

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

API 47-085-10055 County Ritche District Clay
Quad Pennsboro Pad Name PEN 2 Field/Pool Name NA
Farm name Terry & Helen Kiessling Well Number PEN 2 CHS
Operator (as registered with the OOG) Noble Energy, Inc.
Address 1000 Noble Energy Drive City Canonsburg State PA Zip 15317

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4354130.66 Easting 498919.04
Landing Point of Curve Northing 4353946.77 Easting 498851.25
Bottom Hole Northing 4351704.84 Easting 500791.23

Elevation (ft) 1074.85 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 Oil Based

Date permit issued 10/24/2013 Date drilling commenced 01/17/2014 Date drilling ceased 06/15/2014
Date completion activities began 12/31/2014 Date completion activities ceased 3/14/2015
Verbal plugging (Y/N) 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 454 Open mine(s) (Y/N) depths _____
Salt water depth(s) ft None noted for Offsets Void(s) encountered (Y/N) depths _____
Coal depth(s) ft no coal Cavern(s) encountered (Y/N) depths _____
Is coal being mined in area (Y/N) N

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A.L. 06/16/15
W.S. 4/01/15

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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	36	30	66	N	K-55 94#		Y
Surface	17 1/2	13 3/8	595.6	N	J-55 54.5#		Y
Coal							
Intermediate 1	12 3/8	9 5/8	5,527.0	N	K-55 36#		Y
Intermediate 2							
Intermediate 3							
Production	8 3/4	5 1/2	16,466.20	N	P-110 20#		Y
Tubing							
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ²)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	TYPE 1	532	15.6	1.20	111	0	8
Coal							
Intermediate 1	Class A	Lead 938 Tail 302	Lead 12.0 Tail 15.6	Lead 1.94 Tail 1.19	Lead 202 Tail 417	0	8
Intermediate 2							
Intermediate 3							
Production	Class A	Lead 415 Tail 2047	Lead 13.0 Tail 14.8	Lead 1.62 Tail 1.37	Lead 167 Tail 901	5546	8
Tubing							

Drillers TD (ft) 16,485 Loggers TD (ft) 16,458
 Deepest formation penetrated Marcellus Plug back to (ft) Not a Pilot Hole
 Plug back procedure Not a Pilot Hole

Kick off depth (ft) 6,703

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 Conductor - No centralizers used. Fresh Water/Surface-Surface - 5 centralizers used, one every third joint Intermediate - 66 centralizers - bow spring centralizers on every joint to KOP, on every third joint from KOP to 100' from surface.
 Production - 282 centralizers - rigid bow spring every third joint from KOP to TOC, rigid bow spring every joint to KOP.

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WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

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WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

API 47- 085 - 10055 Farm name Terry & Helen Kiessling Well number PEN 2 AHS

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6,287</u>	<u>TVD</u>	<u>16,485</u> <u>MD</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

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

OPEN FLOW Gas 3769 mcfpd Oil 116 bpd NGL 423 bpd Water 908 bpd GAS MEASURED BY Estimated Orifice Pilot

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

Please insert additional pages as applicable.

Drilling Contractor NOMAC
Address 171 Locust Avenue Ext. City Mt. Morris State PA Zip 15349

Logging Company Baker Hughes
Address 400 Technology Drive, Suite 120 City Canonsburg State PA Zip 15317

Cementing Company Schlumberger
Address 4600 J Barry Court, Suite 200 City Canonsburg State PA Zip 15317

Stimulating Company U. S Well Service
Address 533 Industrial Park Drive City Jane Lew State WV Zip 26030

Please insert additional pages as applicable.

Completed by Regina A. Logue Telephone 724-820-3559
Signature Regina A. Logue Title Regulatory Analyst Date 4/6/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry
Office of Oil and Gas
WV Department of Environmental Protection
APR 09 2015
06/12/2015

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/31/2014
Job End Date:	1/22/2015
State:	West Virginia
County:	Ritchie
API Number:	47-085-10055-00-00
Operator Name:	Noble Energy, Inc.
Well Name and Number:	Pen 2 C
Longitude:	-81.01271100
Latitude:	39.33652200
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,287
Total Base Water Volume (gal):	17,756,760
Total Base Non Water Volume:	919,752



