

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

API 47-061-01734 County Monongalia District Clay  
Quad Blacksville Pad Name Fisher Field/Pool Name \_\_\_\_\_  
Farm name Aaron K. Fisher Well Number Fisher 3H  
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 4394339.9 Easting 567410.8  
Landing Point of Curve Northing 4394359.2 Easting 567187.0  
Bottom Hole Northing 4396339.6 Easting 565637.3

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 12/07/2015 Date drilling commenced 12/21/2016 Date drilling ceased 02/08/2017  
Date completion activities began 12/13/2017 Date completion activities ceased 01/12/2018  
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

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Reviewed by:  
*Morgan J. Kimbrell*  
6/11/2018

API 47-061 - 01734 Farm name Aaron K. Fisher Well number Fisher 3H

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"	1,432'	N	54.5	N/A	Y 54 Bbl.
Coal							
Intermediate 1	12-1/4"	9-5/8"	2,626'	N	40	N/A	Y 25 Bbl.
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	16,962'	N	20	N/A	N, EST. 1,626'
Tubing	N/A	2-7/8"	N/A	N	6.5	N/A	
Packer type and depth set							

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	4,500 PSI Grout	-	-	3 Yds	-	-	-
Surface	Class A + 2%	1,146	15.6	1.19	1,369.958	Surface	8
Coal							
Intermediate 1	Class A + 1%	871	15.6	1.19	1,033.083	Surface	8
Intermediate 2							
Intermediate 3							
Production	50:50 Class + Additives	3,421	14.5	1.18	4,031.271	1,626'	48
Tubing							

Drillers TD (ft) 16,966' Loggers TD (ft) 16,932'

Deepest formation penetrated Marcellus Plug back to (ft) \_\_\_\_\_

Plug back procedure \_\_\_\_\_

Kick off depth (ft) 7,374'

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

Well cored  Yes  No Conventional Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING \_\_\_\_\_

Surface: Bow spring centralizers every 3rd joint or approximately 120'  
 Intermediate: Bow spring centralizers every 3rd joint or approximately 120'  
 Production: Rigid body centralizers placed at a minimum of every other joint (-80') from TD to surface

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_

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Customer: NORTHEAST NATURAL ENERGY LLC		Date: 12/22/2016		Serv. Supervisor: Dustin Woods							
Cust. Rep.: Brad Chadwick		Ticket #: JWW1216-0024		Serv. Center: Jane Lew, WV							
Lease: Fisher 3H		API Well #: 47-061-01734		County: Monongalia State: WV							
Well Type:		Rig: US Energy 9-1		Type of Job: Surface 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:	6% Gel	-	8.7			25					
Spacer 2:											
Scavenger											
Lead											
Tail:	CJ910 + 2% CJ110 + 0.25 LB/SK CJ600	1146	15.6	1.19	5.20	244	142				
Displacement Chemicals:											
OPEN HOLE DATA			TUBULAR DATA								
SIZE (in)	EXCESS (%)	DEPTH (ft)	TYPE (CS/ST/COUP)	OD (in)	WEIGHT (lbs/ft)	THREAD	DEPTH (ft)	GRADE	ID (in)	BURST (psi)	COLLAPSE (psi)
17 1/2		1451	Casing	13 3/8	54.5		1432		12.61		
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
24	94.5	23.27	40					45	1387		
WELL FLUID		DISPLACEMENT FLUID			DIFF PRESS (psi)	CSG LIFT (psi)	MAX PRESS (psi)	WATER ON LOC (bbl)			
TYPE	DENSITY	VOLUME	TYPE	DENSITY				1000			
air		214.5 bbl	water	8.3 ppg	524	555	1500				
Time	Rate (bbl/min)	Csg. Press. (psi)	Tbg. Press. (psi)	Ann. Press. (psi)	Stg. Vol. (bbl)	Cum. Vol. (bbl)	Stage Details				
8:30pm						0	arrive on location				
8:35pm						0	spot trucks				
8:55pm						0	rig up				
9:40pm						0	safety meeting				
9:55pm	7	25			491	491	pump casing down/circulate hole @ 400bbl				
11:10pm						491	casing down/rig in head				
11:20pm	2	1500			2	493	PSI Test Lines				
11:25pm	6	40			25	518	pump gel				
11:30pm	6	40			10	528	pump water pad				
11:35pm	6.5	300			243	771	pump cement scaled @ 15.6ppg				
12:15am	7	500			213	984	displace plug				
12:50am	3.5	1000			1.5	985.5	bump plug				
12:55am						985.5	floats held				
1:00am						985.5	wash up in cellar				
1:25am						985.5	rig down				
2:00am						985.5	Depart				
						985.5					
						985.5					
						985.5	Thanks for calling C&J Energy Services				
						985.5					
						985.5					
						985.5					
Left Yard	6:00pm		Left Loc.		2:00am						
Arrived Loc.	8:30pm		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)	Dustin Woods				
Yes	500	yes	no	54	yes	1000	Service Supervisor				

