.76	1768112.88	437291.93	39°41'54.286"N	80°12'43.841"W	826.76	30.996	5.69	4.44	-3.95
8692.00	72.390	336.930	8237.11	395.72	791.21	392.43	1768079.55	437374.43	39°41'55.099"N	80°12'44.276"W	883.19	26.381	6.30	5.93	-2.29

Actual Wellpath Report

Fisher 9H ST01 AWP Proj: 17578'

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MAY 31 2018
WV Department of
Environmental Protection

REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #09
Area	Monongalia County, WV	Well	Fisher 9H ST01
Field	Monongalia	Wellbore	Fisher 9H ST01 AWB
Facility	Fisher Pad	Sidetrack from	Fisher 9H AWP Proj: at 6716.00 MD

WELLPATH DATA (185 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]
8786.00	79.850	336.030	8259.64	484.40	874.82	356.03	1768043.15	437458.04	39°41'55.922"N	80°12'44.750"W	944.49	22.145	7.99	7.94	-0.96
8881.00	90.250	333.110	8267.83	576.99	960.16	315.43	1768002.55	437543.37	39°41'56.762"N	80°12'45.278"W	1010.65	18.186	11.37	10.95	-3.07
8975.00	90.310	329.030	8267.37	670.04	1042.41	269.97	1767957.09	437625.62	39°41'57.572"N	80°12'45.868"W	1076.80	14.520	4.34	0.06	-4.34
9070.00	90.340	323.410	8266.83	764.85	1121.34	217.17	1767904.30	437704.54	39°41'58.348"N	80°12'46.551"W	1142.18	10.961	5.92	0.03	-5.92
9165.00	90.830	321.370	8265.86	859.83	1196.59	159.20	1767846.33	437779.79	39°41'59.087"N	80°12'47.300"W	1207.13	7.578	2.21	0.52	-2.15
9260.00	90.830	321.350	8264.49	954.78	1270.79	99.89	1767787.02	437853.98	39°41'59.815"N	80°12'48.067"W	1274.71	4.494	0.02	0.00	-0.02
9355.00	90.950	325.740	8263.01	1049.74	1347.17	43.46	1767730.60	437930.36	39°42'00.566"N	80°12'48.797"W	1347.87	1.848	4.62	0.13	4.62
9449.00	91.020	325.540	8261.40	1143.63	1424.75	-9.59	1767677.55	438007.94	39°42'01.328"N	80°12'49.483"W	1424.79	359.614	0.23	0.07	-0.21
9544.00	91.140	324.170	8259.60	1238.56	1502.42	-64.26	1767622.88	438085.60	39°42'02.091"N	80°12'50.190"W	1503.79	357.551	1.45	0.13	-1.44
9638.00	91.140	327.520	8257.73	1332.41	1580.18	-117.02	1767570.13	438163.36	39°42'02.856"N	80°12'50.873"W	1584.51	355.765	3.56	0.00	3.56
9733.00	90.180	327.250	8256.64	1427.13	1660.19	-168.22	1767518.93	438243.36	39°42'03.643"N	80°12'51.536"W	1668.70	354.214	1.05	-1.01	-0.28
9829.00	90.000	327.660	8256.49	1522.84	1741.12	-219.86	1767467.29	438324.28	39°42'04.438"N	80°12'52.205"W	1754.95	352.803	0.47	-0.19	0.43
9922.00	89.970	322.000	8256.51	1615.75	1817.11	-273.41	1767413.75	438400.27	39°42'05.185"N	80°12'52.898"W	1837.56	351.443	6.09	-0.03	-6.09
10016.00	90.400	325.190	8256.21	1709.73	1892.76	-329.19	1767357.97	438475.91	39°42'05.928"N	80°12'53.620"W	1921.17	350.134	3.42	0.46	3.39
10111.00	90.460	327.410	8255.50	1804.57	1971.78	-381.90	1767305.27	438554.93	39°42'06.705"N	80°12'54.302"W	2008.43	349.039	2.34	0.06	2.34
10205.00	90.580	329.830	8254.64	1898.10	2052.03	-430.84	1767256.33	438635.17	39°42'07.494"N	80°12'54.936"W	2096.77	348.143	2.58	0.13	2.57
10299.00	90.120	329.940	8254.07	1991.43	2133.34	-478.00	1767209.17	438716.48	39°42'08.294"N	80°12'55.548"W	2186.23	347.371	0.50	-0.49	0.12
10394.00	90.220	326.570	8253.79	2086.01	2214.11	-527.98	1767159.20	438797.25	39°42'09.088"N	80°12'56.195"W	2276.19	346.588	3.55	0.11	-3.55
10488.00	90.310	321.420	8253.35	2179.96	2290.13	-583.21	1767103.96	438873.26	39°42'09.835"N	80°12'56.910"W	2363.22	345.712	5.48	0.10	-5.48
10583.00	90.400	319.350	8252.76	2274.86	2363.31	-643.78	1767043.39	438946.43	39°42'10.554"N	80°12'57.692"W	2449.42	344.762	2.18	0.09	-2.18
10678.00	90.490	319.470	8252.03	2369.67	2435.44	-705.59	1766981.59	439018.57	39°42'11.262"N	80°12'58.490"W	2535.60	343.843	0.16	0.09	0.13
10773.00	90.430	324.480	8251.26	2464.62	2510.25	-764.09	1766923.09	439093.37	39°42'11.996"N	80°12'59.247"W	2623.97	343.070	5.27	-0.06	5.27
10867.00	90.220	326.490	8250.73	2558.53	2587.70	-817.35	1766869.84	439170.82	39°42'12.758"N	80°12'59.936"W	2713.72	342.471	2.15	-0.22	2.14
10994.00	90.030	323.580	8250.45	2685.43	2691.77	-890.13	1766797.07	439274.88	39°42'13.780"N	80°13'00.878"W	2835.13	341.702	2.30	-0.15	-2.29
11057.00	89.910	326.560	8250.49	2748.38	2743.41	-926.19	1766761.00	439326.52	39°42'14.288"N	80°13'01.344"W	2895.54	341.345	4.73	-0.19	4.73
11152.00	90.340	326.940	8250.28	2843.18	2822.86	-978.28	1766708.92	439405.96	39°42'15.069"N	80°13'02.019"W	2987.57	340.886	0.60	0.45	0.40
11246.00	90.460	323.870	8249.62	2937.08	2900.23	-1031.64	1766655.56	439483.32	39°42'15.829"N	80°13'02.709"W	3078.25	340.419	3.27	0.13	-3.27
11341.00	90.550	320.370	8248.78	3032.05	2975.20	-1089.96	1766597.24	439558.29	39°42'16.565"N	80°13'03.463"W	3168.57	339.880	3.69	0.09	-3.68
11436.00	89.970	315.290	8248.35	3126.64	3045.58	-1153.72	1766533.49	439628.67	39°42'17.256"N	80°13'04.286"W	3256.78	339.252	5.38	-0.61	-5.35
11530.00	89.940	317.760	8248.43	3220.03	3113.79	-1218.39	1766468.83	439696.87	39°42'17.925"N	80°13'05.121"W	3343.67	338.630	2.63	-0.03	2.63

