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 - 01752 County Monongalia District Clay
Quad Blacksville Pad Name Fisher Field/Pool Name Fisher
Farm name Aaron K. Fisher Well Number Fisher 4H
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 4394337.6	Easting 567419.4
Landing Point of Curve	Northing 4394138.2	Easting 567644.8
Bottom Hole	Northing 4392570.6	Easting 5688656.5

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 8/29/2016 Date drilling commenced 3/16/2017 Date drilling ceased 5/10/2017
Date completion activities began 6/16/2017 Date completion activities ceased 7/3/2017
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 1,352' 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 - 01752 Farm name Aaron K. Fisher Well number Fisher 4H

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"	1,412'	N	54.5	N/A	Y 59 Bbl.
Coal							
Intermediate 1	12-1/4"	9-5/8"	2,640'	N	40	N/A	Y 20 Bbl.
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	15,271'	N	20	N/A	N, EST. 1,640'
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	Premium NE-1 + Additives	1,095	15.2	1.27	1386.802	Surface	8
Coal							
Intermediate 1	Class A + 1%	882	15.6	1.19	1044.313	Surface	8
Intermediate 2							
Intermediate 3							
Production	50:50 Class A + Additives	2,986	14.5	1.19	3503.5	1,640'	48
Tubing							

Drillers TD (ft) 15,315' Loggers TD (ft) 15,285'
Deepest formation penetrated Marcellus Plug back to (ft)
Plug back procedure

Kick off depth (ft) 7,180'

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

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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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API 47- 061 - 01752 Farm name Aaron K. Fisher Well number Fisher 4H

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

Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS			
Marcellus	8,281'	TVD	15,315'	MD

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 3,469 psi Bottom Hole _____ psi DURATION OF TEST 48 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	4,805 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 1957 Jefferson Rd. City Rices Landing State PA Zip 15357

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

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

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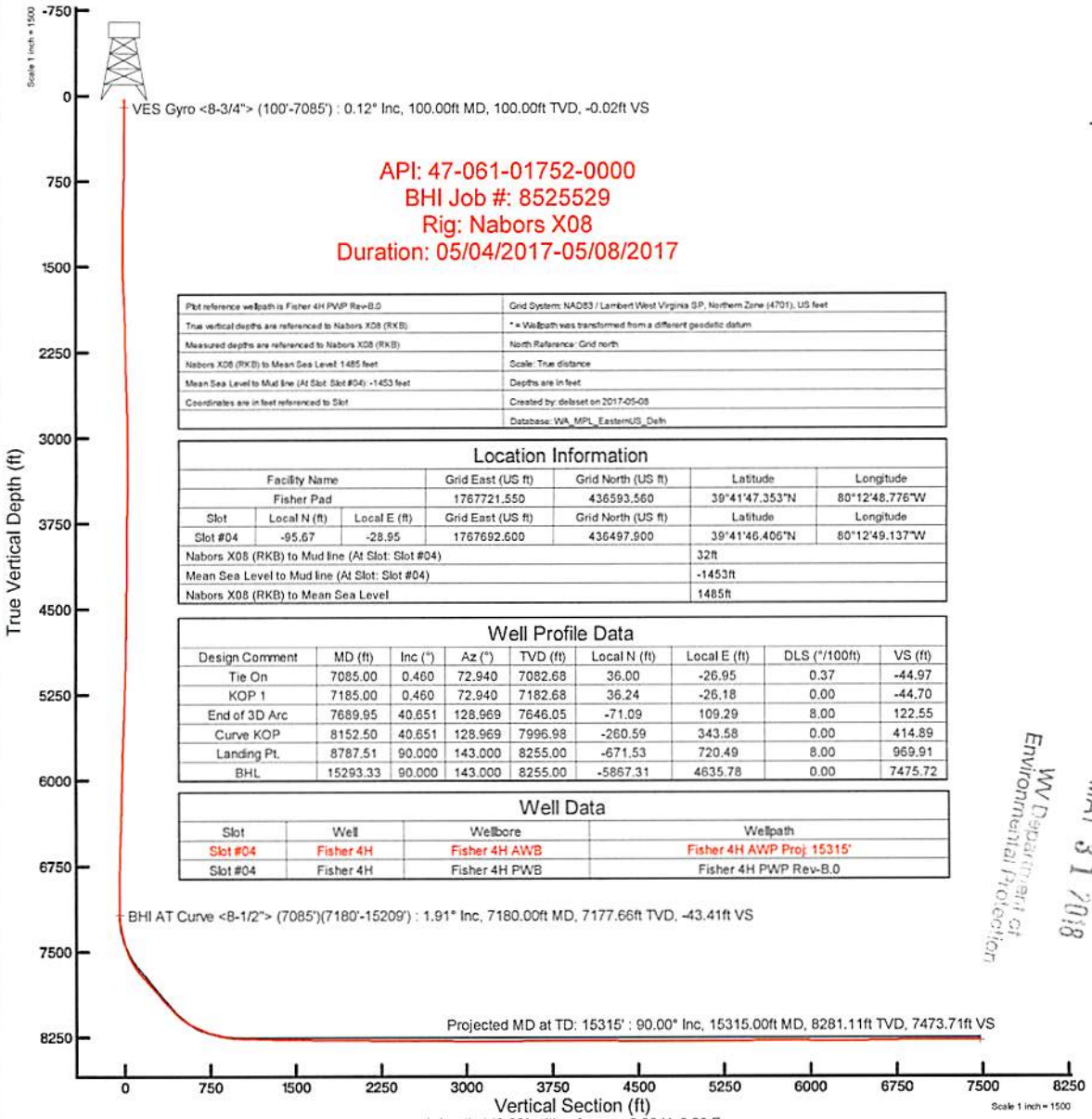
Completed by Hollie Medley Telephone 304-212-0422
Signature Hollie Medley Title Regulatory Manager Date 5-18-18

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 #04
Well: Fisher 4H
Wellbore: Fisher 4H PWB



API: 47-061-01752-0000
BHI Job #: 8525529
Rig: Nabors X08
Duration: 05/04/2017-05/08/2017

Plot reference wellpath is Fisher 4H 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 #04): -1453 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: deboet on 2017-05-08
	Database: WA_MPL_EasternUS_Defn

Location Information

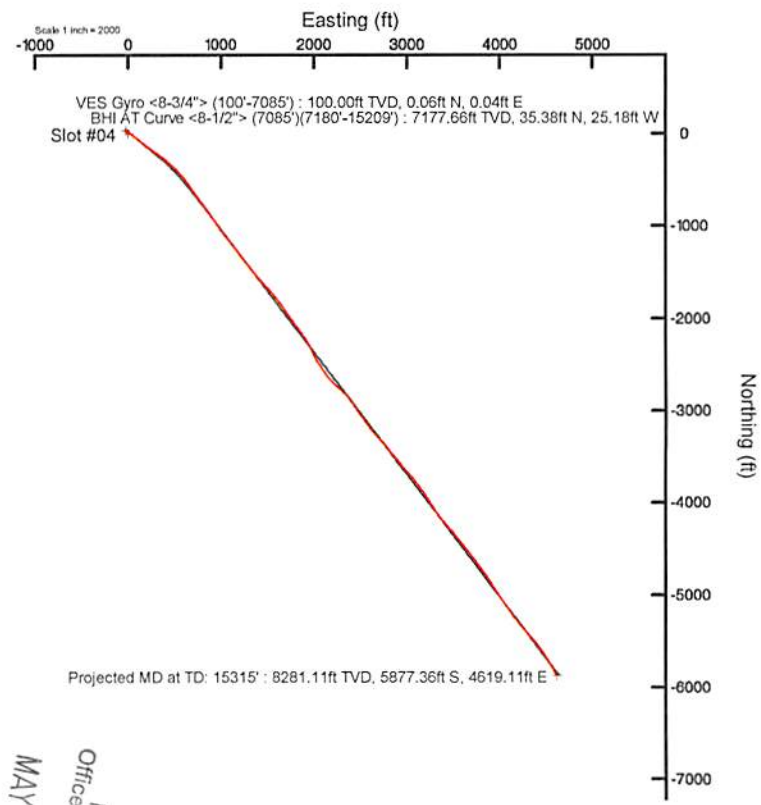
Facility Name			Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Fisher Pad			1767721.550	436593.560	39°41'47.353"N	80°12'48.776"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot #04	-95.67	-28.95	1767692.600	436497.900	39°41'46.406"N	80°12'49.137"W
Nabors X08 (RKB) to Mud line (At Slot: Slot #04)					32ft	
Mean Sea Level to Mud line (At Slot: Slot #04)					-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	7085.00	0.460	72.940	7082.68	36.00	-26.95	0.37	-44.97
KOP 1	7185.00	0.460	72.940	7182.68	36.24	-26.18	0.00	-44.70
End of 3D Arc	7689.95	40.651	128.969	7646.05	-71.09	109.29	8.00	122.55
Curve KOP	8152.50	40.651	128.969	7996.98	-260.59	343.58	0.00	414.89
Landing Pt.	8787.51	90.000	143.000	8255.00	-671.53	720.49	8.00	969.91
BHL	15293.33	90.000	143.000	8255.00	-5867.31	4635.78	0.00	7475.72

Well Data

Slot	Well	Wellbore	Wellpath
Slot #04	Fisher 4H	Fisher 4H AWB	Fisher 4H AWP Proj: 15315'
Slot #04	Fisher 4H	Fisher 4H PWB	Fisher 4H PWP Rev-B.0



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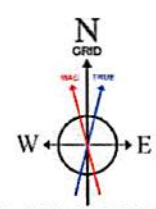

BGGM (1900.0 to 2018.0) Dip: 66.78° Field: 52154.6 nT
Magnetic North is 9.05 degrees West of True North (at 28/Apr/2017)
Grid North is 0.46 degrees West of True North
To correct azimuth from True to Grid add 0.46 degrees
To correct azimuth from Magnetic to Grid subtract 8.59 degrees

Actual Wellpath Report

Fisher 4H AWP Proj: 15315'

REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #04
Area	Monongalia County, WV	Well	Fisher 4H
Field	Monongalia	Wellbore	Fisher 4H AWB
Facility	Fisher Pad		