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Customer: NORTHEAST NATURAL ENERGY LLC		Date: 12/27/2016		Serv. Supervisor: Dave Deyamin							
Cust. Rep.: Brad Chadwick		Ticket #: BPA-1612-0020		Serv. Center: Black Lick, PA							
Lease: Fisher 3H		API Well #: 47-061-01734		County: Monongalia State: WV							
Well Type:		Rig: US Energy 9-1		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:	6% Gel	-	8.7			25	25				
Spacer 2:		-									
Scavenger											
Lead											
Tail:	CJ010 + 1% CJ110	871	15.6	1.19	5.22	184	108				
Displacement Chemicals:											
OPEN HOLE DATA			TUBULAR DATA								
SIZE (in)	EXCESS (%)	DEPTH (ft)	TYPE (csg/rod/cp)	OD (in)	WEIGHT (lbs/ft)	THREAD	DEPTH (ft)	GRADE	ID (in)	BURST (psi)	COLLAPSE (psi)
12 1/4		2880	Casing	9 5/8	40		2626		8.64		
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						2626	2584		
WELL FLUID		DISPLACEMENT FLUID		DIFF PRESS	CSG LIFT	MAX PRESS				WATER ON LOC (bbl)	
TYPE	DENSITY	VOLUME	TYPE	DENSITY	(psi)	(psi)	(psi)				1200
AIR		186 bbl	H2O	8.3 ppg	993	1260					
Time	Rate (bbl/min)	Csg. Press. (psi)	Tbg. Press. (psi)	Ann. Press. (psi)	Stg. Vol. (bbl)	Cum. Vol. (bbl)	Stage Details				
3:00 PM							0 JOB CALLED IN				
5:37 PM							0 PRE-CONVOY SAFTEY MEETING				
5:42 PM							0 LEFT YARD				
9:36 PM							0 ARRIVE ON LOCATION				
9:48 PM							0 PRE JOB SAFTEY MEETIN				
10:01 PM							0 SPOT TRUCKS/RUN LINES TO WELL/PRIME PUMPS				
12:30 PM							0 SAFTEY MEETING				
12:56 PM	4	150				5	5 PUMP H2O				
12:58 PM	0.1	2600				0.1	5.1 PRESSURE TEST LINES AND PUMPS				
1:01 AM	9	450				195	200.1 PUMP H2O AHEAD TO CLEAR SHOE				
1:21 AM	4	110				25	225.1 MIX AND PUMP GEL 500#				
1:29 AM	4.5	105				5	230.1 PUMP H2O				
1:32 AM	7	618				185	415.1 MIX AND PUMP CEMENT @ 15.6 PPG				
1:58 AM						415.1	SHUT DOWN RELEASE PLUG				
1:59 AM	10-3.5	360-1350				198	611.1 PUMP H2O DISPLACEMENT				
2:23 AM						611.1	PLUG BUMPED 1350 PSI-1875 PSI				
2:28 AM							RELEASE OFF CHECK FLOATS				
							FLOATS HELD 1.5 BBL RETURNED TO TRUCK				
2:30 AM							WASH AND RACK UP TRUCKS				
4:00 AM							JOB COMPLETE				
Left Yard	12/27/16 5:42 PM		Left Loc.	12/28/16 4:00 AM							
Arrived Loc.	12/27/16 9:38 PM		Left Loc.								
Bumped Plug (psi)	Final Differential (psi)	Floats Held (Y/N)	PSI Left on Casing	Cement to Surface (bbl)	Full Csg. During Job (Y/N)	Max Pump Pressure (psi)	Dave Deyamin				
Yes	1350	Yes	0	25	Yes		Service Supervisor				

