5500-FM-OG0004b 2/2011

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

Completion Report

DEP USE ONLY	
Site ID	Primary Fac ID
Client	Subfacility Id

Well Information

If you are submitting this Completion Report attached to the Well Record, you only need to enter the well API # in this section.

Well Operator Range Resources-Appalachia,LLC	DEP ID# 141142	Well API # (Permit / Reg) 37 - 12523888-0-0	Project Number	Acres 987
Address 380 Southpointe Blvd, Suite 300		Well Farm Name Drugmand Unit	Well # 1H	Serial #
City Canonsburg	State PA	Zip Code 15317	County Washington	Municipality Mt. Pleasant
Phone 724-743-6700	Fax 724-743-6490		Email	USGS 7.5 min. quadrangle map Midway

Check the appropriate submission: ☐ Original Completion Report ☐ Amended Completion Report

STIMULATION BASE FLUID

List Water Management Plan Approved Water Source(s) that were used	Water Management Plan ID No.	Volume (Gallons)
1. PA American Water Co Pgh/McMurray Ft Cherry Rd	Source 13	1,360,086
2.		
3.		
4.		
5.		
6.		
	Recycled Water Used	1,736,280
Other Base Fluid(s)Components Used		
1.		
2.		
	Total Base Fluid(s)/Components Used	

PERFORATION RECORD

Stage No.	Perforation Date	Stage Perforated From	Stage Perforated To	Perf. Orientation (Vertical, Horizontal, Radial)	Formation
1	3-2-2011	10,962'MD	10,764'MD	Horizontal	Marcellus Shale
2	3-7-2011	10,665'MD	10,467'MD	Horizontal	Marcellus Shale
3	3-7-2011	10,368'MD	10,170'MD	Horizontal	Marcellus Shale
4	3-8-2011	10,071'MD	9,873'MD	Horizontal	Marcellus Shale
5	3-8-2011	9,774'MD	9,576'MD	Horizontal	Marcellus Shale
6a	3-8-2011	9,477'MD	9,279'MD	Horizontal	Marcellus Shale
6b	3-9-2011	9,245'MD	9,216'MD	Horizontal	Marcellus Shale
7	3-10-2011	9,124'MD	8,934'MD	Horizontal	Marcellus Shale
8	3-10-2011	8,839'MD	8,649'MD	Horizontal	Marcellus Shale
9	3-10-2011	8,554'MD	8,364'MD	Horizontal	Marcellus Shale
10	3-11-2011	8,269'MD	8,079'MD	Horizontal	Marcellus Shale
11	3-11-2011	7,984'MD	7,794'MD	Horizontal	Marcellus Shale

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STIMULATION FLUID ADDITVES

Note: Trade secret or confidential proprietary information should be clearly identified as such and should be submitted on a separate sheet attached to this report.

Descriptive Additive Type	Chemical Component(s) listed on Material Safety Data Sheet of the Additive	CAS No. of Chemical Component	Chemical Component % By Volume in Additive	Chemical Component % By Volume used in Each Stage					
				Stage No. 1	Stage No. 2	Stage No. 3	Stage No. 4	Stage No. 5	Stage No. 6
FR-200W	N/A	N/A	N/A	0.0372%	0.0410%	0.0317%	0.0271%	0.0380%	0.1693%
FR-300W	N/A	N/A	N/A	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%
MX 588-2	N/A	N/A	N/A	0.0097%	0.0069%	0.0075%	0.0070%	0.0068%	0.0285%
NE100	N/A	N/A	N/A	0.0003%	0.0000%	0.0003%	0.0003%	0.0000%	0.0019%
FE100L	N/A	N/A	N/A	0.0009%	0.0000%	0.0010%	0.0010%	0.0000%	0.0057%
37% HCL	HCL	7647-01-0	37%	0.0554%	0.0000%	0.0579%	0.0566%	0.0000%	0.3372%
CI-100	Methanol	67-56-1	93%	0.0006%	0.0000%	0.0006%	0.0006%	0.0000%	0.0035%
CI-100	Propargyl Alcohol	107-19-7	4%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0002%
BMC B-8650	Glutaraldehyde	111-30-8	49%	0.0038%	0.0035%	0.0037%	0.0037%	0.0036%	0.0143%
BMC B-8650	Methanol	67-56-1	1%	0.0001%	0.0001%	0.0001%	0.0001%	0.0001%	0.0002%
CS-1135	4,4-Dimethyloxazolidine	51200-87-4	77%	0.0154%	0.0143%	0.0150%	0.0152%	0.0146%	0.0584%
CS-1135	3,4,4-Trimethyloxazolodine	75673-43-7	5%	0.0010%	0.0009%	0.0010%	0.0010%	0.0010%	0.0038%
CS-1135	2-Amino-2-methyl-1-propanol	124-68-5	1%	0.0002%	0.0002%	0.0002%	0.0002%	0.0002%	0.0008%
CS-1135	Formaldehyde Amine	56652-26-7	0%	0.0001%	0.0001%	0.0001%	0.0001%	0.0001%	0.0003%

Please insert additional copies of this page if additional rows/stages are needed.

