

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

RECEIVED  
Office of Oil and Gas

MAY 19 2016

WV Department of  
Environmental Protection

API 47-061-01699 County Monongalia District Grant  
Quad Morgantown South Pad Name MIP Field/Pool Name \_\_\_\_\_  
Farm name Enroute Properties, LLC Well Number 5H  
Operator (as registered with the OOG) Northeast Natural Energy LLC  
Address 707 Virginia St. East, 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 4384061.3 Easting 587904.3  
Landing Point of Curve Northing 4384674.7 Easting 587915.2  
Bottom Hole Northing 4385579.5 Easting 586576.0

Elevation (ft) 1,058' GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other \_\_\_\_\_  
Drilled with  Cable  Rotary

Drilling Media Surface hole  Air  Mud  Fresh Water Intermediate hole  Air  Mud  Fresh Water  Brine  
Production hole  Air  Mud  Fresh Water  Brine

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

Date permit issued 4/7/2015 Date drilling commenced 6/28/2015 Date drilling ceased 9/13/2015  
Date completion activities began 10/28/2015 Date completion activities ceased 11/5/2015  
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 300' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 700 ; 1,440' ; 2,120' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 295' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

Reviewed by:

**APPROVED**

NAME: Jacquelin Thornton  
DATE: 6/16/2016

AX WS 06/17/16

06/17/2016

API 47-061 - 01699 Farm name Enroute Properties, LLC Well number 5H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	30	24	42'	N	N/A	N/A	Y-to surface
Surface	17.5	13 3/8	493'	N	54.5	N/A	Y-30 bbl return
Coal							
Intermediate 1	12.25	9 5/8	1,781'	N	40	N/A	Y-23 bbl return
Intermediate 2							
Intermediate 3							
Production	8.5	5.5	14,375'	N	20	N/A	Y-8 bbl return
Tubing	4.771	2.875	8,400'	N	4.7	N/A	
Packer type and depth set		<u>375</u>					

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 ready mix	36.4		.75	27.27	CTS	48
Surface	Class A	1004	15.2	1.27	1,271	CTS	8
Coal							
Intermediate 1	Class A	858	15.2	1.26	1,074	CTS	8
Intermediate 2							
Intermediate 3							
Production	50/50 Premium NE - 1.2% R-1.1% MPA 110	3192	14.5	1.17	2,661	CTS	48
Tubing							

Drillers TD (ft) 14,454' Loggers TD (ft) 14,416' **RECEIVED**  
 Deepest formation penetrated Marcellus Plug back to (ft) N/A **Office of Oil and Gas**  
 Plug back procedure \_\_\_\_\_

MAY 19 2016

Kick off depth (ft) 6,472'

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

WV Department of Environmental Protection

Well cored  Yes  No Conventional Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING \_\_\_\_\_  
Surface: bow spring centralizers every 3rd joint or aprox 120'  
Intermediate: bow spring centralizers every 3rd joint or aprox 120'  
Production: Hard bodied spiral centralizers every other joint or aprox 80' from TD to KOP then bow spring from KOP to 9 5/8" every forth joint or aprox 140'

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS Completed in a multi-stage plug-and-perforate manner.  
 30 Stages, 40 Shots per Stage

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

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

API 47-061 - 01699 Farm name Enroute Properties, LLC Well number 5H

**PERFORATION RECORD**

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

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 insert additional pages as applicable.

RECEIVED  
Office of Oil and Gas  
MAY 19 2016

API 47- 061 - 01699 Farm name Enroute Properties, LLC Well number 5H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	7,453'	TVD 14,454' MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 3814 psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST 48 hrs

OPEN FLOW Gas 4,329 mcfpd Oil \_\_\_\_\_ bpd NGL \_\_\_\_\_ bpd Water \_\_\_\_\_ bpd GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
	0		0		

Please insert additional pages as applicable.

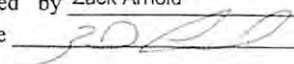
Drilling Contractor Patterson-UTI Drilling  
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Schlumberger  
Address 1080 US 33 City Weston State WV Zip 26452

Cementing Company Schlumberger  
Address 1080 US 33 City Weston State WV Zip 26452

Stimulating Company Schlumberger  
Address 1080 US 33 City Weston State WV Zip 26452

Please insert additional pages as applicable.

Completed by Zack Arnold Telephone 304.241.5752 Ext. 7105  
Signature  Title General Manager - Operations Date 11 FEBRU 2016

**RECEIVED**  
**Office of Oil and Gas**

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

MAY 19 2016

WV Department of  
Environmental Protection  
06/17/2016

MIP 5H - API # 47-061-01699

Lithology/Formation	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, H2S, etc)
Grey Shale	0	130			shale
Red Rock	130	150			red rock
Grey Shale/sandstone	150	290			sandstone/shale
Coal	290	295			coal
Grey Shale	295	765			shale
Red Rock	765	825			red rock
Grey Shale/sandstone	825	1980			shale/sandstone
Red Rock	1980	2070			red rock
Sandstone	2070	2120			sandstone
Grey Shale/sandstone	2120	5312			shale/sandstone
Geneseo	7183	7199	7482	7525	shale
Tully	7199	7285	7525	7823	limestone
Hamilton	7285	7450	7823	8406	shale
Marcellus	7450	7503	8406	8701	shale
Cherry Valley	7503	7511	8701	8750	limestone
Lower Marcellus	7511		8750		shale

**RECEIVED**  
**Office of Oil and Gas**  
 MAY 19 2016  
**WV Department of**  
**Environmental Protection**



MAY 19 2016

Department of Environmental Protection

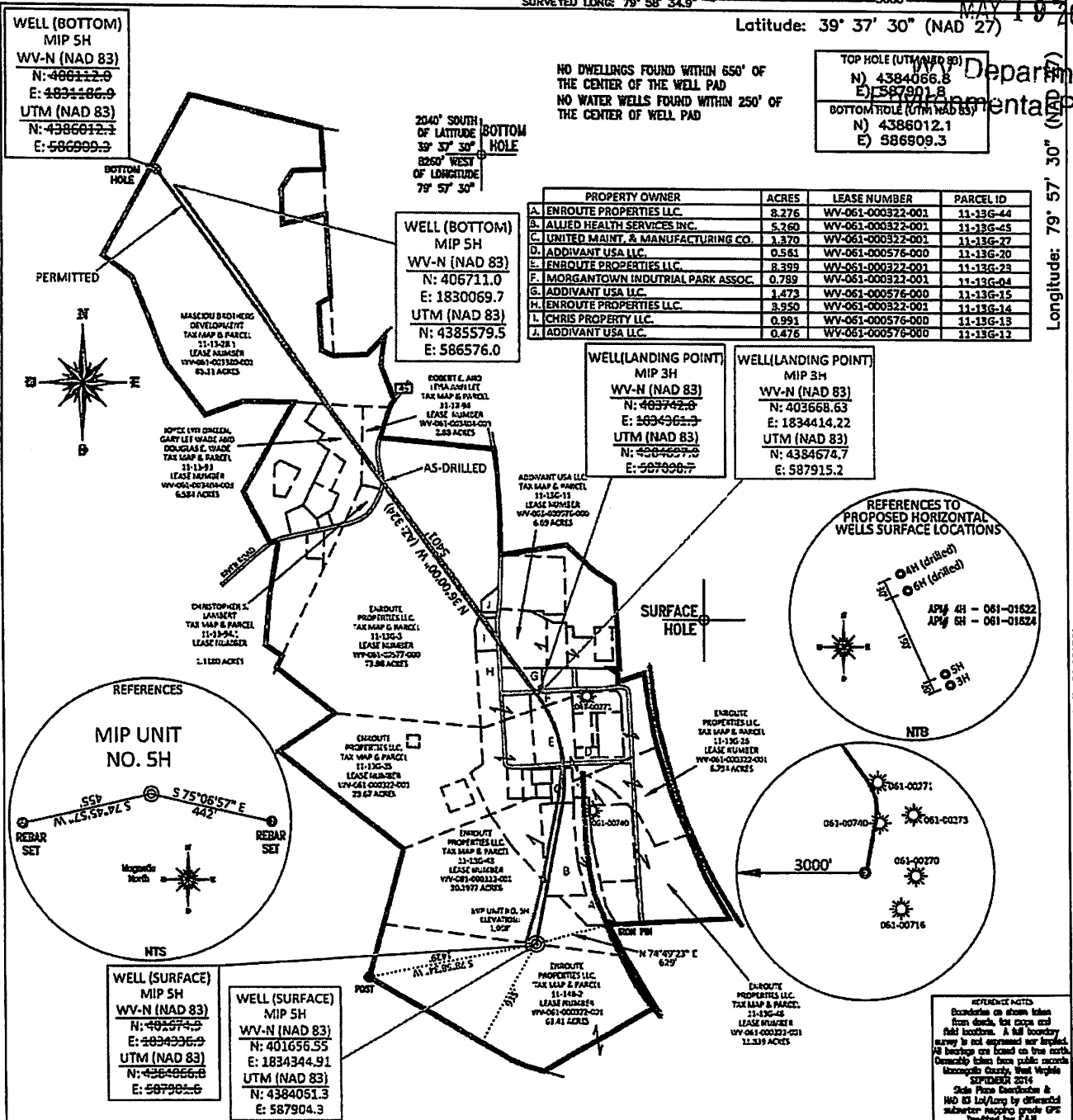
SURFACE HOLE DEC. LONG: 79.976364  
SURVEYED LONG: 79° 58' 54.9"

Latitude: 39° 37' 30" (NAD 27)

Longitude: 79° 57' 30" (NAD 27)

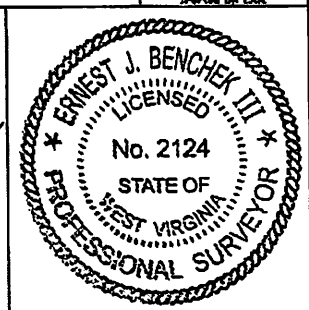
8970

SURFACE HOLE DEC. LAT: 39.60751  
SURVEYED LAT: 39° 36' 06.3"



FILE #: NNE004  
DRAWING #: 2442  
SCALE: 1"=1200'  
MINIMUM DEGREE OF ACCURACY: 1/200  
PROVEN SOURCE SUBMETER MAPPING OF ELEVATION: GRADE GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.  
Signed: *[Signature]*  
L.L.S. #2124 : Ernest J. Benckek III



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP  
OFFICE OF OIL & GAS  
601 57TH STREET  
CHARLESTON, WV 25304

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

WATERSHED: UPPER MONONGAHELA RIVER ELEVATION: 1,058'  
COUNTY/DISTRICT: MONONGALIA/GRANT QUADRANGLE: MORGANTOWN SOUTH  
SURFACE OWNER: ENROUTE PROPERTIES LLC. ACREAGE: 63.41 +/-  
OIL & GAS ROYALTY OWNER: ENROUTE PROPERTIES LLC. ACREAGE: 318.946 +/-  
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: 7,530' TMD: 14,454'  
WELL OPERATOR : NORTHEAST NATURAL ENERGY DESIGNATED AGENT : JOHN ADAMS  
ADDRESS: 707 VIRGINIA STREET - SUITE 1200 ADDRESS: 707 VIRGINIA STREET - SUITE 1200  
CITY: CHARLESTON STATE: WV ZIP CODE: 25301 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