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Customer: NORTHEAST NATURAL ENERGY LL	Date: 2/8/2017	Serv. Supervisor: Dustin Woods
Cust. Rep.:	Ticket #: JWV1702-0004	Serv. Center Jane Lew, WV
Lease: Fisher 3H	API Well #: 47-061-01734	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	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 + 0.5 gpb CJ880	-	13.5			50	
Spacer 2:	CJ810 PureScrub Spacer	-	13.5			50	
Scavenger							
Lead							
Tail:	50:50 CJ010:CJ910 + 0.25% CJ210 + 0.2% CJ500U + 0.2% CJX157011	3421	14.5	1.18	5.19	718	423

Displacement Chemicals:

OPEN HOLE DATA			TUBULAR DATA								
SIZE (in)	EXCESS (%)	DEPTH (ft)	TYPE (Casing)	OD (in)	WEIGHT (lbs/ft)	THREAD	DEPTH (ft)	GRADE	ID (in)	BURST (psi)	COLLAPSE (psi)
8 3/4		7309	Casing	5 1/2	20		16962		4.79		
8 1/2		16988									

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
9 5/8	40	8.84	2628					22	16940	1	

WELL FLUID		DISPLACEMENT FLUID			DIFF PRESS	CSG LIFT	MAX PRESS	WATER ON LOC (bbl)
TYPE	DENSITY	VOLUME	TYPE	DENSITY	(psi)	(psi)	(psi)	
mud	12.5 ppg	376 bbl	fresh	8.3 ppg	2744	7282	7265	1500

Time	Rate (bbl/min)	Csg. Press. (psi)	Tbg. Press. (psi)	Ann. Press. (psi)	Stg. Vol. (bbl)	Cum. Vol. (bbl)	Stage Details
10:00am						0	arrive on location
10:30 AM						0	spot trucks
10:50 AM						0	rig up
12:30 PM						0	rig waiting on landing joint
4:20 PM						0	landing joint arrived
4:40 PM						0	casing landed
4:50 PM						0	rig up floor
5:20PM						0	Safety Meeting
6:00PM	2	6000				2	PSI TEST LINES
6:05PM						2	drop 1st plug
6:06PM	5	1100			50	52	pump spacer#1
6:25PM	5	1130			50	102	pump spacer#2
6:40PM	5	1800			718	820	pump cement
9:10PM						820	drop 2nd plug
9:15PM	6.5	3800			391	1211	displace plug
9:43PM						1211	lost circulation to surface 170bbl into displacement
9:50PM						1211	switch to backup pump (blown hose on primary)
10:25PM	3.5					1211	shut down/plug didn't latch
10:30PM						1211	Floats held 6bbl back
10:40PM						1211	wash up pump
11:40PM						1211	rig down
12:00AM						1211	Depart
						1211	Thanks for calling C&J Energy!!!

Left Yard	8:00am		Left Loc.			
Arrived Loc.	10:00am		Returned Yc			
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	4000	Yes	no	0	no	4400

Dustin Woods  
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	12/16/2017	16,918	16,822	40	Marcellus
2	12/16/2017	16,783	16,620	40	Marcellus
3	12/17/2017	16,582	16,419	40	Marcellus
4	12/17/2017	16,381	16,218	40	Marcellus
5	12/17/2017	16,182		40	Marcellus
6	12/17/2017	15,979	15,816	40	Marcellus
7	12/18/2017	15,778	15,615	40	Marcellus
8	12/18/2017	15,577	15,414	40	Marcellus
9	12/19/2017	15,376	15,213	40	Marcellus
10	12/19/2017	15,175	15,012	40	Marcellus
11	12/20/2017	14,974	14,811	40	Marcellus
12	12/20/2017	14,772	14,610	40	Marcellus
13	12/21/2017	14,571	14,408	40	Marcellus
14	12/21/2017	14,370	14,207	40	Marcellus
15	12/22/2017	14,169	14,006	40	Marcellus
16	12/22/2017	13,968	13,805	40	Marcellus
17	12/23/2017	13,767	13,604	40	Marcellus
18	12/23/2017	13,566	13,403	40	Marcellus
19	12/27/2017	13,365	13,202	40	Marcellus
20	12/27/2017	13,164	13,001	40	Marcellus
21	12/27/2017	12,963	12,800	40	Marcellus
22	12/28/2017	12,762	12,599	40	Marcellus
23	12/29/2017	12,560	12,398	40	Marcellus
24	12/30/2017	12,518	12,357	40	Marcellus
25	12/31/2017	12,158	11,995	40	Marcellus
26	1/1/2018	11,957	11,794	40	Marcellus
27	1/2/2018	11,756	11,593	40	Marcellus
28	1/3/2018	11,555	11,392	40	Marcellus
29	1/4/2018	11,354	11,191	40	Marcellus
30	1/4/2018	11,153	10,990	40	Marcellus
31	1/4/2018	10,952	10,789	40	Marcellus
32	1/5/2018	10,751	10,588	40	Marcellus
33	1/5/2018	10,550	10,387	40	Marcellus
34	1/5/2018	10,349	10,186	40	Marcellus
35	1/7/2018	10,147	9,985	40	Marcellus
36	1/8/2018	9,946	9,784	40	Marcellus
37	1/9/2018	9,745	9,582	40	Marcellus
38	1/10/2018	9,544	9,381	40	Marcellus
39	1/10/2018	9,343	9,180	40	Marcellus
40	1/11/2018	9,142	8,979	40	Marcellus
41	1/11/2018	8,941	8,778	40	Marcellus
42	1/12/2018	8,740	8,577	40	Marcellus

