



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

DEP USE ONLY	
Site Id	Primary Facility Id
Client Id	Sub-facility Id

WELL RECORD AND COMPLETION REPORT

Well Operator Range Resources – Appalachia, LLC		DEP ID# 141142	Well API # (Permit / Reg) 37-059-24661	Project Number 454 ac
Address 380 Southpointe Blvd. Suite 300			Well Farm Name Hardie	Well # 2-H
City Canonsburg	State PA	Zip Code 15317	County Greene	Municipality Greene
Phone 724-743-6700	Fax 724-743-6790	USGS 7.5 min. quadrangle map Garards Fort		
Check all that apply: <input type="checkbox"/> Original Well Record <input checked="" type="checkbox"/> Original Completion Report <input checked="" type="checkbox"/> Amended Well Record <input type="checkbox"/> Amended Completion Report				

WELL RECORD Also complete Log of Formations on back (page 2)

Well Type		<input checked="" type="checkbox"/> Gas	<input type="checkbox"/> Oil	<input type="checkbox"/> Combination Oil & Gas	<input type="checkbox"/> Injection	<input type="checkbox"/> Storage	<input type="checkbox"/> Disposal		
Drilling Method		<input checked="" type="checkbox"/> Rotary – Air	<input type="checkbox"/> Rotary – Mud	<input type="checkbox"/> Cable Tool					
Date Drilling Started 5/3/08	Date Drilling Completed 9/13/10	Surface Elevation 1030 ft.	Total Depth – Driller 11227 ft.	Total Depth - Logger 11227 ft.					
Casing and Tubing			Cement returned on surface casing? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Cement returned on coal protective casing? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A						
Hole Size	Pipe Size	Wt.	Thread / Weld	Amount in Well (ft)	Material Behind Pipe Type and Amount	Packer / Hardware / Centralizers Type	Size	Depth	Date Run
30"	24"	96#	Thread	20'	Class A, 30 sx	---	24"	20'	5/3/08
22"	16"	65#	Thread	476'	Class A Cement, 1050 sx	GS	16"	474'	5/5/08
15"	10 3/4"	40.5#	Thread	2140'	Class A, 100 sx	GS	10 3/4"	2140'	5/12/08
9 7/8"	5 1/2"	20#	Thread	11227'	50/50 poz 14.2 ppg , 2103 sx	FS	5 1/2"	11227'	9/13/10
					50/50 poz 14.5 ppg 544 sx				

COMPLETION REPORT

Perforation Record			Stimulation Record						
Date	Interval Perforated From	To	Date	Interval Treated	Fluid Type	Amount	Propping Agent Type	Amount	Average Injection
10-4-2010	11,065' MD	8,281' MD	10-14-2010	Marcellus Shale	Slick H2O	92,331 bbl	Sand	4,789 Klb	66.1 bpm
Natural Open Flow			Natural Rock Pressure			Hours			
Too small to measure			Too small			Days			
After Treatment Open Flow			After Treatment Rock Pressure			Hours			
0mcf/d @ 24hrs post treatment			N/A @ 24hrs post treatment			Days			

Well Service Companies -- Provide the name, address, and phone number of all well service companies involved.

Name	Name	Name
Patterson	Universal Well Services	Frac Tech
Address 4501 Lamesa Hgwy	Address 730 Braddock View Dr	Address 16858 IH20
City - State - Zip Snyder, TX 79549	City - State - Zip Mt. Braddock, PA 15465	City - State - Zip Cisco, TX 76437
Phone 325-574-6300	Phone 724-430-6201	Phone 817-850-1008

