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

API 47 - 51 - 01589 County Marshall District Franklin
Quad New Martinsville 7.5' Pad Name Goudy Field/Pool Name _____
Farm name PPG Industries, Inc. et al Well Number 6H
Operator (as registered with the OOG) Gastar Exploration
Address 229 West Main Street Suite 301 City Clarksburg State WV Zip 26301

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing see attached report Easting _____
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing _____ Easting _____

Elevation (ft) 1238' 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 Base Mud

RECEIVED
Office of Oil and Gas
JUL 10 2014

Date permit issued November 9, 2012 Date drilling commenced 1/04/2013 Date drilling ceased 3/15/2013
Date completion activities began 6/3/2013 Date completion activities ceased 7/20/2013
Verbal plugging (Y/N) _____ Date permission granted _____ Granted by _____

WV Department of
Environmental Protection

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 1255' Open mine(s) (Y/N) depths None
Salt water depth(s) ft 1670' Void(s) encountered (Y/N) depths None
Coal depth(s) ft 999'-1006' & 1221'-1245' Cavern(s) encountered (Y/N) depths None
Is coal being mined in area (Y/N) No

Reviewed by: _____

10/03/2014

API 47-51 - 01589 Farm name PPG Industries, Inc. et al Well number 6H

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	26"	20"	110'	New	PE / 54.5 #/ft		Yes
Surface	17.5"	13.375"	1173'	New	H-40 / 48 #/ft	83'	Yes
Coal							
Intermediate 1	12.25"	9.625"	2525'	New	J-55 / 36 #/ft	85'	Yes
Intermediate 2							
Intermediate 3							
Production	8.875"	5.5"	12,695'	New	P-110 / 20 #/ft		Yes
Tubing		2.375"	6636'	New	N-80/4.7#		
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Type 1	176	15.2	1.26	222	Surface	12
Surface	Type 1	840	15.2	1.26	1058	Surface	8
Coal							
Intermediate 1	Type 1	855	15	1.29	1103	Surface	8
Intermediate 2							
Intermediate 3							
Production	50:50 Class H / 50:50 Type 1	1306 / 1723	14.5 / 14.5	1.18	3574	Surface	
Tubing							

Drillers TD (ft) 12,725' Loggers TD (ft) N/A
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 5946'

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 - 3 Centralizers at 300' spacing
 Intermediate Casing - 7 Centralizers at 300' Spacing
 Production Casing - 188 Centralizers total - 1 centralizer every joint in the lateral and curve and 1 centralizer every third joint in the vertical section

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 _____

API 47- 51 - 01589 Farm name PPG Industries, Inc. et al Well number 6H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
					see attached report

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)
			attached					

Please insert additional pages as applicable.

API 47- 51 - 01589 Farm name PPG Industries, Inc. et al Well number 6H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6,410' - 6,461'</u> TVD	<u>6,694' - 12,725'</u> MD
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 1265 psi Bottom Hole 4045 psi DURATION OF TEST 144 hrs

OPEN FLOW Gas 2448 mcfpd Oil 261 bpd NGL _____ bpd Water 452 bpd GAS MEASURED BY Estimated Orifice Pilot

<u>LITHOLOGY/ FORMATION</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H₂S, ETC)</u>
	<u>DEPTH IN FT NAME TVD</u>	<u>DEPTH IN FT TVD</u>	<u>DEPTH IN FT MD</u>	<u>DEPTH IN FT MD</u>	
	<u>0</u>		<u>0</u>		<u>see attached report</u>

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling
Address 2640 Reach Road City Williamsport State PA Zip 17701

Logging Company Baker Hughes
Address 370 Westec Drive City Mt. Pleasant State PA Zip 15666

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

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

Please insert additional pages as applicable.

Completed by Thomas Rowan Telephone 304-622-4796
Signature [Signature] Title Drilling and Completions Engineer Date 7-7-14

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

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Formations	Top TVD	Base TVD	Top MD	Base MD
SHALE	0	1000	0	1000
SEWICKLEY COAL	1000	1010	1000	1010
SHALE	1010	1220	1010	1220
PITTSBURGE COAL	1220	1230	1220	1230
SHALE AND SANDSTONE	1230	1685	1230	1685
3RD SALT SAND	1685	1740	1865	1740
SHALE	1740	1827	1740	1827
MAXTON	1827	1860	1827	1860
SHALE	1860	1883	1860	1883
BIG LIME	1883	1958	1883	1958
BIG INJUN	1958	2216	1958	2216
WEIR SILTSTONE	2216	2455	2216	2455
BEREA SILTSTONE	2455	2695	2455	2695
SAND AND SHALE	2695	3030	2695	3030
GORDON	3030	3070	3030	3070
SHALE	3070	3520	3070	3520
WARREN SANDSTONE	3520	3550	3520	3550
BRAILLER	3550	5013	3550	5014
JAVA SHALE	5013	5232	5014	5235
PIPE CREEK SHALE	5232	5432	5235	5435
SHALE	5432	5853	5435	5869
RHINESTREET	5853	6147	5869	6188
CASHAQUA	6147	6232	6188	6296
MIDDLESEX	6232	6256	6296	6331
WEST RIVER	6256	6323	6331	6440
GENESEO	6323	6347	6440	6490
TULLY LIMESTONE	6347	6378	6490	6567
HAMILTON	6378	6387	6567	6599
MARCELLUS	6387	na	6599	na
ONONDOGA	na	na	na	na