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<b>Stimulation Report</b>							
<b>Stage No.</b>	<b>Report Date</b>	<b>Avg Treating Rate (BPM)</b>	<b>Avg Treating Pressure (psi)</b>	<b>Breakdown Pressure (psi)</b>	<b>ISIP (psi)</b>	<b>Total Amount of Proppant (lbs)</b>	<b>Total Clean Fluid (Bbls)</b>
1	12/16/2017	84	8,634	5,200	3,955	301,900	8,176
2	12/16/2017	83	8,141	5,509	4,447	401,520	8,278
3	12/17/2017	83	8,340	6,562	4,029	399,060	7,642
4	12/17/2017	85	8,509	6,660	4,619	400,700	8,033
5	12/17/2017	84	8,539	6,224	5,601	412,680	7,979
6	12/17/2017	85	8,204	6,135	5,198	364,680	7,504
7	12/18/2017	86	8,138	6,223	5,174	413,840	7,923
8	12/18/2017	86	8,280	5,200	4,705	402,940	9,210
9	12/19/2017	85	8,476	5,764	4,688	399,820	8,766
10	12/19/2017	85	8,527	6,272	5,672	399,380	7,509
11	12/20/2017	82	8,228	6,418	5,183	408,800	7,696
12	12/20/2017	85	8,470	6,876	5,277	404,640	7,821
13	12/21/2017	83	8,432	6,622	4,088	399,620	8,024
14	12/21/2017	84	8,723	6,295	4,455	400,620	7,606
15	12/22/2017	84	8,185	5,335	4,665	399,767	7,871
16	12/22/2017	84	8,288	6,978	4,692	410,340	7,785
17	12/23/2017	78	8,754	7,331	5,337	403,020	8,266
18	12/23/2017	85	8,955	6,178	5,072	410,200	7,586
19	12/27/2017	83	8,998	6,739	5,023	407,980	7,298
20	12/27/2017	82	8,736	6,148	4,358	400,920	7,715
21	12/27/2017	81	8,485	6,026	4,804	409,520	8,230
22	12/28/2017	84	8,761	6,898	5,274	410,420	7,607
23	12/29/2017	85	8,919	6,361	4,321	405,080	8,219
24	12/30/2017	83	8,793	6,543	5,262	406,040	8,318
25	12/31/2017	83	8,484	6,079	5,215	399,920	7,623
26	1/1/2018	84	8,620	6,569	4,929	400,480	7,557
27	1/2/2018	85	8,320	6,777	5,443	404,320	7,611
28	1/3/2018	84	8,142	6,912	5,294	401,080	7,573
29	1/4/2018	85	8,260	6,640	5,046	401,440	7,493
30	1/4/2018	85	8,542	6,718	5,254	397,980	7,511
31	1/4/2018	81	8,338	6,461	5,065	398,860	7,585
32	1/5/2018	81	8,341	6,413	5,670	408,320	8,440
33	1/5/2018	81	8,563	7,155	5,076	401,360	7,857
34	1/5/2018	81	8,522	5,921	5,044	405,100	7,519
35	1/7/2018	84	8,317	6,208	5,546	401,580	7,413
36	1/8/2018	85	8,116	6,948	5,328	400,025	7,660
37	1/9/2018	83	8,721	7,066	5,217	398,140	7,632
38	1/10/2018	83	8,252	6,697	5,671	400,100	7,579
39	1/10/2018	83	8,031	7,574	6,080	388,160	7,211
40	1/11/2018	83	7,807	6,886	5,748	402,040	7,463
41	1/11/2018	82	8,401	7,400	5,448	400,560	7,592
42	1/12/2018	82	8,427	6,826	5,264	418,740	7,898

