



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 - 081-20313- -		Project Number	Acres 570.75
Address 100 Throckmorton St., Suite 1200			Well Farm Name Lone Walnut Hunting Club Unit		Well # 3H	Serial #
City Fort Worth	State TX	Zip Code 76102	County Lycoming		Municipality Cummings	
Phone 817 869-4158	Fax 817 869-1458	Email mdennis@rangeresources.com		USGS 7.5 min. quadrangle map Waterville		
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. Jersey Shore @ Larrys Creek				PADWIS ID# 4410156	338,801	
2. Montoursville Borough				PADWIS ID# 4175501	2,137,312	
3. Williamsport Water Authority @ Sanitary Plant				PADWIS ID# 4189510	499,005	
4. LHP Management @ Fishing Creek				SRBC Docket # 20090906	1,356,717	
5.						
6.						
Recycled Water Used					709,212	
Other Bass Fluid(s)/Components Used						
1. Rainwater in Impoundment					1,319,055	
2.						
Total Base Fluid(s)/Components Used					6,360,102 gallons	
PERFORATION RECORD						
Stage No.	Perforation Date	Stage Perforated From	Stage Perforated To	Perf. Orientation (Vertical, Horizontal, Radial)	Formation	
1	10/05/2011	14,256'	14,060'	Horizontal	Marcellus Shale	
2	10/24/2011	13,962'	13,766'	Horizontal	Marcellus Shale	
3	10/25/2011	13,668'	13,472'	Horizontal	Marcellus Shale	
4	10/26/2011	13,374'	13,178'	Horizontal	Marcellus Shale	
5	10/26/2011	13,080'	12,884'	Horizontal	Marcellus Shale	
6	10/29/2011	12,786'	12,590'	Horizontal	Marcellus Shale	
7	10/30/2011	12,492'	12,296'	Horizontal	Marcellus Shale	
8	10/30/2011	12,198'	12,002'	Horizontal	Marcellus Shale	
9	10/31/2011	11,904'	11,708'	Horizontal	Marcellus Shale	
10	10/31/2011	11,610'	11,414'	Horizontal	Marcellus Shale	
11	11/01/2011	11,316'	11,120'	Horizontal	Marcellus Shale	
12	11/01/2011	11,022'	10,826'	Horizontal	Marcellus Shale	

STIMULATION FLUID ADDITIVES									
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 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
MX 588-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WFR-61LA	Sodium Chloride	7647-14-5	9.8%	.00524%	.00524%	.00499%	.00360%	.00552%	.00392%
WFR-61LA	Ammonium Chloride	12125-02-9	7.2%	.00385%	.00385%	.00366%	.00264%	.00405%	.00288%
WFR-61LA	Petroleum Distillates	64742-48-8	52.7%	.02803%	.02804%	.02668%	.01925%	.02952%	.02096%
WFR-61LA	Alcohols, C-12-16, Ethoxylated	68551-12-2	6.9%	.00367%	.00367%	.00349%	.00252%	.00386%	.00274%
35%HCL Acid	Hydrochloric Acid	7647-01-0	35.0%	.10590%	.10320%	.11522%	.10630%	.10867%	.10167%
WAI-251 LC	Tar Bases, Quinoline Derivs, Benzyl Chloride-Quaternized	72480-70-7	13.0%	.00015%	.00014%	.00016%	.00015%	.00015%	.00014%
WAI-251 LC	Ethoxylated Nonylphenol	68412-54-4	10.1%	.00011%	.00011%	.00012%	.00011%	.00012%	.00011%
WAI-251 LC	Cinnamaldehyde	104-55-2	10.2%	.00011%	.00011%	.00012%	.00011%	.00012%	.00011%
WAI-251 LC	Ethylene Glycol	107-21-1	57.8%	.00065%	.00063%	.00071%	.00065%	.00067%	.00062%
WAI-251 LC	2-Butoxyethanol	111-76-2	8.3%	.00009%	.00009%	.00010%	.00009%	.00010%	.00009%
WAI-251 LC	Isopropyl Alcohol	67-63-0	9.5%	.00011%	.00010%	.00012%	.00011%	.00011%	.00010%
WAI-251 LC	Triethyl Phosphate	78-40-0	7.0%	.00008%	.00008%	.00009%	.00008%	.00008%	.00008%
WAI-251 LC	N, N-Dimethylformamide	68-12-2	45.1%	.00050%	.00049%	.00055%	.00051%	.00052%	.00048%
WIC-641L	Citric Acid	77-92-9	56.4%	.00316%	.00308%	.00344%	.00317%	.00324%	.00303%
BMC B-8650	Glutaraldehyde	111-30-8	48.8%	.00356%	.00373%	.00375%	.00371%	.00365%	.00368%
BMC B-8650	Methanol	67-56-1	0.7%	.00005%	.00005%	.00005%	.00005%	.00005%	.00005%
BMC B-8520	4,4-Dimethyloxazolidine	51200-87-4	76.5%	.01437%	.01463%	.01481%	.01313%	.01452%	.01441%
BMC B-8520	3,4,4-Trimethyloxazolidine	75673-43-7	5.0%	.00094%	.00096%	.00097%	.00086%	.00095%	.00094%
BMC B-8520	2-Amino-2-methyl-1-propanol	124-68-5	1.0%	.00020%	.00020%	.00020%	.00018%	.00020%	.00020%
BMC B-8520	Formaldehyde Amine	56652-26-7	0.5%	.00009%	.00009%	.00009%	.00009%	.00009%	.00009%