06/17/2016

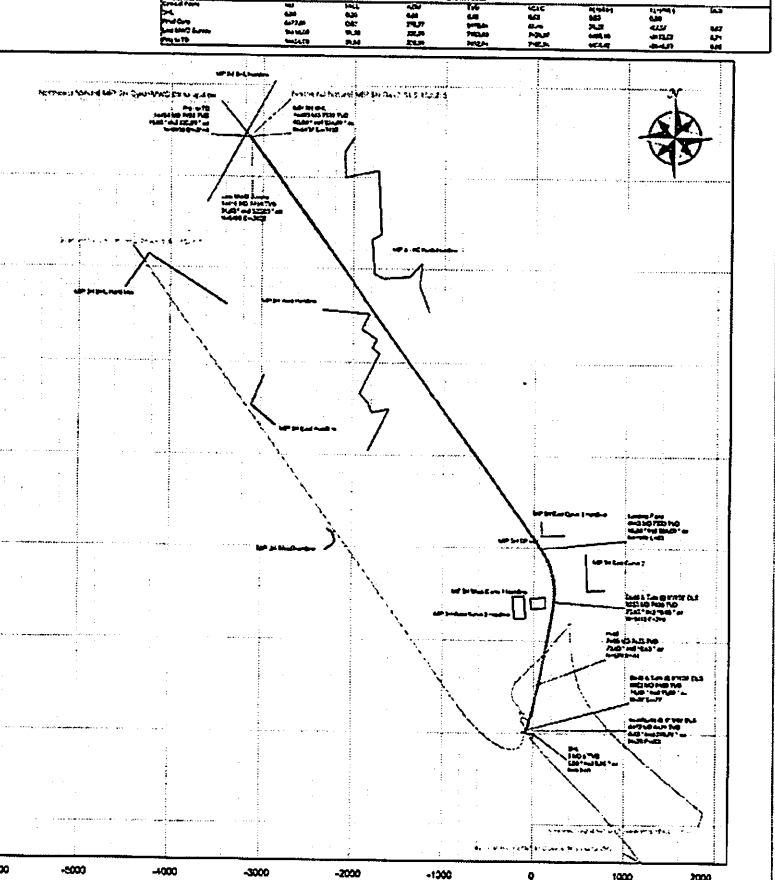
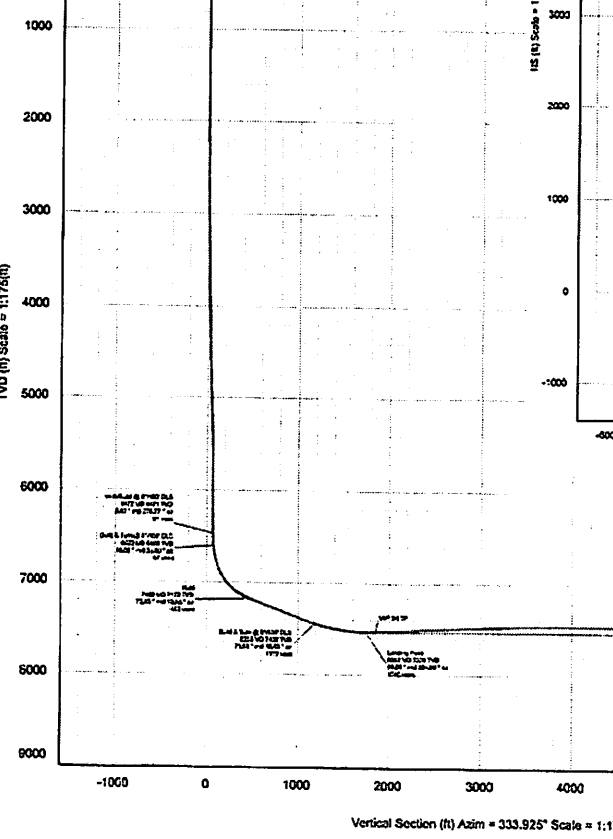
Borehole: Original Borehole Well: MIP 5H Field: WV Monongalia County (NAD 83) Structure: Patterson 254

Geology & Magnetic Parameters: Model: HDGM 2015 Dip: 86.55F Ozal: 01-02-2015 Surface Location: RADE3 West Virginia State Plane, Northern Zone, U2 Foot

Table with columns for Formation, Interval, Lithology, and Core Description. Includes rows for MIP 5H East Curve 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.

Table with columns for Part, Survey Type, Survey Name, Date, Time, Elevation, and other survey data.

Grid Information: Grid North, Grid East, Grid Conv. Total Corr. (N-G = -8.243'), Mag Dec. (-9.547'), Grid Conv. (-4.3043').



Vertical Section (R) Azim = 333.925° Scale = 1:175(1) Origin = ON-S, 02-5-W

RECEIVED Office of Oil and Gas MAY 19 2016 WV Department of Environmental Protection

CONTROLLED stamp with fields for Name, Date, Title, and other administrative information.

Northeast Natural MIP 5H Survey Off to 14454R MD

(Def Survey)

Report Date: September 14, 2015 - 09:54 AM
Client: Northeast Natural
Field: WV Monongalia County (H40 03)
Structure / Stoc: Northeast Natural MIP Pad / MIP 5H

Survey / GCS Computation: Minimum Curvature / Least Squares
Vertical Section Azimuth: 323.025 1st Grid North
Vertical Section Origin: 0.000 E, 0.000 N

Table with columns: Comments, MD (ft), Ind (ft), Area (sq ft), TVD (ft), TVDSS (ft), VSEC (ft), NS (ft), EW (ft), DLS (ft), DR (ft), TR (ft), Northing (ft), Easting (ft), Lat/Long (WGS 84), Directional Drift Index

RECEIVED Office of Oil and Gas

MAY 19 2016

66/17/2016 Department of Protection







# Cementing Service Report

Customer Northeast Natural Energy						Job Number DCHA-00036				
Well MIP Unit 5H			Location (Legal)			Schlumberger Location Strasburg, OH		Job Start Jun/28/2015		
Field		Formation Name/Type Clean-Sandstone		Deviation 0 deg	Bit Size 17.5 in	Well MD 530.0 ft	Well TVD 530.0 ft			
County Monongalia		State/Province West Virginia		BHP psi	BHST degF	BHCT degF	Pore Press. Gradient lb/gal			
Well Master			API/UWI							
Rig Name US Energy 9	Drilled For Oil & Gas		Service Via Land		Casing/Liner					
			Depth, ft	Size, in	Weight, lb/ft	Grade	Thread			
Offshore Zone	Well Class New		Well Type Development		507.0	13.4	54.5	J55	8RD	
			0.0	0.0	0.0					
Drilling Fluid Type		Max. Density lb/gal	Plastic Viscosity cP		Tubing/Drill Pipe					
					T/D	Depth, ft	Size, in	Weight, lb/ft	Grade	Thread
Service Line Cementing		Job Type 13 3/8"								
Max. Allowed Tub. Press 1500 psi		Max. Allowed Ann. Press psi		WH Connection Single Cement head		Perforations/Open Hole				
						Top, ft	Bottom, ft	Shot/ft	No. of Shots	Total Interval ft
						ft	ft			Diameter in
						ft	ft			
						Treat Down Casing	Displacement 71.4 bbl	Packer Type	Packer Depth ft	
						Tubing Vol. bbl	Casing Vol. 78.4 bbl	Annular Vol. 71.8 bbl	Openhole Vol. bbl	
Casing/Tubing Secured <input checked="" type="checkbox"/>			1 Hole Vol. Circulated prior to Cement <input type="checkbox"/>			Casing Tools		Squeeze Job		
Lift Pressure 200 psi			Shoe Type Float			Squeeze Type				
Pipe Rotated <input type="checkbox"/>			Pipe Reciprocated <input type="checkbox"/>			Shoe Depth 507.0 ft		Tool Type		
No. Centralizers			Top Plugs 1	Bottom Plugs 0	Stage Tool Type		Tool Depth ft			
Cement Head Type Single			Stage Tool Depth ft			Tail Pipe Size in				
Job Scheduled For Jun/28/2015 20:00		Arrived on Location Jun/28/2015 22:00		Leave Location Jun/29/2015 02:00		Collar Type Float		Tail Pipe Depth ft		
						Collar Depth 462.0 ft		Seq. Total Vol. bbl		
Date	Time 24-hr clock	Treating Pressure PSI	Flow Rate B/M	Density LB/G	Volume BBL	Message				
06/29/2015	00:02:08	68	3.6	8.38	0.1	Started Acquisition				
06/29/2015	00:02:16	68	3.6	8.38	0.5	Start Pumping Water				
06/29/2015	00:03:08	10	0.0	8.38	2.6					
06/29/2015	00:04:05	664	0.0	8.38	2.6	low pressure test				
06/29/2015	00:04:08	659	0.0	8.38	2.6					
06/29/2015	00:04:15	649	0.0	8.38	2.6	pressure trips ok				
06/29/2015	00:05:08	2105	0.0	8.38	2.6					
06/29/2015	00:05:43	2072	0.0	8.38	2.6	Pressure Test Lines				
06/29/2015	00:06:08	2056	0.0	8.38	2.6					
06/29/2015	00:07:08	2027	0.0	8.38	2.6					
06/29/2015	00:08:08	3	0.0	8.38	2.6					
06/29/2015	00:09:08	28	3.5	8.38	3.5					
06/29/2015	00:10:08	66	3.8	8.38	6.6					
06/29/2015	00:11:08	88	4.4	8.38	10.5					
06/29/2015	00:12:08	100	4.4	8.38	14.9					
06/29/2015	00:13:08	104	4.4	8.38	19.2					
06/29/2015	00:14:08	99	4.2	8.38	23.6					
06/29/2015	00:15:08	99	4.2	8.38	27.7					
06/29/2015	00:16:08	113	4.2	8.38	31.9					
06/29/2015	00:17:08	114	4.3	8.38	36.1					
06/29/2015	00:18:08	116	4.3	8.38	40.5					

RECEIVED  
Office of Oil and Gas  
MAY 19 2016  
WV Department of  
Environmental Protection

06/17/2016

Well		MIP Unit 5H		Field	Job Start	Customer	Job Number
					Jun/28/2015	Northeast Natural Energy	DCHA-00036
Date	Time 24-Hr clock	Treating Pressure PSI	Flow Rate B/H	Density LB/G	Volume BBL	Message	
06/29/2015	00:20:08	124	4.3	8.38	49.1		
06/29/2015	00:21:08	132	4.3	8.38	53.4		
06/29/2015	00:22:08	140	4.2	8.38	57.6		
06/29/2015	00:24:08	145	4.2	8.38	66.1		
06/29/2015	00:24:44	145	4.2	8.38	68.6	Start Circulation	
06/29/2015	00:25:08	138	4.3	8.42	70.3		
06/29/2015	00:25:29	143	4.2	8.43	71.8	End Water	
06/29/2015	00:25:33	142	4.2	8.39	72.1	Reset Total, Vol = 72.05 bbl	
06/29/2015	00:25:37	144	4.2	8.40	72.3	Start Pumping Spacer	
06/29/2015	00:26:08	136	4.2	8.46	74.5		
06/29/2015	00:27:08	153	4.2	8.67	78.7		
06/29/2015	00:28:08	142	4.2	8.60	83.0		
06/29/2015	00:29:08	146	4.2	8.64	87.2		
06/29/2015	00:30:08	170	4.2	8.78	91.4		
06/29/2015	00:31:08	138	4.2	8.38	95.6		
06/29/2015	00:32:08	140	4.2	8.43	99.9		
06/29/2015	00:33:08	71	2.1	8.45	102.8		
06/29/2015	00:34:08	110	3.2	13.22	105.2		
06/29/2015	00:34:16	118	3.1	13.93	105.7	End Spacer	
06/29/2015	00:34:31	124	2.9	14.92	106.4	Start Cement Slurry	
06/29/2015	00:35:08	77	1.5	14.79	107.7		
06/29/2015	00:36:08	241	3.9	15.09	110.7		
06/29/2015	00:37:08	180	4.1	15.33	114.7		
06/29/2015	00:38:08	205	4.1	15.31	118.8		
06/29/2015	00:39:08	227	4.0	15.60	122.8		
06/29/2015	00:40:08	165	4.0	15.71	126.9		
06/29/2015	00:41:08	211	4.0	15.68	130.9		
06/29/2015	00:42:08	203	4.1	15.66	135.0		
06/29/2015	00:43:08	216	4.2	15.71	139.0		
06/29/2015	00:44:08	216	4.2	15.70	143.2		
06/29/2015	00:45:08	210	4.2	15.65	147.4		
06/29/2015	00:46:08	209	4.2	15.67	151.6		
06/29/2015	00:47:08	219	4.2	15.68	155.8		
06/29/2015	00:48:08	215	4.2	15.58	160.0		
06/29/2015	00:49:08	223	4.2	15.84	164.2		
06/29/2015	00:50:08	218	4.2	15.78	168.4		
06/29/2015	00:51:08	215	4.2	15.83	172.6		
06/29/2015	00:52:08	221	4.2	15.89	176.8		
06/29/2015	00:53:08	225	4.2	15.82	181.0		
06/29/2015	00:54:08	224	4.2	15.84	185.1		
06/29/2015	00:55:08	229	4.2	15.80	189.3		
06/29/2015	00:56:08	223	4.2	15.76	193.5		
06/29/2015	00:57:08	223	4.2	15.74	197.7		
06/29/2015	00:58:08	216	4.2	15.13	202.0		
06/29/2015	00:59:01	136	4.1	14.93	205.7	End Cement Slurry	
06/29/2015	00:59:08	59	0.1	15.41	205.8		
06/29/2015	00:59:14	56	0.0	15.41	207.5	Drop Top Plug	
06/29/2015	01:00:08	50	0.0	15.28	207.5		
06/29/2015	01:01:08	49	0.0	15.23	207.5		
06/29/2015	01:02:08	49	0.0	15.23	207.5		
06/29/2015	01:03:08	49	0.0	15.22	207.5		
06/29/2015	01:04:08	126	4.6	8.51	210.7		
06/29/2015	01:05:08	130	4.6	8.43	215.3		
06/29/2015	01:06:08	143	4.6	9.21	219.9		