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WELLPATH DATA (185 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]
11625.00	90.220	321.470	8248.29	3314.85	3186.14	-1279.93	1766407.29	439769.22	39°42'18.635"N	80°13'05.915"W	3433.61	338.114	3.92	0.29	3.91
11719.00	89.850	324.750	8248.24	3408.83	3261.31	-1336.35	1766350.87	439844.38	39°42'19.374"N	80°13'06.645"W	3524.48	337.718	3.51	-0.39	3.49
11814.00	89.910	324.140	8248.44	3503.80	3338.60	-1391.59	1766295.63	439921.67	39°42'20.133"N	80°13'07.360"W	3617.01	337.373	0.65	0.06	-0.64
11909.00	89.940	322.570	8248.56	3598.80	3414.82	-1448.29	1766238.94	439997.88	39°42'20.882"N	80°13'08.093"W	3709.25	337.017	1.65	0.03	-1.65
12003.00	89.630	323.340	8248.91	3692.80	3489.84	-1504.92	1766182.31	440072.90	39°42'21.619"N	80°13'08.825"W	3800.50	336.673	0.88	-0.33	0.82
12098.00	89.410	320.710	8249.71	3787.77	3564.72	-1563.37	1766123.87	440147.78	39°42'22.354"N	80°13'09.580"W	3892.47	336.319	2.78	-0.23	-2.77
12193.00	89.540	322.500	8250.58	3882.73	3639.17	-1622.36	1766064.88	440222.22	39°42'23.085"N	80°13'10.343"W	3984.42	335.972	1.89	0.14	1.88
12287.00	89.880	320.890	8251.05	3976.70	3712.93	-1680.63	1766006.62	440295.98	39°42'23.809"N	80°13'11.096"W	4075.58	335.647	1.75	0.36	-1.71
12382.00	90.310	319.600	8250.90	4071.59	3785.96	-1741.38	1765945.87	440369.01	39°42'24.526"N	80°13'11.881"W	4167.24	335.300	1.43	0.45	-1.36
12477.00	90.150	317.640	8250.52	4166.31	3857.24	-1804.17	1765883.08	440440.28	39°42'25.226"N	80°13'12.692"W	4258.33	334.933	2.07	-0.17	-2.06
12571.00	90.150	316.750	8250.27	4259.83	3926.21	-1868.05	1765819.21	440509.24	39°42'25.902"N	80°13'13.516"W	4347.95	334.555	0.95	0.00	-0.95
12666.00	90.310	320.930	8249.89	4354.55	3997.71	-1930.56	1765756.70	440580.74	39°42'26.604"N	80°13'14.323"W	4439.46	334.223	4.40	0.17	4.40
12760.00	90.150	319.390	8249.51	4448.44	4069.89	-1990.78	1765696.48	440652.91	39°42'27.312"N	80°13'15.101"W	4530.69	333.935	1.65	-0.17	-1.64
12855.00	89.780	320.170	8249.57	4543.28	4142.43	-2052.12	1765635.14	440725.45	39°42'28.024"N	80°13'15.893"W	4622.87	333.647	0.91	-0.39	0.82
12950.00	90.890	325.240	8249.01	4638.25	4217.97	-2109.66	1765577.61	440800.99	39°42'28.767"N	80°13'16.637"W	4716.14	333.428	5.46	1.17	5.34
13044.00	90.520	323.570	8247.86	4732.21	4294.40	-2164.37	1765522.90	440877.41	39°42'29.517"N	80°13'17.345"W	4808.99	333.252	1.82	-0.39	-1.78
13139.00	89.380	320.820	8247.94	4827.19	4369.45	-2222.59	1765464.68	440952.46	39°42'30.255"N	80°13'18.098"W	4902.25	333.039	3.13	-1.20	-2.89
13233.00	89.570	327.720	8248.80	4921.11	4445.71	-2277.45	1765409.83	441028.71	39°42'31.004"N	80°13'18.807"W	4995.11	332.875	7.34	0.20	7.34
13328.00	89.540	329.810	8249.54	5015.62	4526.93	-2326.71	1765360.57	441109.93	39°42'31.803"N	80°13'19.446"W	5089.86	332.798	2.20	-0.03	2.20
13422.00	89.630	329.110	8250.22	5109.02	4607.89	-2374.47	1765312.81	441190.88	39°42'32.599"N	80°13'20.066"W	5183.70	332.738	0.75	0.10	-0.74
13517.00	89.570	329.910	8250.88	5203.40	4689.75	-2422.67	1765264.61	441272.74	39°42'33.404"N	80°13'20.691"W	5278.55	332.680	0.84	-0.06	0.84
13612.00	89.570	322.540	8251.60	5298.18	4768.66	-2475.45	1765211.84	441351.64	39°42'34.180"N	80°13'21.374"W	5372.89	332.566	7.76	0.00	-7.76
13706.00	89.880	318.350	8252.05	5392.07	4841.12	-2535.30	1765152.00	441424.10	39°42'34.891"N	80°13'22.147"W	5464.81	332.359	4.47	0.33	-4.46
13801.00	89.350	319.900	8252.69	5486.85	4912.95	-2597.46	1765089.84	441495.92	39°42'35.596"N	80°13'22.950"W	5557.32	332.135	1.72	-0.56	1.63
13896.00	89.480	323.460	8253.66	5581.80	4987.47	-2656.35	1765030.95	441570.43	39°42'36.328"N	80°13'23.711"W	5650.75	331.960	3.75	0.14	3.75
13991.00	89.690	323.720	8254.35	5676.79	5063.92	-2712.74	1764974.56	441646.88	39°42'37.079"N	80°13'24.441"W	5744.76	331.822	0.35	0.22	0.27
14085.00	89.570	324.280	8254.95	5770.78	5139.96	-2767.99	1764919.32	441722.92	39°42'37.826"N	80°13'25.155"W	5837.89	331.696	0.61	-0.13	0.60
14180.00	89.410	322.860	8255.80	5865.76	5216.39	-2824.40	1764862.91	441799.35	39°42'38.577"N	80°13'25.885"W	5931.95	331.567	1.50	-0.17	-1.49
14275.00	89.970	321.660	8256.31	5960.75	5291.52	-2882.55	1764804.77	441874.47	39°42'39.314"N	80°13'26.637"W	6025.71	331.421	1.39	0.59	-1.26
14370.00	89.540	319.530	8256.72	6055.66	5364.92	-2942.85	1764744.47	441947.86	39°42'40.035"N	80°13'27.416"W	6119.04	331.254	2.29	-0.45	-2.24

Actual Wellpath Report

Fisher 9H ST01 AWP Proj: 17578'

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northeast NATURAL ENERGY

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #09
Area	Monongalia County, WV	Well	Fisher 9H ST01
Field	Monongalia	Wellbore	Fisher 9H ST01 AWB
Facility	Fisher Pad	Sidetrack from	Fisher 9H AWP Proj: at 6716.00 MD

