

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

API 47 - 103 - 02761 County Wetzel District Green
Quad Pine Grove Pad Name Mills-Wetzel Field/Pool Name Heather
Farm name WV Conservation Commission Well Number #20H
Operator (as registered with the OOG) Stone Energy Corporation
Address 1300 Fort Pierpont Dr. - Suite 201 City Morgantown State WV Zip 26508

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,373,422 Easting 528,115
Landing Point of Curve Northing 4,373,166 Easting 528,166
Bottom Hole Northing 4,371,760 Easting 528,980

Elevation (ft) 1,293 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)
Saturated salt mud which includes Caustic Soda, Barite, Lime, New-Drill, Perma-Lose HT, Xan-Plex D, X-Cide 102, Soda Ash, and Sodium Chloride

Date permit issued 6/13/2012 Date drilling commenced 10/28/2012 Date drilling ceased 6/23/2013
Date completion activities began 9/5/2013 Date completion activities ceased 1/24/2014
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 65 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,500 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1,033 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:
A.L. 5/19/15
W.S. 6/23/15
06/12/2015

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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	24"	20"	60'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,265'	New	J55	128' & 256'	Y - CTS
Coal	17.5"	13.375"	1,265'	New	J55	128' & 256'	Y - CTS
Intermediate 1	12.25"	9.625"	2,747'	New	J55	136'	Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	12,930'	New	P110		Y
Tubing	N/A	2.375"	7,896'	New	N80		N/A
Packer type and depth set							

Comment Details 13.375" casing string circulated 47 bbls cement to surface, 9.625" casing string circulated 33 bbls cement to surface. 5.5" casing string TOC @ 859'.

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	Type 1	34	15.6	1.18	40	Surface	24.0
Surface	Class "A"	995	15.6	1.19	1,184	Surface	8.0
Coal	Class "A"	995	15.6	1.19	1,184	Surface	8.0
Intermediate 1	Lead-FlexSeal Tail-Class "A"	Lead-540 Tail-430	Lead-15.0 Tail-15.5	Lead-1.26 Tail-1.19	Lead-680 Tail-512	Surface	12.0
Intermediate 2							
Intermediate 3							
Production	Lead-FlexSeal Tail-Class "A"	Lead-652 Tail-1,951	Lead-15.0 Tail-15.6	Lead-1.25 Tail-1.22	Lead-815 Tail-2,380	859'	7.0
Tubing							

Drillers TD (ft) 12,932 MD / 7,370 TVD Loggers TD (ft) N/A
 Deepest formation penetrated Marcellus Shale Plug back to (ft) _____
 Plug back procedure _____

Kick off depth (ft) 5,942 MD / 5,939 TVD

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/Coal casing had bow spring centralizers placed on joints #s 4, 6, 8, 10, 12, 16, 18, 20, 22 and 26. Intermediate casing had bow spring centralizers placed on joints #s 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44, 47, 50, 53, 56, 59 and 63. The production casing has rigid spiral alternating left/right centralizers placed beginning on joint #1 and then every fourth joint up to the top of curve at joint #165. From there bow spring centralizers were placed beginning on joint #168 and then every third joint to joint #301. A total of 42 rigid left/right centralizers were used and 45 bow spring centralizers were used. The joint numbers begin at TD of each individual casing string and increase as you climb towards the surface.

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	9/10/13	12,665	12,840	72	Marcellus Shale
2	10/4/13	12,388	12,582	72	Marcellus Shale
3	10/5/13	12,121	12,321	72	Marcellus Shale
4	10/6/13	11,855	12,047	72	Marcellus Shale
5	10/7/13	11,604	11,785	72	Marcellus Shale
6	10/7/13	11,345	11,528	72	Marcellus Shale
7	10/8/13	11,080	11,275	72	Marcellus Shale
8	10/8/13	10,820	11,012	72	Marcellus Shale
9	10/15/13	10,555	10,751	72	Marcellus Shale
10	10/16/13	10,285	10,484	72	Marcellus Shale
11	10/17/13	10,022	10,215	72	Marcellus Shale
12	10/19/13	9,760	9,995	72	Marcellus Shale
13	11/19/13	9,500	9,695	72	Marcellus Shale
14	11/20/13	9,325	9,435	72	Marcellus Shale
15	11/28/13	8,970	9,165	72	Marcellus Shale
16	12/1/13	8,705	8,901	72	Marcellus Shale