REPORT SETUP INFORMATION			
Projection System	NAD83 / Lambert West Virginia SP, Northern Zone (4701), US feet	Software System	WellArchitect® 5.0
North Reference	Grid	User	Delaset
Scale	0.999941	Report Generated	08/May/2017 at 15:00
Convergence at slot	0.46° West	Database/Source file	WA_MPL_EasternUS_Defn/Fisher_4H_AWP_Proj__15315_.xml

WELLPATH LOCATION	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-95.67	-28.95	1767692.60	436497.90	39°41'46.406"N	80°12'49.137"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 #04)	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	143.00°

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Fisher 4H AWP Proj: 15315'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #04
Area	Monongalia County, WV	Well	Fisher 4H
Field	Monongalia	Wellbore	Fisher 4H AWB
Facility	Fisher Pad		

WELLPATH DATA (160 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]	Comments
0.00†	0.000	38.030	0.00	0.00	0.00	0.00	1767692.60	436497.90	39°41'46.406"N	80°12'49.137"W	0.00	0.000	0.00	0.00	0.00	
32.00	0.000	38.030	32.00	0.00	0.00	0.00	1767692.60	436497.90	39°41'46.406"N	80°12'49.137"W	0.00	0.000	0.00	0.00	0.00	
100.00	0.120	38.030	100.00	-0.02	0.06	0.04	1767692.64	436497.96	39°41'46.406"N	80°12'49.136"W	0.07	38.030	0.18	0.18	55.93	VES Gyro <8-3/4"> (100'-7085')
200.00	0.410	128.620	200.00	0.30	-0.08	0.39	1767692.99	436497.82	39°41'46.405"N	80°12'49.132"W	0.40	102.322	0.43	0.29	90.59	
300.00	0.170	269.380	300.00	0.56	-0.31	0.52	1767693.12	436497.59	39°41'46.403"N	80°12'49.130"W	0.60	120.816	0.55	-0.24	140.76	
400.00	0.470	250.020	400.00	0.35	-0.45	-0.01	1767692.59	436497.45	39°41'46.401"N	80°12'49.137"W	0.45	181.863	0.31	0.30	-19.36	
500.00	0.990	262.790	499.99	-0.20	-0.70	-1.26	1767691.34	436497.20	39°41'46.399"N	80°12'49.153"W	1.44	240.892	0.54	0.52	12.77	
600.00	0.800	266.420	599.98	-1.01	-0.85	-2.81	1767689.79	436497.05	39°41'46.397"N	80°12'49.173"W	2.94	253.138	0.20	-0.19	3.63	
700.00	1.170	290.930	699.96	-2.26	-0.53	-4.46	1767688.14	436497.37	39°41'46.400"N	80°12'49.194"W	4.49	263.214	0.55	0.37	24.51	
800.00	1.340	293.510	799.94	-4.14	0.30	-6.49	1767686.11	436498.20	39°41'46.408"N	80°12'49.220"W	6.49	272.650	0.18	0.17	2.58	
900.00	1.300	296.430	899.91	-6.18	1.27	-8.58	1767684.03	436499.17	39°41'46.417"N	80°12'49.247"W	8.67	278.435	0.08	-0.04	2.92	
1000.00	1.070	297.330	999.89	-8.03	2.21	-10.42	1767682.18	436500.11	39°41'46.427"N	80°12'49.271"W	10.65	281.949	0.23	-0.23	0.90	
1100.00	0.370	343.740	1099.88	-9.18	2.94	-11.34	1767681.26	436500.84	39°41'46.434"N	80°12'49.282"W	11.72	284.552	0.86	-0.70	46.41	
1200.00	0.230	307.900	1199.88	-9.67	3.38	-11.59	1767681.01	436501.28	39°41'46.438"N	80°12'49.286"W	12.07	286.246	0.23	-0.14	-35.84	
1300.00	0.030	154.170	1299.88	-9.84	3.48	-11.74	1767680.86	436501.38	39°41'46.439"N	80°12'49.288"W	12.24	286.502	0.26	-0.20	-153.73	
1400.00	0.420	334.130	1399.88	-10.17	3.78	-11.88	1767680.72	436501.68	39°41'46.442"N	80°12'49.289"W	12.47	287.657	0.45	0.39	179.96	
1500.00	0.600	79.330	1499.88	-10.30	4.21	-11.53	1767681.07	436502.11	39°41'46.446"N	80°12'49.285"W	12.27	290.058	0.82	0.18	105.20	
1600.00	2.180	114.210	1599.85	-8.40	3.53	-9.28	1767683.32	436501.43	39°41'46.440"N	80°12'49.256"W	9.93	290.807	1.72	1.58	34.88	
1700.00	2.840	122.810	1699.75	-4.41	1.40	-5.46	1767687.14	436499.30	39°41'46.419"N	80°12'49.207"W	5.64	284.415	0.76	0.66	8.60	
1800.00	3.060	119.530	1799.62	0.36	-1.25	-1.06	1767691.54	436496.65	39°41'46.393"N	80°12'49.150"W	1.64	220.198	0.28	0.22	-3.28	
1900.00	2.260	132.150	1899.51	4.75	-3.89	2.73	1767695.32	436494.01	39°41'46.367"N	80°12'49.102"W	4.75	145.004	0.99	-0.80	12.62	
2000.00	1.120	136.370	1999.46	7.66	-5.92	4.86	1767697.46	436491.98	39°41'46.347"N	80°12'49.074"W	7.66	140.622	1.15	-1.14	4.22	
2100.00	1.140	131.160	2099.44	9.60	-7.29	6.28	1767698.88	436490.62	39°41'46.334"N	80°12'49.056"W	9.62	139.217	0.10	0.02	-5.21	
2200.00	1.760	88.350	2199.41	11.46	-7.90	8.57	1767701.17	436490.00	39°41'46.328"N	80°12'49.027"W	11.65	132.659	1.21	0.62	-42.81	
2300.00	2.150	82.750	2299.36	13.28	-7.61	11.96	1767704.56	436490.29	39°41'46.331"N	80°12'48.983"W	14.18	122.474	0.43	0.39	-5.60	
2400.00	2.690	89.600	2399.27	15.61	-7.36	16.17	1767708.77	436490.54	39°41'46.334"N	80°12'48.929"W	17.77	114.475	0.61	0.54	6.85	
2500.00	2.880	97.410	2499.15	18.77	-7.67	21.01	1767713.61	436490.23	39°41'46.331"N	80°12'48.867"W	22.37	110.054	0.42	0.19	7.81	
2600.00	2.630	97.800	2599.03	22.14	-8.30	25.77	1767718.37	436489.60	39°41'46.325"N	80°12'48.806"W	27.08	107.859	0.25	-0.25	0.39	
2700.00	2.220	97.260	2698.94	25.11	-8.86	29.97	1767722.57	436489.04	39°41'46.320"N	80°12'48.753"W	31.25	106.471	0.41	-0.41	-0.54	
2800.00	1.550	96.690	2798.89	27.40	-9.26	33.23	1767725.83	436488.64	39°41'46.317"N	80°12'48.711"W	34.50	105.575	0.67	-0.67	-0.57	

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northeast NATURAL ENERGY

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Area	Monongalia County, WV	Well	Fisher 4H
Field	Monongalia	Wellbore	Fisher 4H AWB
Facility	Fisher Pad		

WELLPATH DATA (160 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]	Comments
2900.00	0.530	102.360	2898.87	28.68	-9.52	35.03	1767727.63	436488.38	39°41'46.314"N	80°12'48.688"W	36.30	105.204	1.02	-1.02	5.67	
3000.00	0.320	130.230	2998.87	29.31	-9.80	35.69	1767728.29	436488.10	39°41'46.311"N	80°12'48.679"W	37.01	105.351	0.29	-0.21	27.87	
3100.00	0.120	345.630	3098.87	29.48	-9.88	35.88	1767728.48	436488.02	39°41'46.311"N	80°12'48.677"W	37.22	105.392	0.42	-0.20	-144.60	
3200.00	0.160	233.760	3198.87	29.38	-9.86	35.74	1767728.34	436488.04	39°41'46.311"N	80°12'48.679"W	37.08	105.421	0.23	0.04	-111.87	
3300.00	0.210	310.070	3298.87	29.20	-9.82	35.49	1767728.09	436488.08	39°41'46.311"N	80°12'48.682"W	36.82	105.472	0.23	0.05	76.31	
3400.00	0.280	257.230	3398.87	28.92	-9.76	35.11	1767727.71	436488.14	39°41'46.312"N	80°12'48.687"W	36.44	105.534	0.23	0.07	-52.84	
3500.00	0.370	312.990	3498.87	28.51	-9.59	34.64	1767727.23	436488.31	39°41'46.313"N	80°12'48.693"W	35.94	105.482	0.31	0.09	55.76	
3600.00	0.540	309.470	3598.86	27.73	-9.07	34.04	1767726.63	436488.83	39°41'46.319"N	80°12'48.701"W	35.22	104.927	0.17	0.17	-3.52	
3700.00	0.360	296.120	3698.86	26.99	-8.64	33.39	1767725.99	436489.26	39°41'46.323"N	80°12'48.709"W	34.49	104.501	0.21	-0.18	-13.35	
3800.00	0.630	295.630	3798.86	26.22	-8.26	32.61	1767725.21	436489.64	39°41'46.326"N	80°12'48.719"W	33.64	104.212	0.27	0.27	-0.49	
3900.00	0.390	303.020	3898.85	25.41	-7.84	31.83	1767724.43	436490.06	39°41'46.331"N	80°12'48.729"W	32.78	103.830	0.25	-0.24	7.39	
4000.00	0.480	321.610	3998.85	24.68	-7.32	31.29	1767723.88	436490.58	39°41'46.336"N	80°12'48.736"W	32.13	103.173	0.17	0.09	18.59	
4100.00	0.520	306.360	4098.84	23.82	-6.73	30.66	1767723.26	436491.18	39°41'46.341"N	80°12'48.744"W	31.39	102.372	0.14	0.04	-15.25	
4200.00	0.460	303.870	4198.84	23.01	-6.23	29.96	1767722.56	436491.67	39°41'46.346"N	80°12'48.753"W	30.60	101.751	0.06	-0.06	-2.49	
4300.00	0.300	301.720	4298.84	22.39	-5.87	29.41	1767722.00	436492.03	39°41'46.350"N	80°12'48.760"W	29.99	101.291	0.16	-0.16	-2.15	
4400.00	0.610	289.160	4398.84	21.70	-5.56	28.68	1767721.28	436492.34	39°41'46.353"N	80°12'48.770"W	29.21	100.969	0.32	0.31	-12.56	
4500.00	0.700	281.970	4498.83	20.80	-5.26	27.58	1767720.18	436492.64	39°41'46.356"N	80°12'48.784"W	28.08	100.793	0.12	0.09	-7.19	
4600.00	0.990	288.980	4598.82	19.62	-4.85	26.16	1767718.76	436493.05	39°41'46.360"N	80°12'48.802"W	26.61	100.501	0.31	0.29	7.01	
4700.00	1.110	286.630	4698.80	18.12	-4.29	24.42	1767717.02	436493.61	39°41'46.365"N	80°12'48.824"W	24.79	99.967	0.13	0.12	-2.35	
4800.00	1.210	287.480	4798.78	16.48	-3.70	22.48	1767715.08	436494.20	39°41'46.371"N	80°12'48.849"W	22.79	99.338	0.10	0.10	0.85	
4900.00	1.240	280.530	4898.76	14.83	-3.18	20.41	1767713.01	436494.72	39°41'46.376"N	80°12'48.876"W	20.66	98.861	0.15	0.03	-6.95	
5000.00	1.510	287.790	4998.73	12.95	-2.58	18.10	1767710.69	436495.32	39°41'46.381"N	80°12'48.905"W	18.28	98.121	0.32	0.27	7.26	
5100.00	1.800	290.050	5098.69	10.56	-1.64	15.37	1767707.96	436496.26	39°41'46.391"N	80°12'48.940"W	15.45	96.096	0.30	0.29	2.26	
5200.00	2.260	296.950	5198.62	7.47	-0.21	12.13	1767704.73	436497.69	39°41'46.404"N	80°12'48.982"W	12.13	90.987	0.52	0.46	6.90	
5300.00	2.310	303.660	5298.55	3.80	1.80	8.70	1767701.30	436499.70	39°41'46.424"N	80°12'49.026"W	8.88	78.297	0.27	0.05	6.71	
5400.00	2.150	301.020	5398.47	0.15	3.89	5.41	1767698.01	436501.79	39°41'46.444"N	80°12'49.068"W	6.66	54.328	0.19	-0.16	-2.64	
5500.00	2.240	307.750	5498.40	-3.47	6.05	2.26	1767694.86	436503.95	39°41'46.465"N	80°12'49.109"W	6.46	20.487	0.27	0.09	6.73	
5600.00	2.280	312.800	5598.32	-7.31	8.60	-0.74	1767691.86	436506.50	39°41'46.490"N	80°12'49.147"W	8.63	355.048	0.20	0.04	5.05	
5700.00	2.440	315.170	5698.23	-11.38	11.46	-3.71	1767688.90	436509.36	39°41'46.518"N	80°12'49.186"W	12.04	342.080	0.19	0.16	2.37	
5800.00	1.780	294.680	5798.17	-14.86	13.62	-6.62	1767685.98	436511.51	39°41'46.540"N	80°12'49.223"W	15.14	334.081	0.99	-0.66	-20.49	