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STIMULATION FLUID ADDITVES-Continued

Descriptive Additive Type	Chemical Component(s) listed on Material Safety Data Sheet of the Additive	CAS No. of Chemical Component	Chemical Component % By Volume in Additive	Chemical Component % By Volume used in Each Stage					
				Stage No. 7	Stage No. 8	Stage No. 9	Stage No. 10	Stage No. 11	Stage No. 12
FR-200W	N/A	N/A	N/A	0.0527%	0.0346%	0.0345%	0.0335%	0.0366%	
FR-300W	N/A	N/A	N/A	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	
MX 588-2	N/A	N/A	N/A	0.0072%	0.0069%	0.0073%	0.0072%	0.0069%	
NE100	N/A	N/A	N/A	0.0003%	0.0003%	0.0003%	0.0003%	0.0003%	
FE100L	N/A	N/A	N/A	0.0010%	0.0008%	0.0010%	0.0010%	0.0009%	
37% HCL	HCL	7647-01-0	37%	0.0606%	0.0491%	0.0589%	0.0582%	0.0559%	
CI-100	Methanol	67-56-1	93%	0.0006%	0.0005%	0.0006%	0.0006%	0.0006%	
CI-100	Propargyl Alcohol	107-19-7	4%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	
BMC B-8650	Glutaraldehyde	111-30-8	49%	0.0037%	0.0036%	0.0037%	0.0037%	0.0038%	
BMC B-8650	Methanol	67-56-1	1%	0.0001%	0.0001%	0.0001%	0.0001%	0.0001%	
CS-1135	4,4-Dimethyloxazolidine	51200-87-4	77%	0.0151%	0.0149%	0.0152%	0.0152%	0.0155%	
CS-1135	3,4,4-Trimethyloxazolodine	75673-43-7	5%	0.0010%	0.0010%	0.0010%	0.0010%	0.0010%	
CS-1135	2-Amino-2-methyl-1-propanol	124-68-5	1%	0.0002%	0.0002%	0.0002%	0.0002%	0.0002%	
CS-1135	Formaldehyde Amine	56652-26-7	0%	0.0001%	0.0001%	0.0001%	0.0001%	0.0001%	

Please insert additional copies of this page if additional rows/stages are needed.

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STIMULATION INFORMATION (WELL)

Open Flow Production:	24 Hr. Open Flow Production:	24 Hr. Shut-in Pressure:	Flow Back Date:
Omcf/d @ 24hrs pos treatment	Omcf/d @ 24hrs pos treatment	N/A @ 24hrs post treatment	

STIMULATION INFORMATION (STAGE)

Complete a separate record for each stimulation stage. (Please insert additional copies of this page for additional stages).

Stage No.: 1	Stimulation Date: 3-2-2011	Pump Rate: 65.3
Pressure (psi): 7,973	Shut-in Surface Pressure: 3,438	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 301,536	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 2	Stimulation Date: 3-7-2011	Pump Rate: 65.0
Pressure (psi): 7,127	Shut-in Surface Pressure: 3,661	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 301,168	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 3	Stimulation Date: 3-7-2011	Pump Rate: 69.0
Pressure (psi): 7,410	Shut-in Surface Pressure: 3,841	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 302,924	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 4	Stimulation Date: 3-8-2011	Pump Rate: 65.1
Pressure (psi): 7,242	Shut-in Surface Pressure: 3,729	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 301,374	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 5	Stimulation Date: 3-8-2011	Pump Rate: 64.1
Pressure (psi): 7,593	Shut-in Surface Pressure: 3,519	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 305,188	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 6 A&B	Stimulation Date: 3-8-2011	Pump Rate: 67.2
Pressure (psi): 7,172	Shut-in Surface Pressure: 3,799	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 303,555	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 7	Stimulation Date: 3-10-2011	Pump Rate: 70.5
Pressure (psi): 6,529	Shut-in Surface Pressure: 3,673	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 304,168	Propping Agent Size: 100 Mesh 30/50 Mesh

WELL SERVICE COMPANIES (Provide the name, address, and telephone number of all well service companies involved.)