WELLPATH DATA (185 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]
14464.00	89.820	319.380	8257.24	6149.48	5436.35	-3003.95	1764683.37	442019.29	39°42'40.736"N	80°13'28.205"W	6211.09	331.076	0.34	0.30	-0.16
14559.00	89.140	317.240	8258.11	6244.15	5507.28	-3067.13	1764620.20	442090.22	39°42'41.432"N	80°13'29.021"W	6303.76	330.886	2.36	-0.72	-2.25
14654.00	90.340	320.760	8258.54	6338.90	5578.96	-3129.44	1764557.89	442161.90	39°42'42.135"N	80°13'29.826"W	6396.74	330.710	3.91	1.26	3.71
14748.00	89.140	323.960	8258.96	6432.88	5653.39	-3186.84	1764500.49	442236.31	39°42'42.866"N	80°13'30.568"W	6489.74	330.590	3.64	-1.28	3.40
14843.00	88.860	321.750	8260.62	6527.86	5729.10	-3244.19	1764443.14	442312.02	39°42'43.610"N	80°13'31.310"W	6583.87	330.479	2.34	-0.29	-2.33
14937.00	88.890	322.150	8262.47	6621.83	5803.10	-3302.12	1764385.22	442386.02	39°42'44.337"N	80°13'32.058"W	6676.83	330.359	0.43	0.03	0.43
15032.00	89.510	323.860	8263.79	6716.82	5878.97	-3359.28	1764328.07	442461.88	39°42'45.082"N	80°13'32.798"W	6771.04	330.256	1.91	0.65	1.80
15126.00	89.510	327.460	8264.60	6810.70	5956.57	-3412.29	1764275.06	442539.48	39°42'45.844"N	80°13'33.484"W	6864.72	330.193	3.83	0.00	3.83
15221.00	89.480	329.470	8265.44	6905.26	6037.53	-3461.97	1764225.38	442620.44	39°42'46.641"N	80°13'34.128"W	6959.67	330.170	2.12	-0.03	2.12
15315.00	89.780	329.740	8266.04	6998.63	6118.61	-3509.53	1764177.82	442701.51	39°42'47.438"N	80°13'34.745"W	7053.67	330.162	0.43	0.32	0.29
15410.00	89.450	325.240	8266.68	7093.31	6198.70	-3560.57	1764126.78	442781.60	39°42'48.225"N	80°13'35.406"W	7148.54	330.127	4.75	-0.35	-4.74
15504.00	89.720	325.040	8267.36	7187.24	6275.83	-3614.30	1764073.06	442858.72	39°42'48.983"N	80°13'36.102"W	7242.18	330.062	0.36	0.29	-0.21
15599.00	89.690	327.280	8267.85	7282.09	6354.73	-3667.20	1764020.16	442937.62	39°42'49.759"N	80°13'36.787"W	7336.96	330.012	2.36	-0.03	2.36
15693.00	90.090	327.520	8268.03	7375.81	6433.92	-3717.84	1763969.52	443016.80	39°42'50.537"N	80°13'37.443"W	7430.86	329.979	0.50	0.43	0.26
15788.00	89.940	323.720	8268.01	7470.70	6512.31	-3771.48	1763915.89	443095.19	39°42'51.308"N	80°13'38.138"W	7525.57	329.924	4.00	-0.16	-4.00
15883.00	90.150	321.230	8267.93	7565.69	6587.65	-3829.34	1763858.03	443170.52	39°42'52.048"N	80°13'38.886"W	7619.78	329.831	2.63	0.22	-2.62
15977.00	90.120	322.180	8267.71	7659.66	6661.42	-3887.59	1763799.78	443244.29	39°42'52.772"N	80°13'39.639"W	7712.84	329.732	1.01	-0.03	1.01
16072.00	90.090	323.550	8267.54	7754.66	6737.16	-3944.94	1763742.44	443320.02	39°42'53.516"N	80°13'40.381"W	7807.17	329.649	1.44	-0.03	1.44
16166.00	90.250	319.480	8267.26	7848.61	6810.72	-4003.43	1763683.96	443393.58	39°42'54.238"N	80°13'41.137"W	7900.21	329.552	4.33	0.17	-4.33
16261.00	90.520	317.400	8266.62	7943.30	6881.80	-4066.44	1763620.94	443464.65	39°42'54.936"N	80°13'41.950"W	7993.44	329.421	2.21	0.28	-2.19
16356.00	91.230	318.570	8265.17	8037.92	6952.37	-4130.02	1763557.37	443535.22	39°42'55.628"N	80°13'42.771"W	8086.57	329.288	1.44	0.75	1.23
16450.00	90.120	319.600	8264.06	8131.69	7023.40	-4191.58	1763495.81	443606.25	39°42'56.325"N	80°13'43.566"W	8179.09	329.171	1.61	-1.18	1.10
16545.00	89.480	319.430	8264.39	8226.52	7095.65	-4253.26	1763434.14	443678.49	39°42'57.034"N	80°13'44.363"W	8272.76	329.061	0.70	-0.67	-0.18
16639.00	88.920	318.980	8265.70	8320.30	7166.81	-4314.67	1763372.73	443749.65	39°42'57.732"N	80°13'45.156"W	8365.38	328.951	0.76	-0.60	-0.48
16734.00	89.140	320.050	8267.31	8415.11	7239.05	-4376.34	1763311.07	443821.88	39°42'58.441"N	80°13'45.953"W	8459.09	328.845	1.15	0.23	1.13
16828.00	90.580	329.160	8267.54	8508.97	7315.60	-4430.72	1763256.69	443898.42	39°42'59.193"N	80°13'46.657"W	8552.73	328.799	9.81	1.53	9.69
16923.00	88.710	327.080	8268.13	8603.58	7396.26	-4480.89	1763206.52	443979.08	39°42'59.987"N	80°13'47.307"W	8647.72	328.791	2.94	-1.97	-2.19
17018.00	89.010	325.450	8270.02	8698.40	7475.24	-4533.64	1763153.78	444058.06	39°43'00.763"N	80°13'47.990"W	8742.60	328.764	1.74	0.32	-1.72
17112.00	90.000	324.410	8270.83	8792.34	7552.17	-4587.64	1763099.78	444134.98	39°43'01.519"N	80°13'48.689"W	8836.39	328.723	1.53	1.05	-1.11
17206.00	89.940	322.170	8270.88	8886.34	7627.52	-4643.83	1763043.59	444210.33	39°43'02.259"N	80°13'49.416"W	8929.96	328.666	2.38	-0.06	-2.38

Actual Wellpath Report

Fisher 9H ST01 AWP Proj: 17578'

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northeast NATURAL ENERGY

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #09
Area	Monongalia County, WV	Well	Fisher 9H ST01
Field	Monongalia	Wellbore	Fisher 9H ST01 AWB
Facility	Fisher Pad	Sidetrack from	Fisher 9H AWP Proj: at 6716.00 MD

WELLPATH DATA (185 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]
17301.00	89.660	315.300	8271.22	8981.02	7698.89	-4706.45	1762980.98	444281.69	39°43'02.959"N	80°13'50.225"W	9023.50	328.562	7.24	-0.29	-7.23
17396.00	89.320	319.680	8272.06	9075.55	7768.90	-4770.62	1762916.81	444351.70	39°43'03.646"N	80°13'51.053"W	9116.72	328.447	4.62	-0.36	4.61
17490.00	89.200	318.930	8273.28	9169.35	7840.16	-4831.91	1762855.52	444422.96	39°43'04.345"N	80°13'51.845"W	9209.53	328.354	0.81	-0.13	-0.80
17554.00	88.830	318.770	8274.38	9233.17	7888.35	-4874.02	1762813.42	444471.14	39°43'04.818"N	80°13'52.389"W	9272.65	328.289	0.63	-0.58	-0.25
17578.00	88.830	318.770	8274.87	9257.10	7906.39	-4889.83	1762797.61	444489.18	39°43'04.995"N	80°13'52.593"W	9296.32	328.265	0.00	0.00	0.00