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Fisher 4H AWP Proj: 15315'

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BAKER HUGHES

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Area	Monongalia County, WV	Well	Fisher 4H
Field	Monongalia	Wellbore	Fisher 4H AWB
Facility	Fisher Pad		

WELLPATH DATA (160 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]	Comments
5900.00	1.610	295.610	5898.12	-17.47	14.87	-9.30	1767683.31	436512.77	39°41'46.552"N	80°12'49.257"W	17.54	327.993	0.17	-0.17	0.93	
6000.00	1.610	305.400	5998.08	-20.06	16.29	-11.71	1767680.89	436514.19	39°41'46.566"N	80°12'49.288"W	20.06	324.301	0.27	0.00	9.79	
6100.00	1.590	292.580	6098.05	-22.59	17.64	-14.13	1767678.47	436515.54	39°41'46.579"N	80°12'49.320"W	22.60	321.297	0.36	-0.02	-12.82	
6200.00	1.520	294.990	6198.01	-24.96	18.73	-16.62	1767675.98	436516.63	39°41'46.589"N	80°12'49.352"W	25.04	318.425	0.10	-0.07	2.41	
6300.00	1.650	310.450	6297.97	-27.54	20.23	-18.91	1767673.69	436518.13	39°41'46.604"N	80°12'49.381"W	27.69	316.920	0.45	0.13	15.46	
6400.00	2.060	311.610	6397.92	-30.70	22.35	-21.35	1767671.25	436520.25	39°41'46.625"N	80°12'49.412"W	30.91	316.311	0.41	0.41	1.16	
6500.00	2.370	325.900	6497.84	-34.53	25.26	-23.86	1767668.75	436523.16	39°41'46.653"N	80°12'49.445"W	34.74	316.636	0.63	0.31	14.29	
6600.00	1.780	313.770	6597.78	-38.13	28.05	-26.14	1767666.46	436525.94	39°41'46.681"N	80°12'49.474"W	38.34	317.018	0.73	-0.59	-12.13	
6700.00	1.520	349.830	6697.74	-40.84	30.43	-27.49	1767665.11	436528.32	39°41'46.704"N	80°12'49.492"W	41.01	317.899	1.05	-0.26	36.06	
6800.00	1.150	342.850	6797.71	-42.97	32.69	-28.02	1767664.58	436530.59	39°41'46.726"N	80°12'49.499"W	43.06	319.396	0.40	-0.37	-6.98	
6900.00	0.980	20.380	6897.70	-44.38	34.45	-28.02	1767664.58	436532.35	39°41'46.744"N	80°12'49.499"W	44.41	320.876	0.70	-0.17	37.53	
7000.00	0.490	34.520	6997.69	-44.97	35.60	-27.48	1767665.12	436533.50	39°41'46.755"N	80°12'49.492"W	44.98	322.338	0.52	-0.49	14.14	
7085.00	0.460	72.940	7082.68	-44.97	36.00	-26.95	1767665.65	436533.90	39°41'46.759"N	80°12'49.485"W	44.97	323.186	0.37	-0.04	45.20	
7180.00	1.910	117.740	7177.66	-43.41	35.38	-25.18	1767667.42	436533.28	39°41'46.753"N	80°12'49.463"W	43.43	324.557	1.70	1.53	47.16	BHI AT Curve <8-1/2"> (7085')(7180'-15209')
7275.00	8.620	124.280	7272.21	-35.23	30.63	-17.89	1767674.71	436528.53	39°41'46.707"N	80°12'49.369"W	35.47	329.709	7.08	7.06	6.88	
7369.00	13.440	129.760	7364.45	-17.91	19.67	-3.66	1767688.94	436517.56	39°41'46.600"N	80°12'49.186"W	20.00	349.448	5.24	5.13	5.83	
7463.00	18.540	127.950	7454.78	7.17	3.48	16.53	1767709.13	436501.38	39°41'46.441"N	80°12'48.926"W	16.89	78.120	5.45	5.43	-1.93	
7558.00	24.650	125.640	7543.07	40.70	-17.37	44.57	1767737.17	436480.53	39°41'46.237"N	80°12'48.565"W	47.84	111.297	6.49	6.43	-2.43	
7653.00	33.190	127.130	7626.15	84.70	-44.66	81.47	1767774.06	436453.24	39°41'45.971"N	80°12'48.090"W	92.91	118.733	9.02	8.99	1.57	
7747.00	41.910	129.390	7700.61	140.07	-80.19	126.33	1767818.93	436417.72	39°41'45.623"N	80°12'47.513"W	149.63	122.405	9.39	9.28	2.40	
7842.00	42.730	128.440	7770.85	202.10	-120.36	176.10	1767868.69	436377.55	39°41'45.230"N	80°12'46.872"W	213.30	124.352	1.09	0.86	-1.00	
7937.00	42.740	127.130	7840.63	264.31	-159.86	227.05	1767919.63	436338.05	39°41'44.844"N	80°12'46.216"W	277.68	125.148	0.94	0.01	-1.38	
8031.00	42.810	125.820	7909.63	325.51	-197.81	278.38	1767970.96	436300.11	39°41'44.473"N	80°12'45.556"W	341.50	125.396	0.95	0.07	-1.39	
8126.00	42.710	125.350	7979.38	387.05	-235.34	330.83	1768023.41	436262.58	39°41'44.106"N	80°12'44.881"W	406.00	125.426	0.35	-0.11	-0.49	
8221.00	47.320	128.480	8046.53	451.60	-275.73	384.48	1768077.06	436222.18	39°41'43.711"N	80°12'44.191"W	473.13	125.646	5.38	4.85	3.29	
8315.00	55.500	132.040	8105.12	523.21	-323.26	440.40	1768132.98	436174.66	39°41'43.245"N	80°12'43.470"W	546.31	126.279	9.19	8.70	3.79	
8410.00	64.060	133.950	8152.89	603.98	-379.23	500.34	1768192.91	436118.69	39°41'42.697"N	80°12'42.698"W	627.82	127.160	9.18	9.01	2.01	
8504.00	66.870	137.110	8191.93	688.75	-440.25	560.21	1768252.78	436057.67	39°41'42.099"N	80°12'41.926"W	712.51	128.163	4.28	2.99	3.36	
8599.00	72.690	142.680	8224.77	777.69	-508.43	617.53	1768310.09	435989.50	39°41'41.429"N	80°12'41.186"W	799.90	129.466	8.23	6.13	5.86	
8694.00	78.790	145.940	8248.17	869.68	-583.18	671.18	1768363.74	435914.75	39°41'40.695"N	80°12'40.492"W	889.15	130.987	7.23	6.42	3.43	

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Actual Wellpath Report

Fisher 4H AWP Proj: 15315'

northeast NATURAL ENERGY

BAKER HUGHES

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Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #04
Area	Monongalia County, WV	Well	Fisher 4H
Field	Monongalia	Wellbore	Fisher 4H AWB
Facility	Fisher Pad		