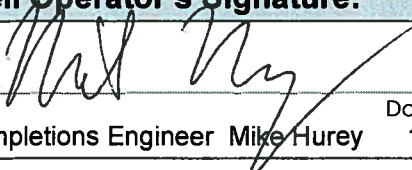
LOG OF FORMATIONS

Well API#: 37-059-24661

Formation Name or Type	Top (feet)	Bottom (feet)	Gas at (feet)	Oil at (feet)	Water at (fresh / brine; ft.)	Source of Data
Fill	0'	20'				Drillers Log
Sandy Shale	20'	30'				Drillers Log
Shale	30'	130'			Water @ 125'	Drillers Log
Sandy Shale	130'	150'				Drillers Log
Sand	150'	210'				Drillers Log
Sandy Shale	210'	241'				Drillers Log
Sand & Shale	241'	348'				Drillers Log
Coal	348'	352'				Drillers Log
Sandy Shale	352'	432'				Drillers Log
Coal	432'	436'				Drillers Log
Shale	436'	511'				Drillers Log
Sandy Shale	511'	570'				Drillers Log
Shale	570'	632'				Drillers Log
Sandy Shale	632'	643'				Drillers Log
Sand	643'	670'				Drillers Log
Sandy Shale	670'	674'				Drillers Log
Sand	674'	700'				Drillers Log
Shale	700'	855'				Drillers Log
Red Rock	855'	890'	1' Coal			Drillers Log
Shale	890'	990'	887'			Drillers Log
Sandy Shale	990'	1025'				Drillers Log
Shale	1025'	1152'				Drillers Log
Sandy Shale	1152'	1223'				Drillers Log
Sand	1223'	1261'				Drillers Log
Sandy Shale	1261'	1520'				Drillers Log
Red Rock & Shale	1520'	1540'				Drillers Log
Shale	1540'	1620'				Drillers Log
Sand & Shale	1620'	2449'				Drillers Log
Sand	2449'	2482'				Drillers Log
Shale & Sand	2482'	3625'	Gas 2890'			Drillers Log
Shale	3625'	3714'				Drillers Log
Sandy Shale	3714'	3852'				Drillers Log
Sand and Shale	3852'	3903'				Drillers Log
Sandy Shale	3903'	4080'				Drillers Log
Sand	4080'	4135'				Drillers Log
Shale	4135'	4589'				Drillers Log
Sandy Shale	4589'	5084'				Drillers Log
Sand	5084'	6020'				Drillers Log
Shale	6020'	6450'				Drillers Log
Horizontal						
Shale	7000'	7610'				Drillers Log
Limestone	7610'	7680'				Drillers Log
Shale	7680'					Drillers Log
Drillers Total Depth		11227'				Drillers Log

Please delete empty rows if necessary to make all of page 2 fit on one page.

Well Operator's Signature:



Title: Completions Engineer Mike Hurey Date: 11-5-10

DEP USE ONLY

Reviewed by: _____ Date: _____

Comments:



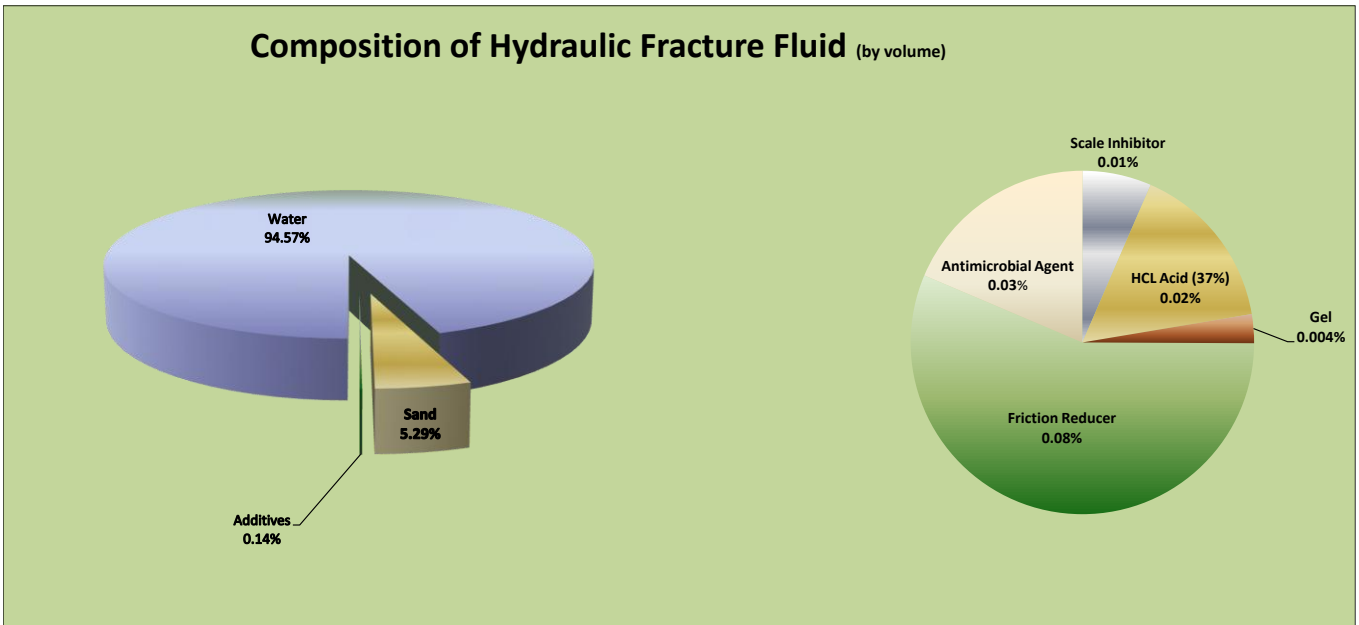
RANGE RESOURCES

Composition of Components in Marcellus Shale Hydraulic Fracturing Fluid

Hardie Unit #2H
Well API: 37-059-24661

Completion Date: September 27, 2010
Township: Greene

% Composition of Hydraulic Fracture Fluid (by volume)						
Product Name	Additive	Purpose	Use and Dilution	Volume	Overall %	Common Uses
Water	Carrier Fluid	Creates fracture network in shale and carry proppant to the formation	Primary constituent	3,872,136 gal	94.57%	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	216,482 gal	5.29%	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	3,330 gal	0.08%	Water treatment; soil conditioner; some children's toys
MC B-8642/Bioban	Antimicrobial Agent	Eliminates bacteria in the water that produce corrosive byproducts	Diluted at one-half gallon per 1,000 gallons of water	1,103 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	383 gal	0.01%	Water treatment, household cleaners, de-icing agent
HCL Acid	Perf Clean-Up	Dissolves cement and minerals to help initiate fractures	139 gallons per stage (non-diluted chemicals)	937 gal	0.02%	Swimming pool and household cleaner
HVG-01	Viscosity	Dissolves cement and minerals to help initiate fractures	Diluted at five gallon per 1,000 gallons of water if needed	161 gal	0.004%	Used in food and cosmetic industry





Composition of Components in Marcellus Shale Hydraulic Fracturing Fluid

RANGE RESOURCES

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%	936.9	0.0229%	0.0092%
	CI-100	Corrosion Inhibitor	Methanol	Protects casing	95.0%	28.9	0.0007%	0.0005%
			Propargyl Alcohol	Protects casing	5.0%	1.2	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	N/A
TOTAL							0.0236%	0.0098%

Friction Reducer (FracTech)	FRW-200	Friction Reducer	No hazardous ingredients	Reduce friction down casing	0.0%	N/A	N/A	N/A
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Gelling Agent (FracTech)	HVG-01	Gelling Agent	Petroleum Distillates	Creates viscosity to carrier fluid	50.0%	84.5	0.0020%	0.0019%
TOTAL							0.0020%	0.0019%

Scale Inhibitor (Multichem)	MX 588-2	Scale Inhibitor	No hazardous ingredients	prevents scale deposits	0.0%	N/A	N/A	N/A
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Antibacterial Agent (Multichem)	Bioban	Antibacterial Agent	4,4-Dimethyloxazolidine	eliminates bacteria in water	78.0%	606.0	0.0148%	0.0137%
			3,4,4-Trimethyloxazolodine		5.0%	39.7	0.0010%	0.0009%
			2-Amino-2-methyl-1-propanol		1.0%	8.3	0.0002%	0.0002%
			Formaldehyde Amine		0.5%	3.6	0.0001%	0.0001%
	BMC B-8642	Antibacterial Agent	Glutaraldehyde	eliminates bacteria in water	60.0%	136.5	0.0033%	0.0046%
			n-alkyl dimethyl benzyl ammonium chloride		10.0%	22.8	0.0006%	0.0008%
					1.0%	2.3	0.0001%	0.0001%
TOTAL							0.0161%	0.0148%

SUMMARY	by vol %	by weight %
	0.042%	0.026%