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Fisher 9H LP Plat 2	8246.00	927.92	400.76	**1768087.88**	**437511.13**	39°41'56.450"N	80°12'44.183"W	point
Fisher 9H BHL Rev-3	8262.00	7922.18	-4869.75	**1762817.68**	**444504.97**	39°43'05.153"N	80°13'52.338"W	point
Fisher 9H LP Rev-3	8262.00	902.98	367.68	1768054.80	437486.19	39°41'56.201"N	80°12'44.604"W	point

WELLPATH COMPOSITION - Ref Wellbore: Fisher 9H ST01 AWB Ref Wellpath: Fisher 9H ST01 AWP Proj: 17578'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
32.00	6716.00	VESSI GyroFlex v4	01_VES Gyro <8-3/4"> (100'-8452')	Fisher 9H AWB
6716.00	17554.00	BHI AutoTrak Curve (Short)	02_BHI AT Curve <8-1/2"> (6716')(6799'-17554')	Fisher 9H ST01 AWB
17554.00	17578.00	Blind Drilling (std)	Projection to bit	Fisher 9H ST01 AWB

Actual Wellpath Report

Fisher 9H ST01 AWP Proj: 17578'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	**NORTHEAST NATURAL ENERGY, LLC**	Slot	**Slot #09**
Area	**Monongalia County, WV**	Well	**Fisher 9H ST01**
Field	**Monongalia**	Wellbore	**Fisher 9H ST01 AWB**
Facility	**Fisher Pad**	Sidetrack from	**Fisher 9H AWP Proj: at 6716.00 MD**

COMMENTS

Wellpath general comments
API: 47-061-01737-0100
BHI Job #: 8189402
Rig: Nabors X08
Duration: 10/12/2016-10/16/2016
VES Gyro <8-3/4"> (100'-8452')
BHI AT Curve <8-1/2"> (6716')(6799'-17554')
Projected MD at TD: 17578'

C&J Energy Services

Cement Job Log

Black Lick, PA
724-248-1001

Customer	NORTHEAST NATURAL	Date:	9/5/2016	Serv. Supervisor:	Jason D. Cribbs
Date:		Invoice #	BPA-1609-0003	Serv. Supervisor:	
Lease:	FISHER 9H	Permit #	47-061-01737	County and State:	MONONGALIA,WV
District:	Black Lick, PA	Rig:	US ENERGY 9-1	Type of Job:	13 3/8 Surface

Employees & Units on Job Site:							
	R. JUART	92-1156	M. FRANCO	93-1712	J. TIMKO	91-4422	

Materials Furnished by C&J ENERGY SERVICES

Plugs	Casing Hardware	Physical Slurry Properties					
13 3/8 RUBBER TOP		Sacks of Cement	Slurry Wt PPG	Slurry Yield CuFt	Water GPS	Bbls	Bbls of Mix Water
Spacer:	CJ020 (1000# BENTONITE)					50	
Lead:							
Tail:	CJ910 + 2% CJ110 + 0.25#/SK CJ600	1202	15.6	1.19	5.21	254.7	149.1
Acid:							
Displacement Chemicals:							

HOLE			TUBING - CASING - DRILL PIPE						COLLAR DEPTHS		
SIZE	% EXCESS	DEPTH	SIZE	WGT	TYPE	DEPTH	GRADE	ID	SHOE	FLOAT	STAGE
17 1/2	30%	1450	13 3/8	54.5	CASING	1428	J-55	12.615	1428	1387	NA

LAST CASING			PKR / CMT RET / LINER PKR		PERF DEPTH		TOP CONN		WELL FLUID	
SIZE	ID	DEPTH	BRAND / TYPE	DEPTH	TOP	BTM	SIZE	THREAD	TYPE	WGT
24"	23.226	40'	NA	NA	NA	NA	13 3/8	BUTTRESS	AIR	

DISPL VOLUME		DISPL FLUID		CAL PSI		WATER	CEMENT TEMP	MAX PRESSURE		Bbls H2O
VOLUME	UOM	TYPE	WGT	BMP PLUG	PH	TEMP	GOING DOWN HOLE	RATED	WORKING	on Loc.
214.3	BBL	H2O	8.33	NA	7	65	NA	2730	2184	800

Time Left Yard	12:00 AM	Time Left Loc	10:00 AM
Time Arrived on Loc	3:00 AM	Time Arrived Yard	

Time Hrs	Rate	Pressure	Bbls Pumped	Fluid Type	
7:30 PM					CALLED OUT FOR JOB
11:30 PM					PRE-CONVOY SAFETY MEETING
12:00 AM					LEAVE YARD
3:00 AM					ARRIVED TO LOCATION/WAIT ON RIG TO RUN CASING
4:00 AM					PRE-JOB SAFETY MEETING
4:15 AM					SPOT TRUCKS/RIG UP/PRIME PUMPS
6:15 AM					HOLD SAFETY MEETING WITH ALL PERSONNEL
6:25 AM	3	65	5	H2O	PUMP H20 TO LOAD LINES
6:27 AM					PRESSURE TEST PUMPS AND LINES TO 2000 PSI (NO LEAKS)
6:29 AM	7	220	160	H2O	PUMP H20 AHEAD
6:52 AM	7	220	50	GEL	MIX AND PUMP GEL SPACER
7:00 AM	7	210	10	H2O	PUMP H20 TO CLEAN MIX TUB
7:03 AM	0	0	0		SHUT DOWN/ OPEN RELEASE VALVE TO LET FLUID FALL INTO RAT HOLE
7:05 AM	6	300	254	CEMT	MIX AND PUMP CEMENT @ 15.6 PPG
7:48 AM	0	0	0		SHUT DOWN/ RELEASE TOP PLUG
7:49 AM	9 TO 3	0-550	214.3	H2O	PUMP H20 DISPLACEMENT
8:20 AM		980			LAND PLUG ON FLOAT COLLAR/HOLD PRESSURE 5 MINUTES
8:25 AM					RELEASE PRESSURE/CHECK FLOATS/ FLOATS HELD WITH 1.5 BBL BLED BACK
8:30 AM					WASH UP/RACK UP
9:30 AM					JOB COMPLETE
9:45 AM					PRE-CONVOY SAFETY MEETING
10:00 AM					LEAVE LOCATION

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Bumped Plug	Final Lift Pressure	Floats Held	PSI Left on Casing	Cement to Surface		Total Circulation	Recommended time to wait on cement		Service Supervisor
YES	550	YES	0	70	Bbls	328	NA	Hours	Jason D. Cribbs

C&J Energy Services

Cement Job Log

Black Lick, PA
724-248-1001

Customer	Northeast Natural	Date:	9/9/2016	Serv. Supervisor:	DAVE DEYARMIN
Date:	9/9/2016	Invoice #	BPA-1609-0006	Serv. Supervisor:	ANTHONY BARBARA
Lease:	FISHER #9H	Permit #		County and State:	MONONGALIA W.V
District:	BLACK LICK, PA	Rig:		Type of Job:	9 5/8" Intermediate String

Employees & Units on Job Site:							
	DAVE DEYARMIN	91-3268	DAN DEYARMIN	93-4067	GEORGE SWANIK	92-1148
Ralph Juart		Frank Cock		Ron Stephnson		Anthony Barbara	91-2144