WELLPATH DATA (160 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]	Comments
8788.00	85.530	145.070	8260.99	962.65	-659.88	723.89	1768416.45	435838.06	39°41'39.941"N	80°12'39.810"W	979.52	132.352	7.23	7.17	-0.93	
8883.00	88.520	144.090	8265.92	1057.48	-737.19	778.87	1768471.42	435760.76	39°41'39.181"N	80°12'39.099"W	1072.42	133.425	3.31	3.15	-1.03	
8977.00	87.420	143.920	8269.25	1151.40	-813.19	834.08	1768526.63	435684.76	39°41'38.435"N	80°12'38.385"W	1164.89	134.273	1.18	-1.17	-0.18	
9072.00	88.220	144.630	8272.86	1246.31	-890.26	889.51	1768582.05	435607.70	39°41'37.677"N	80°12'37.668"W	1258.48	135.024	1.13	0.84	0.75	
9167.00	88.430	145.660	8275.64	1341.20	-968.18	943.78	1768636.32	435529.78	39°41'36.911"N	80°12'36.966"W	1352.07	135.731	1.11	0.22	1.08	
9261.00	89.110	145.690	8277.65	1435.08	-1045.79	996.77	1768689.31	435452.17	39°41'36.149"N	80°12'36.280"W	1444.72	136.375	0.72	0.72	0.03	
9356.00	89.690	142.380	8278.65	1530.04	-1122.67	1052.55	1768745.09	435375.30	39°41'35.393"N	80°12'35.559"W	1538.91	136.846	3.54	0.61	-3.48	
9450.00	89.570	141.670	8279.26	1624.03	-1196.76	1110.39	1768802.92	435301.21	39°41'34.665"N	80°12'34.811"W	1632.55	137.144	0.77	-0.13	-0.76	
9545.00	89.320	141.930	8280.18	1719.00	-1271.42	1169.13	1768861.66	435226.56	39°41'33.932"N	80°12'34.052"W	1727.24	137.400	0.38	-0.26	0.27	
9639.00	89.910	144.270	8280.81	1812.99	-1346.58	1225.57	1768918.09	435151.40	39°41'33.194"N	80°12'33.323"W	1820.79	137.694	2.57	0.63	2.49	
9734.00	89.200	142.000	8281.55	1907.98	-1422.58	1282.56	1768975.08	435075.41	39°41'32.447"N	80°12'32.586"W	1915.38	137.963	2.50	-0.75	-2.39	
9828.00	89.420	140.700	8282.68	2001.93	-1495.98	1341.26	1769033.78	435002.01	39°41'31.726"N	80°12'31.828"W	2009.21	138.121	1.40	0.23	-1.38	
9923.00	89.320	140.250	8283.72	2096.84	-1569.25	1401.71	1769094.23	434928.74	39°41'31.007"N	80°12'31.047"W	2104.13	138.228	0.49	-0.11	-0.47	
10017.00	89.260	137.980	8284.89	2190.61	-1640.31	1463.23	1769155.74	434857.69	39°41'30.310"N	80°12'30.253"W	2198.11	138.266	2.42	-0.06	-2.41	
10112.00	89.910	138.230	8285.58	2285.26	-1711.02	1526.67	1769219.18	434786.98	39°41'29.616"N	80°12'29.434"W	2293.10	138.259	0.73	0.68	0.26	
10206.00	89.940	139.990	8285.70	2379.04	-1782.08	1588.20	1769280.70	434715.93	39°41'28.918"N	80°12'28.640"W	2387.09	138.292	1.87	0.03	1.87	
10301.00	90.310	143.750	8285.49	2474.00	-1856.80	1646.85	1769339.35	434641.22	39°41'28.184"N	80°12'27.882"W	2481.89	138.429	3.98	0.39	3.96	
10395.00	89.540	147.110	8285.61	2567.90	-1934.19	1700.18	1769392.67	434563.83	39°41'27.424"N	80°12'27.192"W	2575.20	138.684	3.67	-0.82	3.57	
10490.00	89.230	143.440	8286.63	2662.80	-2012.25	1754.28	1769446.77	434485.77	39°41'26.657"N	80°12'26.492"W	2669.58	138.918	3.88	-0.33	-3.86	
10584.00	89.320	143.600	8287.82	2756.79	-2087.82	1810.16	1769502.65	434410.20	39°41'25.914"N	80°12'25.770"W	2763.28	139.074	0.20	0.10	0.17	
10679.00	89.350	145.610	8288.93	2851.74	-2165.26	1865.18	1769557.67	434332.77	39°41'25.153"N	80°12'25.058"W	2857.84	139.258	2.12	0.03	2.12	
10773.00	89.510	148.420	8289.86	2945.50	-2244.09	1916.35	1769608.83	434253.94	39°41'24.378"N	80°12'24.396"W	2950.99	139.504	2.99	0.17	2.99	
10867.00	89.690	154.510	8290.52	3038.43	-2326.63	1961.23	1769653.71	434171.41	39°41'23.566"N	80°12'23.813"W	3042.97	139.871	6.48	0.19	6.48	
10962.00	89.630	154.100	8291.08	3131.58	-2412.24	2002.42	1769694.90	434085.81	39°41'22.723"N	80°12'23.278"W	3135.06	140.304	0.44	-0.06	-0.43	
11057.00	89.720	146.250	8291.62	3225.77	-2494.59	2049.63	1769742.10	434003.46	39°41'21.913"N	80°12'22.666"W	3228.62	140.592	8.26	0.09	-8.26	
11151.00	90.310	148.350	8291.60	3319.50	-2573.69	2100.41	1769792.88	433924.37	39°41'21.135"N	80°12'22.008"W	3321.98	140.782	2.32	0.63	2.23	
11246.00	90.950	140.740	8290.55	3414.38	-2651.01	2155.47	1769847.94	433847.05	39°41'20.375"N	80°12'21.296"W	3416.71	140.886	8.04	0.67	-8.01	
11340.00	90.650	133.120	8289.24	3507.78	-2719.62	2219.61	1769912.07	433778.44	39°41'19.702"N	80°12'20.469"W	3510.41	140.781	8.11	-0.32	-8.11	
11434.00	90.370	130.970	8288.40	3600.06	-2782.57	2289.41	1769981.87	433715.50	39°41'19.085"N	80°12'19.570"W	3603.34	140.554	2.31	-0.30	-2.29	
11527.00	90.550	138.720	8287.65	3692.04	-2848.10	2355.29	1770047.75	433649.97	39°41'18.443"N	80°12'18.720"W	3695.82	140.410	8.34	0.19	8.33	

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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]	Comments
11621.00	89.630	147.420	8287.50	3785.95	-2923.17	2411.72	1770104.17	433574.91	39°41'17.705"N	80°12'17.991"W	3789.63	140.476	9.31	-0.98	9.26	
11715.00	89.970	145.660	8287.83	3879.77	-3001.58	2463.54	1770155.99	433496.50	39°41'16.934"N	80°12'17.320"W	3883.11	140.623	1.91	0.36	-1.87	
11810.00	89.510	144.420	8288.26	3974.71	-3079.44	2517.98	1770210.42	433418.65	39°41'16.169"N	80°12'16.616"W	3977.83	140.728	1.39	-0.48	-1.31	
11904.00	90.370	144.080	8288.36	4068.68	-3155.73	2572.89	1770265.34	433342.36	39°41'15.420"N	80°12'15.906"W	4071.66	140.809	0.98	0.91	-0.36	
11998.00	89.970	140.890	8288.08	4162.67	-3230.28	2630.13	1770322.57	433267.82	39°41'14.687"N	80°12'15.167"W	4165.61	140.847	3.42	-0.43	-3.39	
12092.00	89.290	137.120	8288.69	4256.42	-3301.21	2691.78	1770384.22	433196.89	39°41'13.991"N	80°12'14.371"W	4259.54	140.806	4.08	-0.72	-4.01	
12186.00	89.690	139.360	8289.53	4350.08	-3371.32	2754.38	1770446.81	433126.78	39°41'13.303"N	80°12'13.563"W	4353.44	140.751	2.42	0.43	2.38	
12280.00	89.720	140.310	8290.01	4443.94	-3443.15	2815.01	1770507.44	433054.96	39°41'12.598"N	80°12'12.780"W	4447.42	140.732	1.01	0.03	1.01	
12375.00	90.400	140.400	8289.91	4538.84	-3516.30	2875.62	1770568.04	432981.81	39°41'11.880"N	80°12'11.998"W	4542.42	140.724	0.72	0.72	0.09	
12469.00	89.750	141.700	8289.79	4632.78	-3589.41	2934.71	1770627.13	432908.71	39°41'11.162"N	80°12'11.235"W	4636.42	140.730	1.55	-0.69	1.38	
12564.00	89.350	139.230	8290.53	4727.68	-3662.66	2995.17	1770687.59	432835.46	39°41'10.442"N	80°12'10.454"W	4731.40	140.725	2.63	-0.42	-2.60	
12658.00	89.290	140.500	8291.65	4821.53	-3734.52	3055.76	1770748.18	432763.60	39°41'09.737"N	80°12'09.672"W	4825.39	140.708	1.35	-0.06	1.35	
12753.00	89.720	143.050	8292.47	4916.49	-3809.15	3114.54	1770806.95	432688.99	39°41'09.004"N	80°12'08.913"W	4920.36	140.729	2.72	0.45	2.68	
12847.00	89.450	145.000	8293.15	5010.47	-3885.21	3169.75	1770862.16	432612.92	39°41'08.257"N	80°12'08.199"W	5014.20	140.791	2.09	-0.29	2.07	
12942.00	90.550	148.740	8293.15	5105.24	-3964.75	3221.66	1770914.07	432533.39	39°41'07.475"N	80°12'07.527"W	5108.66	140.904	4.10	1.16	3.94	
13036.00	90.310	148.090	8292.45	5198.81	-4044.82	3270.89	1770963.30	432453.32	39°41'06.687"N	80°12'06.889"W	5201.86	141.039	0.74	-0.26	-0.69	
13130.00	90.520	143.550	8291.77	5292.67	-4122.57	3323.69	1771016.09	432375.58	39°41'05.923"N	80°12'06.206"W	5295.51	141.124	4.83	0.22	-4.83	
13225.00	90.710	140.840	8290.75	5387.65	-4197.61	3381.91	1771074.31	432300.54	39°41'05.186"N	80°12'05.454"W	5390.48	141.142	2.86	0.20	-2.85	
13319.00	90.740	138.750	8289.56	5481.49	-4269.40	3442.58	1771134.97	432228.76	39°41'04.481"N	80°12'04.671"W	5484.44	141.119	2.22	0.03	-2.22	
13414.00	90.610	140.420	8288.44	5576.31	-4341.72	3504.17	1771196.55	432156.44	39°41'03.771"N	80°12'03.876"W	5579.40	141.093	1.76	-0.14	1.76	
13508.00	90.890	141.690	8287.21	5670.25	-4414.82	3563.24	1771255.63	432083.35	39°41'03.053"N	80°12'03.113"W	5673.39	141.093	1.38	0.30	1.35	
13603.00	90.520	141.540	8286.04	5765.21	-4489.28	3622.23	1771314.61	432008.89	39°41'02.322"N	80°12'02.351"W	5768.38	141.101	0.42	-0.39	-0.16	
13697.00	88.950	142.740	8286.47	5859.19	-4563.49	3679.92	1771372.29	431934.69	39°41'01.593"N	80°12'01.606"W	5862.36	141.118	2.10	-1.67	1.28	
13791.00	88.740	143.430	8288.37	5953.17	-4638.63	3736.36	1771428.74	431859.55	39°41'00.855"N	80°12'00.876"W	5956.28	141.149	0.77	-0.22	0.73	
13886.00	89.200	142.700	8290.07	6048.16	-4714.55	3793.44	1771485.81	431783.63	39°41'00.109"N	80°12'00.139"W	6051.21	141.179	0.91	0.48	-0.77	
13980.00	89.380	144.170	8291.24	6142.15	-4790.04	3849.43	1771541.80	431708.15	39°40'59.367"N	80°11'59.415"W	6145.13	141.214	1.58	0.19	1.56	
14075.00	89.750	148.390	8291.96	6236.97	-4869.04	3902.16	1771594.52	431629.16	39°40'58.590"N	80°11'58.733"W	6239.74	141.291	4.46	0.39	4.44	
14170.00	90.250	146.200	8291.96	6331.69	-4948.97	3953.49	1771645.85	431549.23	39°40'57.804"N	80°11'58.068"W	6334.22	141.380	2.36	0.53	-2.31	
14263.00	91.080	145.860	8290.88	6424.56	-5026.10	4005.45	1771697.80	431472.11	39°40'57.046"N	80°11'57.396"W	6426.91	141.448	0.96	0.89	-0.37	
14358.00	90.920	145.820	8289.22	6519.42	-5104.69	4058.78	1771751.14	431393.52	39°40'56.274"N	80°11'56.706"W	6521.62	141.512	0.17	-0.17	-0.04	