RECEIVED  
Office of Oil and Gas

MAY 19 2016

WV Department of  
Environmental Protection

Well		Field		Job Start		Customer		Job Number	
MIP Unit 5H				Jun/28/2015		Northeast Natural Energy		DCHA-00036	
Date	Time 24-hr clock	Treating Pressure PSI	Flow Rate B/H	Density LB/G	Volume BBL	Message			
06/29/2015	01:08:08	151	4.6	8.39	229.1				
06/29/2015	01:09:08	152	4.6	8.38	233.7				
06/29/2015	01:10:08	153	4.6	8.38	238.2				
06/29/2015	01:11:08	168	4.6	8.38	242.8				
06/29/2015	01:12:08	203	4.5	8.43	247.3				
06/29/2015	01:13:08	223	4.5	8.38	252.0				
06/29/2015	01:14:08	216	4.5	8.38	256.5				
06/29/2015	01:15:08	211	4.5	8.38	261.0				
06/29/2015	01:16:08	262	4.5	8.41	265.6				
06/29/2015	01:17:08	189	2.3	8.38	270.0				
06/29/2015	01:18:08	202	2.1	8.38	272.1				
06/29/2015	01:19:08	189	2.1	8.38	274.2				
06/29/2015	01:20:08	186	2.1	8.38	276.3				
06/29/2015	01:21:08	217	2.1	8.38	278.4				
06/29/2015	01:22:08	215	2.1	8.38	280.4				
06/29/2015	01:23:08	1229	0.0	8.38	281.4				
06/29/2015	01:23:38	1226	0.0	8.38	281.4	Bump Top Plug			
06/29/2015	01:23:41	1225	0.0	8.38	281.4	Reset Total, Vol = 73.86 bbl			
06/29/2015	01:23:43	1225	0.0	8.38	281.4	71 bbls by tanks			
06/29/2015	01:23:50	1224	0.0	8.38	281.4	30 bbls cement to surface			
06/29/2015	01:24:08	1224	0.0	8.38	281.4				
06/29/2015	01:25:08	1220	0.0	8.38	281.4				
06/29/2015	01:26:08	1218	0.0	8.38	281.4				
06/29/2015	01:27:08	1216	0.0	8.38	281.4				
06/29/2015	01:28:08	1214	0.0	8.38	281.4				
06/29/2015	01:28:46	4	0.0	8.38	281.4	1/2bbl back, floats ok			
06/29/2015	01:29:08	4	0.0	8.38	281.4				

### Post Job Summary

Average Pump Rates, bbl/min				Volume of Fluid Injected, bbl			
Slurry	N2	Mud	Maximum Rate	Total Slurry	Mud	Spacer	N2
3.8			4.5	101.0	0.0	35.0	
Treating Pressure Summary, psi				Breakdown Fluid			
Maximum	Final	Average	Bump Plug to	Breakdown	Type	Volume	Density
2426	5	302	1200			bbl	lb/gal
Avg. N2 Percent	Designed Slurry Volume		Displacement	Mix Water Temp	Cement Circulated to Surface?		Volume
%	101.0 bbl		71.0 bbl	76 degF	<input checked="" type="checkbox"/>		30.0 bbl
Customer or Authorized Representative			Schlumberger Supervisor		Washed Thru Perfs		To
Tim Ahrends			Tim Ahrends		<input type="checkbox"/>		ft
					Circulation Lost		Job Completed
					<input type="checkbox"/>		<input checked="" type="checkbox"/>

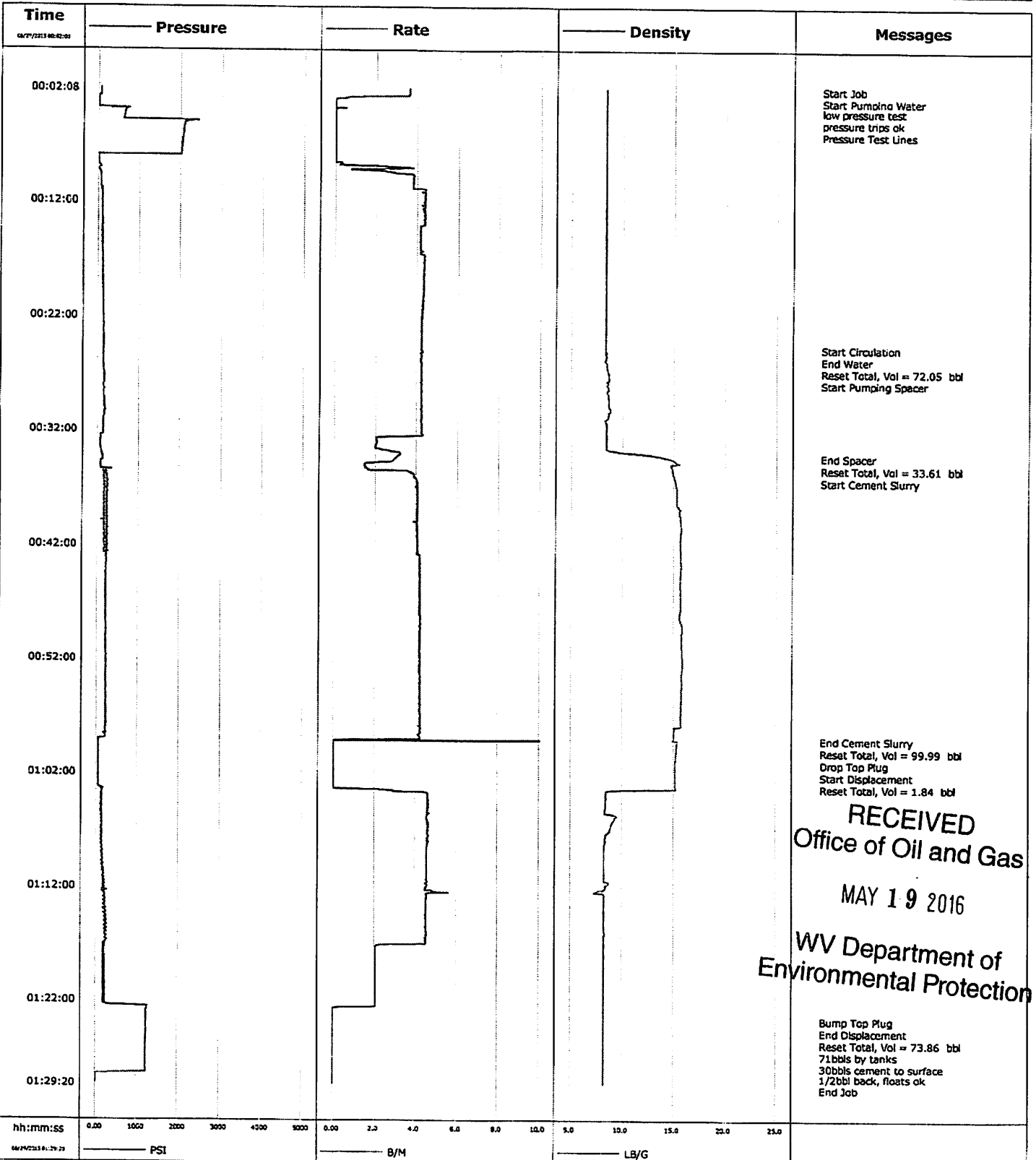
RECEIVED  
Office of Oil and Gas

MAY 19 2016

WV Department of  
Environmental Protection

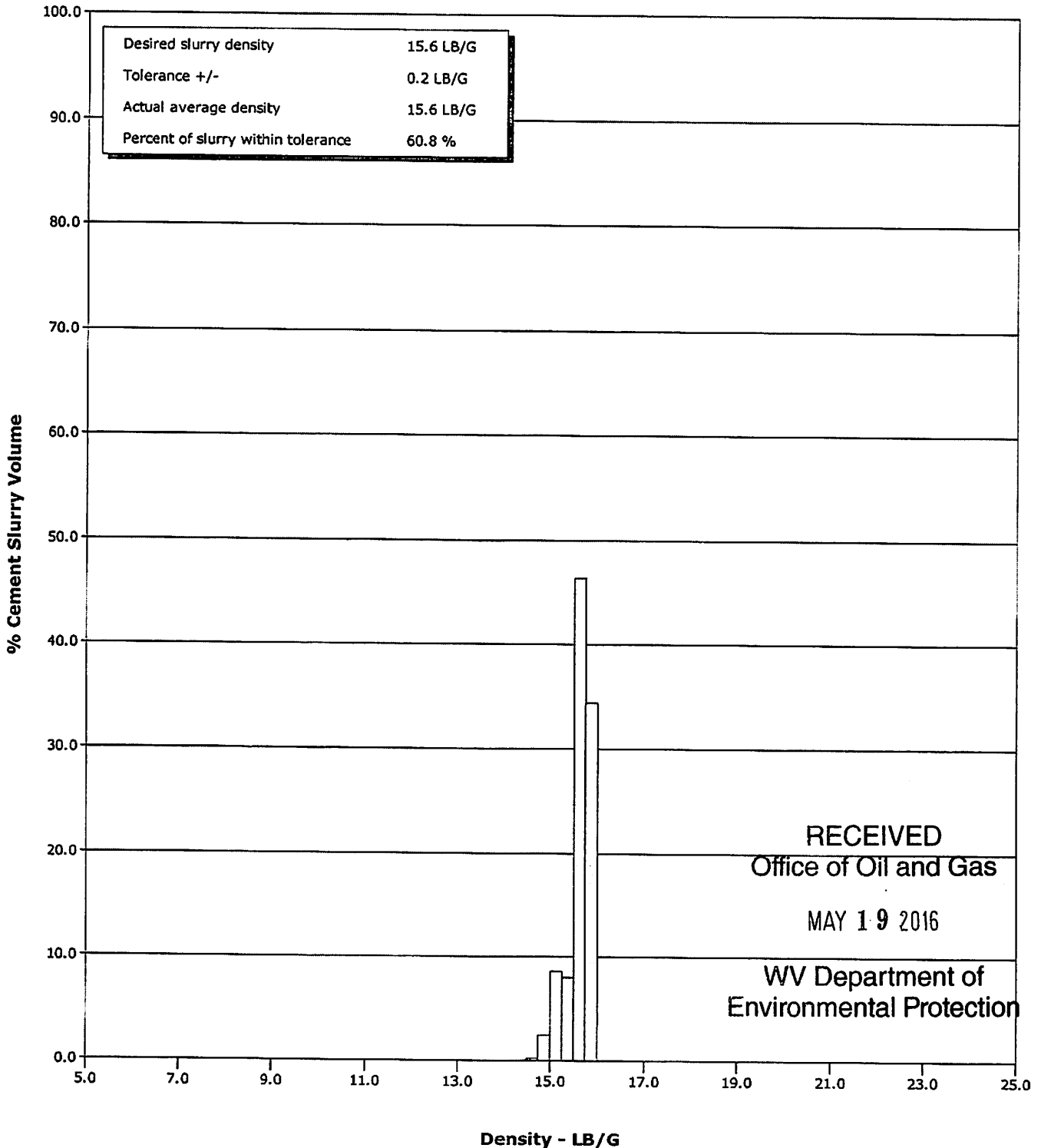


<b>Well</b>	MIP Unit 5H	<b>Client</b>	Northeast Natural Energy
<b>Field</b>		<b>SIR No.</b>	DCHA-00036
<b>Engineer</b>	Tim Ahrends	<b>Job Type</b>	13 3/8"
<b>Country</b>	United States	<b>Job Date</b>	06-28-2015



<b>Well</b>	MIP Unit 5H	<b>Client</b>	Northeast Natural Energy
<b>Field</b>		<b>SIR No.</b>	DCHA-00036
<b>Engineer</b>	Tim Ahrends	<b>Job Type</b>	13 3/8"
<b>Country</b>	United States	<b>Job Date</b>	06-28-2015

