



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

DEP USE ONLY	
Site ID	Primary Fac ID
Client	Subfacility Id

Completion Report

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) 37-125-23994-00	Project Number	Acres 494.27	
Address 380 Southpointe Blvd, Suite 300		Well Farm Name Engel	Well # #4H	Serial #	
City Canonsburg	State PA	Zip Code 15317	County Washington	Municipality Cecil	
Phone 724-743-6700	Fax 724-743-6490	Email		USGS 7.5 min. quadrangle map Canonsburg	
Check the appropriate submission: <input checked="" type="checkbox"/> Original Completion Report <input type="checkbox"/> 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.		
2.		
3.		
4.		
5.		
6.		
Recycled Water Used		2,957,472
Other Base Fluid(s)/Components Used		
1.		
2.		
Total Base Fluid(s)/Components Used		2,957,472

PERFORATION RECORD					
Stage No.	Perforation Date	Stage Perforated From	Stage Perforated To	Perf. Orientation (Vertical, Horizontal, Radial)	Formation
1	7/28/11	10080' MD	9885' MD	Horizontal	Marcellus Shale
2	8/24/11	9785' MD	9585' MD	Horizontal	Marcellus Shale
3	8/25/11	9485' MD	9285' MD	Horizontal	Marcellus Shale
4	8/25/11	9185' MD	8985' MD	Horizontal	Marcellus Shale
5	8/26/11	8885' MD	8685' MD	Horizontal	Marcellus Shale
6	8/27/11	8585' MD	8385' MD	Horizontal	Marcellus Shale
7	8/29/11	8285' MD	8085' MD	Horizontal	Marcellus Shale
8	8/29/11	7985' MD	7785' MD	Horizontal	Marcellus Shale
9	8/30/11	7685' MD	7485' MD	Horizontal	Marcellus Shale
10	8/31/11	7385' MD	7185' MD	Horizontal	Marcellus Shale
11				Horizontal	Marcellus Shale
12				Horizontal	Marcellus Shale

STIMULATION INFORMATION (WELL)

Open Flow Production: Omc/d @ 24hrs pos treatment	24 Hr. Open Flow Production: Omc/d @ 24hrs pos treatment	24 Hr. Shut-in Pressure: N/A @ 24hrs post treatment	Flow Back Date:
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STIMULATION INFORMATION (STAGE)

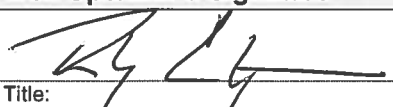
Complete a separate record for each stimulation stage. (Please insert additional copies of this page for additional stages).

Stage No.: 1	Stimulation Date: 8/24/11	Pump Rate: 68.8
Pressure (psi): 7134	Shut-in Surface Pressure: 3704	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 300,970	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 2	Stimulation Date: 8/25/11	Pump Rate: 70.5
Pressure (psi): 7072	Shut-in Surface Pressure: 3833	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 303,903	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 3	Stimulation Date: 8/25/11	Pump Rate: 69.5
Pressure (psi): 7120	Shut-in Surface Pressure: 3962	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 306,852	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 4	Stimulation Date: 8/26/11	Pump Rate: 67.2
Pressure (psi): 7189	Shut-in Surface Pressure: 4009	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 302,607	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 5	Stimulation Date: 8/27/11	Pump Rate: 70.8
Pressure (psi): 7175	Shut-in Surface Pressure: 3962	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 304,667	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 6	Stimulation Date: 8/29/11	Pump Rate: 69.1
Pressure (psi): 7080	Shut-in Surface Pressure: 3898	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 300,098	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 7	Stimulation Date: 8/29/11	Pump Rate: 68.9
Pressure (psi): 6939	Shut-in Surface Pressure: 3933	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 302,656	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 Frac Tech	Name Multi-Chem	Name CDK Perforating
Address 16858 IH20	Address 200 Detroit Street	Address 427 Half Moon Way
City - State - Zip Cisco, TX 76437	City - State - Zip Washington, PA	City - State - Zip Runaway Bay, TX 76426
Phone 817-850-1008	Phone 325-486-7489	Phone 940-577-4300

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
 Date: 9/19/2011	Reviewed by: _____ Date: _____
Title: Completion Engineer: Rodney Archibeque	Comments: _____

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: 8/30/11	Pump Rate: 66.1
Pressure (psi): 7034	Shut-in Surface Pressure: 3939	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 305,069	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 9	Stimulation Date: 8/30/11	Pump Rate: 67.6
Pressure (psi): 7207	Shut-in Surface Pressure: 3857	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 301,296	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 10	Stimulation Date: 8/31/11	Pump Rate: 71.2
Pressure (psi): 6638	Shut-in Surface Pressure: 3992	5 Minute Shut-in Surface Pressure: N/A
Propping Agent Type: Sand	Propping Agent Amount: 309,546	Propping Agent Size: 100 Mesh 30/50 Mesh
Stage No.: 11	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.: 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