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**Formation and Depths**

<u>Lithology/Formation</u>	<u>Top Depth in FT Name TVD</u>	<u>Bottom Depth in FT TVD</u>	<u>Top Depth in FT MD</u>	<u>Bottom Depth in FT MD</u>	<u>Describe rock type and record quantity and type of fluid (freshwater, brine, oil, gas, H2S, etc)</u>
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	7565	7779	7572	7823	shale
Burkett	7779	7975	7823	8055	shale
Geneseo	7975	8014	8055	8104	shale
Tully	8014	8059	8104	8169	limestone
Hamilton	8059	8169	8169	8349	shale
Marcellus	8169	8220	8349	8475	shale
Cherry Valley	8220	8223	8475	8485	limestone
Lower Marcellus	8223		8485		shale

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# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/16/2017
Job End Date:	1/12/2018
State:	West Virginia
County:	Monongalia
API Number:	47-061-01734-00-00
Operator Name:	Northeast Natural Energy LLC
Well Name and Number:	Fisher 3H
Latitude:	39.69624700
Longitude:	-80.21375200
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	8,309
Total Base Water Volume (gal):	13,357,324
Total Base Non Water Volume:	0



## Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Company 1	Carrier/Base Fluid	Water	7732-18-5	100.00000	86.46096	None
			Crystalline Silica (quartz)	14808-60-7	100.00000	13.03225	None
HCl Acid (7.5%)	Producers Service Corp	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.06109	None
			Petroleum Distillates	64742-47-8	30.00000	0.02165	None
STIMLUBE HBVB	Producers Service Corp	Friction Reducer	Ammonium Acetate	631-61-8	10.00000	0.00722	None
			Methanol	67-56-1	60.00000	0.01267	None
BIOC11219A	Nalco-Champion	Biocide	Benzyl-(C12-C16 Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00633	None
			Glutaraldehyde	111-30-8	10.00000	0.00211	None
SCAL16486A	Nalco-Champion	Scale Inhibitor	Ethylene Glycol	107-21-1	30.00000	0.00164	None
			Amine Triphosphate	Proprietary	30.00000	0.00164	None

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PROHIB II	Producers Service Corp	Inhibitor					
			Acetic Acid	64-19-7	90.00000	0.00068	None
			2-Ethylhexanol	104-76-7	10.00000	0.00008	None
			Methanol	67-56-1	10.00000	0.00008	None
			Cocamide Diethanolamine	68603-42-9	5.00000	0.00004	None
			Diethanolamine	111-42-2	1.00000	0.00001	None
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
Other Chemical(s)	Listed Above	See Trade Name(s) List					
			Ammonium Acetate	631-61-8	10.00000	0.00722	
			Benzyl-(C12-C16 Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00633	
			Glutaraldehyde	111-30-8	10.00000	0.00211	
			Ethylene Glycol	107-21-1	30.00000	0.00164	
			Methanol	67-56-1	10.00000	0.00008	
			2-Ethylhexanol	104-76-7	10.00000	0.00008	
			Cocamide Diethanolamine	68603-42-9	5.00000	0.00004	
			Diethanolamine	111-42-2	1.00000	0.00001	

\* Total Water Volume sources may include fresh water, produced water, and/or recycled water