Cement Slurry - 06/29/2015 00:34:31 to 06/29/2015 00:59:01





# Cementing Service Report

Customer Northeast Natural Energy LLC				Job Number DCHA-00042				
Well MIP 5H 5H		Location (legal) US Energy 9		Schlumberger Location		Job Start Jul/01/2015		
Field Undesignated		Formation Name/Type Clean-Sandstone		Deviation 0 deg	Bit Size 12.3 in	Well MD 1781.0 ft	Well TVD 1781.0 ft	
County Monongalia		State/Province West Virginia		BHP 1500 psi	BHST 79 degF	BHCT 75 degF	Pore Press. Gradient lb/gal	
Well Master 631634042		API/UWI 4706101699						
Rig Name US Energy 9		Drilled For Gas	Service Via Land	Casing/Liner				
Offshore Zone		Well Class New	Well Type Development	Depth, ft 493.0	Size, in 13.4	Weight, lb/ft 54.5	Grade J55	
Drilling Fluid Type		Max. Density lb/gal	Plastic Viscosity cP	Depth, ft 1781.0	Size, in 9.6	Weight, lb/ft 40.0	Grade J55	
Service Line Cementing		Job Type 9 5/8" Intermediate		Tubing/Drill Pipe				
Max. Allowed Tub. Press psi		Max. Allowed Ann. Press psi	WH Connection Single Cement head	Perforations/Open Hole				
Service Instructions 9 5/8" Intermediate 25bbl Gel spacer with D130 10bbl Water behind 137bbl Tail @ 15.6ppg( D901 Class A 641sk, 1.2cu/ft/sk, 5.252gps, D046 0.2%, S001 2%, D130 0.13%) Shut down / Drop top plug 130bbl Displacement		Top, ft	Bottom, ft	shot/ft	No. of Shots	Total Interval ft	Diameter in	
Casing/Tubing Secured <input checked="" type="checkbox"/>		1 Hole Vol. Circulated prior to Cement <input type="checkbox"/>		Casing Tools		Squeeze Job		
Lift Pressure 892 psi		Shoe Type Float		Squeeze Type				
Pipe Rotated <input type="checkbox"/>		Pipe Reciprocated <input type="checkbox"/>		Shoe Depth 1781.0 ft		Tool Type		
No. Centralizers 13		Top Plugs 1	Bottom Plugs	Stage Tool Type		Tool Depth ft		
Cement Head Type Single		Stage Tool Depth ft		Tail Pipe Size in				
Job Scheduled For Jul/01/2015 06:00		Arrived on Location Jul/01/2015 06:00		Leave Location Jul/01/2015 12:00		Collar Type Float		
						Collar Depth 1736.3 ft		
						Sqz. Total Vol. bbl		
Date	Time 24-hr clock	CPF1_PRESS PSI	CPF1_DENS LB/G	DOWNHOLE B/M	CPF1_TTL_STAGE BBL	CMT_DISP BBL	VCCPF1_TTL_VOLUME BBL	Message
07/01/2015	08:45:34	4	8.81	0.0	0.0	0.0	0.0	Started Acquisition
07/01/2015	09:11:04	4	8.81	0.0	0.0	0.0	0.0	
07/01/2015	09:11:07	4	8.80	0.0	0.0	0.0	0.0	Start Job
07/01/2015	09:11:49	3	8.80	0.0	0.0	0.0	0.0	
07/01/2015	09:12:34	4	8.78	0.0	0.0	0.0	0.0	
07/01/2015	09:13:19	4	8.77	0.0	0.0	0.0	0.0	
07/01/2015	09:14:04	4	8.77	0.0	0.0	0.0	0.0	
07/01/2015	09:14:49	45	8.74	4.4	2.0	0.0	2.0	
07/01/2015	09:15:34	42	8.50	4.7	4.9	0.0	4.9	
07/01/2015	09:16:19	2	8.50	0.0	0.0	0.0	5.5	
07/01/2015	09:17:04	104	8.51	0.4	0.0	0.0	5.5	
07/01/2015	09:17:49	579	8.50	0.0	0.1	0.0	5.5	
07/01/2015	09:18:34	2692	8.50	0.0	0.1	0.0	5.5	
07/01/2015	09:19:19	2922	8.50	0.0	0.1	0.0	5.5	
07/01/2015	09:20:04	2810	8.50	0.0	0.1	0.0	5.5	
07/01/2015	09:20:49	2777	8.50	0.0	0.1	0.0	5.5	
07/01/2015	09:21:26	2750	8.50	0.0	0.1	0.0	5.5	Pressure Test Lines
07/01/2015	09:21:34	2740	8.50	0.0	0.1	0.0	5.5	Reset Total, Vol = 5.54 bbl
07/01/2015	09:22:19	2715	8.50	0.0	0.1	0.0	5.5	
07/01/2015	09:23:04	2696	8.50	0.0	0.1	0.0	5.5	
07/01/2015	09:23:49	2677	8.50	0.0	0.1	0.0	5.5	

**RECEIVED**  
 Office of Oil and Gas  
 MAY 19 2016  
 WV Department of  
 Environmental Protection

Well		Field				Job Start	Customer	Job Number
MIP 5H 5H		Undesignated				Jul/01/2015	Northeast Natural Energy LLC	DCHA-00042
Date	Time 24-hr clock	CPFI_PRESS PSI	CPFI_DENS LB/G	CPFI_DOWNHOLE B/M	CPFI_TTL_STAGE BBL	CHT_DISP_VCCPFI BBL	CPFI_TTL_VOLUME BBL	Message
07/01/2015	09:25:19	5	8.50	0.0	0.1	0.0	5.5	
07/01/2015	09:26:04	45	8.50	3.5	0.3	0.0	5.8	
07/01/2015	09:26:49	83	8.51	6.8	4.8	0.0	10.3	
07/01/2015	09:27:25	90	8.63	6.8	8.8	0.0	14.3	Start Pumping Water
07/01/2015	09:27:34	89	8.58	6.8	9.9	0.0	15.3	
07/01/2015	09:28:19	121	8.44	8.5	16.0	0.0	21.5	
07/01/2015	09:28:59	125	8.43	8.3	21.6	0.0	27.1	Water temp 72F, Bulk temp 63F
07/01/2015	09:29:00	130	8.43	8.3	21.7	0.0	27.2	Slurry temp 91F
07/01/2015	09:29:04	122	8.43	8.3	22.3	0.0	27.8	
07/01/2015	09:29:49	127	4.39	6.5	27.4	0.0	32.8	
07/01/2015	09:30:34	118	8.42	8.3	33.5	0.0	39.0	
07/01/2015	09:31:19	122	8.42	8.3	39.7	0.0	45.2	
07/01/2015	09:32:04	123	8.42	8.3	45.9	0.0	51.4	
07/01/2015	09:32:49	126	8.43	8.3	52.1	0.0	57.6	
07/01/2015	09:33:34	128	8.43	8.4	58.4	0.0	63.9	
07/01/2015	09:34:19	120	8.42	8.3	64.6	0.0	70.1	
07/01/2015	09:35:04	120	8.42	8.3	70.9	0.0	76.4	
07/01/2015	09:35:49	119	8.43	8.3	77.1	0.0	82.6	
07/01/2015	09:36:34	123	8.43	8.3	83.3	0.0	88.8	
07/01/2015	09:37:19	124	8.43	8.3	89.6	0.0	95.1	
07/01/2015	09:38:04	126	8.43	8.3	95.8	0.0	101.3	
07/01/2015	09:38:49	128	8.43	8.3	102.0	0.0	107.5	
07/01/2015	09:39:34	127	8.43	8.3	108.3	0.0	113.8	
07/01/2015	09:40:19	127	8.43	8.3	114.5	0.0	120.0	
07/01/2015	09:41:04	126	8.43	8.3	120.8	0.0	126.3	
07/01/2015	09:41:49	76	8.43	6.6	126.8	0.0	132.3	
07/01/2015	09:42:34	72	8.43	6.7	131.8	0.0	137.3	
07/01/2015	09:43:19	93	8.44	6.5	136.7	0.0	142.2	
07/01/2015	09:43:54	6	8.45	0.0	139.3	0.0	144.8	End Water
07/01/2015	09:43:57	6	8.44	0.0	139.3	0.0	144.8	Reset Total, Vol = 139.24 bbl
07/01/2015	09:44:04	5	8.44	0.0	0.0	0.0	144.8	
07/01/2015	09:44:49	5	8.43	0.0	0.0	0.0	144.8	
07/01/2015	09:45:34	3	8.43	0.0	0.0	0.0	144.8	
07/01/2015	09:46:19	3	8.43	0.0	0.0	0.0	144.8	
07/01/2015	09:47:04	3	8.43	0.0	0.0	0.0	144.8	
07/01/2015	09:47:20	41	9.55	2.6	0.1	0.0	144.9	Start Pumping Spacer
07/01/2015	09:47:49	100	8.99	6.7	2.8	0.0	147.6	
07/01/2015	09:48:34	101	9.11	6.7	7.8	0.0	152.6	
07/01/2015	09:49:19	97	9.16	6.7	12.8	0.0	157.6	
07/01/2015	09:50:04	53	8.89	4.8	17.3	0.0	162.0	
07/01/2015	09:50:49	57	9.02	4.8	20.8	0.0	165.6	
07/01/2015	09:51:34	60	8.92	5.2	24.5	0.0	169.3	
07/01/2015	09:52:13	58	8.90	5.3	28.0	0.0	172.8	End Spacer
07/01/2015	09:52:18	57	8.79	5.3	0.0	0.0	173.2	Reset Total, Vol = 28.53 bbl
07/01/2015	09:52:19	57	8.76	5.2	0.1	0.0	173.3	
07/01/2015	09:52:23	58	8.72	5.2	0.4	0.0	173.7	Start Pumping Water
07/01/2015	09:53:04	57	8.68	5.4	4.1	0.0	177.3	
07/01/2015	09:53:49	58	8.62	5.4	8.2	0.0	181.4	
07/01/2015	09:54:08	57	8.62	5.4	9.9	0.0	183.1	End Water
07/01/2015	09:54:32	-6	8.63	0.0	0.1	0.0	184.4	Reset Total, Vol = 11.13 bbl
07/01/2015	09:54:34	-5	8.63	0.0	0.1	0.0	184.5	
07/01/2015	09:54:55	-5	8.63	0.0	0.0	0.0	184.5	Start Cement Slurry
07/01/2015	09:55:19	-5	8.63	0.0	0.0	0.0	184.5	
07/01/2015	09:55:41	-5	8.63	0.0	0.0	0.0	184.5	2CTF09204

RECEIVED  
 Office of Oil and Gas  
 MAY 19 2016  
 WV Department of  
 Environmental Protection