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Goudy 6H Completion Summary

Stage	Stimulation Date	Avg Pump Rate (BPM)	Avg Pressure (PSI)	Max Break Pres. (PSI)	ISIP (PSI)	Proppant (lbs)	Water (bbls)
1	6/12/2013	80	6446	4530	N/A	150823	5147
2	6/15/2013	80	5555	N/A	N/A	N/A	143
3	6/22/2013	80	6611	5710	3991	125835	4632
4	6/23/2013	80	6693	4631	4151	128214	4869
5	6/24/2013	80	6562	4923	4065	125741	4784
6	6/25/2013	80	6835	4959	4106	123904	5014
7	6/26/2013	80	6662	5047	4135	127197	4754
8	6/26/2013	80	6317	4710	4137	128249	4726
9	6/28/2013	80	6267	4993	3816	126001	4628
10	6/29/2013	80	6115	5142	3965	125398	4510
11	6/30/2013	80	6278	4905	4097	127465	4501
12	7/1/2013	80	6115	4951	3972	112599	4889
13	7/2/2013	80	6467	5162	3902	140067	4977
14	7/3/2013	80	5934	5103	3924	113172	4516
15	7/4/2013	80	6213	5190	3947	133408	4840
16	7/5/2013	80	6055	4902	4094	136207	4829
17	7/6/2013	80	6373	4884	3576	113322	4726
18	7/7/2013	80	6144	4876	3995	109166	3757
19	7/8/2013	80	6168	5489	3669	126045	3982
20	7/9/2013	80	5938	5181	3582	125534	4069
21	7/10/2013	80	5970	4856	4096	109393	3780

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Nitrogen/Other
(units)

10/03/2014

Welcome Tracy H., Operator - OpNo. G1410907 [[Log Out](#)]

Hydraulic Fracturing DISCLOSURE



Please use the FracFocus XML submission process or create disclosures online.

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BY STATE](#)

[ABOUT PROJECT
PARTNERS](#)

(Note: Clicking the FracFocus, FIND A WELL links will open a new window.)

Prepare Disclosure for FracFocus Submission

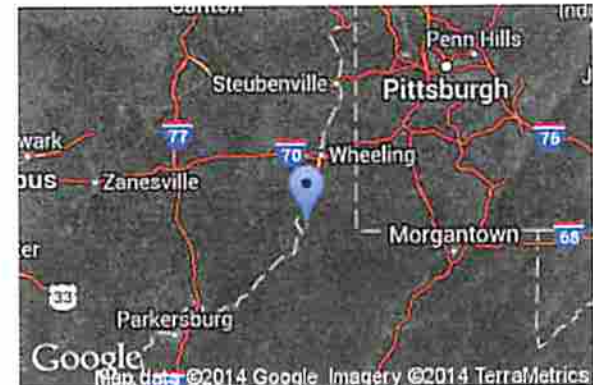
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Hydraulic Fracturing Data

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Job Start Date 6/6/2013	Job End Date 7/10/2013	API Number 47-051-01589-00-00	State & County West Virginia --- Marshall
Well Name Goudy 6H			
Longitude -80.80653	Latitude 39.7303	Datum NAD27	Federal/Tribal Well? <input type="checkbox"/>
True Vertical Depth (ft) 6488	Total Water Vol (gal) 3873282	Total Non Water Vol 0	Total Mass (lbs) 34989888.4412



