

## Hydraulic Fracturing Fluid Product Component Information Disclosure

<b>Fracture Date:</b>	3/1/2011
<b>State:</b>	WEST VIRGINIA
<b>County:</b>	UPSHUR
<b>API Number:</b>	4709703686
<b>Operator Name:</b>	CHESAPEAKE APPALACHIA LLC
<b>Well Name and Number:</b>	JAMES OGDEN 3H
<b>Longitude:</b>	-80.280048
<b>Latitude:</b>	38.815487
<b>Long/Lat Projection:</b>	NAD27
<b>Production Type:</b>	GAS
<b>True Vertical Depth (TVD):</b>	7,249
<b>Total Water Volume (gal)*:</b>	5,826,030

### 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
Fresh Water		Carrier/Base Fluid				72.50824%	
Recycled Produced Water		Carrier/Base Fluid				16.50631%	
Sand (Proppant)		Proppant				10.09741%	
15% HCl Acid	CALFRAC	Acid	Water	007732-18-5	85.00%	0.58627%	
			Hydrochloric Acid	007647-01-0	15.00%	0.10346%	
DAP-103	CALFRAC	Iron Control Agent	Citric Acid	000077-92-9	60.00%	0.00230%	
DAP-923	CALFRAC	Corrosion Inhibitor	Methanol (Methyl Alcohol)	000067-56-1	60.00%	0.00018%	
			Ethoxylated Alcohols^ C14-15	068951-67-7	30.00%	0.00009%	
			Modified Thiourea Polymer	068527-49-1	30.00%	0.00009%	
			Tall Oil Fatty Acids	061790-12-3	30.00%	0.00009%	
			Propargyl Alcohol (2-Propynol)	000107-19-7	10.00%	0.00003%	
			Alkenes^ C>10 alpha-	064743-02-8	5.00%	0.00001%	
SCALETROL 720	BJ SERVICES COMPANY U S A	Scale Inhibitor	Ethylene Glycol	000107-21-1	35.00%	0.01038%	
			Diethylene Glycol	000111-46-6	5.00%	0.00148%	
ALPHA 114	BJ SERVICES COMPANY U S A	Bactericide	Glutaraldehyde (Pentanediol)	000111-30-8	15.00%	0.00211%	
			Dimethyl benzyl ammonium chloride	000139-08-2	5.00%	0.00070%	
DWP-901	CALFRAC	Breaker	Ammonium Persulfate	007727-54-0	100.00%	0.03038%	

DWP-111	CALFRAC	Gelling Agent	No Hazardous Components	NONE		0.00000%	
DWP-612	CALFRAC	Friction Reducer	No Hazardous Components	NONE		0.00000%	

\* 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%

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(j) and Appendix D.