Materials Furnished by C&J ENERGY SERVICES

Plugs	Casing Hardware	Physical Slurry Properties					
9 5/8 RUBBER & SPARE	CEMENT HEAD & SWADGE	Sacks of Cement	Slurry Wt PPG	Slurry Yield CuFt	Water GPS	Bbls	Bbls of Mix Water
Spacer:	GEL 500 LBS					35	35
Lead:							
Tail:	CJ910 CJ110 1% C,C	900	15.6	1.19	5.22	191	112
Acid:							
Displacement Chemicals:	NA						

HOLE			TUBING - CASING - DRILL PIPE						COLLAR DEPTHS		
SIZE	% EXCESS	DEPTH	SIZE	WGT	TYPE	DEPTH	GRADE	ID	SHOE	FLOAT	STAGE
12 1/4	30%	2680	9 5/8	40	BUTT	2650		8.835	NA	NA	na

LAST CASING			PKR / CMT RET / LINER PKR		PERF DEPTH		TOP CONN		WELL FLUID	
SIZE	ID	DEPTH	BRAND / TYPE	DEPTH	TOP	BTM	SIZE	THREAD	TYPE	WGT
13 3/8	12.615	1429							AIR	

DISPL VOLUME		DISPL FLUID		CAL PSI		WATER	CEMENT TEMP	MAX PRESSURE		Bbls H2O
VOLUME	UOM	TYPE	WGT	BMP PLUG	PH	TEMP	GOING DOWN HOLE	RATED	WORKING	on Loc.
197.0	BBL	H2O	8.33	985	8	58	88.6	2500	850	2000

Time Hrs	Rate	Pressure	Bbls Pumped	Fluid Type				
					Time Left Yard	12:11 PM	Time Left Loc	10:45 AM
					Time Arrived on Loc	3:13 PM	Time Arrived Yard	2:00 PM
10:00 AM					CALLED IN FOR JOB			
12:03 PM					PRECONVOY MEETING			
12:11 PM					LEFT YARD			
3:13 PM					ARRIVE ON LOCATION			
3:20 PM					PRE-JOB SAFTEY MEETING			
3:26 PM					SPOT TRUCKS			
3:30 PM					RUN LINES TO WELL PRIME PUMPS			
4:27 PM					SAFTEY MEETING			
4:48 PM	5	130	4680	GEL	PUMP WHILE RIG DRILLING BACK TO BOTTOM			
11:00 AM					SHUT DOWN			
3:00 PM	4-5	25-170	2980	GEL	PUMP WHILE RIG DRILLING BACK TO BOTTOM			
5:00 AM					SHUT DOWN			
1:00 PM	4-5	25-120		GEL	PUMP ON RIG WHILE RUNNING CASING			
12:30 AM					RE-SPOT TRUCKS/RIG UP CEMENT LINES			
1:30 AM	4-5	25-120		GEL	CONTINUE PUMPING WHILE RUNNING CASING			
6:15 AM					SAFETY MEETING WITH COMPANY MAN AND RIG CREW			
6:53 AM	3.5	150	10	H2O	LOAD LINES WASH OUT MUD FROM LINES AND TRUCK			
7:10 AM		2700			PRESSURE TEST			
7:28 AM	4	200	35	GEL	Mix and Pump Gell			
7:39 AM	4	200	5	H2O	Spacer			
7:42 AM	3	170	191	CEMT	Mix and Pump Cement @ 15.6# PPG Weighed with Pressurized Mud Scales			
8:12 AM					Dropped Plug			
8:13 AM	3	0	1	H2O	Start Displacement			
8:19 AM	5.5	50	20	H2O	Rate and Pressure			
8:24 AM	6.1	70	50	H2O	Rate and Pressure			
8:32 AM	6.1	150	100	H2O	Rate and Pressure			
8:38 AM			120	H2O	Rate and Pressure			
8:41 AM	6.1	580	150	H2O	Rate and Pressure. Gell came back @ 135bbls.			
8:47 AM			190		COMPANY MAN SAID SHUT DOWN SINCE WE HAD CEMENT BACK. 4 BBLS			
8:50 AM					Closed in Head and Rigged Down			

Bumped Plug	Final Lift Pressure	Floats Held	PSI Left on Casing	Cement to Surface		Total Circulation	Recommended time to wait on cement		
NO	860	NA	625	4	Bbls	50		Hours	DAVE DEYARMIN Service Supervisor

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Cement Job Log

Customer:	NORTHEAST NATURAL ENERGY LLC	Date:	10/18/2016	Serv. Supervisor:	JASON D. CRIBBS
Cust. Rep.:	JAY LEWIS	Ticket #:	BPA-1610-0013	Serv. Center	Black Lick, PA
Lease:	Fisher 9H	API Well #:		County:	Monongalia State: WV
Well Type:		Rig:	Nabors Drilling X08	Type of Job:	Production Casing

Materials Furnished by C&J ENERGY SERVICES

Plugs	Casing Hardware

		Sacks of Cement	Fluid Dens (lb/gal)	Yield (cuft/sk)	Mix Water (gal/sk)	Fluid Volume (bbls)	Mix Water (bbls)
Spacer 1:	CJ810 PureScrub Spacer + 0.5 gpb CJ880	-	13.5			50	
Spacer 2:	CJ810 PureScrub Spacer	-	13.5			50	
Scavenger							
Lead							
Tail:	50:50 CJ010:CJ910 + 0.35% CJ210 + 0.2% CJ500 + 0.2% CJX157011	3510	14.5	1.15	4.79	718	401
Displacement Chemicals:							

OPEN HOLE DATA

SIZE (in)	EXCESS (%)	DEPTH (ft)
8 3/4		6600
8 1/2		17578

TUBULAR DATA

TYPE (CSG/TBG/DP)	OD (in)	WEIGHT (lbs/ft)	THREAD	DEPTH (ft)	GRADE	ID (in)	BURST (psi)	COLLAPSE (psi)
Casing	5 1/2	20	BTC	17540.6		4.79	12360	11080

PREVIOUS CASING DATA

SIZE (in)	WEIGHT (lbs/ft)	ID (in)	DEPTH (ft)
9 5/8	40	8.84	2683

PERFORATED INTERVAL DATA

TOP	BTM	SPF	SIZE

CASING EQUIPMENT DEPTHS

SHOE	FLOAT	STAGE	ACP
17540.6	17517.9		NA

WELL FLUID TYPE	WELL FLUID DENSITY	DISPLACEMENT FLUID VOLUME	DISPLACEMENT FLUID TYPE	DISPLACEMENT FLUID DENSITY	DIFF PRESS (psi)	CSG LIFT (psi)	MAX PRESS (psi)	WATER ON LOC (bbl)
OBM	12.6 ppg	388.9 bbl	H20	8.3 ppg	2617	6072	6000	1200