Well		Field				Job Start		Customer	Job Number
MIP 5H 5H		Undesignated				Jul/01/2015		Northeast Natural Energy LLC	DCHA-00042
Date	Time 24-hr clock	CPFL_PRESS PSI	CPFL_DENS LB/G	CPFL_DOWNHOLE B/M	CPFL_TTL_STAGE BBL	CMT_DISP_VCCPFL BBL	CPFL_TTL_VOLUME BBL	Message	
07/01/2015	09:56:49	-5	8.63	0.0	0.0	0.0	184.5		
07/01/2015	09:57:34	-4	8.63	0.0	0.0	0.0	184.5		
07/01/2015	09:58:19	-4	8.63	0.0	0.0	0.0	184.5		
07/01/2015	09:59:04	-4	8.63	0.0	0.0	0.0	184.5		
07/01/2015	09:59:49	-3	8.63	0.0	0.0	0.0	184.5		
07/01/2015	10:00:34	92	15.11	4.8	0.8	0.0	185.2	Start Mixing Tail Slurry	
07/01/2015	10:01:19	113	15.36	5.0	4.5	0.0	189.0		
07/01/2015	10:02:04	178	15.41	6.7	9.3	0.0	193.7		
07/01/2015	10:02:49	184	15.50	6.7	14.3	0.0	198.7		
07/01/2015	10:03:34	186	15.54	6.7	19.3	0.0	203.8		
07/01/2015	10:04:19	183	15.53	6.7	24.3	0.0	208.8		
07/01/2015	10:05:04	182	15.54	6.7	29.3	0.0	213.8		
07/01/2015	10:05:49	187	15.65	6.7	34.3	0.0	218.8		
07/01/2015	10:06:34	196	15.68	6.7	39.3	0.0	223.8		
07/01/2015	10:07:19	210	15.75	6.6	44.3	0.0	228.7		
07/01/2015	10:08:04	109	15.75	4.7	48.3	0.0	232.7		
07/01/2015	10:08:49	112	15.70	4.7	51.8	0.0	236.3		
07/01/2015	10:09:34	84	15.78	3.9	55.0	0.0	239.5		
07/01/2015	10:10:19	106	15.63	4.4	57.9	0.0	242.4		
07/01/2015	10:11:04	102	15.62	4.8	61.4	0.0	245.9		
07/01/2015	10:11:49	140	15.66	5.8	65.2	0.0	249.7		
07/01/2015	10:12:34	147	15.64	5.6	69.5	0.0	253.9		
07/01/2015	10:13:19	140	15.61	5.7	73.7	0.0	258.2		
07/01/2015	10:14:04	31	15.64	2.5	76.8	0.0	261.2		
07/01/2015	10:14:21	58	15.50	3.3	77.6	0.0	262.1	2CTT26395	
07/01/2015	10:14:49	58	15.50	3.4	79.2	0.0	263.6		
07/01/2015	10:15:34	62	16.01	3.6	81.9	0.0	266.3		
07/01/2015	10:16:19	52	15.19	3.5	84.4	0.0	268.9		
07/01/2015	10:17:04	54	15.79	3.4	87.0	0.0	271.5		
07/01/2015	10:17:49	54	15.76	3.4	89.6	0.0	274.0		
07/01/2015	10:18:34	48	15.83	3.2	92.0	0.0	276.5		
07/01/2015	10:19:19	80	15.65	4.0	94.4	0.0	278.8		
07/01/2015	10:20:04	104	15.65	4.5	97.5	0.0	282.0		
07/01/2015	10:20:49	104	15.63	4.7	101.0	0.0	285.5		
07/01/2015	10:21:34	108	15.68	5.0	104.7	0.0	289.1		
07/01/2015	10:22:19	105	15.70	4.9	108.4	0.0	292.9		
07/01/2015	10:23:04	104	15.67	4.8	112.0	0.0	296.5		
07/01/2015	10:23:49	137	15.64	5.6	116.1	0.0	300.5		
07/01/2015	10:24:34	144	15.65	5.6	120.3	0.0	304.7		
07/01/2015	10:25:19	147	15.70	5.6	124.5	0.0	308.9		
07/01/2015	10:26:04	139	15.72	5.6	128.7	0.0	313.2		
07/01/2015	10:26:49	145	15.72	5.6	132.9	0.0	317.4		
07/01/2015	10:27:34	144	15.70	5.7	137.1	0.0	321.6		
07/01/2015	10:28:19	143	15.76	5.7	141.4	0.0	325.9		
07/01/2015	10:28:34	15	15.76	4.6	142.9	0.0	327.3	End Tail Slurry	
07/01/2015	10:28:38	-5	15.89	1.8	143.1	0.0	327.6	Reset Total, Vol = 143.15 bbl	
07/01/2015	10:28:45	-3	15.93	0.0	143.2	0.0	327.7	End Cement Slurry	
07/01/2015	10:29:00	-5	15.92	0.0	0.0	0.0	327.7	Drop Top Plug	
07/01/2015	10:29:04	-4	15.92	0.0	0.0	0.0	327.7		
07/01/2015	10:29:49	-3	15.90	0.0	0.0	0.0	327.7		
07/01/2015	10:30:34	-3	15.90	0.0	0.0	0.0	327.7		
07/01/2015	10:31:00	48	15.85	2.4	0.4	0.0	328.0	Start Displacement	
07/01/2015	10:31:19	94	9.55	4.3	1.1	0.0	328.8		
07/01/2015	10:32:04	100	9.05	6.8	6.1	0.0	333.7		

RECEIVED  
 Office of Oil and Gas  
 MAY 19 2016  
 WV Department of  
 Environmental Protection

Well		Field				Job Start		Customer	Job Number
MIP 5H 5H		Undesignated				Jul/01/2015		Northeast Natural Energy LLC	DCHA-00042
Date	Time 24-hr clock	CPFF1_PRESS PSI	CPFF1_DENS LB/G	CPFF1_DOWNHOLE B/M	CPFF1_TTL_STAGE BBL	CMT_DISP_VCCPFF1 BBL	TTL_VOLUME BBL	Message	
07/01/2015	10:33:34	92	8.73	6.8	16.2	5.9	343.8		
07/01/2015	10:34:19	90	8.73	6.8	21.3	11.0	349.0		
07/01/2015	10:35:04	89	8.63	6.8	26.4	16.1	354.0		
07/01/2015	10:35:49	86	8.59	6.8	31.5	21.2	359.1		
07/01/2015	10:36:34	85	8.56	6.8	36.6	26.3	364.2		
07/01/2015	10:37:19	88	8.54	6.8	41.7	31.4	369.3		
07/01/2015	10:38:04	89	8.54	6.8	46.8	36.5	374.5		
07/01/2015	10:38:49	96	8.54	6.8	51.9	41.6	379.6		
07/01/2015	10:39:34	131	8.51	6.6	56.9	46.6	384.5		
07/01/2015	10:40:19	187	8.51	6.7	61.9	51.6	389.5		
07/01/2015	10:41:04	253	8.51	6.6	66.8	56.5	394.5		
07/01/2015	10:41:30	257	8.51	6.7	69.7	59.4	397.3	Gel spacer to surface at 70bbl	
07/01/2015	10:41:49	282	8.52	6.6	71.8	61.5	399.4		
07/01/2015	10:42:34	315	8.51	6.6	76.7	66.4	404.3		
07/01/2015	10:43:19	382	8.51	6.6	81.6	71.4	409.3		
07/01/2015	10:44:04	467	8.51	6.5	86.6	76.3	414.2		
07/01/2015	10:44:49	489	8.51	6.5	91.5	81.2	419.1		
07/01/2015	10:45:34	536	8.51	6.5	96.4	86.1	424.0		
07/01/2015	10:46:00	577	8.51	6.5	99.2	88.9	426.9	Cement to surface at 100bbl	
07/01/2015	10:46:19	577	8.51	6.5	101.3	91.0	428.9		
07/01/2015	10:47:04	638	8.51	6.5	106.2	95.9	433.8		
07/01/2015	10:47:49	688	8.51	6.5	111.1	100.8	438.7		
07/01/2015	10:48:34	698	8.51	6.5	115.9	105.7	443.6		
07/01/2015	10:49:19	716	8.51	6.5	120.8	110.6	448.5		
07/01/2015	10:50:04	739	8.51	6.5	125.7	115.4	453.4		
07/01/2015	10:50:49	679	8.51	4.6	130.4	120.2	458.1		
07/01/2015	10:51:34	698	8.51	3.3	133.0	122.7	460.6		
07/01/2015	10:52:19	1353	8.51	3.3	135.4	125.2	463.1		
07/01/2015	10:53:01	1749	8.51	0.0	135.9	125.6	463.6	Bump Top Plug	
07/01/2015	10:53:04	1749	8.51	0.0	135.9	125.6	463.6		
07/01/2015	10:53:49	1746	8.51	0.0	135.9	125.6	463.6		
07/01/2015	10:54:34	1743	8.51	0.0	135.9	125.6	463.6		
07/01/2015	10:55:19	1742	8.51	0.0	135.9	125.6	463.6		
07/01/2015	10:56:04	1740	8.51	0.0	135.9	125.6	463.6		
07/01/2015	10:57:34	1737	8.51	0.0	135.9	125.6	463.6		
07/01/2015	10:58:19	1647	8.51	0.0	135.9	125.6	463.6		
07/01/2015	10:59:04	6	8.51	0.0	135.9	125.6	463.6		
07/01/2015	10:59:49	6	8.51	0.0	0.0	125.6	463.6		
07/01/2015	11:00:00	6	8.51	0.0	0.0	125.6	463.6	End Displacement	
07/01/2015	11:00:34	1	8.51	0.0	0.0	125.6	463.6		
07/01/2015	11:01:19	1	8.51	0.0	0.0	125.6	463.6		
07/01/2015	11:02:04	1	8.51	0.0	0.0	125.6	463.6		

**RECEIVED**  
 Office of Oil and Gas  
 MAY 19 2016  
 WV Department of  
 Environmental Protection

Well MIP 5H 5H	Field Undesignated	Job Start Jul/01/2015	Customer Northeast Natural Energy LLC	Job Number DCHA-00042
-------------------	-----------------------	--------------------------	--	--------------------------

**Post Job Summary**

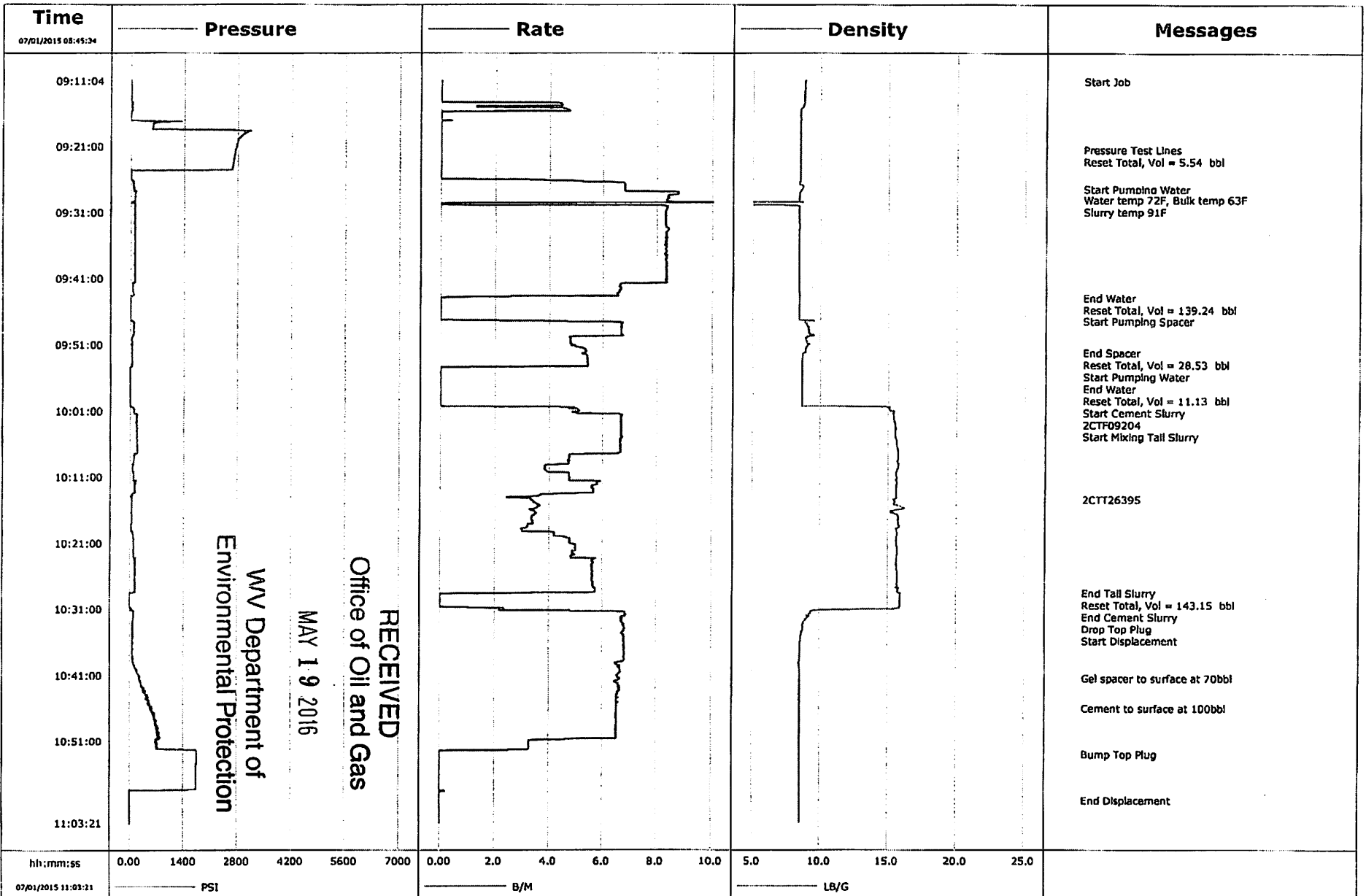
Average Pump Rates, bbl/min					Volume of Fluid Injected, bbl			
Slurry 6.0	N2	Mud	Maximum Rate 25.0	Total Slurry 463.6	Mud 0.0	Spacer 172.8	N2	
Treating Pressure Summary, psi					Breakdown Fluid			
Maximum 3126	Final 1	Average 324	Bump Plug to	Breakdown	Type FreshWater	Volume bbl	Density 8.34 lb/gal	
Avg. N2 Percent %	Designed Slurry Volume 128.0 bbl	Displacement 125.6 bbl	Mix Water Temp 72 degF	Cement Circulated to Surface? <input checked="" type="checkbox"/>	Volume 31.0 bbl	Washed Thru Perfs <input type="checkbox"/>	To ft	
Customer or Authorized Representative Jamie Czerneski			Schlumberger Supervisor Joshua Richards		Circulation Lost <input type="checkbox"/>	Job Completed <input checked="" type="checkbox"/>		