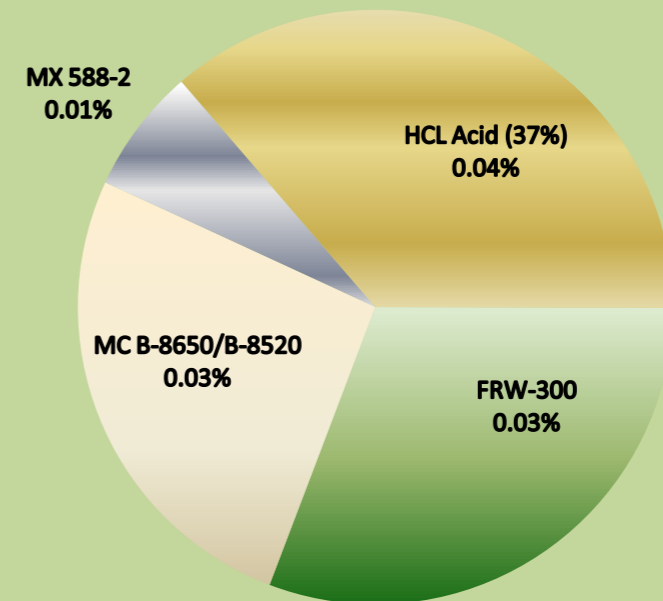
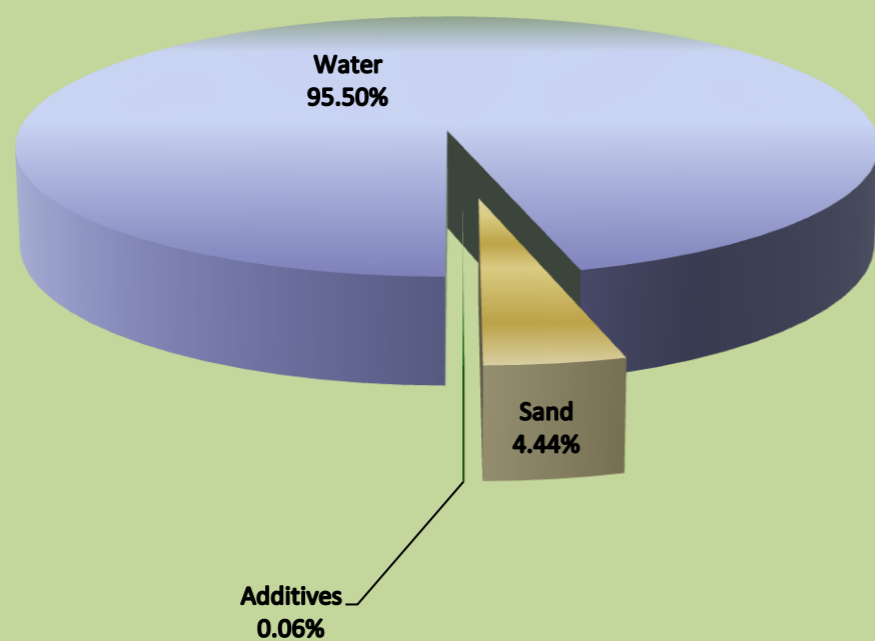
RANGE RESOURCES

Engle Unit #4H
Well API: 3712523994

Completion Date: 08/31/2011
Township: Cecil

% 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	2,955,094 gal	95.46%	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	137,302 gal	4.44%	Drinking water filtration, play sand
FRW-300	Friction Reducer	Reduces friction between fluid and pipe	Diluted at one-half gallon per 1,000 gallons of water	0,974 gal	0.03%	Water treatment; soil conditioner; some children's toys
MC B-8650/B-8520	Antimicrobial Agent	Eliminates bacteria in the water that produce corrosive byproducts	Diluted at one-half gallon per 1,000 gallons of water	0,827 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	0,216 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)	1,152 gal	0.04%	Swimming pool and household cleaner

Composition of Hydraulic Fracture Fluid (by volume)





Composition of Components in Marcellus Shale Hydraulic Fracturing Fluid

RANGE RESOURCES

Common Name & Supplier	Supplier Chemical Name	Common Description	Hazardous Component listed on MSDS	Hazardous Component CAS No.	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	7647-01-0	Cleans perforation	37.0%	1152.04	0.0372%	0.0152%	
	CI-100	Corrosion Inhibitor	Methanol	67-56-1	Protects casing	95.0%	13.41	0.0004%	0.0003%	
			Propargyl Alcohol	107-19-7	Protects casing	5.0%	0.58	0.0000%	0.0000%	
	NE100	Non- Emulsifer	No hazardous ingredients	N/A	Prevents emulsions	0.0%	N/A	N/A	N/A	
FE100L	Iron Chelator	No hazardous ingredients	N/A	Prevents precipitation	0.0%	N/A	N/A	N/A		
							TOTAL	0.0377%	0.0155%	
Friction Reducer (FracTech)	FRW-300	Friction Reducer	No hazardous ingredients	N/A	Reduce friction down casing	0.0%	N/A	N/A	N/A	
Scale Inhibitor (Multichem)	MX 588-2	Scale Inhibitor	No hazardous ingredients	N/A	prevents scale deposits	0.0%	N/A	N/A	N/A	
Antibacterial Agent (Multichem)	MC B-8520	Antibacterial Agent	4,4-Dimethyloxazolidine	51200-87-4	eliminates bacteria in water	78.0%	454.38	0.0147%	0.0137%	
			3,4,4-Trimethyloxazolidine	75673-43-7		5.0%	29.74	0.0010%	0.0009%	
			2-Amino-2-methyl-1-propanol	124-68-5		1.0%	6.23	0.0002%	0.0002%	
			Formaldehyde Amine	56652-26-7		0.5%	2.71	0.0001%	0.0001%	
	MC B-8650	Antibacterial Agent	Glutaraldehyde	111-30-8	eliminates bacteria in water	50.0%	85.32	0.0028%	0.0039%	
			Methanol	67-56-1		0.5%	0.85	0.0000%	0.0000%	
							TOTAL	0.0187%	0.0188%	
								SUMMARY	by vol %	by weight %
									0.056%	0.034%