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Actual Wellpath Report

Fisher 4H AWP Proj: 15315'

northeast NATURAL ENERGY

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #04
Area	Monongalia County, WV	Well	Fisher 4H
Field	Monongalia	Wellbore	Fisher 4H AWB
Facility	Fisher Pad		

WELLPATH DATA (160 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]	Comments
14453.00	91.480	145.260	8287.23	6614.31	-5183.00	4112.52	1771804.87	431315.21	39°40'55.504"N	80°11'56.011"W	6616.37	141.569	0.83	0.59	-0.59	
14548.00	91.080	142.890	8285.11	6709.26	-5259.91	4168.24	1771860.59	431238.31	39°40'54.748"N	80°11'55.290"W	6711.25	141.605	2.53	-0.42	-2.49	
14641.00	90.490	141.030	8283.84	6802.23	-5333.14	4225.54	1771917.89	431165.08	39°40'54.029"N	80°11'54.550"W	6804.24	141.610	2.10	-0.63	-2.00	
14736.00	90.490	138.260	8283.02	6897.06	-5405.53	4287.05	1771979.39	431092.70	39°40'53.318"N	80°11'53.756"W	6899.17	141.583	2.92	0.00	-2.92	
14831.00	89.910	137.490	8282.69	6991.68	-5475.99	4350.77	1772043.11	431022.24	39°40'52.627"N	80°11'52.934"W	6993.97	141.532	1.01	-0.61	-0.81	
14926.00	90.150	142.550	8282.64	7086.52	-5548.76	4411.79	1772104.12	430949.48	39°40'51.912"N	80°11'52.147"W	7088.91	141.512	5.33	0.25	5.33	
15020.00	90.460	144.310	8282.14	7180.51	-5624.25	4467.79	1772160.12	430873.99	39°40'51.170"N	80°11'51.423"W	7182.85	141.537	1.90	0.33	1.87	
15114.00	90.400	150.870	8281.44	7274.15	-5703.56	4518.14	1772210.47	430794.68	39°40'50.390"N	80°11'50.771"W	7276.28	141.615	6.98	-0.06	6.98	
15209.00	90.000	149.530	8281.11	7368.40	-5786.00	4565.36	1772257.68	430712.25	39°40'49.579"N	80°11'50.159"W	7370.23	141.725	1.47	-0.42	-1.41	
15315.00	90.000	149.530	8281.11	7473.71	-5877.36	4619.11	1772311.43	430620.90	39°40'48.681"N	80°11'49.463"W	7475.26	141.836	0.00	0.00	0.00	Projected MD at TD: 15315'

HOLE & CASING SECTIONS - Ref Wellbore: Fisher 4H AWB Ref Wellpath: Fisher 4H AWP Proj: 15315'

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]
24in Conductor	32.00	72.00	40.00	32.00	72.00	0.00	0.00	0.02	0.02
17.5in Open Hole	72.00	1490.12	1418.12	72.00	1490.00	0.02	0.02	4.19	-11.63
13.375in Casing Surface	32.00	1490.12	1458.12	32.00	1490.00	0.00	0.00	4.19	-11.63
12.25in Open Hole	1490.12	2713.07	1222.95	1490.00	2712.00	4.19	-11.63	-8.92	30.46
9.625in Casing Intermediate	32.00	2713.07	2681.07	32.00	2712.00	0.00	0.00	-8.92	30.46
8.75in Open Hole	2713.07	7085.00	4371.93	2712.00	7082.68	-8.92	30.46	36.00	-26.95
8.5in Open Hole	7085.00	15315.00	8230.00	7082.68	8281.11	36.00	-26.95	-5877.36	4619.11
5.5in Casing Production	32.00	15315.00	15283.00	32.00	8281.11	0.00	0.00	-5877.36	4619.11

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Actual Wellpath Report

Fisher 4H AWP Proj: 15315'

REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #04
Area	Monongalia County, WV	Well	Fisher 4H
Field	Monongalia	Wellbore	Fisher 4H AWB
Facility	Fisher Pad		

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Fisher 4H BHL Rev-3	8255.00	-5867.31	4635.78	1772328.09	430630.94	39°40'48.781"N	80°11'49.250"W	point
Fisher 4H LP Rev-3	8255.00	-671.53	720.49	1768413.05	435826.41	39°41'39.826"N	80°12'39.852"W	point

WELLPATH COMPOSITION - Ref Wellbore: Fisher 4H AWB Ref Wellpath: Fisher 4H AWP Proj: 15315'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
32.00	7085.00	VESSI GyroFlex v4	01_VES Gyro <8-3/4">(100'-7085')	Fisher 4H AWB
7085.00	15209.00	BHI AutoTrak Curve (Short)	02_BHI AT Curve <8-1/2">(7085')(7180'-15209')	Fisher 4H AWB
15209.00	15315.00	Blind Drilling (std)	Projection to bit	Fisher 4H AWB

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Actual Wellpath Report

Fisher 4H AWP Proj: 15315'

REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #04
Area	Monongalia County, WV	Well	Fisher 4H
Field	Monongalia	Wellbore	Fisher 4H AWB
Facility	Fisher Pad		

COMMENTS

Wellpath general comments
API: 47-061-01752-0000
BHI Job #: 8525529
Rig: Nabors X08
Duration: 05/04/2017-05/08/2017
VES Gyro <8-3/4"> (100'-7085')
BHI AT Curve <8-1/2"> (7085')(7180'-15209')
Projected MD at TD: 15315'

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CEMENT JOB REPORT

BAKER HUGHES

CUSTOMER NORTHEAST NATURAL ENER	DATE 20-MAR-17	F.R. # 258532327	SERV. SUPV. Bradley Golder
LEASE & WELL NAME Fisher Pad	LOCATION		COUNTY-PARISH-BLOCK Monongalia West Virginia
DISTRICT Clarksburg	DRILLING CONTRACTOR RIG #		TYPE OF JOB Surface

SIZE & TYPE OF PLUGS	LIST-CSG-HARDWARE	MECHANICAL BARRIERS	MD	TVD	HANGER TYPES	MD	TVD
Cement Plug, Rubber, Top 13-3/8 i	Guide Shoe, Texas-Notched 13-3/8 i						
	Float Collar, Al Flap, 13-3/8 - 8rd						

MATERIALS FURNISHED BY BJ	LAB REPORT NO.	SACKS OF CEMENT	SLURRY WGT PPG	SLURRY YLD FT	WATER GPS	PUMP TIME HR:MIN	Bbl SLURRY	Bbl MIX WATER
		PHYSICAL SLURRY PROPERTIES						
Premium NE-1 + Additives		1,095	15.2	1.27	5.77	03:00	246.96	150.39
Fresh Water			8.34				217.97	
6% Gel + Flake			8.5				50	
Fresh Water			8.34				10	
Fresh Water			8.34				10	
						TOTAL	534.94	150.39

Available Mix Water 500 Bbl. Available Displ. Fluid 500 Bbl.

