

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

JUL 21 2014

Office of Oil and Gas
WV Dept. of Environmental Protection

API 47-021-05767 County Gilmer District Glenville
Quad Glenville 7.5' Pad Name na Field/Pool Name na
Farm name Ross, Mike & Morris, I.L. Well Number Summers S-1
Operator (as registered with the OOG) Energy Corporation of America
Address 501 56th St. City Charleston State WV Zip 25304

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4308648 Easting 518056
Landing Point of Curve Northing na Easting na
Bottom Hole Northing na Easting na

Elevation (ft) 758 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)

Date permit issued 5/5/14 Date drilling commenced 5/23/14 Date drilling ceased 5/26/14
Date completion activities began 6/25/14 Date completion activities ceased 6/25/14
Verbal plugging (Y/N) na Date permission granted na Granted by na

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

Freshwater depth(s) ft Na Open mine(s) (Y/N) depths N
Salt water depth(s) ft Na Void(s) encountered (Y/N) depths N
Coal depth(s) ft Na Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:

08/15/2014

API 47-021 - 05767 Farm name Ross, Mike & Morris, I.L. Well number Summers S-1

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	17 1/2"	13 3/8"	40'	N	43.6#/ft	na	Driven
Surface	8 7/8"	7"	633'	N	16#/ft	40'	Y
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	6 3/8"	4.5	1973'	N	9.5#/ft ET-65	na	N (TOC 594')
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 ³)	Cement Top (MD)	WOC (hrs)
Conductor	Driven						
Surface	Class A	125	15.6	1.20	150	Surface	8
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	50/50 Poz	100	14.4	1.29	129	594'	600
Tubing							

Drillers TD (ft) 2013' Loggers TD (ft) 1998'
 Deepest formation penetrated Berea Plug back to (ft) na
 Plug back procedure na

Kick off depth (ft) na

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 Centralizers placed on Shoe and every 200' to surface

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS Received

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS JUL 21 2014

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

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Blue Monday</u>	<u>1476-1490</u> TVD	<u>1476-1490</u> MD
<u>Big Injun</u>	<u>1632-1638</u>	<u>1632-1638</u>
_____	_____	_____
_____	_____	_____

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Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump Office of Oil and Gas
WV Dept. of Environmental Protection

SHUT-IN PRESSURE Surface 213 psi Bottom Hole na psi DURATION OF TEST 24 hrs

OPEN FLOW Gas 84 mcfpd Oil na bpd NGL na bpd Water na 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 ₂ S, ETC)
Fill	0	30	0	30	Fill
Shale	30	490	30	490	Shale
Sandstone/Shale	490	645	490	645	Interbedded Sandstone and Shale
Sandstone	645	810	645	810	Sandstone
Shale	810	1066	810	1066	Shale
1st Salt Sand	1066	1134	1066	1134	Sandstone with small gas show
Shale	1134	1184	1134	1184	Shale
2nd Salt Sand	1184	1204	1184	1204	Sandstone
Shale	1204	1268	1204	1268	Shale
3rd Salt Sand	1268	1290	1268	1290	Sandstone
Shale	1290	1374	1290	1374	Shale
Maxton	1374	1380	1374	1380	Sandstone with small gas show
Shale	1380	1472	1380	1472	Shale
Blue Monday	1472	1490	1472	1490	Sandstone with small gas show

Please insert additional pages as applicable.

Drilling Contractor Waco Oil and Gas Co
Address 1595 U.S. 33 City Glenville State WV Zip 26351

Logging Company Nabors Completion & Production
Address 528 Industrial Park Rd. City Jane Lew State WV Zip 26378

Cementing Company Universal Well Services
Address RT. 5 Hall Road City Buckhannon State WV Zip 26201

Stimulating Company Universal Well Services
Address RT. 5 Hall Road City Buckhannon State WV Zip 26201

Please insert additional pages as applicable.

Completed by Lowell Warden Telephone 304-925-6100
Signature _____ Title VP of Business Development Date _____

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

API 47- 021 - 05767 Farm name Ross, Mike & Morris, I.L. Well number Summers S-1

PRODUCING FORMATION(S)	DEPTHS		
Blue Monday	1476-1490	TVD	1476-1490 MD
Big Injun	1632-1638		1632-1638

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

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OPEN FLOW Gas 84 mcfd Oil na bpd NGL na bpd Water na 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 ₂ S, ETC)
	0		0		
Shale	1490	1500	1490	1500	Shale
Big Lime	1500	1582	1500	1582	Limestone
Limey Sandstone	1582	1654	1582	1654	Limey Sandstone
Shale	1654	1708	1654	1708	Shale
Weir	1708	1842	1708	1842	Sandstone
Shale	1842	1911	1842	1911	Shale
Berea	1911	1923	1911	1923	Siltstone
Shale	1923	2013	1923	2013	Shale (TD)

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Please insert additional pages as applicable.

Completed by Lowell Warden Telephone 304-925-6100
Signature [Signature] Title VP of Business Development Date 7-18-2014

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

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/25/2014
Job End Date:	6/25/2014
State:	West Virginia
County:	Gilmer
API Number:	47-021-05767-00-00
Operator Name:	Energy Corporation of America
Well Name and Number:	Summers S-1 - #1
Longitude:	-80.79188000
Latitude:	38.92647000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	1,931
Total Base Water Volume (gal):	13,902

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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	ECA	Base Fluid	Water	7732-18-5	100.00000	62.88373	Includes Fresh and recycled water
20-40 mesh White Sand	Universal Well Services	Proppant	Crystalline Silica	14808-60-7	99.00000	27.90092	
Nitrogen	Universal Well Services	Base Fluid	Nitrogen	7727-37-9	100.00000	8.57724	
UNIFOAM	Universal Well Services	Surfactant	Glycol Ethers	111-76-2	20.00000	0.04769	
			N-Cocoamidopropyl-N,N-dimethyl-N-2-hydroxypropylsulfobetaine	68139-30-0	15.00000	0.03576	
			Sulfonic Acids, C-14-16- Alkane Hydroxy and C14-16-Alkene, Sodium Salts	68439-57-6	5.00000	0.01192	
Unigel 5F	Universal Well Services	Dry Gellant	Guar Gum	9000-30-0	100.00000	0.05430	
NE-90	Universal Well Services	Non-Emulsifier for Acid	Methanol	67-56-1	60.00000	0.01194	

			Isopropanol	67-63-0	10.00000	0.00199
			2-Ethylhexanol	104-76-7	10.00000	0.00199
			EO-C7-9-iso-, C8-rich alcohols	78330-19-5	5.00000	0.00100
			Polyethylene Glycol	25322-68-3	5.00000	0.00100
			EO-C9-11-iso-, C10-rich alcohols	78330-20-8	5.00000	0.00100
			Heavy Aromatic Naphtha	64742-94-5	5.00000	0.00100
			Naphthalene	91-20-3	1.00000	0.00020
CLA-CHEK LP	Universal Well Services	Clay control				
			Ethylene Glycol	107-21-1	40.00000	0.00767
			2-Propen-1-aminium, N,N-dimethyl-N-2-propenyl-,chloride, homopolymer	26062-79-3	20.00000	0.00384
Iron Control A	Universal Well Services	Iron Control for Acid				
			Ethylene Glycol	107-21-1	30.00000	0.00651
LEB 10X	Universal Well Services	Breaker				
			Ethylene Glycol	107-21-1	60.00000	0.00166

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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)

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