Time	Rate (bbl/min)	Csg. Press. (psi)	Tbg. Press (psi)	Ann. Press. (psi)	Stg. Vol. (bbl)	Cum. Vol. (bbl)	Stage Details
12:00 AM						0	ARRIVE TO LOCATION/HOLD PRE-JOB SAFETY MEETING
12:15 AM						0	WAIT ON RIG TO FINISH RUNNING CASING
2:30 AM						0	SPOT TRUCKS/RIG UP/PRIME PUMPS
4:50 AM						0	HOLD SAFETY MEETING WITH ALL PERSONNEL
5:55 AM	3	500			5	5	PUMP H20 TO LOAD LINES
5:56 AM	0	0			0	5	PRESSURE TEST PUMPS AND LINES TO 6000 PSI
5:58 AM	0	0			0	5	CHANGE OUT VALVE ON PLUG CONTAINER
6:23 AM	0	0			0	5	PRESSURE TEST PUMPS AND LINES TO 6000 PSI
6:27 AM	5	1500			50	55	RELEASE BOTTOM PLUG/ MIX & PUMP SPACER 1 @ 13.5 PPG
6:36 AM	5	1500			50	105	MIX AND PUMP SPACER 2 @ 13.5 PPG
6:47 AM	7.1	2000			718	823	MIX AND PUMP CEMENT @ 14.5 PPG
8:28 AM	0	0			0	823	SHUT DOWN/WASH LINES/RELEASE TOP PLUG
8:37 AM	9 TO 2	0-3300			389	1212	PUMP H20 DISPLACEMENT
9:36 AM		4300				1212	LAND PLUG ON FC/HOLD PRESSURE 5 MINUTES
9:41 AM		4300-0				1212	RELEASE PRESSURE/CHECK FLOATS/FLOATS HELD
9:53 AM		0-4300			6	1218	PRESSURE BACK UP ON WELL/HOLD 3 MINUTES
10:00 AM		4300-0				1218	RELEASE PRESSURE/CHECK FLOATS/FLOATS HELD
10:05 AM						1218	RIG DOWN FLOOR
10:15 AM						1218	WASH UP/RACK UP
						1218	JOB COMPLETE
						1218	
						1218	
						1218	
						1218	

Left Yard	10/17/16 9:00 PM	Left Loc.	10/18/16 11:00 AM
Arrived Loc.	10/18/16 12:00 AM	Left Loc.	

Bumped Plug (psi)	Final Differential (psi)	Floats Held (Y/N)	PSI Left on Casing	Cement to Surface (bbl)	Full Circ During Job (Y/N)	Max Pump Pressure (psi)	
Yes	3300	YES	0		Yes	4300	JASON D. CRIBBS Service Supervisor

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Perforation Record

Stage No.	Report Date	Perforated from MD Ft.	Perforated to MD ft.	Number of Perforations	Formation
1	7/2/2017		17,396	40	Marceullus
2	7/3/2017	17,358	17,195	40	Marceullus
3	7/3/2017	17,157	16,994	40	Marceullus
4	7/3/2017	16,956	16,793	40	Marceullus
5	7/4/2017	16,755	16,592	40	Marceullus
6	7/5/2017	16,554	16,391	40	Marceullus
7	7/6/2017	16,352	16,190	40	Marceullus
8	7/6/2017	16,152	15,989	40	Marceullus
9	7/6/2017	15,951	15,788	40	Marceullus
10	7/7/2017	15,750	15,587	40	Marceullus
11	7/7/2017	15,549	15,386	40	Marceullus
12	7/7/2017	15,348	15,185	40	Marceullus
13	7/8/2017	15,147	14,984	40	Marceullus
14	7/8/2017	14,946	14,783	40	Marceullus
15	7/8/2017	14,745	14,582	40	Marceullus
16	7/8/2017	14,544	14,381	40	Marceullus
17	7/8/2017	14,343	14,180	40	Marceullus
18	7/9/2017	14,142	13,979	40	Marceullus
19	7/9/2017	13,740	13,577	40	Marceullus
20	7/9/2017	13,740	13,577	40	Marceullus
21	7/9/2017	13,539	13,376	40	Marceullus
22	7/10/2017	13,338	13,175	40	Marceullus
23	7/10/2017	13,338	13,175	40	Marceullus
24	7/11/2017	12,936	12,773	40	Marceullus
25	7/11/2017	12,534	12,371	40	Marceullus
26	7/11/2017	12,534	12,371	40	Marceullus
27	7/12/2017	12,333	12,170	40	Marceullus
28	7/12/2017	12,132	11,969	40	Marceullus
29	7/12/2017	11,931	11,768	40	Marceullus
30	7/12/2017	11,730	11,567	40	Marceullus
31	7/12/2017	11,529	11,366	40	Marceullus
32	7/13/2017	11,328	11,165	40	Marceullus
33	7/13/2017	11,127	10,964	40	Marceullus
34	7/13/2017	10,926	10,763	40	Marceullus
35	7/14/2017	10,725	10,562	40	Marceullus
36	7/14/2017	10,524	10,361	40	Marceullus
37	7/14/2017	9,954	9,793	40	Marceullus
38	7/15/2017	10,122	9,959	40	Marceullus
39	7/15/2017	9,921	9,758	40	Marceullus
40	7/15/2017	9,720	9,557	40	Marceullus
41	7/16/2017	9,519	9,356	40	Marceullus
42	7/16/2017	9,318	9,155	40	Marceullus
43	7/16/2017	9,117	8,954	40	Marceullus
44	7/16/2017	8,976	8,753	40	Marceullus

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Stimulation Report

Stage No.	Report Date	Avg Treating Rate (BPM)	Avg Treating Pressure (psi)	Breakdown Pressure (psi)	ISIP (psi)	Total Amount of Proppant (lbs)	Total Clean Fluid (bbls)
1	7/2/2017	70	9,003	8,859	5,235	299,085	7,795
2	7/3/2017	81	8,306	6,046	4,210	399,438	7,702
3	7/3/2017	81	8,296	6,056	4,515	403,603	7,472
4	7/3/2017	81	8,403	5,892	4,329	403,480	7,476
5	7/4/2017	79	8,261	6,495	5,111	399,785	7,626
6	7/5/2017	81	8,240	6,408	5,125	399,349	8,969
7	7/6/2017	81	8,347	6,198	4,857	403,514	7,727
8	7/6/2017	81	8,469	6,408	4,684	401,455	7,323
9	7/6/2017	81	8,285	6,834	5,156	399,815	7,567
10	7/7/2017	88	8,564	6,015	5,392	400,291	7,688
11	7/7/2017	82	8,291	6,333	5,319	401,401	7,740
12	7/7/2017	85	8,620	6,799	5,462	399,336	8,668
13	7/8/2017	88	8,790	6,509	4,948	399,476	7,258
14	7/8/2017	81	8,175	6,561	5,414	401,090	7,476
15	7/8/2017	81	8,183	6,210	5,462	402,063	8,650
16	7/8/2017	89	8,620	6,236	5,047	400,932	7,696
17	7/8/2017	84	8,399	6,715	5,585	398,416	7,812
18	7/9/2017	81	8,263	6,413	5,064	399,974	7,655
19	7/9/2017	80	8,240	6,315	4,910	398,993	7,418
20	7/9/2017	80	8,163	6,604	4,972	402,224	7,480
21	7/9/2017	82	8,109	6,820	4,559	403,559	7,691
22	7/10/2017	88	8,731	7,006	4,919	401,430	7,333
23	7/10/2017	82	8,085	6,587	4,820	401,660	7,605
24	7/11/2017	85	8,551	7,037	5,452	400,320	7,556
25	7/11/2017	81	8,081	6,724	4,999	402,184	7,658
26	7/11/2017	79	8,145	7,241	4,874	401,336	7,721
27	7/12/2017	80	8,161	6,474	5,018	400,324	7,595
28	7/12/2017	81	8,228	6,434	5,005	402,318	7,512
29	7/12/2017	81	8,219	6,616	4,903	402,960	7,416
30	7/12/2017	81	7,960	6,943	5,587	400,282	7,647
31	7/12/2017	80	8,191	6,506	4,783	400,628	7,680
32	7/13/2017	82	8,293	7,070	5,223	403,518	7,639
33	7/13/2017	81	8,300	6,821	5,898	398,453	8,564
34	7/13/2017	81	8,261	7,168	5,131	400,314	7,262
35	7/14/2017	82	8,325	7,208	4,987	403,956	7,765
36	7/14/2017	81	8,197	7,368	5,308	403,933	7,682
37	7/14/2017	80	8,097	7,375	4,875	399,452	7,315
38	7/15/2017	80	8,143	7,501	9,999	400,218	7,395
39	7/15/2017	82	8,124	7,323	5,436	400,115	7,456
40	7/15/2017	81	8,129	7,531	5,170	396,018	7,536
41	7/16/2017	80	8,143	7,170	5,125	399,810	7,387
42	7/16/2017	82	8,288	7,561	5,307	364,080	7,178
43	7/16/2017	80	8,053	7,768	5,381	400,442	8,301
44	7/16/2017	80	7,936	7,621	5,272	404,668	7,383