HOLE SIZE	% EXCESS	DEPTH	TBG-CSG-D.P. ID	OD	WGT.	TYPE	MD	TVD	GRADE	COLLAR DEPTHS SHOE	FLOAT	STAGE
17.5	30	1450	12.62	13.38	54.5	CSG	1450	1450				

LAST CASING ID	OD	WGT	TYPE	MD	TVD	PKR-CMT RET-BR PL-LINER BRAND & TYPE	DEPTH	PERF. DEPTH TOP	BTM	TOP CONN SIZE	THREAD	WELL FLUID TYPE	WGT.
23.	24	95.		40	40			0	0	13.375	8RD		

DISPL. VOLUME VOLUME	UOM	DISPL. FLUID TYPE	WGT.	CAL. PSI BUMP PLUG	CAL. MAX PSI TO REV.	OP. MAX SQ. PSI	MAX TBG PSI RATED	Operator	MAX CSG PSI RATED	Operator	MIX WATER
211	BBLS	Fresh Water	8.34	503	0	0	0	0	2370	2184	FRAC TANK

EXPLANATION: TROUBLE SETTING TOOL, RUNNING CSG, ETC. PRIOR TO CEMENTING: NONE

TIME HR:MIN.	PRESSURE - PSI PIPE	ANNULUS	RATE BPM	Bbl. FLUID PUMPED	FLUID TYPE	EXPLANATION
						SAFETY MEETING: BJ CREW [X] CO. REP. [X]
						TEST LINES 4330 PSI
						CIRCULATING WELL - RIG [ ] BJ [X]
20:30	0	0	0	0	==========	DSM CALLED WITH RTS OF 05:00
21:30	0	0	0	0	==========	YARD CALL
22:00	0	0	0	0	==========	LEAVE YARD
02:00	0	0	0	0	==========	ARRIVE ON LOCATION
05:30	0	0	0	0	==========	MIX WATER: 51 DEG F / SPECIFIC GRAVITY 1 / CHLORIDES 0 / SULFATES <200 / TOTAL HARDNESS >90 / pH 7
06:30	0	0	0	0	==========	SPOT TRUCKS
07:30	0	0	0	0	==========	FINISH RIG UP
09:30	0	0	0	0	==========	SAFETY MEETING
09:42	310	0	7	5	WATER	START TO WASH DOWN CASING
09:59	145	0	7	100	WATER	RATE AND PRESSURE CHECK
10:14	300	0	7	200	WATER	RATE AND PRESSURE CHECK
10:40	0	0	0	253	WATER	CASING WILL NOT WASH DOWN / PULL LAST JOINT AND STAB CEMENT HEAD
11:46	0	0	0	2	WATER	LINE FILL
11:48	4330	0	0	0	WATER	PRESSURE TEST
11:50	145	0	5	1	GEL	START GEL SPACER
12:00	153	0	3.5	25	GEL	RATE AND PRESSURE CHECK
12:06	157	0	3.5	50	GEL	FINISH GEL SPACER

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CEMENT JOB REPORT

BAKER HUGHES

PRESSURE/RATE DETAIL						EXPLANATION
TIME HR:MIN.	PRESSURE - PSI PIPE	PRESSURE - PSI ANNULUS	RATE BPM	Bbl. FLUID PUMPED	FLUID TYPE	SAFETY MEETING: BJ CREW [X] CO. REP. [X]
						TEST LINES 4330 PSI
						CIRCULATING WELL - RIG [ ] BJ [X]
12:09	156	0	3.5	10	WATER	FRESH WATER SPACER
12:10	0	0	0	0	CEMENT	BATCH UP CEMENT / 68 DEG F
12:16	425	0	4.9	15	CEMENT	RATE AND PRESSURE CHECK
12:25	400	0	4.7	50	CEMENT	RATE AND PRESSURE CHECK
12:35	340	0	4.2	100	CEMENT	RATE AND PRESSURE CHECK
12:47	400	0	4.5	150	CEMENT	RATE AND PRESSURE CHECK
13:00	383	0	4.7	200	CEMENT	RATE AND PRESSURE CHECK
13:10	0	0	0	248	CEMENT	FINISH CEMENT
13:15	0	0	0	0	WATER	DROP PLUG / BEGIN DISPLACEMENT
13:18	150	0	4	10	WATER	RATE AND PRESSURE CHECK
13:25	300	0	6.6	50	WATER	RATE AND PRESSURE CHECK
13:33	340	0	6.6	100	WATER	RATE AND PRESSURE CHECK
13:40	590	0	6.6	150	WATER	RATE AND PRESSURE CHECK
13:48	714	0	6.6	200	WATER	RATE AND PRESSURE CHECK
13:51	558	0	2.8	209	WATER	BUMP PLUG
13:56	1214	0	0	0	=========	CHECK FLOATS / HELD / 1 BBL BACK
00:00	0	0	0	0	=========	GOOD RETURNS THROUGHT JOB
00:00	0	0	0	0	=========	59 BBL CEMENT BACK TO SURFACE
00:00	0	0	0	0	=========	THANKS, BRAD AND CREW

BUMPED PLUG	PSI TO BUMP PLUG	TEST FLOAT EQUIP.	BBL.CMT RETURNS/ REVERSED	TOTAL BBL. PUMPED	PSI LEFT ON CSG	SPOT TOP OUT CEMENT	SERVICE SUPERVISOR SIGNATURE:
[Y] N	558	Y [N]	59	771	0	Y [N]	Brad Nc

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C&J Energy Services

Cement Job Log

Customer:	NORTHEAST NATURAL ENERGY LLC	Date:	4/3/2017	Serv. Supervisor:	Jason Beeson
Cust. Rep.:	jamie	Ticket #:	JWV1704-0004	Serv. Center	Jane Lew, WV
Lease:	Fisher 4H	API Well #:		County:	Monongalia State: WV
Well Type:		Rig:	Nabors X08	Type of Job:	Intermediate Casing

Materials Furnished by C&J ENERGY SERVICES

Plugs		Casing Hardware	Physical Slurry Properties					
			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		-	13			50	
Spacer 2:			-					
Scavenger								
Lead								
Tail:	CJ910 + 1% CJ110		882	15.6	1.19	5.22	186	110
Displacement Chemicals:								

OPEN HOLE DATA			TUBULAR DATA								
SIZE (in)	EXCESS (%)	DEPTH (ft)	TYPE (CSG/TBG/DP)	OD (in)	WEIGHT (lbs/ft)	THREAD	DEPTH (ft)	GRADE	ID (in)	BURST (psi)	COLLAPSE (psi)
12 1/4		1268	Casing	9 5/8	40		2640		8.84		

PREVIOUS CASING DATA				PERFORATED INTERVAL DATA				CASING EQUIPMENT DEPTHS			
SIZE (in)	WEIGHT (lbs/ft)	ID (in)	DEPTH (ft)	TOP	BTM	SPF	SIZE	SHOE	FLOAT	STAGE	ACP
13 3/8	54.5	12.61	1412					45	2595		

WELL FLUID		DISPLACEMENT FLUID			DIFF PRESS (psi)	CSG LIFT (psi)	MAX PRESS (psi)	WATER ON LOC (bbl)
TYPE	DENSITY	VOLUME	TYPE	DENSITY				
water base	9.3 ppg	196.5 bbl	fresh	8.3 ppg	980	1451	2500	1000

Time	Rate (bbl/min)	Csg. Press. (psi)	Tbg. Press (psi)	Ann. Press. (psi)	Stg. Vol. (bbl)	Cum. Vol. (bbl)	Stage Details
3:30 PM						0	arrived on location
4:00 PM						0	spot trucks rig up
5:45 PM						0	safety meeting
6:05 PM						0	rig up head
6:20 PM						0	psi test to 2500
6:25 PM	5.5	270			50	50	spacer @ 13 ppg
6:37 PM	5.75	330			187	237	cement slurry @15.6
6:45 PM	5.8	440				237	cement slurry @15.6
6:57 PM	5.8	460				237	cement slurry @15.6
7:07 PM						237	shut down drop plug
7:09 PM	7	250			196.5	433.5	start displacement
7:18 PM	7	204				433.5	displacement
7:30 PM	7	858				433.5	spacer to surface @ 126bbl
7:36 PM	5	995				433.5	cement to surface @ 176
7:39 PM	3	1000				433.5	slow rate
7:40 PM	0	1540				433.5	plug down
7:45 PM	0	0					float held 1.5 bbl return
7:50 PM							rig down
9:00 PM							leave location

Left Yard	4/3/17 1:00 PM	Left Loc.	4/3/17 9:00 PM
Arrived Loc.	4/3/17 3:30 PM	Returned Yd	

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)	Jason Beeson
Yes	1000	Yes	0	20	Yes	1500	Service Supervisor

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CEMENT JOB REPORT

CUSTOMER	DATE	F.R. #	SERV. SUPV.
NORTHEAST NATURAL ENER	09-MAY-17	10011219964	Brian Lough

LEASE & WELL NAME	LOCATION	COUNTY-PARISH-BLOCK
Fisher 4H 5-1/2 Longstring - API 47061017520000	DAYBROOK	Monongalia West Virginia
DISTRICT	**DRILLING CONTRACTOR RIG #**	**TYPE OF JOB**
Clarksburg	Nabors Rig	Long String

SIZE & TYPE OF PLUGS	LIST-CSG-HARDWARE	MECHANICAL BARRIERS	MD	TVD	HANGER TYPES	MD	TVD
Cement Plug, Rubber, Top 5-1/2 in	Float Collar, Al Flap, 5-1/2 - 8rd						
5-1/2" Btm Cem Plug, Nitri cvr, Phen	Guide Shoe, Cement Nose, 5-1/2 i						

MATERIALS FURNISHED BY BJ	LAB REPORT NO.	PHYSICAL SLURRY PROPERTIES: SACKS OF CEMENT	SLURRY WGT PPG	SLURRY YLD FT	WATER GPS	PUMP TIME HR:MIN	Bbl SLURRY	Bbl MIX WATER
UltraBond 10			13.7				50	
50:50 Class A + Additives		2,986	14.5	1.19	5.17		624	363.96
Fresh Water			8.34				337.20	
Sugar Water- (200 LBS OF SUGAR)			8.34				10	
						TOTAL	1021.20	363.96

Available Mix Water 750 Bbl. Available Displ. Fluid 750 Bbl.