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	Noble Energy	Base Fluid	Water	7732-18-5	100.00000	88.58268	
40/70 Sand	U.S. Well Services	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	7.69597	
100 Mesh Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	3.38865	
HCL Acid (12.6% 18.0%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.50000	0.15154	
Al	U.S. Well Services, LLC	Friction Reducer	Hydrogen Chloride	7647-01-0	18.00000	0.03620	
WFRA-1000	U.S. Well Services, LLC	Friction Reducer	Anionic Polyacrylamide	Proprietary	40.00000	0.02088	
WFRA-100	U.S. Well Services, LLC	Friction Reducer	Water	7732-18-5	40.00000	0.02088	
WFRA-405	U.S. Well Services, LLC	Friction Reducer	Petroleum Distillates	64742-47-8	40.00000	0.01681	
			Crystalline Salt	12125-02-9	5.00000	0.00261	
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00261	
	U.S. Well Services	Friction Reducer	Anionic Polyacrylamide	Proprietary	40.00000	0.01131	
			Water	7732-18-5	40.00000	0.01131	

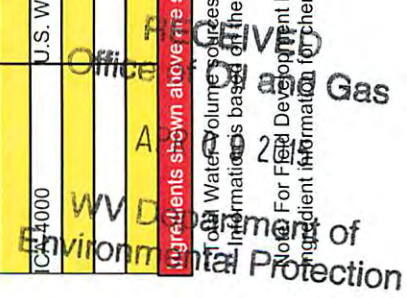
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January 9 2015
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SI-1100	U.S. Well Services	Scale Inhibitor	Sodium Chloride	7647-14-5	20.00000	0.00566
			Petroleum Distillates	64742-47-8	20.00000	0.00455
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00141
	U.S. Well Services	Scale Inhibitor	DI Water	7732-18-5	80.00000	0.01371
			Ethylene Glycol	107-21-1	40.00000	0.00775
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	10.00000	0.00231
			2-Phosphonobutane 1,2,4 tricarboxylic salt	37971-36-1	10.00000	0.00221
			hexamethylenediamine tetra (methylene phosphonic acid)	38820-59-6	10.00000	0.00214
			Copolymer of Maleic and Acrylic acid	26677-99-6	10.00000	0.00202
			bis (hexamethylene) triamine penta (methylene phosphonic acid) - phosphate acid	40623-75-4	10.00000	0.00197
			Acrylic polymer	52255-49-9	5.00000	0.00086
X-BAC 1020	U.S. Well Services, LLC	Anti-Bacterial Agent				
			2,2-dibromo-3-nitripropionamide	10222-01-2	20.00000	0.00832
AI-301	U.S. Well Services, LLC	Acid Corrosion Inhibitors	Deionized Water	7732-18-5	28.00000	0.00475
			Diethylene Glycol	111-46-6	30.00000	0.00023
			Methenamine	100-97-0	20.00000	0.00018
			Hydrogen Chloride	7647-01-0	10.00000	0.00008
			Polyethylene polyamine	68603-67-8	10.00000	0.00007
			Coco amine	61791-14-8	5.00000	0.00003
ICA-800	U.S. Well Services	Iron Control Additive	Erythorbic Acid	89-65-6	100.00000	0.00019
ICA-4000	U.S. Well Services	Iron Control Additive	Ethylene Glycol	107-21-1	20.00000	0.00004
			Triethanolamine hydroxyacetate	68299-02-5	20.00000	0.00003
			Glycolic Acid	79-14-1	2.50000	0.00001

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 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%.