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

STIMULATION FLUID ADDITIVES										
Descriptive Additive Type	Chemical Component(s) listed on Material Safety 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	
MX 588-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WFR-61LA	Sodium Chloride	7647-14-5	9.8%	.00295%	.00440%	.00381%	.00324%	.00355%	.00410%	
WFR-61LA	Ammonium Chloride	12125-02-9	7.2%	.00216%	.00323%	.00280%	.00238%	.00260%	.00301%	
WFR-61LA	Petroleum Distillates	64742-48-8	52.7%	.01577%	.02354%	.02040%	.01734%	.01897%	.02194%	
WFR-61LA	Alcohols, C-12-16, Ethoxylated	68551-12-2	6.9%	.00206%	.00308%	.00267%	.00227%	.00248%	.00287%	
35%HCL Acid	Hydrochloric Acid	7647-01-0	35.0%	.10778%	.11264%	.10458%	.11015%	.10894%	.11248%	
WAI-251 LC	Tar Bases, Quinoline Derivs, Benzyl Chloride-Quaternized	72480-70-7	13.0%	.00015%	.00015%	.00014%	.00015%	.00015%	.00015%	
WAI-251 LC	Ethoxylated Nonylphenol	68412-54-4	10.1%	.00012%	.00012%	.00011%	.00012%	.00012%	.00012%	
WAI-251 LC	Cinnamaldehyde	104-55-2	10.2%	.00012%	.00012%	.00011%	.00012%	.00012%	.00012%	
WAI-251 LC	Ethylene Glycol	107-21-1	57.8%	.00066%	.00069%	.00064%	.00067%	.00067%	.00069%	
WAI-251 LC	2-Butoxyethanol	111-76-2	8.3%	.00009%	.00010%	.00009%	.00010%	.00010%	.00010%	
WAI-251 LC	Isopropyl Alcohol	67-63-0	9.5%	.00011%	.00011%	.00011%	.00011%	.00011%	.00011%	
WAI-251 LC	Triethyl Phosphate	78-40-0	7.0%	.00008%	.00008%	.00008%	.00008%	.00008%	.00008%	
WAI-251 LC	N, N-Dimethylformamide	68-12-2	45.1%	.00051%	.00054%	.00050%	.00053%	.00052%	.00054%	
WIC-641L	Citric Acid	77-92-9	56.4%	.00321%	.00336%	.00312%	.00329%	.00325%	.00336%	
BMC B-8650	Glutaraldehyde	111-30-8	48.8%	.00362%	.00364%	.00365%	.00356%	.00366%	.00378%	
BMC B-8650	Methanol	67-56-1	0.7%	.00005%	.00005%	.00005%	.00005%	.00005%	.00005%	
BMC B-8520	4,4-Dimethylloxazolidine	51200-87-4	76.5%	.01440%	.01460%	.01461%	.01450%	.01456%	.01480%	
BMC B-8520	3,4,4-Trimethyloxazolidine	75673-43-7	5.0%	.00094%	.00095%	.00095%	.00095%	.00095%	.00097%	
BMC B-8520	2-Amino-2-methyl-1-propanol	124-68-5	1.0%	.00020%	.00020%	.00020%	.00020%	.00020%	.00020%	
BMC B-8520	Formaldehyde Amine	56652-26-7	0.5%	.00009%	.00009%	.00009%	.00009%	.00009%	.00009%	