\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

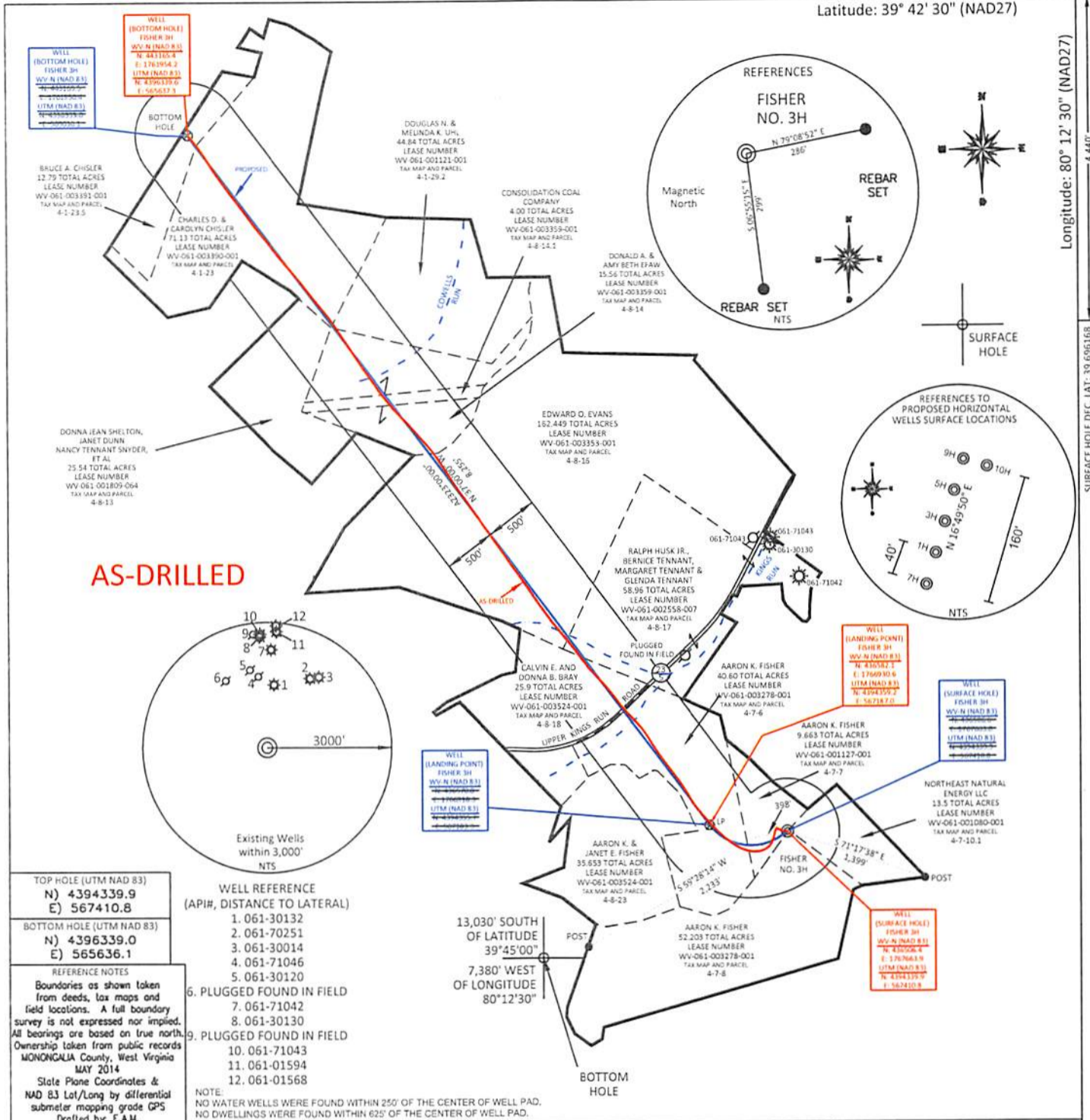
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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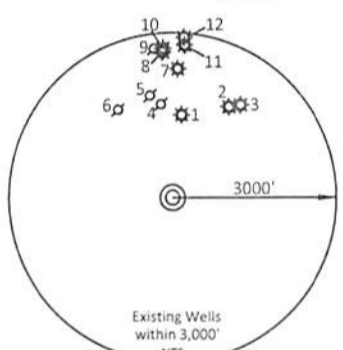
SURFACE HOLE DEC. LONG: 80.213957  
SURVEYED LONG: 80° 12' 50.2"

Latitude: 39° 42' 30" (NAD27)

Longitude: 80° 12' 30" (NAD27)



**AS-DRILLED**



TOP HOLE (UTM NAD 83)  
N) 4394339.9  
E) 567410.8

BOTTOM HOLE (UTM NAD 83)  
N) 4396339.0  
E) 565636.1

- 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

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 2014  
State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS  
Drafted by E.A.M.

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.

FILE #: NNE14

DRAWING #: 2376

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

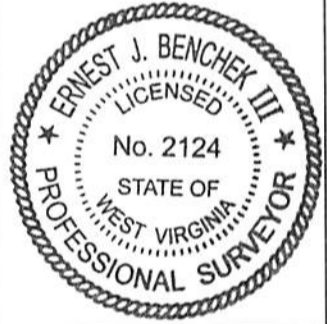
MINIMUM DEGREE OF ACCURACY: 1/200

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: [Signature]

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



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

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

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: 572.788 +/-

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: 8,309.93' TMD: 16,966'

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

DATE: APRIL 13, 2018

OPERATOR'S WELL #: FISHER NO. 3H

API WELL #: 47 61  
STATE COUNTY PERMIT