Name	Name	Name
Frac Tech	**Multi-Chem**	**Universal Well Servi ces**
Address: 16858 IH20	Address: 200 Detroit Street	Address: 730 Braddock View Drive
City – State- Zip: Ciscok, TX 76437	City – State – Zip: Washington, PA 15301	City – State – Zip: Mt Braddock, PA 15465
Phone: 817-850-1008	Phone: 325-486-7489	Phone: 724-430-6201

I do hereby certify to the best of my knowledge, information and belief that the information contained on this Completion Report is true and correct. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator's Signature	**DEP USE ONLY**
4/8/11	Reviewed by: Date:
Title: Completion Engineer: Date:	Comments:

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STIMULATION INFORMATION (STAGE- Continued)

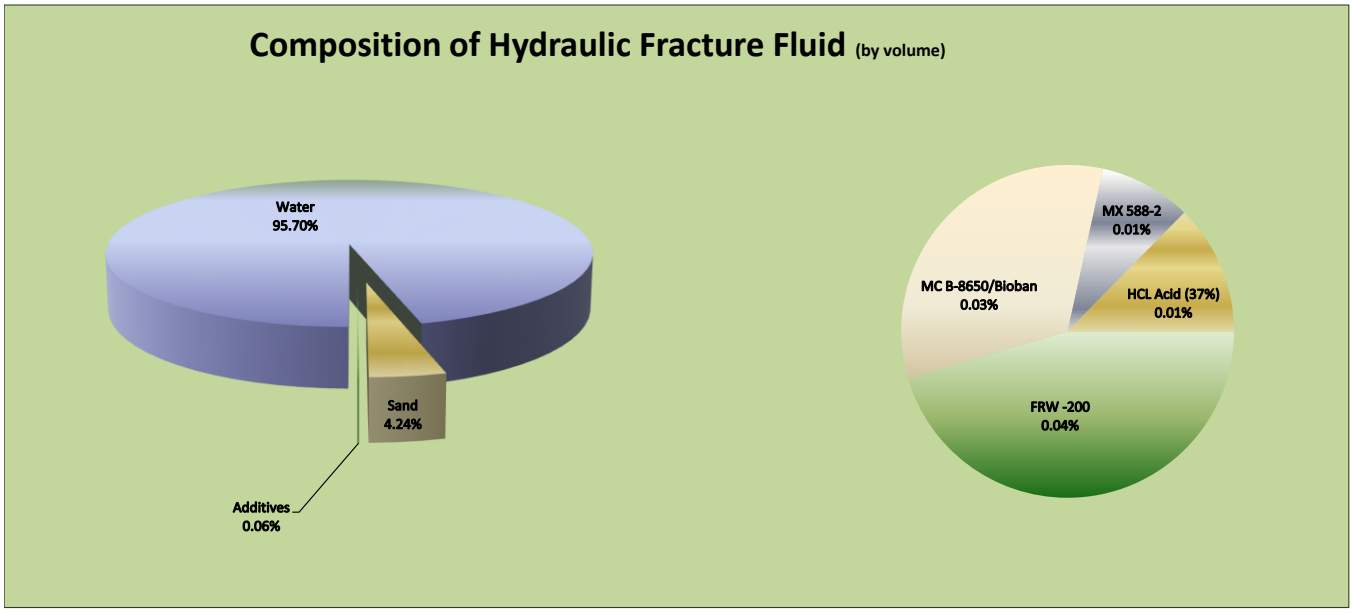
Complete a separate record for each stimulation stage. (Please insert additional copies of this page for additional stages).

Stage No.: 8	Stimulation Date: 3-10-2011	Pump Rate: 66.5
Pressure (psi): 6,950	Shut-in Surface Pressure: 3,824	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 301,130	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 9	Stimulation Date: 3-11-2011	Pump Rate: 68.1
Pressure (psi): 7,064	Shut-in Surface Pressure: 3,747	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 301,506	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 10	Stimulation Date: 3-11-2011	Pump Rate: 68.7
Pressure (psi): 6.828	Shut-in Surface Pressure: 3,884	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 305,349	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 11	Stimulation Date: 3-12-2011	Pump Rate: 66.4
Pressure (psi): 7,073	Shut-in Surface Pressure: 3,659	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 304,114	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 12	Stimulation Date:	Pump Rate:
Pressure (psi):	Shut-in Surface Pressure:	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount:	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 13	Stimulation Date:	Pump Rate:
Pressure (psi):	Shut-in Surface Pressure:	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount:	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 14	Stimulation Date:	Pump Rate:
Pressure (psi):	Shut-in Surface Pressure:	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount:	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 15	Stimulation Date:	Pump Rate:
Pressure (psi):	Shut-in Surface Pressure:	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount:	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 16	Stimulation Date:	Pump Rate:
Pressure (psi):	Shut-in Surface Pressure:	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount:	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 17	Stimulation Date:	Pump Rate:
Pressure (psi):	Shut-in Surface Pressure:	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount:	Propping Agent Size: 100 Mesh 30/50 Mesh