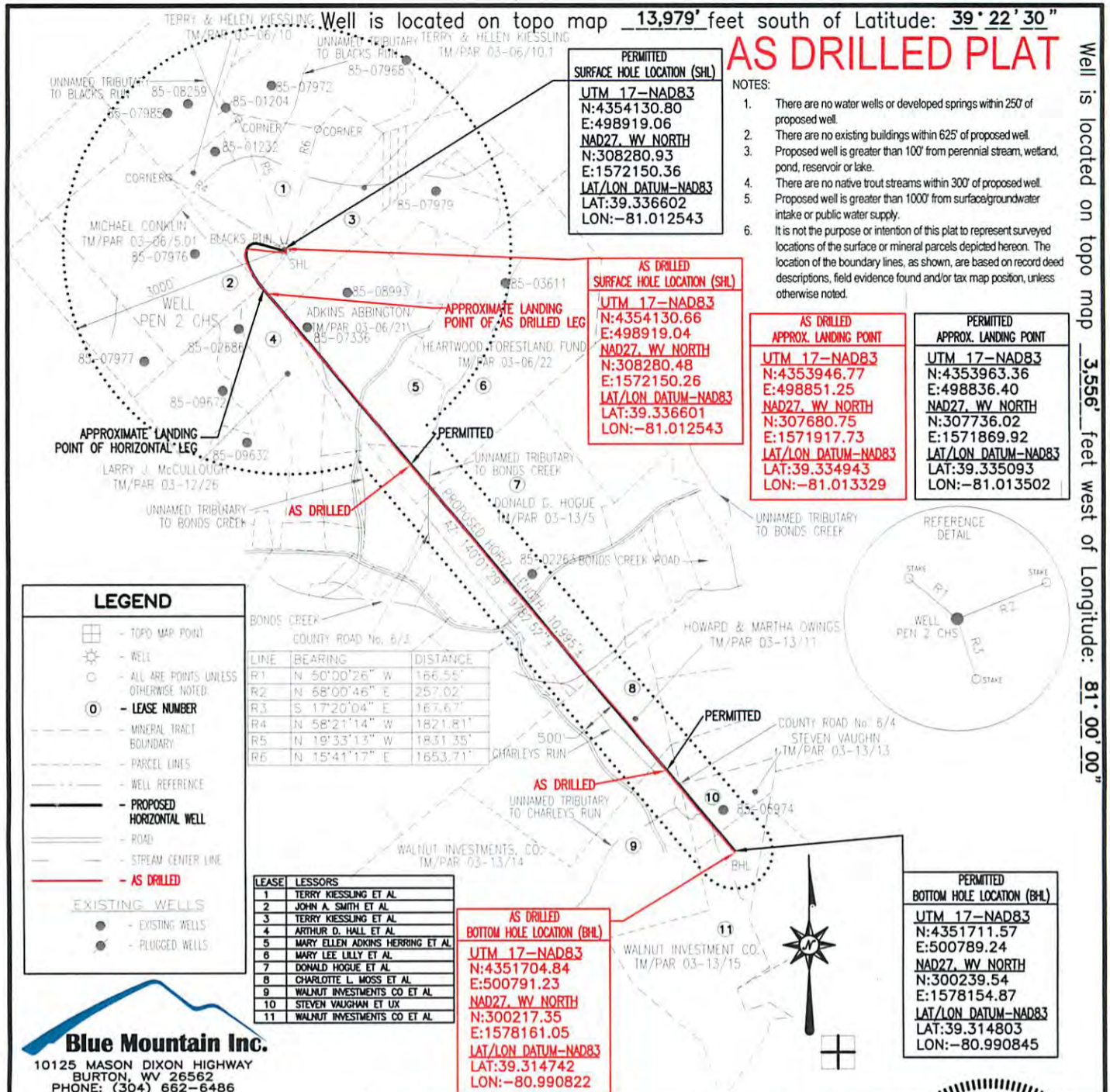
For Field Development Products (products that begin with FDP), MSDS level only information has been provided. Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)



Well is located on topo map 13,979' feet south of Latitude: 39° 22' 30"

AS DRILLED PLAT

Well is located on topo map 3,556' feet west of Longitude: 81° 00' 00"



Blue Mountain Inc.
 10125 MASON DIXON HIGHWAY
 BURTON, WV 26562
 PHONE: (304) 662-6486

FILE #: PEN 2 CHS-AS DRILLED
 DRAWING #: PEN 2 CHS-AS DRILLED
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1/2500
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

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]
 R.P.E.: _____
 L.L.S. No. 2000

GEORGE D SIX
 LICENSED
 No. 2000
 STATE OF WEST VIRGINIA
 PROFESSIONAL SURVEYOR

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 Office of Oil and Gas
 PLACE SEAL HERE

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

DATE: APR 09 2015
 FEBRUARY 11, 2015

OPERATOR'S WELL #: PEN 2 CHS-AS DRILLED
 WV Department of Environmental Protection
 47 85 10055
 STATE COUNTY PERMIT

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

WATERSHED: NORTH FORK HUGHES RIVER ELEVATION: 1084'±
 COUNTY/DISTRICT: RITCHIE / CLAY QUADRANGLE: ELLENBORO, WV 7.5'
 SURFACE OWNER: TERRY & HELEN KIESSLING ACREAGE: 79.242±
 OIL & GAS ROYALTY OWNER: TERRY KIESSLING ET AL ACREAGE: 992.959±

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,423'± TMD: 16,598'±
 WELL OPERATOR NOBLE ENERGY, INC. DESIGNATED AGENT STEVEN M. GREEN
 Address 333 TECHNOLOGY DRIVE, SUITE 116 Address 500 VIRGINIA STREET EAST, UNITED CENTER SUITE 590
 City CANONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25301

06/12/2015