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STIMULATION FLUID ADDITIVES										
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. 13	Stage No. 14	Stage No. 15	Stage No. 16	Stage No. 17	Stage No.	
MX 588-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WFR-61LA	Sodium Chloride	7647-14-5	9.8%	.00314%	.00340%	.00339%	.00407%	.00324%	.00324%	
WFR-61LA	Ammonium Chloride	12125-02-9	7.2%	.00231%	.00250%	.00249%	.00299%	.00238%	.00238%	
WFR-61LA	Petroleum Distillates	64742-48-8	52.7%	.01683%	.01819%	.01813%	.02178%	.01736%	.01736%	
WFR-61LA	Alcohols, C-12-16, Ethoxylated	68551-12-2	6.9%	.00220%	.00238%	.00237%	.00285%	.00227%	.00227%	
35%HCL Acid	Hydrochloric Acid	7647-01-0	35.0%	.10979%	.10882%	.10168%	.11326%	.10931%	.10931%	
WAI-251 LC	Tar Bases, Quinoline Derivs, Benzyl Chloride-Quaternized	72480-70-7	13.0%	.00015%	.00015%	.00014%	.00016%	.00015%	.00015%	
WAI-251 LC	Ethoxylated Nonylphenol	68412-54-4	10.1%	.00012%	.00012%	.00011%	.00012%	.00012%	.00012%	
WAI-251 LC	Cinnamaldehyde	104-55-2	10.2%	.00012%	.00012%	.00011%	.00012%	.00012%	.00012%	
WAI-251 LC	Ethylene Glycol	107-21-1	57.8%	.00067%	.00067%	.00062%	.00069%	.00067%	.00067%	
WAI-251 LC	2-Butoxyethanol	111-76-2	8.3%	.00010%	.00010%	.00009%	.00010%	.00010%	.00010%	
WAI-251 LC	Isopropyl Alcohol	67-63-0	9.5%	.00011%	.00011%	.00010%	.00011%	.00011%	.00011%	
WAI-251 LC	Triethyl Phosphate	78-40-0	7.0%	.00008%	.00008%	.00008%	.00008%	.00008%	.00008%	
WAI-251 LC	N, N-Dimethylformamide	68-12-2	45.1%	.00052%	.00052%	.00048%	.00054%	.00052%	.00052%	
WIC-641L	Citric Acid	77-92-9	56.4%	.00327%	.00325%	.00303%	.00338%	.00326%	.00326%	
BMC B-8650	Glutaraldehyde	111-30-8	48.8%	.00369%	.00379%	.00358%	.00366%	.00367%	.00367%	
BMC B-8650	Methanol	67-56-1	0.7%	.00005%	.00005%	.00005%	.00005%	.00005%	.00005%	
BMC B-8520	4,4-Dimethyloxazolidine	51200-87-4	76.5%	.01467%	.01476%	.01441%	.01468%	.01461%	.01461%	
BMC B-8520	3,4,4-Trimethyloxazolidine	75673-43-7	5.0%	.00096%	.00096%	.00094%	.00096%	.00095%	.00095%	
BMC B-8520	2-Amino-2-methyl-1-propanol	124-68-5	1.0%	.00020%	.00020%	.00020%	.00020%	.00020%	.00020%	
BMC B-8520	Formaldehyde Amine	56652-26-7	0.5%	.00009%	.00009%	.00009%	.00009%	.00009%	.00009%	