HOLE SIZE	% EXCESS	DEPTH	TBG-CSG-D.P. ID	OD	WGT.	TYPE	MD	TVD	GRADE	COLLAR DEPTHS SHOE	FLOAT	STAGE
8.5	10	15247	4.778	5.5	20	CSG	15247	8787		15270	15246	

LAST CASING ID	OD	WGT	TYPE	MD	TVD	PKR-CMT RET-BR PL-LINER BRAND & TYPE	DEPTH	PERF. DEPTH TOP	BTM	TOP CONN SIZE	THREAD	WELL FLUID TYPE	WGT.
8.8	9.625	40		2640	2640					5.5	BUTT	OIL BASED MUD	12.5

DISPL. VOLUME VOLUME	UOM	DISPL. FLUID TYPE	WGT.	CAL. PSI BUMP PLUG	CAL. MAX PSI TO REV.	OP. MAX SQ. PSI	MAX TBG PSI RATED	Operator	MAX CSG PSI RATED	Operator	MIX WATER
337.2	BBLS	Fresh Water	8.34	4000	0	0	0	0	10112	6000	TANKS

EXPLANATION: TROUBLE SETTING TOOL, RUNNING CSG, ETC. PRIOR TO CEMENTING:

PRESSURE/RATE DETAIL TIME HR:MIN.	PRESSURE - PSI PIPE	ANNULUS	RATE BPM	Bbl. FLUID PUMPED	FLUID TYPE	EXPLANATION
						SAFETY MEETING: BJ CREW [X] CO. REP. [X]
						TEST LINES 8000 PSI
						CIRCULATING WELL - RIG [X] BJ [X]
10:20						ARRIVE ON LOCATION. JOB TIME ASAP
10:21						SPOT EQUIPMENT ON LOCATION
10:40						SAFETY MEETING WITH BJ CREW
11:00						RIG INTO WELL & TANKS
12:30						SAFETY MEETING WITH RIG CREW & CO.MAN
13:29	840		5.7	5	H2O	LINE FILL
13:30	0		.5	.5	H2O	PRESSURE TEST BJ IRON TO 8000 PSI
13:34	760		5.6	49	PREFLUSH	ULTRABOND 10 MIXED TO 13.7 #/GAL
13:48	0					SHUT DOWN / DROP BOTTOM PLUG
13:53	1000		6.5	624	CEMENT	2984 SACKS OF 50/50 POZ CLASS A CEMENT+ .4% R-3+ 1% EC-1+ .75/100 SACKS FP-13L+ .3% MPA-170. TOP OF CEMENT AT 550'. TEMP WAS 70 DEGREE'S
15:25	0					SHUT DOWN / FLUSH LINES / SPOT SUGAR / DROP PLUG
15:29	1200		7	10	SUGAR	SUGAR WATER LAUNCHING TOP PLUG & STARTING DISPLACEMENT
15:31	1500		6	329	H2O	TREATED H2O DISPLACEMENT
16:10	4235		5.4	285	H2O	DUMP RETURNS TO THE 1/2 ROUND. 25 BBL SPACER RETURNS TO SURFACE
16:31	5220		4.1	340	H2O	LAND PLUG
16:36	0					RELEASE PRESSURE TO PUMPER. 5 1/2 BBLS RETURNS OF H2O

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CEMENT JOB REPORT

PRESSURE/RATE DETAIL						EXPLANATION
TIME HR:MIN.	PRESSURE - PSI		RATE BPM	Bbl. FLUID PUMPED	FLUID TYPE	SAFETY MEETING: BJ CREW [X] CO. REP. [X]
	PIPE	ANNULUS				TEST LINES 8000 PSI
						CIRCULATING WELL - RIG [X] BJ [X]
						ON RELEASE
16:40	0					FLOATS HELD. / END JOB.

BUMPED PLUG	PSI TO BUMP PLUG	TEST FLOAT EQUIP.	BBL.CMT RETURNS/ REVERSED	TOTAL BBL. PUMPED	PSI LEFT ON CSG	SPOT TOP OUT CEMENT	SERVICE SUPERVISOR SIGNATURE:
[Y] N	4000	[Y] N	0	1030	0	Y [N]	

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Perforation Record

Stage No.	Report Date	Perforated from MD Ft.	Perforated to MD ft.	Number of Perforations	Formation
1	6/15/2017		15,118	40	Marceullus
2	6/15/2017	15,085	14,941	40	Marceullus
3	6/16/2017	14,908	14,764	40	Marceullus
4	6/17/2017	14,731	14,587	40	Marceullus
5	6/17/2017	14,554	14,411	40	Marceullus
6	6/17/2017	14,377	14,057	40	Marceullus
7	6/18/2017	14,200	14,059	40	Marceullus
8	6/18/2017	14,023	13,880	40	Marceullus
9	6/18/2017	13,846	13,740	40	Marceullus
10	6/18/2017	13,670	13,526	40	Marceullus
11	6/19/2017	13,493	13,349	40	Marceullus
12	6/19/2017	13,316	13,172	40	Marceullus
13	6/20/2017	13,139	12,995	40	Marceullus
14	6/21/2017	12,962	12,819	40	Marceullus
15	6/22/2017	12,785	12,642	40	Marceullus
16	6/22/2017	14,023	13,902	40	Marceullus
17	6/22/2017	12,431	12,288	40	Marceullus
18	6/23/2017	12,254	12,111	40	Marceullus
19	6/23/2017	12,078	11,934	40	Marceullus
20	6/23/2017	11,901	11,757	40	Marceullus
21	6/24/2017	11,724	11,580	40	Marceullus
22	6/24/2017	11,547	11,403	40	Marceullus
23	6/24/2017	11,370	11,226	40	Marceullus
24	6/25/2017	11,193	11,050	40	Marceullus
25	6/25/2017	11,016	10,873	40	Marceullus
26	6/25/2017	10,839	10,696	40	Marceullus
27	6/25/2017	10,662	10,519	40	Marceullus
28	6/26/2017	10,486	10,342	40	Marceullus
29	6/26/2017	10,309	10,165	40	Marceullus
30	6/26/2017	10,132	9,988	40	Marceullus
31	6/27/2017	9,955	9,811	40	Marceullus
32	6/27/2017	9,778	9,634	40	Marceullus
33	6/27/2017	9,601	9,458	40	Marceullus
34	6/27/2017	9,424	9,281	40	Marceullus
35	6/28/2017	9,247	9,104	40	Marceullus
36	6/28/2017	9,070	8,927	40	Marceullus
37	6/29/2017	8,894	8,750	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	6/15/2017	78	8,542	9,350	5,360	304,406	6,701
2	6/15/2017	78	8,594	7,595	5,398	399,979	8,021
3	6/16/2017	79	8,832	7,789	5,664	403,477	7,827
4	6/17/2017	78	8,685	8,179	5,914	399,455	7,693
5	6/17/2017	80	8,844	8,197	5,860	401,251	7,624
6	6/17/2017	79	8,705	7,969	5,736	400,340	7,781
7	6/18/2017	79	8,569	7,655	6,148	401,016	7,609
8	6/18/2017	81	8,689	7,884	5,844	399,762	7,709
9	6/18/2017	80	8,504	7,806	6,040	401,687	7,494
10	6/18/2017	78	8,670	7,442	5,968	400,126	7,505
11	6/19/2017	78	8,711	8,759	5,894	399,594	7,730
12	6/19/2017	78	8,618	8,020	6,218	400,381	7,518
13	6/20/2017	81	8,566	8,539	6,014	400,686	7,585
14	6/21/2017	80	8,656	7,946	5,914	402,084	7,552
15	6/22/2017	80	8,644	8,040	6,047	398,505	7,615
16	6/22/2017	80	8,578	7,939	5,903	399,174	7,693
17	6/22/2017	80	8,532	8,082	6,235	405,224	7,556
18	6/23/2017	79	8,634	7,585	5,819	399,267	7,369
19	6/23/2017	80	8,803	7,769	5,967	400,485	7,407
20	6/23/2017	78	8,565	7,749	5,563	403,138	7,438
21	6/24/2017	81	8,441	7,750	5,734	397,206	7,019
22	6/24/2017	78	8,313	8,051	5,597	400,553	6,869
23	6/24/2017	78	8,211	8,121	5,938	372,388	7,075
24	6/25/2017	79	8,176	7,723	6,015	399,786	7,372
25	6/25/2017	80	8,151	7,961	5,828	396,281	6,595
26	6/25/2017	79	8,210	7,761	5,779	400,962	7,443
27	6/25/2017	80	8,207	8,363	6,030	401,220	7,393
28	6/26/2017	80	8,159	8,133	6,124	400,841	7,008
29	6/26/2017	79	8,124	7,942	6,170	399,634	7,235
30	6/26/2017	80	8,285	7,840	5,811	402,655	7,287
31	6/27/2017	81	8,045	7,917	5,959	397,363	6,912
32	6/27/2017	80	8,236	7,754	5,842	399,340	7,044
33	6/27/2017	81	7,920	6,962	5,753	400,876	7,369
34	6/27/2017	80	8,107	7,645	6,279	400,362	8,239
35	6/28/2017	79	7,849	7,071	5,876	395,280	6,824
36	6/28/2017	80	7,730	6,669	5,427	398,674	6,803
37	6/29/2017	79	8,356	6,000	5,965	404,061	11,837

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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, H2S, 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	7786	7586	7863	shale
Burkett	7786	7979	7863	8125	shale
Geneseo	7979	8018	8125	8179	shale
Tully	8018	8065	8179	8249	limestone
Hamilton	8065	8180	8249	8474	shale
Marcellus	8180	8232	8474	8624	shale
Cherry Valley	8232	8234	8624	8632	limestone
Lower Marcellus	8234		8632		shale

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/16/2017
Job End Date:	6/29/2017
State:	West Virginia
County:	Monongalia
API Number:	47-061-01752-00-00
Operator Name:	Northeast Natural Energy LLC
Well Name and Number:	Fisher 4H
Latitude:	39.69622400
Longitude:	-80.21364900
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	8,281
Total Base Water Volume (gal):	11,943,414
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	86.62647	
Sand, White	BJ Services	Proppant					
				Listed Below			

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HCl, 5.1 - 7.5%	BJ Services	Acidizing					
				Listed Below			
Other Chemical (s)	BJ Services	See Trade Name (s) List					
			Water	7732-18-5	92.50000	0.49659	
MaxPerm 30	BJ Services	Friction Reducer					
				Listed Below			
Ferrotrol 300L	BJ Services	Iron Control					
				Listed Below			
CI-14	BJ Services	Corrosion Inhibitor					
				Listed Below			
GBW-5	BJ Services	Breaker					
				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	12.77668	
			Hydrochloric Acid	7647-01-0	7.50000	0.03754	