**RECEIVED**  
Office of Oil and Gas

MAY 19 2016

WV Department of  
Environmental Protection

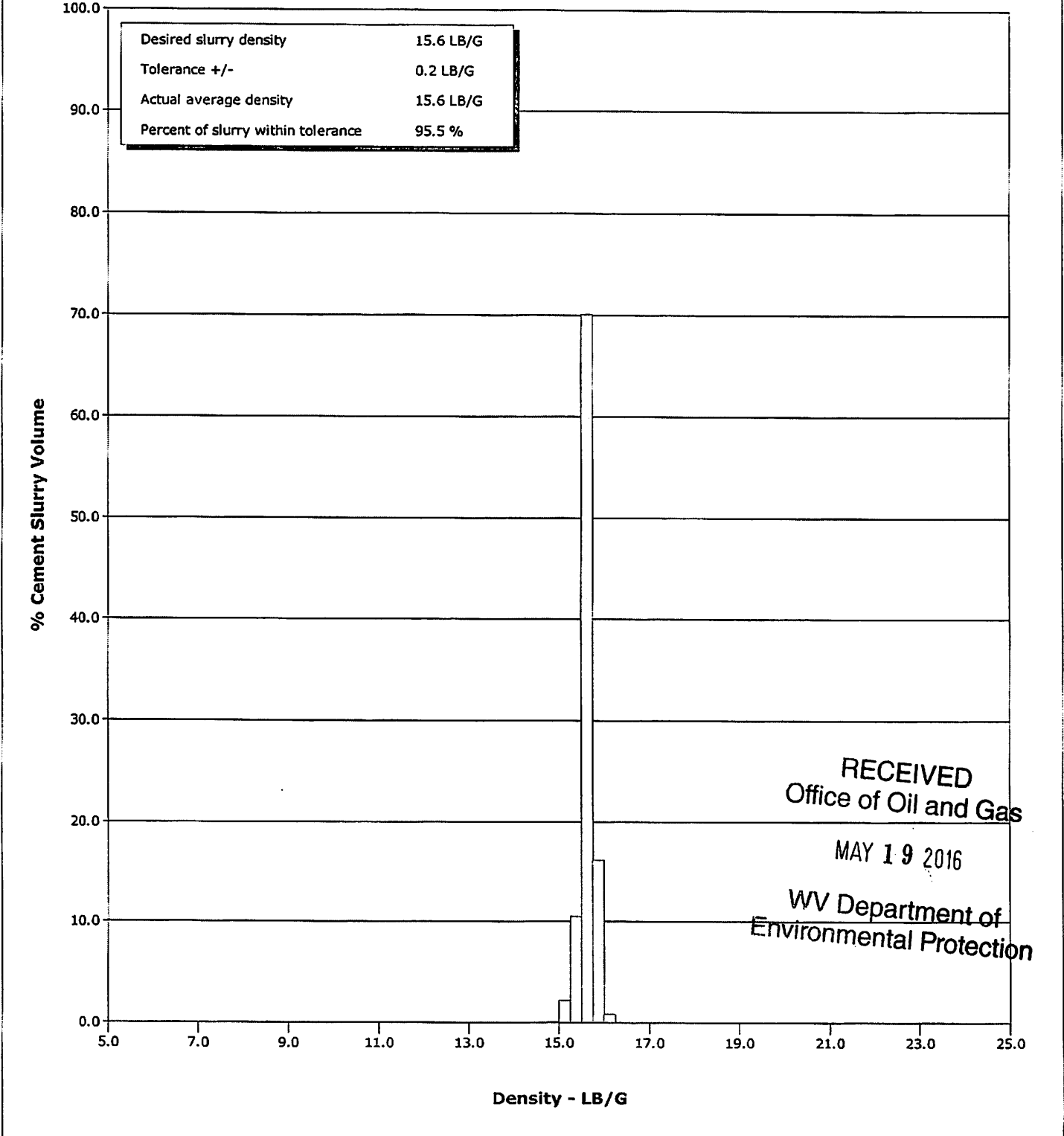
<b>Well</b>	MIP 5H	<b>Client</b>	Northeast Natural Energy LLC
<b>Field</b>	Undesignated	<b>SIR No.</b>	DCHA-00042
<b>Engineer</b>	Joshua Richards	<b>Job Type</b>	9 5/8" Intermediate
<b>Country</b>	United States	<b>Job Date</b>	07-01-2015





<b>Well</b>	MIP 5H	<b>Client</b>	Northeast Natural Energy LLC
<b>Field</b>	Undesignated	<b>SIR No.</b>	DCHA-00042
<b>Engineer</b>	Joshua Richards	<b>Job Type</b>	9 5/8" Intermediate
<b>Country</b>	United States	<b>Job Date</b>	07-01-2015

Cement Slurry - 07/01/2015 09:54:55 to 07/01/2015 10:28:45



Customer Northeast Natural Energy				Job Number 2169491			
Well MIP SH SH		Location (Legal) Monongalia		Schlumberger Location Strasburg		Job Start Sep/15/2015	
Field Undesignated		Formation Name/Type Shale		Deviation 90 deg		Well MD 14454.0 ft	
County Monongalia		State/Province West Virginia		Bit Size 8.5 in		Well TVD 7452.0 ft	
Well Master 0631634042		API/UWI 4706101699H000		BHP psi		BHT 144 degF	
Rlg Name Patterson 254		Drilled For Gas		Service Via Land		BHCT 142 degF	
Offshore Zone		Well Class New		Well Type Other		Pore Press. Gradient lb/gal	
Drilling Fluid Type		Max. Density lb/gal		Plastic Viscosity cP		Casing/Liner	
Service Line Cementing		Job Type Cem Prod Casing		T/D		Depth, ft	
Max. Allowed Tub. Press 6000 psi		Max. Allowed Ann. Press 6000 psi		WH Connection Double Cement head		Size, in	
Service Instructions Safety cement 5 1/2" Production Casing Lead 235.4 bbl, 1.5 ppg FlexSEAL Tail 370.2 bbl, 15.4 ppg Class A						Weight, lb/ft	
						Grade	
						Thread	
						Perforations/Open Hole	
						Top, ft	
						Bottom, ft	
						shot/ft	
						No. of Shots	
						Total Interval ft	
						Diameter in	
						Treat Down Casing	
						Displacement 319.7 bbl	
						Packer Type	
						Packer Depth ft	
						Tubing Vol. bbl	
						Casing Vol. 319.7 bbl	
						Annular Vol. bbl	
						Openhole Vol. bbl	
Casing/Tubing Secured <input checked="" type="checkbox"/>		1 Hole Vol. Circulated prior to Cement <input checked="" type="checkbox"/>		Casing Tools		Squeeze Job	
Lift Pressure psi		Pipe Rotated <input type="checkbox"/>		Pipe Reciprocated <input type="checkbox"/>		Shoe Type	
Pipe Rotated <input type="checkbox"/>		Pipe Reciprocated <input type="checkbox"/>		Shoe Depth 14437.0 ft		Guide	
No. Centralizers 114		Top Plugs 1		Bottom Plugs		Squeeze Type	
Cement Head Type Double		Stage Tool Type		Tool Depth ft		Tool Type	
Job Scheduled For Sep/15/2015 11:00		Arrived on Location Sep/15/2015 13:00		Leave Location Sep/16/2015 18:00		Stage Tool Depth ft	
						Tail Pipe Size in	
						Collar Type Float	
						Tail Pipe Depth ft	
						Collar Depth 14402.0 ft	
						Sqz. Total Vol. bbl	
Date	Time 24-hr clock	Treating Pressure PSI	Flow Rate B/M	Density LB/G	Volume BBL	Message	
09/16/2015	00:26:20	24	0.0	8.43	0.0	Started Acquisition	
09/16/2015	00:26:38	26	0.0	8.43	0.0	Start Job	
09/16/2015	00:29:40	19	0.0	8.43	0.0		
09/16/2015	00:33:00	26	0.0	8.43	0.0		
09/16/2015	00:36:20	25	0.0	8.43	0.0		
09/16/2015	00:39:40	14	0.0	8.43	0.0		
09/16/2015	00:43:00	20	0.0	8.43	0.1		
09/16/2015	00:46:20	34	0.0	8.43	0.1		
09/16/2015	00:49:40	94	0.0	8.43	1.2		
09/16/2015	00:53:00	362	2.2	8.43	5.7		
09/16/2015	00:54:06	186	0.2	8.40	8.1	Pressure Test Lines	
09/16/2015	00:56:20	992	0.0	8.40	8.1		
09/16/2015	00:59:40	1064	0.0	8.40	8.1		
09/16/2015	01:03:00	2235	0.0	8.40	8.1		
09/16/2015	01:06:20	5961	0.0	8.39	8.1		
09/16/2015	01:09:40	5824	0.0	8.40	8.1		
09/16/2015	01:11:52	158	0.0	8.39	8.2	Reset Total, Vol = 8.16 bbl	
09/16/2015	01:11:58	163	0.0	8.40	8.2	Start Pumping Spacer	
09/16/2015	01:13:00	185	0.0	8.40	8.2		
09/16/2015	01:16:20	194	0.0	8.39	8.2		
09/16/2015	01:19:40	207	0.0	8.40	8.2		

**RECEIVED**  
 Office of Oil and Gas  
 MAY 19 2016  
 WV Department of  
 Environmental Protection

Well		Field	Job Start	Customer	Job Number	
MIP 5H 5H		Undesignated	Sep/15/2015	Northeast Natural Energy	2169491	
Date	Time 24-hr clock	Treating Pressure PSI	Flow Rate B/M	Density LB/G	Volume BBL	Message
09/16/2015	01:26:20	199	0.0	8.40	8.2	
09/16/2015	01:29:40	213	0.0	8.40	8.3	
09/16/2015	01:33:00	208	0.0	8.40	8.3	
09/16/2015	01:36:20	264	0.0	8.40	8.3	
09/16/2015	01:39:40	244	0.0	8.40	8.3	
09/16/2015	01:43:00	224	0.0	8.40	8.3	
09/16/2015	01:46:20	224	0.0	8.40	8.4	
09/16/2015	01:49:40	214	0.0	8.40	8.4	
09/16/2015	01:53:00	206	0.0	8.40	8.4	
09/16/2015	01:56:20	208	0.0	8.40	8.4	
09/16/2015	01:59:40	200	0.0	8.40	8.5	
09/16/2015	02:03:00	190	0.0	8.40	8.5	
09/16/2015	02:06:20	185	0.0	8.40	8.5	
09/16/2015	02:09:40	190	0.0	8.40	8.5	
09/16/2015	02:13:00	259	0.0	8.40	8.5	
09/16/2015	02:16:20	213	0.0	8.40	8.6	
09/16/2015	02:19:40	508	2.0	13.25	13.4	
09/16/2015	02:23:00	627	4.5	14.17	21.8	
09/16/2015	02:26:20	556	4.5	13.69	36.9	
09/16/2015	02:29:21	454	4.5	13.41	50.5	Start Spacer
09/16/2015	02:29:40	447	4.5	13.12	52.0	
09/16/2015	02:33:00	413	4.5	14.24	64.0	
09/16/2015	02:36:20	372	4.6	14.08	79.1	
09/16/2015	02:39:40	150	2.3	13.91	93.0	
09/16/2015	02:43:00	316	4.4	13.92	101.3	
09/16/2015	02:43:49	354	4.4	14.13	104.9	Reset Total, Vol = 96.70 bbl
09/16/2015	02:43:54	339	4.3	14.17	105.2	End Spacer
09/16/2015	02:43:55	339	4.4	14.19	105.3	Start Mixing Lead Slurry
09/16/2015	02:46:00	154	2.2	14.41	112.4	Reset Total, Vol = 7.51 bbl
09/16/2015	02:46:20	157	2.2	14.40	113.1	
09/16/2015	02:49:40	381	4.4	14.57	125.9	
09/16/2015	02:53:00	129	1.9	14.07	138.4	
09/16/2015	02:56:20	59	0.0	14.38	140.2	
09/16/2015	02:59:40	315	4.1	15.11	144.1	
09/16/2015	03:03:00	65	0.0	14.63	149.6	
09/16/2015	03:06:20	190	2.2	14.75	154.2	
09/16/2015	03:09:40	262	2.4	14.27	161.7	
09/16/2015	03:13:00	574	5.8	14.51	175.5	
09/16/2015	03:16:20	562	5.9	14.36	195.0	
09/16/2015	03:17:19	575	5.9	14.39	200.8	Verify density with Mud Balance 14.8ppg
09/16/2015	03:19:40	560	5.7	14.41	214.5	
09/16/2015	03:23:00	562	5.7	14.41	233.6	
09/16/2015	03:26:20	420	4.1	14.26	250.3	
09/16/2015	03:29:40	248	2.3	14.11	258.5	
09/16/2015	03:33:00	390	4.4	14.32	269.7	
09/16/2015	03:35:56	561	6.2	14.36	285.2	Verify density with Mud balance 14.6ppg
09/16/2015	03:36:20	576	6.2	14.36	287.7	
09/16/2015	03:39:40	491	5.6	14.34	308.2	
09/16/2015	03:43:00	503	5.6	14.29	326.8	
09/16/2015	03:46:20	292	4.1	14.33	345.3	
09/16/2015	03:48:49	299	4.1	14.56	355.4	Reset Total, Vol = 242.99 bbl
09/16/2015	03:48:53	323	4.1	14.58	355.6	End Lead Slurry
09/16/2015	03:48:54	326	4.1	14.58	355.7	Start Mixing Tail Slurry
09/16/2015	03:49:40	327	4.1	14.92	358.9	