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

STIMULATION INFORMATION (WELL)			
Open Flow Production: 0mcf/d @ 24hrs pos treatment	24 Hr. Open Flow Production: 0mcf/d @ 24hrs pos treatment	24 Hr. Shut-in Pressure: N/A @ 24hrs post treatment	Flow Back Date: 11/08/2011
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: 10/24/2011	Pump Rate: 64.4	
Pressure (psi): 9,038	Shut-in Surface Pressure: 5,563	5 Minute Shut-in Surface Pressure: NA	
Propping Agent Type: Sand	Propping Agent Amount: 398,575	Propping Agent Size: 100 mesh/40-70 Mesh	
Stage No.: 2	Stimulation Date: 10/25/2011	Pump Rate: 69.0	
Pressure (psi): 8,912	Shut-in Surface Pressure: 5,805	5 Minute Shut-in Surface Pressure: NA	
Propping Agent Type: Sand	Propping Agent Amount: 402,040	Propping Agent Size: 100 mesh/40-70 Mesh	
Stage No.: 3	Stimulation Date: 10/26/2011	Pump Rate: 68.0	
Pressure (psi): 8,933	Shut-in Surface Pressure: 6,147	5 Minute Shut-in Surface Pressure: NA	
Propping Agent Type: Sand	Propping Agent Amount: 407,940	Propping Agent Size: 100 mesh/40-70 Mesh	
Stage No.: 4	Stimulation Date: 10/26/2011	Pump Rate: 69.3	
Pressure (psi): 9,224	Shut-in Surface Pressure: 6,726	5 Minute Shut-in Surface Pressure: NA	
Propping Agent Type: Sand	Propping Agent Amount: 410,344	Propping Agent Size: 100 mesh/40-70 Mesh	
Stage No.: 5	Stimulation Date: 10/29/2011	Pump Rate: 71.0	
Pressure (psi): 8,867	Shut-in Surface Pressure: 6,504	5 Minute Shut-in Surface Pressure: NA	
Propping Agent Type: Sand	Propping Agent Amount: 423,917	Propping Agent Size: 100 mesh/40-70 Mesh	
Stage No.: 6	Stimulation Date: 10/29/2011	Pump Rate: 71.0	
Pressure (psi): 9,097	Shut-in Surface Pressure: 5,979	5 Minute Shut-in Surface Pressure: NA	
Propping Agent Type: Sand	Propping Agent Amount: 438,032	Propping Agent Size: 100 mesh/40-70 Mesh	
WELL SERVICE COMPANIES (Provide the name, address, and telephone number of all well service companies involved.)			
Name Weatherford	Name Multi-Chem	Name	
Address 121 Hillpointe Drive, Suite 300	Address 2905 Southwest Blvd.	Address	
City - State - Zip Canonsburg, PA 15317	City - State - Zip San Angelo, Texas 76904	City - State - Zip	
Phone 724 745-7050	Phone 325 223-6200	Phone	
<i>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..</i>			
Well Operator's Signature		DEP USE ONLY	
		Reviewed by:	Date:
Title: Regulatory Analyst	Date: 11/29/2011	Comments:	