MSDS Chemical Ingredients

	Trade Name	Supplier	Purpose	Ingredients	CAS #	% High Additive	% HF Job	Comments	Ingredient Mass
<input type="button" value="Edit"/>	Water	Operator	Carrier	Water	7732-18-5	100%	92.2708563%		32294650.6596
<input type="button" value="Edit"/>	Sand, White, 40/70	Baker Hughes	Proppant	Crystalline Silica (Quartz)	14808-60-7	100%	4.3233342%		1513160
<input type="button" value="Edit"/>	Sand, White, 30/50	Baker Hughes	Proppant	Crystalline Silica (Quartz)	14808-60-7	100%	2.4212906%		847447.8
<input type="button" value="Edit"/>	HCl, 10.1 - 15%	Baker Hughes	Acidizing	Water	7732-18-5	85%	.7160851%	SmartCare Product	250628.6412
				Hydrochloric Acid	7647-01-0	15%	.126368%	SmartCare Product	44228.5837
<input type="button" value="Edit"/>	FRW-18	Baker Hughes	Friction Reducer	Petroleum Distillates	64742-47-8	30%	.0167715%	SmartCare Product	5869.9804
<input type="button" value="Edit"/>	Alpha 1427	Baker Hughes	Biocide	Glutaraldehyde	111-30-8	30%	.0067275%	SmartCare Product	2354.625
				Didecyl Dimethyl Ammonium Chloride	7173-51-5	10%	.0022425%	SmartCare Product	784.875
				Ethanol	64-17-5	5%	.0011213%	SmartCare Product	392.4375
				Quaternary Ammonium Compound	68424-85-1	5%	.0011213%	SmartCare Product	392.4375
<input type="button" value="Edit"/>	FRW-26D, bulk	Baker Hughes	Friction Reducer						

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			No Hazardous Ingredients	N.A.	100%	.0108%		3780
<input type="button" value="Edit"/>	Scaletrol 720	Baker Hughes	Scale Inhibitor					
			Ethylene Glycol	107-21-1	30%	.0047286%	SmartCare Product	1654.9863
			Calcium Chloride	10043-52-4	5%	.0007881%	SmartCare Product	275.831
<input type="button" value="Edit"/>	CI-14	Baker Hughes	Corrosion Inhibitor					
			Methanol	67-56-1	100%	.0025272%	SmartCare Product	884.5
			Polyoxyalkylenes	Trade Secret	30%	.0007581%	SmartCare Product	265.35
			Fatty Acids	Trade Secret	10%	.0002527%	SmartCare Product	88.45
			Propargyl Alcohol	107-19-7	5%	.0001264%	SmartCare Product	44.225
			Olefin	Trade Secret	5%	.0001264%	SmartCare Product	44.225
<input type="button" value="Edit"/>	Ferrotrol 300L	Baker Hughes	Iron Control					
			Citric Acid	77-92-9	60%	.0032963%	SmartCare Product	1153.6939
<input type="button" value="Edit"/>	GW-3LDF	Baker Hughes	Gelling Agent					
			Guar Gum	9000-30-0	60%	.0003773%	SmartCare Product	132.066
			Paraffinic Petroleum Distillate	64742-55-8	30%	.0001887%	SmartCare Product	66.033
			Petroleum Distillates	64742-47-8	30%	.0001887%	SmartCare Product	66.033
			Crystalline Silica: Quartz	14808-60-7	5%	.0000314%	SmartCare Product	11.0055
			1-butoxy-2-propanol	5131-66-8	5%	.0000314%	SmartCare Product	11.0055
			Isotridecanol, ethoxylated	9043-30-5	5%	.0000314%	SmartCare Product	11.0055
<input type="button" value="Edit"/>	Enzyme G-NE	Baker Hughes	Breaker					
			Water	7732-18-5	95%	.0000905%		31.6836

Hemicellulase Enzyme Concentrate	9025-56-3	5%	.0000048%	SmartCare Product	1.6676
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Non-MSDS Chemical Ingredients

New Ingredients

Edit

Other Chemicals

Trade Name	Supplier	Purpose	Ingredients	CAS #	% High Additive	% HF Job	Comments	Ingredient Mass
		Other Chemicals	Water	7732-18-5	0%	.0520606%		18221.1177
			Poly (acrylamide-co-acrylic acid)	Trade Secret	0%	.0167715%		5869.9804
			Anionic Water Soluble Polymer	Trade Secret	0%	.0108%		3780
			Polyacrylate	Trade Secret	0%	.0031524%		1103.3242
			Sorbitan Monooleate	Trade Secret	0%	.0027952%		978.3301
			Salt	Trade Secret	0%	.0027952%		978.3301
			Ethoxylated Alcohol	Trade Secret	0%	.0011181%		391.332
			Modified Thiorea Polymer	68527-49-1	0%	.0001769%		61.915
			Formaldehyde	50-00-0	0%	.0000253%		8.845
			Hydrochloric Acid	7647-01-0	0%	.0000253%		8.845
			Potassium Chloride	7447-40-7	0%	.0000079%		2.7583
			Sodium Chloride	7647-14-5	0%	.0000047%		1.655
			2-butoxy-1-propanol	15821-83-7	0%	.0000006%		0.2201

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