RECEIVED  
Office of Oil and Gas

MAY 19 2016

WV Department of  
Environmental Protection

Well		Field		Job Start	Customer	Job Number
MIP 5H 5H		Undesignated		Sep/15/2015	Northeast Natural Energy	2169491
Date	Time 24-hr clock	Treating Pressure PSI	Flow Rate B/M	Density LB/G	Volume BBL	Message
09/16/2015	03:56:20	396	4.5	15.37	388.5	
09/16/2015	03:58:12	415	4.5	15.50	396.9	Verify Density with Mud balance 15.6ppg
09/16/2015	03:59:40	402	4.5	15.54	403.5	
09/16/2015	04:03:00	371	4.5	15.45	418.5	
09/16/2015	04:06:20	668	6.3	15.37	434.8	
09/16/2015	04:09:40	587	5.9	15.31	455.3	
09/16/2015	04:13:00	407	4.5	15.34	472.6	
09/16/2015	04:16:20	421	4.5	15.42	487.6	
09/16/2015	04:19:40	448	4.5	15.53	502.6	
09/16/2015	04:23:00	439	4.5	15.42	522.2	
09/16/2015	04:26:20	419	4.5	15.41	537.2	
09/16/2015	04:29:40	220	2.1	15.35	549.4	
09/16/2015	04:33:00	399	4.5	15.17	559.6	
09/16/2015	04:36:20	442	4.5	15.44	574.7	
09/16/2015	04:39:40	670	6.3	15.43	593.4	
09/16/2015	04:43:00	638	6.3	15.38	614.6	
09/16/2015	04:46:20	639	6.3	15.40	635.8	
09/16/2015	04:49:40	659	6.3	15.41	656.9	
09/16/2015	04:53:00	706	6.3	15.39	678.1	
09/16/2015	04:56:20	589	5.9	15.18	699.1	
09/16/2015	04:59:40	392	4.5	15.32	716.6	
09/16/2015	05:03:00	253	0.0	15.44	731.4	
09/16/2015	05:04:10	110	1.6	15.12	736.0	Reset Total, Vol = 380.63 bbl
09/16/2015	05:04:12	107	0.7	15.18	736.1	End Tail Slurry
09/16/2015	05:04:14	107	0.1	15.20	736.1	Wash pump and lines
09/16/2015	05:06:20	74	0.0	15.01	736.1	
09/16/2015	05:09:40	331	4.6	8.78	741.0	
09/16/2015	05:13:00	104	0.7	8.39	759.3	
09/16/2015	05:14:33	116	0.0	8.41	759.3	Reset Total, Vol = 23.30 bbl
09/16/2015	05:14:38	117	0.0	8.41	759.3	Drop Top Plug
09/16/2015	05:14:39	118	0.0	8.41	759.3	Start Displacement
09/16/2015	05:16:20	262	6.5	8.40	764.1	
09/16/2015	05:19:40	1313	8.3	8.40	789.6	
09/16/2015	05:19:59	1335	8.3	8.40	792.2	End Displacement
09/16/2015	05:23:00	1709	8.1	8.40	816.8	
09/16/2015	05:26:20	2157	8.1	8.39	843.9	
09/16/2015	05:29:40	2622	8.1	8.39	870.9	
09/16/2015	05:33:00	3094	8.0	8.39	897.8	
09/16/2015	05:36:20	3514	7.9	8.39	924.4	
09/16/2015	05:39:40	3741	7.8	8.40	950.5	
09/16/2015	05:43:00	3798	7.7	8.39	976.3	
09/16/2015	05:46:20	3868	7.6	8.39	1001.8	
09/16/2015	05:48:36	3849	7.6	8.39	1019.1	Cement to surface
09/16/2015	05:49:40	3862	7.6	8.39	1027.2	
09/16/2015	05:53:00	3419	4.4	8.39	1048.0	
09/16/2015	05:56:20	3474	4.4	8.39	1062.6	
09/16/2015	05:59:40	3177	2.0	8.39	1073.6	
09/16/2015	06:03:00	3237	2.0	8.39	1080.3	
09/16/2015	06:06:14	4348	2.0	8.39	1086.9	Bump Top Plug
09/16/2015	06:06:20	4464	0.1	8.39	1087.0	
09/16/2015	06:09:40	4430	0.0	8.39	1087.0	
09/16/2015	06:12:55	3521	0.0	8.40	1087.0	Reset Total, Vol = 327.66 bbl
09/16/2015	06:13:00	3296	0.0	8.39	1087.0	
09/16/2015	06:15:40	108	0.0	8.39	1087.0	6 bbl back

RECEIVED  
Office of Oil and Gas  
MAY 19 2016  
WV Department of  
Environmental Protection



Well		Field		Job Start		Customer		Job Number	
MIP 5H 5H		Undesignated		Sep/15/2015		Northeast Natural Energy		2169491	
Date	Time 24-hr clock	Treating Pressure PSI	Flow Rate B/M	Density LB/G	Volume BBL	Message			
09/16/2015	06:19:40	114	0.0	8.38	1087.0				
09/16/2015	06:21:26	782	2.1	8.39	1087.6	Bump plug 2nd time			
09/16/2015	06:23:00	3406	2.0	8.39	1090.8				
09/16/2015	06:23:48	3299	0.8	8.39	1092.4	Pressure Drops			
09/16/2015	06:26:20	2981	0.0	8.39	1092.4				
09/16/2015	06:29:40	3006	0.0	8.39	1092.4				
09/16/2015	06:33:00	2383	0.0	8.39	1092.4				
09/16/2015	06:36:20	2415	0.0	8.39	1092.4				
09/16/2015	06:37:20	2422	0.0	8.39	1092.4	Pressure levels off			
09/16/2015	06:39:40	2443	0.0	8.39	1092.4				
09/16/2015	06:43:00	135	0.0	8.39	1092.5				
09/16/2015	06:46:06	163	0.0	8.39	1092.5	Reset Total, Vol = 5.44 bbl			
09/16/2015	06:46:20	163	0.0	8.39	0.0				

### Post Job Summary

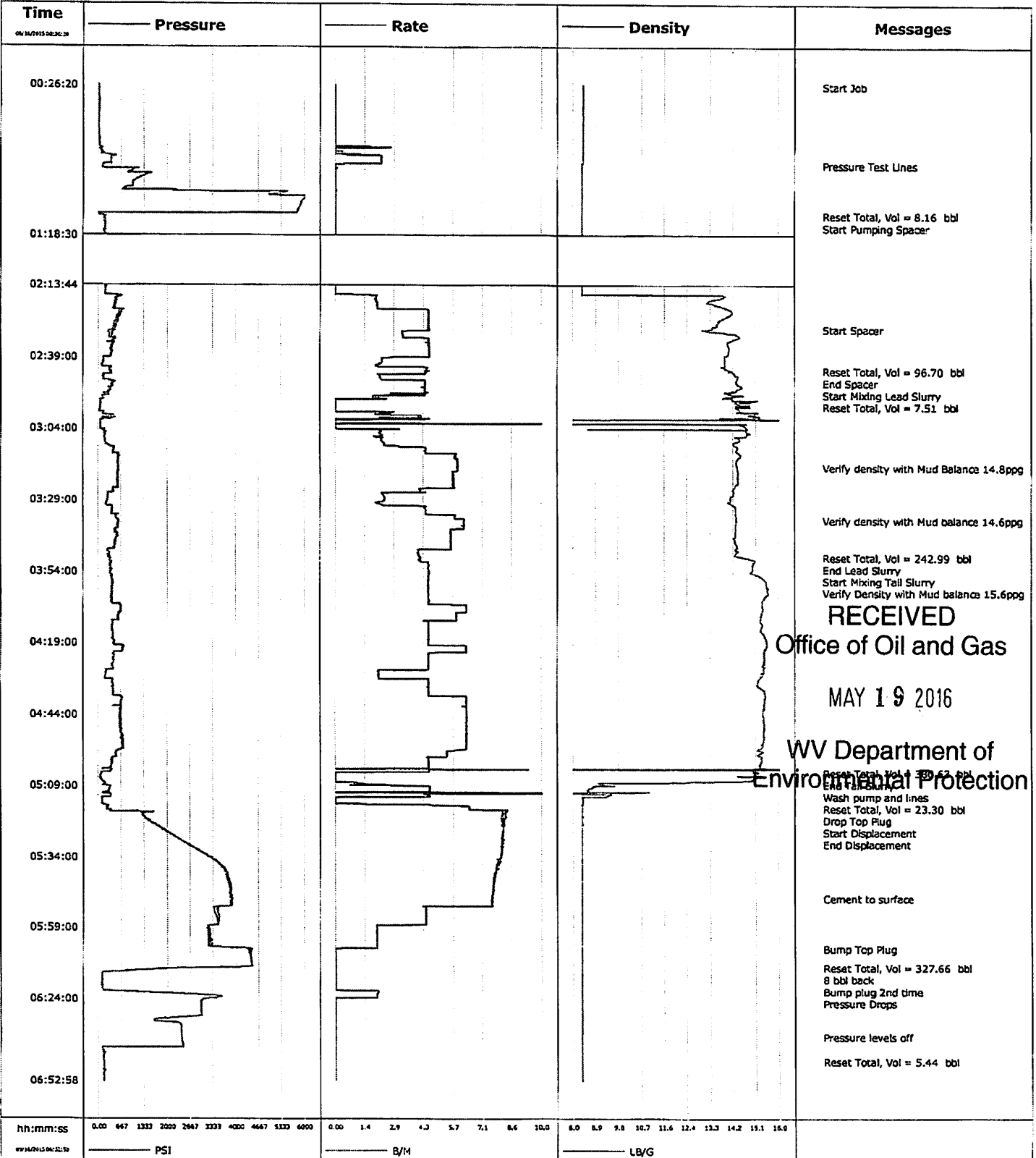
Average Pump Rates, bbl/min				Volume of Fluid Injected, bbl			
Slurry	N2	Mud	Maximum Rate	Total Slurry	Mud	Spacer	N2
3.6			25.0	505.0	0.0	100.0	
Treating Pressure Summary, psi				Breakdown Fluid			
Maximum	Final	Average	Bump Plug to	Breakdown	Type	Volume	Density
6261	158	977	4200			bbl	lb/gal
Avg. N2 Percent	Designed Slurry Volume	Displacement	Mix Water Temp	Cement Circulated to Surface?	<input checked="" type="checkbox"/>	Volume	70.0 bbl
%	0.0 bbl	317.0 bbl	72 degF	Washed Thru Perfs	<input type="checkbox"/>	To	ft
Customer or Authorized Representative	Schlumberger Supervisor				Circulation Lost	<input type="checkbox"/>	Job Completed
	Ana Rodriguez				-		<input checked="" type="checkbox"/>