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)
1	10/4/13	85.1	7,918	5,998	4,028	377,120	8,314	
2	10/5/13	84.0	8,246	6,242	4,063	408,860	8,405	
3	10/6/13	84.6	8,173	7,594	4,168	412,720	8,411	
4	10/7/13	83.5	8,135	6,695	4,580	409,200	8,514	
5	10/7/13	84.9	7,924	6,129	4,476	411,280	8,436	
6	10/8/13	85.2	7,939	7,478	4,545	409,160	8,198	
7	10/8/13	85.3	7,842	6,428	4,234	414,260	9,085	
8	10/15/13	81.1	8,017	5,647	4,682	369,520	8,134	
9	10/16/13	80.4	7,524	5,957	4,650	411,860	8,381	
10	10/17/13	81.8	7,665	6,680	4,856	415,880	8,335	
11	10/19/13	80.4	7,337	6,911	4,409	411,360	8,377	
12	11/19/13	80.3	7,533	7,000	5,470	240,460	7,231	
13	11/20/13	79.2	7,488	6,683	4,470	414,130	8,266	
14	11/28/13	79.6	7,360	6,341	4,185	406,560	8,390	
15	12/1/13	81.0	7,588	7,298	4,676	413,900	8,303	
16	12/3/13	80.1	7,091	6,672	4,752	405,460	8,232	

Please insert additional pages as applicable.

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MILL-WETZEL #20H

API 47-103-02761

Stone Energy Corporation

	Horizontal		Bottom (ft TVD)	Bottom (ft MD)	
	Top (ft TVD)	Top (ft MD)			
Sandstone & Shale	Surface	*	1,033		FW @ 65'
Coal	1,033	*	1,036		
Sandstone & Shale	1,036	*	2,190		SW @ 1,500'
Little Lime	2,190	*	2,220		
Big Lime	2,220	*	2,365		
Big Injun	2,365	*	2,422		
Sandstone & Shale	2,422	*	2,851		
Berea Sandstone	2,851	*	2,881		
Shale	2,881	*	3,055		
Gordon	3,055	*	3,105		
Undiff Devonian Shale	3,105	*	5,358		
Riley Shale	5,358	*	5,465		
Benson Siltstone	5,465	*	5,713		
Pipe Creek Shale	5,713	*	5,722		
Undiff Devonian Shale	5,722	~	6,536	6,605	
Rhinestreet	3,536	6,605	6,739	6,914	
Cashaqua	6,739	6,914	6,906	7,174	
Middlesex	6,906	7,174	7,081	7,441	
West River	7,081	7,441	7,171	7,602	
Geneseo	7,171	7,602	7,196	7,652	
Tully Limestone	7,196	7,652	7,219	7,708	
Hamilton Shale	7,219	7,708	7,283	7,910	
Marcellus	7,283	7,910	7,370	12,932	
TD			7,370	12,932	

* From Pilot Hole Log and Driller's Log

~ From MWD Gamma Log

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	12/6/2013
State:	West Virginia
County/Parish:	Wetzel County
API Number:	47-103-02761
Operator Name:	Stone Energy
Well Name and Number:	Mills Wetzel #20H
Longitude:	528,115
Latitude:	4,373,422
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	6609661

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
H015%, Slickwater, WF115, Sapphire VF105	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Scale Inhibitor, Surfactant, Acid, Breaker, Gelling Agent, Friction Reducer, Iron Control Agent, Clay Control Agent, Fluid Loss Additive, Propping	Water (Including Mix Water Supplied by Client)*	NA		94.27901%	
			Crystalline silica	14808-60-7	96.18298%	5.50262%	
			Hydrochloric acid	7647-01-0	1.97786%	0.11315%	
			Carbohydrate polymer	Proprietary	1.22160%	0.06989%	
			Ammonium sulfate	Proprietary	0.41392%	0.02368%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.15736%	0.00900%	
			Glutaraldehyde	111-30-8	0.11500%	0.00658%	
			Diammonium peroxodisulfate	7727-54-0	0.05806%	0.00332%	
			Calcium chloride	10043-52-4	0.02716%	0.00155%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.01210%	0.00069%	
			Trisodium ortho phosphate	7601-54-9	0.00784%	0.00045%	
			Ethane-1,2-diol	107-21-1	0.00784%	0.00045%	
			Methanol	67-56-1	0.00733%	0.00042%	
			Sodium erythorbate	6381-77-7	0.00573%	0.00033%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00549%	0.00031%	
			Aliphatic acids	Proprietary	0.00549%	0.00031%	
			Prop-2-yn-1-ol	107-19-7	0.00183%	0.00010%	