Formation and Depths

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_2S, etc)
Gray Sand/Shale	0	245			sand/shale
Gray/Red Shale	245	335			shale
Gray Sand	335	350			sand
Coal	350	355			coal
Sand	355	375			sand
Coal	375	380			coal
Sand/Shale	380	1056			sand/shale
Coal	1056	1066			coal
Sand/Shale	1066	1135			sand/shale
Gray/Red Shale	1135	1670			shale
Sand	1670	1864			sand
Coal	1884	1890			coal
Sand/Shale	1890	1920			sand/shale
Coal	1920	1930			coal
Sand/shale	1930	2480			sand/shale
Sand	2480	2680			sand
Sand/shale	2680	3600			sand/shale
Sandstone/Shale/Siltstone	3600	6300			sandstone/shale/siltstone
Middlesex	7568	7784	7688	7947	shale
Burkett	7784	7976	7947	8192	shale
Geneseo	7976	8022	8192	8225	shale
Tully	8022	8069	8225	8328	limestone
Hamilton	8069	8181	8328	8542	shale
Marcellus	8181	8233	8542	8678	shale
Cherry Valley	8233	8236	8678	8690	limestone
Lower Marcellus	8236		8690		shale

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Hydraulic Fracturing Fluid Product Component Information Disclosure

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Job Start Date:	7/2/2017
Job End Date:	7/17/2017
State:	West Virginia
County:	Monongalia
API Number:	47-061-01737-00-00
Operator Name:	Northeast Natural Energy LLC
Well Name and Number:	Fisher 9H
Latitude:	39.69645800
Longitude:	-80.21367100
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	8,274
Total Base Water Volume (gal):	14,561,484
Total Base Non Water Volume:	0

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

INTERSTATE Oil & Gas COMPACT COMMISSION

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	Operator	Carrier					
			Water	7732-18-5	100.00000	87.24870	
Sand, White	BJ Services	Proppant					
				Listed Below			

Other Chemical (s)	BJ Services	See Trade Name (s) List					
			Water	7732-18-5	92.50000	0.10784	
MaxPerm 30	BJ Services	Friction Reducer					
				Listed Below			
HCl, 5.1 - 7.5%	BJ Services	Acidizing					
				Listed Below			
Ferrotrol 300L	BJ Services	Iron Control					
				Listed Below			
CI-14	BJ Services	Corrosion Inhibitor					
				Listed Below			
K-139	Nalco-Champion	Microbial Control					
				Listed Below			
EC6486A	Nalco-Champion	Scale Inhibitor					
				Listed Below			
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Crystalline Silica (Quartz)	14808-60-7	100.00000	12.57980	
			Acrylamide Modified Acrylic Polymer	38193-60-1	60.00000	0.02972	
			Petroleum distillates	64742-47-8	30.00000	0.01486	
			Hydrochloric Acid	7647-01-0	7.50000	0.00624	

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			Quaternary ammounium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	30.00000	0.00488	
			Sodium Chloride	7647-14-5	5.00000	0.00248	
			Sorbitan monooleate ethoxylate	9005-65-6	5.00000	0.00248	
			Sorbian, mono-(9Z)-9octadecenoate	1338-43-8	5.00000	0.00248	
			Oxyalkylated Alcohol	78330-21-9	5.00000	0.00248	
			Glutaraldehyde	111-30-8	10.00000	0.00192	
			Citric Acid	77-92-9	60.00000	0.00145	
			Ethylene Glycol	107-21-1	30.00000	0.00140	
			Amine Triphosphate	Proprietary	30.00000	0.00126	
			Ethanol	64-17-5	5.00000	0.00067	
			Methanol	67-56-1	100.00000	0.00056	
			Acetic acid	127-08-2	1.00000	0.00050	
			Polyoxyalkylenes	68951-67-7	30.00000	0.00017	
			Fatty Acids	61790-12-3	1.20000	0.00006	
			Acetic acid, Potassium Salt	64-19-7	0.10000	0.00005	
			Tetrasodium EDTA	64-02-8	0.10000	0.00005	
			Modified Thiourea Polymer	68527-49-1	7.00000	0.00004	
			Propargyl Alcohol	107-19-7	5.00000	0.00003	
			Olefin	64743-02-8	5.00000	0.00003	
			Ammonium Persulfate	7727-54-0	100.00000	0.00001	
			Formaldehyde	50-00-0	1.00000	0.00001	