RECEIVED  
Office of Oil and Gas

MAY 19 2016

WV Department of  
Environmental Protection

<b>Well</b>	MIP 5H	<b>Client</b>	Northeast Natural Energy
<b>Field</b>	Undesignated	<b>SIR No.</b>	2169491
<b>Engineer</b>	Ana Rodriguez	<b>Job Type</b>	Cem Prod Casing
<b>Country</b>	United States	<b>Job Date</b>	09-15-2015



RECEIVED  
Office of Oil and Gas  
MAY 19 2016  
WV Department of  
Environmental Protection

## Stimulation Record

Stage Number	Report Date	Avg Treating Rate (BPM)	Avg Treating Pressure (psl)	Breakdown Pressure (psl)	ISIP (psl)	Total Proppant Amount (lbs)	Total Clean Fluid (Bbls)
1	10/28/2015	69.8	8305	7500	0	328880	6307
2	10/29/2015	68.5	8619	7804	5965	329020	6924
3	10/29/2015	82	8827	6906	5885	265640	5682
4	10/29/2015	77.4	8735	6499	0	260460	5284
5	10/30/2015	75	8111	5749	5278	272280	6138
6	10/30/2015	88	8691	7201	5817	267420	7766
7	10/30/2015	78.8	8330	6383	1.24	401540	8548
8	10/31/2015	81.2	8455	5970	6156	400180	7702
9	10/31/2015	85	8217	6009	5312	398620	7557
10	10/31/2015	91.2	8644	6647	5401	398840	7736
11	10/31/2015	83.7	8655	6841	5408	400480	7514
12	10/31/2015	85.9	8747	6253	0	403380	7916
13	11/1/2015	92.8	8672	6436	5898	398620	8971
14	11/1/2015	93	8702	6654	5820	400100	7783
15	11/1/2015	94	8648	6453	5403	403260	7674
16	11/1/2015	89.6	8861	7417	5983	400400	7289
17	11/2/2015	90	8972	6435	6465	400540	7823
18	11/3/2015	88.7	8892	6457	6814	397180	7690
19	11/3/2015	94	8782	6536	6219	400500	7743
20	11/3/2015	94	8613	6266	5535	378600	7457
21	11/3/2015	99.5	8773	6213	6145	400620	7686
22	11/3/2015	94.7	8718	6617	5788	401800	7794
23	11/4/2015	92.9	8900	6736	6907	290880	5781
24	11/4/2015	98	8797	6780	6697	334620	7259
25	11/4/2015	98	8609	6384	5596	358260	7534
26	11/4/2015	97	8587	6729	6323	402100	8094
27	11/4/2015	93.9	8829	6528	6250	398820	8010
28	11/5/2015	91.2	8899	7891	6250	394780	8366
29	11/5/2015	99.6	8229	6550	6513	399720	8029
30	11/5/2015	99	8368	7031	6482	400560	8149

**RECEIVED**  
**Office of Oil and Gas**  
 MAY 19 2016  
**WV Department of**  
**Environmental Protection**

<b>Perforation Record</b>					
<b>Stage Number</b>	<b>Report Date</b>	<b>Perforated from MD ft</b>	<b>Perforated to MD ft</b>	<b>Number of Perforations</b>	<b>Formation</b>
1	10/28/2015	14228	14166	40	Marcellus Shale
2	10/29/2015	14148	13988	40	Marcellus Shale
3	10/29/2015	13950	13790	40	Marcellus Shale
4	10/29/2015	13752	13592	40	Marcellus Shale
5	10/30/2015	13554	13394	40	Marcellus Shale
6	10/30/2015	13356	13201	40	Marcellus Shale
7	10/30/2015	13158	12998	40	Marcellus Shale
8	10/31/2015	12960	12800	40	Marcellus Shale
9	10/31/2015	12762	12602	40	Marcellus Shale
10	10/31/2015	12564	12404	40	Marcellus Shale
11	10/31/2015	12366	12206	40	Marcellus Shale
12	10/31/2015	12168	12008	40	Marcellus Shale
13	11/1/2015	11970	11810	40	Marcellus Shale
14	11/1/2015	11772	11612	40	Marcellus Shale
15	11/1/2015	11574	11414	40	Marcellus Shale
16	11/1/2015	11376	11216	40	Marcellus Shale
17	11/2/2015	11178	11018	40	Marcellus Shale
18	11/3/2015	10980	10820	40	Marcellus Shale
19	11/3/2015	10782	10622	40	Marcellus Shale
20	11/3/2015	10584	10424	40	Marcellus Shale
21	11/3/2015	10386	10224	40	Marcellus Shale
22	11/3/2015	10188	10028	40	Marcellus Shale
23	11/4/2015	9990	9830	40	Marcellus Shale
24	11/4/2015	9792	9640	40	Marcellus Shale
25	11/4/2015	9594	9434	40	Marcellus Shale
26	11/4/2015	9396	9236	40	Marcellus Shale
27	11/4/2015	9186	9040	40	Marcellus Shale
28	11/5/2015	9000	8840	40	Marcellus Shale
29	11/5/2015	8802	8642	40	Marcellus Shale
30	11/5/2015	8596	8444	40	Marcellus Shale

**RECEIVED**  
 Office of Oil and Gas  
 MAY 19 2016  
 WV Department of  
 Environmental Protection

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date	9/12/2015
Job End Date	11/7/2015
State	West Virginia
County	Monongalia
API Number	47-061-01898-00400
Operator Name	Northeast Natural Energy LLC
Well Name and Number	Staller 7H
Longitude	-80.17804900
Latitude	39.70782800
Datum	NAD83
Federal/Tribal Well	NO
True Vertical Depth	7,808
Total Base Water Volume (gal)	8,214,948
Total Base Non Water Volume	0



## Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Northeast Natural Energy LLC	Water					
			Water	7732-18-5	100.00000	86.08478	
Sand	C&J Well Services	Sand - Bulk - Pennsylvania					
			Crystalline Silica, quartz	14808-60-7	99.90000	8.04830	
			Aluminum Oxide	1344-28-1	1.10000	0.08862	
			Iron Oxide	1309-37-1	0.10000	0.00806	
			Titanium Oxide	13463-67-7	0.10000	0.00806	
Sand	C&J Well Services	Sand - Bulk - Pennsylvania					
			Crystalline Silica, quartz	14808-60-7	99.90000	4.81366	
			Aluminum Oxide	1344-28-1	1.10000	0.05300	
			Titanium Oxide	13463-67-7	0.10000	0.00482	
			Iron Oxide	1309-37-1	0.10000	0.00482	
HC-15	C&J Well Services	Bulk Acid					
			Hydrochloric Acid	7647-01-0	15.00000	0.09904	
GA-6	C&J Well Services	Gelling Agents					
			Distillates (Petroleum), Hydrorefined, Light	64742-47-8	60.00000	0.03278	
			Guar Gum	9000-30-0	55.00000	0.03005	

WV Department of Environmental Protection

RECEIVED  
 Office of Oil and Gas  
 MAY 19 2016



			Organophylic Clay	68953-58-2	3.00000	0.00164
FR-18	C&J Well Services	Friction Reducer				
			Distillates (Petroleum), Hydrotreated Light	64742-47-8	45.00000	0.03096
			Ethylene Glycol	107-21-1	10.00000	0.00688
K-219	Nalco-Champlon	Microbial Control				
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	30.00000	0.01128
			Methanol	67-56-1	60.00000	0.01090
			Glutaraldehyde	111-30-8	10.00000	0.00308
BR-11	C&J Well Services	Gel Breakers				
			Ammonium Persulfate	7727-54-0	92.00000	0.01641
			Cured Resin	Proprietary	13.00000	0.00232
			Silica, Crystalline-Quartz	14808-60-7	1.00000	0.00018
HC-7.5	C&J Well Services	Bulk Acid				
			Hydrochloric Acid	7647-01-0	7.50000	0.01482
NI 200 FR	ECM	Friction Reduction				
			Water	7732-18-5	50.00000	0.00372
			Copolymer of Two Propenamide	69418-26-4	30.00000	0.00223
			Petroleum Distillate	64742-47-8	20.00000	0.00149
			Alcohols, C-12-16, Ethoxylated	68551-12-2	2.00000	0.00015
			Oleic Acid Diethanolamide	93-83-4	2.00000	0.00015
			Ammonium Chloride ((NH4)Cl)	12125-02-9	1.00000	0.00007
SV-1	C&J Well Services	Paraffin & Scale Additives				
			Alkanes, C10-24 branched and linear	848301-67-7	90.00000	0.00101
			Dodecane	112-40-3	40.00000	0.00045
			Tridecane	Proprietary	30.00000	0.00034
			Tetradecane	629-59-4	30.00000	0.00034
			Undecane	1120-21-4	30.00000	0.00034
			Hydrocarbons	Proprietary	25.00000	0.00028
EC6486A	Nalco-Champlon	Scale Inhibitor				
			Ethylene Glycol	107-21-1	30.00000	0.00139
			Amine Triphosphate	Proprietary	30.00000	0.00134
K-139	Nalco-Champlon	Microbial Control				
			Benzyl-(C12-C16 Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00165
			Glutaraldehyde	111-30-8	10.00000	0.00065
			Ethanol	64-17-5	5.00000	0.00023
CI-3	C&J Well Services	Acid Corrosion Inhibitors				
			Ethylene Glycol	107-21-1	40.00000	0.00072
			Dimethylformamide	68-12-2	20.00000	0.00036
			2-Butoxyethanol	111-76-2	15.00000	0.00027
			Cinnamaldehyde	104-55-2	15.00000	0.00027

WV Department of  
 Environmental Protection

RECEIVED  
 Office of Oil and Gas  
 MAY 19 2016

			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15.00000	0.00027
			Nonyphenol (branched), ethoxylated	127087-87-0	5.00000	0.00009
			1-DECANOL	112-30-1	5.00000	0.00009
			Isopropyl Alcohol	67-63-0	2.50000	0.00004
			1-OCTANOL	111-87-5	2.50000	0.00004
			Triethyl Phosphate	78-40-0	2.50000	0.00004
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 Ingredients	C&J Well Services	Other Ingredients				
			Water	7732-18-5	85.00000	0.56125
			Water	7732-18-5	92.50000	0.18275
			Anionic Polyacrylamide	Proprietary	100.00000	0.02270
			Water	7732-18-5	33.00000	0.02270
			Alcohol Ethoxylates component	Proprietary	100.00000	0.00344
			Alcohol Ethoxylates Component	Proprietary	100.00000	0.00344
			Proprietary	Proprietary	12.80000	0.00228
			Ethoxylated Alcohols (C10-C16)	68002-97-1	3.00000	0.00164
			Proprietary	Proprietary	1.00000	0.00018
			Proprietary	Proprietary	0.70000	0.00012
			Silica, Crystalline-Quartz	14808-60-7	0.05000	0.00002

\* 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)

**RECEIVED**  
 Office of Oil and Gas  
 MAY 19 2016  
 WV Department of  
 Environmental Protection

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	9/14/2015
Job End Date:	9/24/2015
State:	West Virginia
County:	Monongalia
API Number:	47-061-01698-00-00
Operator Name:	Northeast Natural Energy LLC
Well Name and Number:	Staffer 10H
Longitude:	-80.17804900
Latitude:	39.70782800
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,948
Total Base Water Volume (gal):	7,845,600
Total Base Non Water Volume:	0



## Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Northeast Natural Energy LLC	Water					
			Water	7732-18-5	100.00000	84.52772	
Sand	C&J Well Services	Sand - Bulk - Pennsylvania					
			Crystalline Silica, quartz	14808-60-7	99.90000	11.15588	
			Aluminum Oxide	1344-28-1	1.10000	0.12284	
			Iron Oxide	1309-37-1	0.10000	0.01117	
			Titanium Oxide	13463-67-7	0.10000	0.01117	
Sand	C&J Well Services	Sand - Bulk - Pennsylvania					
			Crystalline Silica, quartz	14808-60-7	99.80000	3.74168	
			Aluminum Oxide	1344-28-1	1.10000	0.04120	
			Iron Oxide	1309-37-1	0.10000	0.00375	
			Titanium Oxide	13463-67-7	0.10000	0.00375	
HCl Acid (12.5-18.0%), 22 Baume	C&J Well Services	Bulk Acid					
			Water	7732-18-5	87.50000	0.41419	
			Hydrochloric Acid	7647-01-0	18.00000	0.08521	
FR-18	C&J Well Services	Friction Reducer					
			Distillates (Petroleum), Hydrotreated Light	64742-47-8	45.00000	0.02298	