RANGE RESOURCES

Drugmand Unit #1H **Completion Date: March 12th, 2011**
Well API: 37-125-23888 **Township: Somerset**

% Composition of Hydraulic Fracture Fluid (by volume)						
Product Name	**Additive**	**Purpose**	**Use and Dillution**	**Volume**	**Overall %**	**Common Uses**
Water	Carrier Fluid	Creates fracture network in shale and carry proppant to the formation	Primary constituent	3,094,420 gal	95.67%	Water is the most abundant molecule on the Earth's surface
Sand	Sand	Allows fractures to remain open so gas can escape	Second most common constituent, making up almost 6% of the fluid	137,033 gal	4.24%	Drinking water filtration, play sand
FRW -200	Friction Reducer	Reduces friction between fluid and pipe	Diluted at one-half gallon per 1,000 gallons of water	1,322 gal	0.04%	Water treatment; soil conditioner; some children's toys
MC B-8650/Bioban	Antimicrobial Agent	Eliminates bacteria in the water that produce corrosive byproducts	Diluted at one-half gallon per 1,000 gallons of water	0,962 gal	0.03%	Water treatment, disinfectant; sterilize medical and dental equipment and surfaces
MX 588-2	Scale Inhibitor	Prevents scaling in pipe	Diluted at one-tenth gallon per 1,000 gallons of water	0,260 gal	0.01%	Water treatment, household cleaners, de-icing agent
HCL Acid (37%)	Perf Clean-Up	Dissolves cement and minerals to help initiate fractures	177 gallons per stage if required (non-diluted chemicals)	0,369 gal	0.01%	Swimming pool and household cleaner



RANGE RESOURCES

Composition of Components in Marcellus Shale Hydraulic Fracturing Fluid

Common Name & Supplier	Supplier Chemical Name	Common Description	Hazardous Component listed on MSDS	Purpose	MSDS Component Weight % of Chemical	Gallons MSDS Component in Well	Maximum Concentration of MSDS Component of Total Stage Fluid	
							% Vol	% Weight
7.5% HCl Mixture (FracTech)	37% HCL	concentrated HCl Acid	HCL	Cleans perforation	37.0%	369.44	0.0114%	0.0047%
	CI-100	Corrosion Inhibitor	Methanol	Protects casing	85.0%	18.51	0.0006%	0.0004%
			Propargyl Alcohol	Protects casing	5.0%	0.03	0.0000%	0.0000%
	NE100	Non- Emulsifer	No hazardous ingredients	Prevents emulsions	0.0%	N/A	N/A	N/A
	FE100L	Iron Chelator	No hazardous ingredients	Prevents precipitation	0.0%	N/A	N/A	N/A
						TOTAL	0.0120%	0.0051%
Friction Reducer (FracTech)	FRW -200	Friction Reducer	No hazardous ingredients	Reduce friction down casing	0.0%	N/A	N/A	N/A
Scale Inhibitor (Multichem)	MX 588-2	Scale Inhibitor	No hazardous ingredients	prevents scale deposits	0.0%	N/A	N/A	N/A
Antibacterial Agent (Multichem)	CS-1135	Antibacterial Agent	4,4-Dimethyloxazolidine	eliminates bacteria in water	78.0%	530.72	0.0164%	0.0154%
			3,4,4-Trimethyloxazolodine		5.0%	34.74	0.0011%	0.0010%
			2-Amino-2-methyl-1-propanol		1.0%	7.28	0.0002%	0.0002%
			Formaldehyde Amine		0.5%	3.17	0.0001%	0.0001%
	BMC B-8650	Antibacterial Agent	Glutaraldehyde	eliminates bacteria in water	50.0%	98.20	0.0030%	0.0043%
			Methanol		0.5%	0.98	0.0000%	0.0000%
						TOTAL	0.0209%	0.0210%

	by vol %	by weight %
SUMMARY	0.033%	0.026%