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			Acrylamide Modified Acrylic Polymer	38193-60-1	60.00000	0.03192	
			Petroleum distillates	64742-47-8	30.00000	0.01596	
			Quaternary ammounium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	30.00000	0.00485	
			Sodium Chloride	7647-14-5	5.00000	0.00266	
			Sorbian, mono-(9Z)-9octadecenoate	1338-43-8	5.00000	0.00266	
			Oxyalkylated Alcohol	78330-21-9	5.00000	0.00266	
			Sorbitan monooleate ethoxylate	9005-65-6	5.00000	0.00266	
			Citric Acid	77-92-9	60.00000	0.00219	
			Glutaraldehyde	111-30-8	10.00000	0.00191	
			Ethylene Glycol	107-21-1	30.00000	0.00140	
			Amine Triphosphate	Proprietary	30.00000	0.00126	
			Methanol	67-56-1	100.00000	0.00085	
			Ethanol	64-17-5	5.00000	0.00066	
			Acetic acid	127-08-2	1.00000	0.00053	
			Polyoxyalkylenes	68951-67-7	30.00000	0.00026	
			Fatty Acids	61790-12-3	1.20000	0.00009	
			Modified Thiourea Polymer	68527-49-1	7.00000	0.00006	
			Tetrasodium EDTA	64-02-8	0.10000	0.00005	
			Acetic acid, Potassium Salt	64-19-7	0.10000	0.00005	
			Ammonium Persulfate	7727-54-0	100.00000	0.00004	
			Olefin	64743-02-8	5.00000	0.00004	
			Propargyl Alcohol	107-19-7	5.00000	0.00004	
			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)

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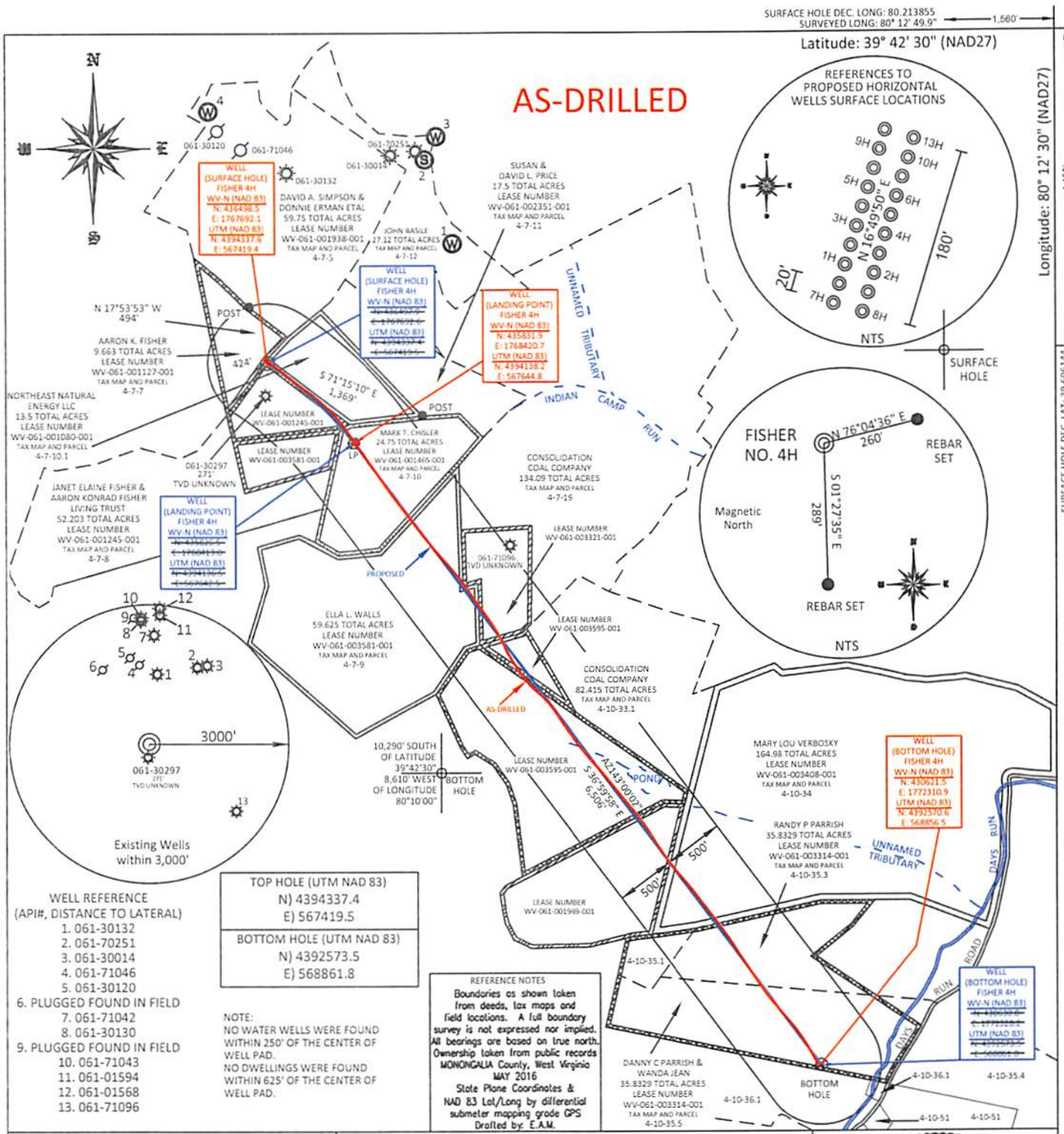


WELL REFERENCE
(API#, DISTANCE TO LATERAL)
1. 061-30132
2. 061-70251
3. 061-30014
4. 061-71046
5. 061-30120
6. PLUGGED FOUND IN FIELD
7. 061-71042
8. 061-30130
9. PLUGGED FOUND IN FIELD
10. 061-71043
11. 061-01594
12. 061-01568
13. 061-71096

TOP HOLE (UTM NAD 83)
N) 4394337.4
E) 567419.5
BOTTOM HOLE (UTM NAD 83)
N) 4392573.5
E) 568861.8

NOTE:
NO WATER WELLS WERE FOUND WITHIN 250' OF THE CENTER OF WELL PAD.
NO DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF WELL PAD.

REFERENCE NOTES
Boundaries as shown taken from deeds, tax maps and field locations. A full boundary survey is not expressed nor implied. All bearings are based on true north. Ownership taken from public records MONONGALIA County, West Virginia MAY 2016
State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS
Drafted by: E.A.M.

FILE #: NNE14
DRAWING #: 2385
SCALE: PLAT: 1" = 1200' 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: APRIL 13, 2018

OPERATOR'S WELL #: FISHER NO. 4H

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: 612.8918 +/-

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: 8,281.11' TMD: 15,315'

WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC

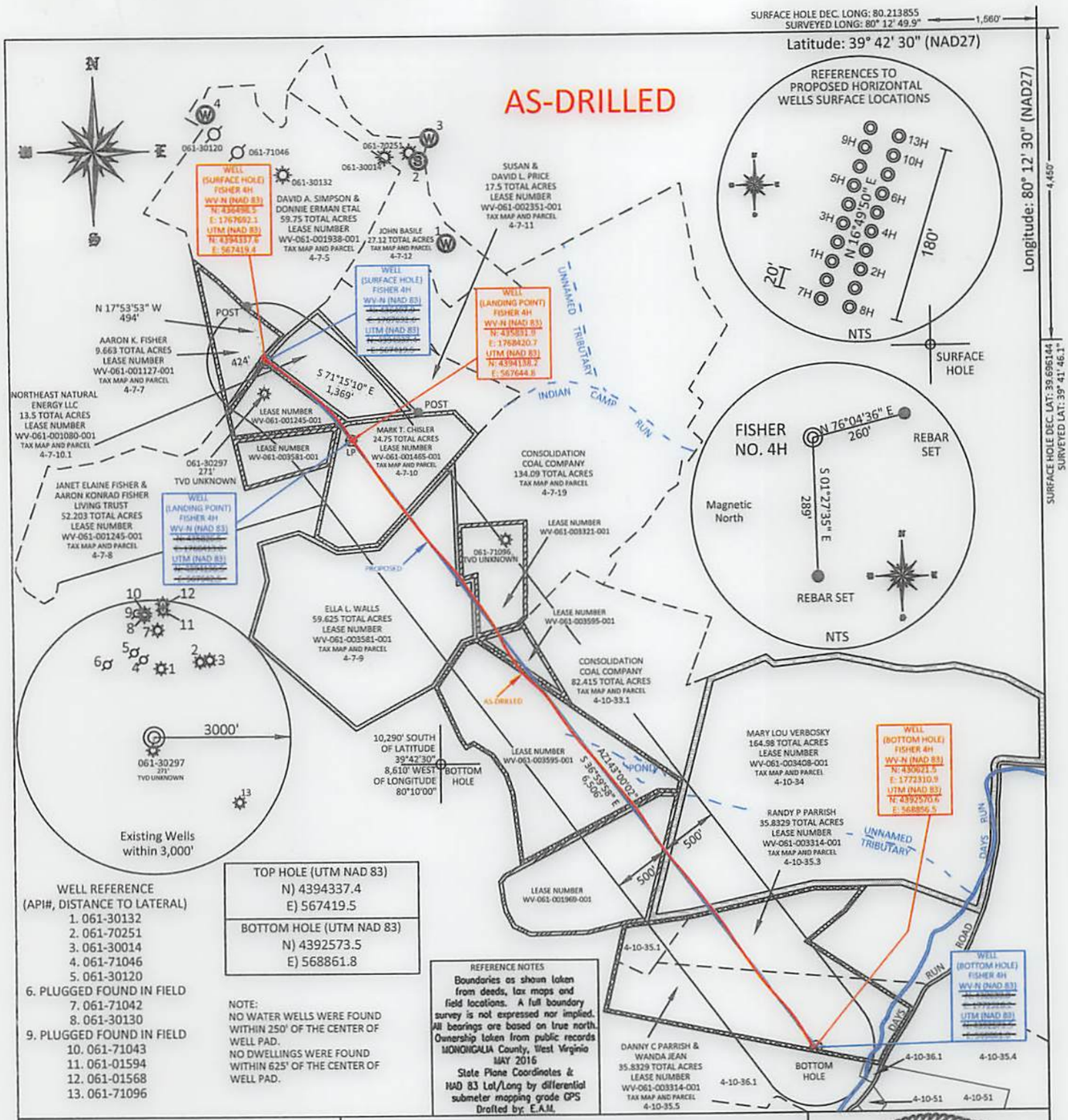
DESIGNATED AGENT: JOHN ADAMS

ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200

ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200

CITY: CHARLESTON STATE: WV ZIP CODE: 25301

CITY: CHARLESTON STATE: WV ZIP CODE: 25301



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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: APRIL 13, 2018

OPERATOR'S WELL #: FISHER NO. 4H

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: 612.8918 +/-

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: 8,281.11' TMD: 15,315'

WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC

DESIGNATED AGENT: JOHN ADAMS

ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200

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CITY: CHARLESTON STATE: WV ZIP CODE: 25301

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