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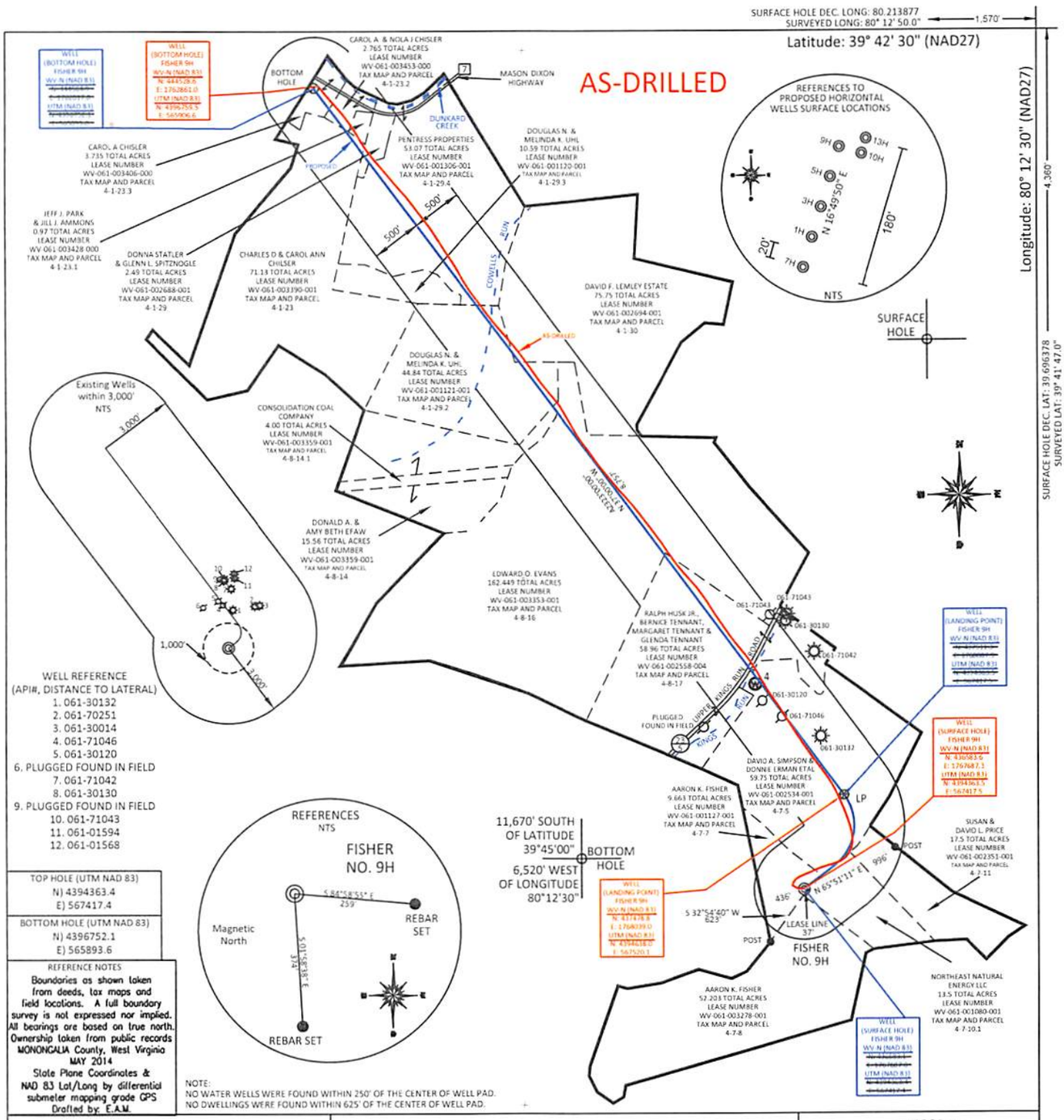
* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%
*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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)



FILE #: NNE14

DRAWING #: 2373

SCALE: PLAT: 1" = 1400' TICK: 1" = 2000'

MINIMUM DEGREE OF ACCURACY: 1/200

PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

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

Signed: _____

L.L.S. #2124 : Ernest J. Benchek III

ERNEST J. BENCHEK III LICENSED No. 2124 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

DATE: MAY 21, 2018

OPERATOR'S WELL #: FISHER NO. 9H

API WELL #: 47 (STATE) 61 (COUNTY) ____ (PERMIT)

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

WATERSHED: DUNKARD CREEK

AS-BUILT ELEVATION: 1,453'

COUNTY/DISTRICT: MONONGALIA / CLAY

QUADRANGLE: BLACKSVILLE

SURFACE OWNER: AARON K. FISHER

ACREAGE: 9.663 +/-

OIL & GAS ROYALTY OWNER: HENRY P. AMES, III, ET AL

ACREAGE: 640.205 +/-

LEASE NUMBERS: _____

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

TARGET FORMATION: MARCELLUS

ESTIMATED DEPTH: TVD: 8,274.87' TMD: 17,578'

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

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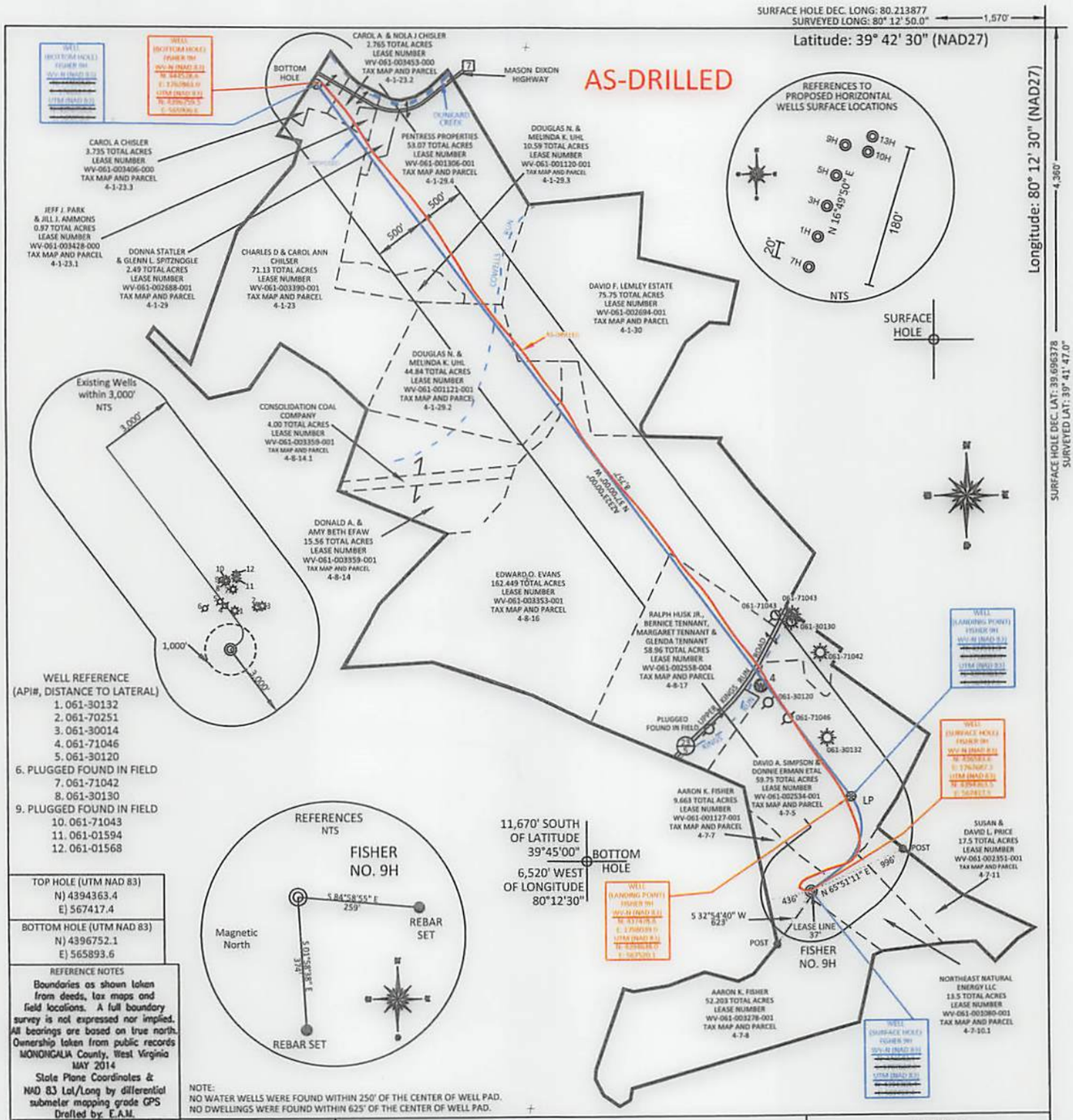

FILE #: NNE14

DRAWING #: 2373

SCALE: PLAT: 1" = 1400' TICK: 1" = 2000'

MINIMUM DEGREE OF ACCURACY: 1/200

PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

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