WR-35
Rev. 8/23/13

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

API 47 - 91 - 01238 County Taylor District Booths Creek
Quad Grafton 7.5' Pad Name Musgrove Field/Pool Name
Farm name Musgrove, Jr. et ux, John Well Number 3H
Operator (as registered with the OOG) Triana Energy LLC
Address 900 Virginia Street East 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 4,356,748 Easting 578,549
Landing Point of Curve Northing 4,356,820 Easting 578,319
Bottom Hole Northing 4,357,936 Easting 577,246

Elevation (ft) 1415' 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)
ABS 40 (Synthetic oil-based mud) from AES Drilling Fluids; Additives: Barite, FM WA II, FLR, ABS MUL, CAL-CARB (MIX), Lime, FM VIS LS, TRU VIS, SILVERSEAL

Date permit issued Aug. 26, 2011 Date drilling commenced 6/16/13 Date drilling ceased 7/4/13
Date completion activities began 9/11/13 Date completion activities ceased 9/23/2013
Verbal plugging (Y/N) N Date permission granted n/a Granted by n/a

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

Freshwater depth(s) ft 220', 400' Open mine(s) (Y/N) depths N
Salt water depth(s) ft none reported Void(s) encountered (Y/N) depths
Coal depth(s) ft 560', 746' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) Y

RECEIVED
Office of Oil and Gas
NOV 21 2013
WV Department of
Environmental Protection

Reviewed by:

01/03/2014

API 47- 91 - 01238 Farm name Musgrove, Jr. et ux, John Well number 3H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor		20"	50' GL	N	LS, 55 #/ft	n/a	Grouted to surface
Surface	17.5"	13.375"	964' KB	N	H-40, 48 #/ft	168', 210'	Y - 10 bbls good cement returns
Coal							
Intermediate 1	12.375"	9.625"	3104' KB	N	J-55, 40 #/ft	155', 198'	Y - 10 bbls good cement returns
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	13,124' GL	N	P-110, 20 #/ft.	n/a	N
Tubing		2.375"	7732' GL	N	N-80, 4.7 #/ft	n/a	n/a
Packer type and depth set		n/a					

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							
Surface	Type I w/ 3%CaCl, 1/4#/sk flake	700	15.6	1.24	868	Surface +	8
Coal							
Intermediate 1	Type I,1%CaCl,75g/100sks/FP-12L,1/4lb/sk	773/168	15.2/15.6	1.26/1.19	974/200	Surface +	8
Intermediate 2							
Intermediate 3							
Production	50-50 pozmix w/ additives	317/1622	14/14.7	1.28/1.14	406/1849	CBL - 6044'	9.25
Tubing							

Drillers TD (ft) 13,224' KB Loggers TD (ft) n/a

Deepest formation penetrated Marcellus Shale Plug back to (ft) n/a

Plug back procedure n/a

Kick off depth (ft) 6610'

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 casing - total of 8 centrilizers used, one placed on every 3rd joint.
Intermediate casing - total of 16 centralizers used, one every 5th joint.
Production casing - total of 74 centalizers used, one every other joint from bottom of string back to KOP.

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- 910 - 1238 Farm name Musgrove Jr. ET. UX, John Well number 3H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	8/19/2013	12902	13078	48	Marcellus
2	9/11/2013	12558	12791	60	Marcellus
3	9/11/2013	12771	12515	60	Marcellus
4	9/12/2013	11984	12218	60	Marcellus
5	9/12/2013	11697	11922	60	Marcellus
6	9/12/2013	11411	11644	60	Marcellus
7	9/13/2013	11124	11370	60	Marcellus
8	9/13/2013	10840	11071	60	Marcellus
9	9/13/2013	10551	10784	60	Marcellus
10	9/14/2013	10254	10516	60	Marcellus
11	9/14/2013	9977	10211	60	Marcellus
12	9/15/2013	9680	9924	60	Marcellus
13	9/15/2013	9404	9637	60	Marcellus
14	9/16/2013	9107	9356	60	Marcellus
15	9/16/2013	8830	9064	60	Marcellus
16	9/17/2013	8543	8767	60	Marcellus

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulation 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	9/11/13	83.9	7799	6087	5255	414872	9360	
2	9/11/13	84.1	7688	6409	5740	410975	10195	
3	9/12/13	83.9	7572	6349	5807	413752	9311	
4	9/12/13	84.2	7767	6786	5421	411531	9422	
5	9/12/13	84.0	7376	6478	5653	413258	10074	
6	9/13/13	84.0	7538	7896	5192	406000	9919	
7	9/13/13	84.7	7561	6560	5445	413270	9375	
8	9/13/13	84.9	7784	7496	5174	413270	10296	
9	9/14/13	85.6	7963	6532	5551	413296	8914	
10	9/14/13	86.3	7810	6151	5722	407033	9392	
11	9/15/13	83.8	7823	7822	5615	405634	9375	
12	9/15/13	86.4	7970	7134	6057	414492	8994	
13	9/16/13	86.0	7892	6313	6026	412185	8940	
14	9/16/13	84.6	7905	6573	6112	408568	8940	
15	9/17/13	84.7	7891	5425	5983	411684	9629	
16	9/17/13	85.3	7612	7888	5901	414200	10284	

Please insert additional pages as applicable.