* 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%

Report ID: RPT-23461 (Generated on 1/23/2014 4:09 PM)

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

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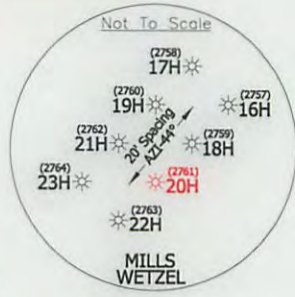
MILLS WETZEL #20H SURFACE HOLE

STATE PLANE COORDINATES
NORTH ZONE -NAD 27
(N) 368982
(E) 1669013

L & L DECIMAL
NAD 27
39.50989
80.67314

UTM (NAD 83)
ZONE 17
METERS
4373422
528115

MILLS WETZEL #20H (47-103-02761) AS-DRILLED



MILLS WETZEL #20H LANDING POINT

WV CONSERVATION COMMISSION
5104.5 ACRES±
MAP 21
PARCEL 3

MILLS WETZEL #20H LANDING POINT

STATE PLANE COORDINATES
NORTH ZONE -NAD 27
(N) 368404
(E) 1669156

L & L DECIMAL
NAD 27
39.50556
80.67256

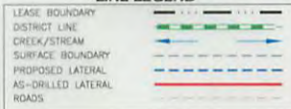
UTM (NAD 83)
ZONE 17
METERS
4372942
528186

MILLS WETZEL #20H BOTTOM HOLE

NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND.
2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID, NORTH WV NORTH ZONE NAD '27, WELL LAT./LONG. ESTABLISHED BY SG-GPS(OPUS).
4. SURFACE OWNER AND ADJACENT INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF WETZEL COUNTY IN AUGUST, 2013 AND INFORMATION PROVIDED BY STONE ENERGY CORPORATION.
5. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP.
6. AS-DRILLED INFORMATION PROVIDED BY STONE ENERGY CORPORATION.

LINE LEGEND



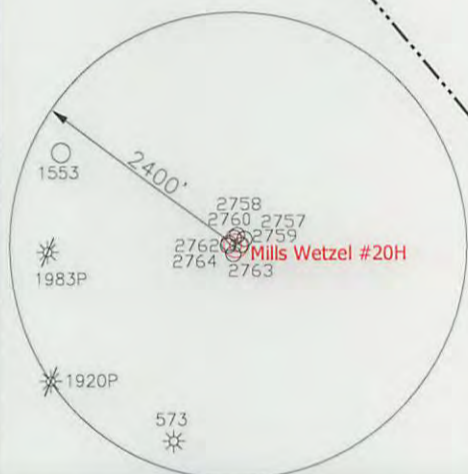
MILLS WETZEL #20H BOTTOM HOLE

STATE PLANE COORDINATES
NORTH ZONE -NAD 27
(N) 364483
(E) 1671762

L & L DECIMAL
NAD 27
39.49489
80.66314

UTM (NAD 83)
ZONE 17
METERS
4371760
528980

NORTH



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 DIVISION OF ENVIRONMENTAL PROTECTION.

P.S.
834

HUPP Surveying & Mapping
P.O. Box 647 Grantsville, WV 26147
(304) 354-7035 EMAIL: hupp@frontiernet.net



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

DATE DECEMBER 16, 2014

OPERATORS WELL NO. MILLS WETZEL #20H

API WELL NO. 47-103-02761
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. W1719 (BK75-3)
PROVEN SOURCE OF ELEVATION SG-GPS (OPUS) SCALE 1" = 1000'

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS



WELL TYPE : OIL GAS LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION :
ELEVATION 1293' WATERSHED TRIBUTARY OF PINEY FORK
DISTRICT GREEN COUNTY WETZEL QUADRANGLE PINE GROVE 7.5'

SURFACE OWNER WEST VIRGINIA CONSERVATION COMMISSION ACREAGE 5104.5 ±
ROYALTY OWNER MILLS WETZEL LAND Inc. LEASE ACREAGE 5104.5± **06/12/2015**

PROPOSED WORK :
DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER
PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH 7,370' TVD 12,932' MD

WELL OPERATOR STONE ENERGY CORPORATION DESIGNATED AGENT TIM MCGREGOR
ADDRESS P.O. BOX 52807 LAFAYETTE, LA 70508 ADDRESS 1300 FORT PIERPONT DR., SUITE 201 MORGANTOWN, WV 26508

COUNTY NAME
PERMIT