STIMULATION INFORMATION (WELL)			
Open Flow Production: 0mcf/d @ 24hrs pos treatment	24 Hr. Open Flow Production: 0mcf/d @ 24hrs pos treatment	24 Hr. Shut-in Pressure: N/A @ 24hrs post treatment	Flow Back Date: 11/08/2011
STIMULATION INFORMATION (STAGE)			
Complete a separate record for each stimulation stage. (Please insert additional copies of this page for additional stages).			
Stage No.: 7	Stimulation Date: 10/30/2011	Pump Rate: 70.9	
Pressure (psi): 8,962	Shut-in Surface Pressure: 6,200	5 Minute Shut-in Surface Pressure: NA	
Propping Agent Type: Sand	Propping Agent Amount: 406,416	Propping Agent Size: 100 mesh/40-70 Mesh	
Stage No.: 8	Stimulation Date: 10/31/2011	Pump Rate: 70.2	
Pressure (psi): 9,076	Shut-in Surface Pressure: 5,256	5 Minute Shut-in Surface Pressure: NA	
Propping Agent Type: Sand	Propping Agent Amount: 400,760	Propping Agent Size: 100 mesh/40-70 Mesh	
Stage No.: 9	Stimulation Date: 10/31/2011	Pump Rate: 71.0	
Pressure (psi): 8,921	Shut-in Surface Pressure: 5,830	5 Minute Shut-in Surface Pressure: NA	
Propping Agent Type: Sand	Propping Agent Amount: 446,161	Propping Agent Size: 100 mesh/40-70 Mesh	
Stage No.: 10	Stimulation Date: 11/1/2011	Pump Rate: 71.0	
Pressure (psi): 8,761	Shut-in Surface Pressure: 6,123	5 Minute Shut-in Surface Pressure: NA	
Propping Agent Type: Sand	Propping Agent Amount: 401,760	Propping Agent Size: 100 mesh/40-70 Mesh	
Stage No.: 11	Stimulation Date: 11/1/2011	Pump Rate: 70.4	
Pressure (psi): 8,902	Shut-in Surface Pressure: 6,544	5 Minute Shut-in Surface Pressure: NA	
Propping Agent Type: Sand	Propping Agent Amount: 395,716	Propping Agent Size: 100 mesh/40-70 Mesh	
Stage No.: 12	Stimulation Date: 11/2/2011	Pump Rate: 69.4	
Pressure (psi): 8,843	Shut-in Surface Pressure: 6,701	5 Minute Shut-in Surface Pressure: NA	
Propping Agent Type: Sand	Propping Agent Amount: 398,029	Propping Agent Size: 100 mesh/40-70 Mesh	
WELL SERVICE COMPANIES (Provide the name, address, and telephone number of all well service companies involved.)			
Name Weatherford	Name Multi-Chem	Name	
Address 121 Hillpointe Drive, Suite 300	Address 2905 Southwest Blvd.	Address	
City - State - Zip Canonsburg, PA 15317	City - State - Zip San Angelo, Texas 76904	City - State - Zip	
Phone 724 745-7050	Phone 325 223-6200	Phone	
<i>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.</i>			
Well Operator's Signature		DEP USE ONLY	
		Reviewed by:	Date:
Title: Regulatory Analyst	Date: 11/29/2011	Comments:	

STIMULATION INFORMATION (WELL)			
Open Flow Production: 0mcf/d @ 24hrs pos treatment	24 Hr. Open Flow Production: 0mcf/d @ 24hrs pos treatment	24 Hr. Shut-in Pressure: N/A @ 24hrs post treatment	Flow Back Date: 11/08/2011

STIMULATION INFORMATION (STAGE)


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

Stage No.: 13	Stimulation Date: 11/02/2011	Pump Rate: 71.00
Pressure (psi): 9,114	Shut-in Surface Pressure: 6,311	5 Minute Shut-in Surface Pressure: NA
Propping Agent Type: Sand	Propping Agent Amount: 409,938	Propping Agent Size: 100 mesh/40-70 Mesh
Stage No.: 14	Stimulation Date: 11/02/2011	Pump Rate: 71.8
Pressure (psi): 8,045	Shut-in Surface Pressure: 6,351	5 Minute Shut-in Surface Pressure: NA
Propping Agent Type: Sand	Propping Agent Amount: 415,285	Propping Agent Size: 100 mesh/40-70 Mesh
Stage No.: 15	Stimulation Date: 11/03/2011	Pump Rate: 71.00
Pressure (psi): 7,958	Shut-in Surface Pressure: 6,162	5 Minute Shut-in Surface Pressure: NA
Propping Agent Type: Sand	Propping Agent Amount: 400,580	Propping Agent Size: 100 mesh/40-70 Mesh
Stage No.: 16	Stimulation Date: 11/03/2011	Pump Rate: 72.00
Pressure (psi): 8,522	Shut-in Surface Pressure: 6,248	5 Minute Shut-in Surface Pressure: NA
Propping Agent Type: Sand	Propping Agent Amount: 400,380	Propping Agent Size: 100 mesh/40-70 Mesh
Stage No.: 17	Stimulation Date: 11/03/2011	Pump Rate: 73.9
Pressure (psi): 8,289	Shut-in Surface Pressure: 5,367	5 Minute Shut-in Surface Pressure: NA
Propping Agent Type: Sand	Propping Agent Amount: 402,208	Propping Agent Size: 100 mesh/40-70 Mesh
Stage No.:	Stimulation Date:	Pump Rate:
Pressure (psi):	Shut-in Surface Pressure:	5 Minute Shut-in Surface Pressure:
Propping Agent Type:	Propping Agent Amount:	Propping Agent Size:

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

Name Weatherford	Name Multi-Chem	Name
Address 121 Hillpointe Drive, Suite 300	Address 2905 Southwest Blvd.	Address
City - State - Zip Canonsburg, PA 15317	City - State - Zip San Angelo, Texas 76904	City - State - Zip
Phone 724 745-7050	Phone 325 223-6200	Phone

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
	Reviewed by:	Date:
Title: Regulatory Analyst	Date: 11/29/2011	Comments:



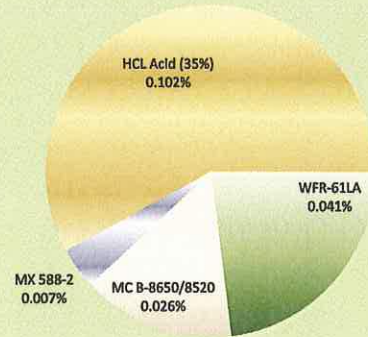
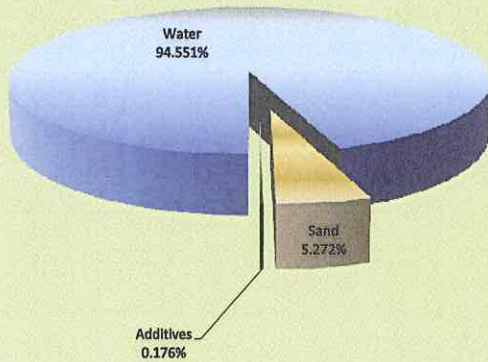
Lone Walnut Hunting Club #3-H
Well API: 37-081-20313

Completion Date: 10/24/2011
Township: Cummings

% 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	5,640,371 gal	94.551%	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	314,505 gal	5.272%	Drinking water filtration, play sand
WFR-61LA	Friction Reducer	Reduces friction between fluid and pipe	Diluted at one-half gallon per 1,000 gallons of water	2,419 gal	0.041%	Water treatment; soil conditioner; some children's toys
MC B-8650/8520	Antimicrobial Agent	Eliminates bacteria in the water that produce corrosive byproducts	Diluted at one-half gallon per 1,000 gallons of water	1,579 gal	0.026%	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	0,417 gal	0.007%	Water treatment, household cleaners, de-icing agent
HCL Acid (35%)	Perf Clean-Up	Dissolves cement and minerals to help initiate fractures	177 gallons per stage if required (non-diluted chemicals)	6,105 gal	0.102%	Swimming pool and household cleaner

Composition of Hydraulic Fracture Fluid (by volume)