API 47- 910 - 1238 Farm name Musgrove Jr. ET UX, John. Well number 3H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	9/17/13	8257	8490	60	Marcellus
18	9/18/13	7970	8194	60	Marcellus

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)
17	9/17/13	85.8	7528	6250	5856	411647	9079	
18	9/18/13	82.9	7495	6345	5832	445993	10143	

Please insert additional pages as applicable.

API 47- 91 - 01238 Farm name Musgrove, Jr. et ux, John Well number 3H

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	7,366' to 7,648' TVD	8000' to 13,202' MD	

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 _____ 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_2S, ETC)
	0	17	0	17	
Sand and shale	17	560	0	560	FW @ 220' and 400'; both 1/2" stream
Coal	560	564	560	564	
Sand and shale	564	746	564	746	
Coal	746	751	746	751	
Sand, shale and lime	751	1313	751	1313	
Big Lime/Injun	1313	1520	1313	1520	
Sand and Shale	1520	2411	1520	2411	
Fifth Sand	2411	2456	2411	2456	
Sand, silt and shale	2456	6668	2456	6669	KOP @ 6610', begin deviated hole
Sycamore Grit and shale	6668	7345	6669	7410	
Tully Limestone	7345	7410	7410	7492	
Hamilton shale	7410	7537	7492	7688	
Marcellus	7537		7688		Did not encounter bottom of Marcellus

Please insert additional pages as applicable.

Drilling Contractor Pioneer Drilling Services
Address 1658 Avenplace Rd. City Tomball State TX Zip 77377

Logging Company Diversified Well Logging
Address 711 West 10th St. City Reserve State LA Zip 70084

Cementing Company Baker
Address 2106 Roxalana Rd. City Dunbar State WV Zip 25064

Stimulating Company Universal Well Services
Address 201 Arch St., 2nd Floor City Meadville, State PA Zip 16335

Please insert additional pages as applicable.

Completed by Michael I. Stratton Telephone (304) 205-8578
Signature Michael I. Stratton Title Senior Regulatory Specialist Date November 12, 2013

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

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	9/11/2013
Job End Date:	9/18/2013
State:	West Virginia
County:	Taylor
API Number:	47-091-01238-00-00
Operator Name:	Triana Energy
Well Name and Number:	Musgrove A-3H
Longitude:	-80.08849000
Latitude:	39.35653000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	7,511
Total Base Water Volume (gal):	7,329,084
Total Base Non Water Volume:	0

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Interstate Oil & Gas Compact Commission

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	Triana Energy	Carrier/Base Fluid					
			Water	7732-18-5	100.00000	88.43874	None
Sand (Proppant)	Universal Well Services	Proppant					
			Crystalline Silica in the form of Quartz	14808-60-7	99.90000	10.75466	None
Hydrochloric Acid (15%)	Universal Well Services	Acidizing					
			Other - (non-hazardous)	NA	85.00000	0.59535	None
			Hydrochloric Acid	7647-01-0	15.00000	0.10506	None
Friction Reducer, Unislick ST-50	Universal Well Services	Friction Reducer					
			Other - (non-hazardous)	NA	70.00000	0.03454	None
			Petroleum distillates, hydrotreated light	64742-47-8	30.00000	0.01480	None
MicroBiocide, B-84	X-Chem	Biocide					
			Glutaraldehyde	111-30-8	27.00000	0.00973	None
			Didecyl dimethyl ammonium chloride	7173-51-5	8.00000	0.00288	None
			n-Alkyl dimethyl benzyl ammonium chloride	68424-85-1	5.50000	0.00198	None
			Ethanol	64-17-5	4.00000	0.00144	None
Scale Inhibitor, SC-30	X-Chem	Scale Inhibitor					

Acid Inhibitor, Unihib G	Universal Well Services	Acid Inhibitor	Sodium polyacrylate	9003-04-7	30.00000	0.00285	None
			Short Chained Glycol Ether	112-34-5	60.00000	0.00034	None
			Ethoxylated Alcohol	68002-97-1	35.00000	0.00020	None
			Methanol	67-56-1	5.00000	0.00003	None
			Formaldehyde	50-00-0	1.00000	0.00001	None
			Acetophenone	98-86-2	1.00000	0.00001	None
			Thiourea	62-56-6	1.00000	0.00001	None

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

* 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)