RANGE RESOURCES

Wellname: Lone Walnut Hunting Club #3-H
Township: Cummings

WELL API#: 37-081-20313
Completion Date: 10/24/2011

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	Specific Gravity of Additive	Specific Gravity of Component	Additive Conc (gal/1000 gal)	lbs Hazardous Component	Gallons MSDS Component in Well	Maximum Concentration of MSDS Component of Total Stage Fluid	
											% Vol	% Weight
7.5% HCl Mixture (Weatherford)	35% HCL	Concentrated HCl Acid	HCL	Cleans perforation	35.0%	4:12 AM	4:12 AM	189.0	20925.09	6105.34	0.1023%	0.0387%
	WAI-251 LC	Corrosion Inhibitor	Tar bases, quinoline derivs, benzyl chloride-quaternized	Protects casing	13.0%	1:40 AM	1:40 AM	2.0	79.12	8.88	0.0001%	0.0001%
			Ethoxylated Nonylphenol	Protects casing	10.0%	1:40 AM	1:26 AM	2.0	60.86	6.89	0.0001%	0.0001%
			Cinnamaldehyde	Protects casing	10.0%	1:40 AM	1:12 AM	2.0	60.86	6.96	0.0001%	0.0001%
			Ethylene Glycol	Protects casing	60.0%	1:40 AM	2:38 AM	2.0	365.17	39.49	0.0007%	0.0007%
			2-Butoxyethanol	Protects casing	7.0%	1:40 AM	9:36 PM	2.0	42.60	5.68	0.0001%	0.0001%
			Isopropyl alcohol	Protects casing	7.0%	1:40 AM	6:53 PM	2.0	42.60	6.50	0.0001%	0.0001%
			Triethyl Phosphate	Protects casing	7.0%	1:40 AM	1:40 AM	2.0	42.60	4.78	0.0001%	0.0001%
	N, N-Dimethylformamide	Protects casing	40.0%	1:40 AM	10:48 PM	2.0	243.45	30.78	0.0005%	0.0005%		
	WIC-641L	Iron Chelator	Citric Acid	Prevents precipitation	70.0%	5:45 AM	12:57 PM	10.0	2468.62	192.44	0.0032%	0.0046%
TOTAL											0.1074%	0.0450%

Friction Reducer (Weatherford)	WFR-61LA	Friction Reducer	Sodium Chloride	Reduce friction down casing	10.0%	1:16 AM	1:40 AM	0.5	1,060.91	119.03	0.0020%	0.0020%
			Ammonium Chloride	Reduce friction down casing	7.0%	1:16 AM	12:28 AM	0.5	742.64	87.40	0.0015%	0.0014%
			Petroleum Distillates	Reduce friction down casing	40.0%	1:16 AM	7:12 PM	0.5	4,243.65	636.80	0.0107%	0.0079%
			Alcohols, C-12-16, Ethoxylated	Reduce friction down casing	7.0%	1:16 AM	1:40 AM	0.5	742.64	83.32	0.0014%	0.0014%
TOTAL											0.0155%	0.0126%

Scale Inhibitor (MultiChem)	MX 588-2	Scale Inhibitor	No hazardous ingredients	prevents scale deposits	N/A	2:52 AM	12:43 PM	0.1	N/A	N/A	N/A	N/A
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Antibacterial Agent (MultiChem)	BMC B-8520	Antibacterial Agent	4,4-Dimethyloxazolidine	eliminates bacteria in water	78.0%	11:35 PM	12:05 AM	4:55 AM	7255.59	867.55	0.0145%	0.0134%
			3,4,4-Trimethyloxazolidine		5.0%	11:38 PM	11:38 PM	4:55 AM	465.95	56.79	0.0010%	0.0009%
			2-Amino-2-methyl-1-propanol		1.0%	11:38 PM	10:33 PM	4:55 AM	93.19	11.90	0.0002%	0.0002%
			Formaldehyde Amine		0.5%	11:38 PM	1:55 AM	4:55 AM	46.60	5.18	0.0001%	0.0001%
	BMC B-8650	Antibacterial Agent	Glutaraldehyde	eliminates bacteria in water	50.0%	2:28 AM	3:07 AM	1:55 AM	2036.19	162.90	0.0027%	0.0038%
			Methanol		0.5%	2:28 AM	6:51 PM	1:55 AM	20.36	1.63	0.00003%	0.00004%
TOTAL											0.0185%	0.0184%

SUMMARY	by vol %	0.141%
	by weight %	0.076%