Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/20/2013
Job End Date:	10/27/2013
State:	Ohio
County:	Carroll
API Number:	34-019-22256-00-00
Operator Name:	Chesapeake Operating, Inc.
Well Name and Number:	JC ACRES 12-12-5 5H
Longitude:	-81.00543900
Latitude:	40.46952600
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	8,211
Total Base Water Volume (gal):	8,242,458
Total Base Non Water Volume:	533,559

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	CHESAPEAKE ENERGY	Carrier/Base Fluid					
			Water	007732-18-5	100.00000	79.98490	
Northern White Sand	PERFORMANCE TECHNOLOGIES	Proppant - Natural					
			Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7	100.00000	10.78745	
Recycled Produced Water	CHESAPEAKE ENERGY	Carrier/Base Fluid					
			Water	007732-18-5	100.00000	6.80939	
100 Mesh Sand	PERFORMANCE TECHNOLOGIES	Proppant - Natural					
			Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7	100.00000	1.18619	
PTLMP136	PERFORMANCE TECHNOLOGIES	Acid					
			Water	007732-18-5	85.00000	0.83904	
			Hydrochloric Acid	007647-01-0	15.00000	0.14807	
PTLCA102	PERFORMANCE TECHNOLOGIES	Cross Linker					
			Proprietary Alkyl Alcohol	TRADE SECRET	60.00000	0.00909	
			Sodium Hydroxide	001310-73-2	60.00000	0.00909	
			Proprietary Inorganic Salt	TRADE SECRET	30.00000	0.00455	

PTLFR200	PERFORMANCE TECHNOLOGIES	Friction Reducer					
			Proprietary Aliphatic Hydrocarbon	TRADE SECRET	30.00000	0.01495	
			Proprietary Oxyalkylated Alcohol	TRADE SECRET	5.00000	0.00249	
EC6111A	NALCO	Anti-Bacterial Agent					
			Glutaraldehyde (Pentanediol)	000111-30-8	30.00000	0.00821	
PTLBW112	PERFORMANCE TECHNOLOGIES	Breaker					
			Ammonium Persulfate	007727-54-0	100.00000	0.00763	
PTLAI171	PERFORMANCE TECHNOLOGIES	Corrosion Inhibitor					
			Isopropanol (Isopropyl Alcohol, Propan-2-ol)	000067-63-0	60.00000	0.00099	
			Ethylene Glycol	000107-21-1	30.00000	0.00050	
			Proprietary Organic Amine Resin Salt	TRADE SECRET	30.00000	0.00050	
			Proprietary Aromatic Aldehyde	TRADE SECRET	10.00000	0.00017	
			Dimethyl Formamide	000068-12-2	10.00000	0.00017	
			Proprietary Quaternary Ammonium Compound	TRADE SECRET	10.00000	0.00017	
PTLBW102	PERFORMANCE TECHNOLOGIES	Breaker					
			Ammonium Persulfate	007727-54-0	100.00000	0.00077	
PTLIS352	PERFORMANCE TECHNOLOGIES	Iron Control Agent					
			Citric Acid	000077-92-9	100.00000	0.00052	
PTLGL240	PERFORMANCE TECHNOLOGIES	Gelling Agent					
			No Hazardous Components	NONE			
PTLSI372	PERFORMANCE TECHNOLOGIES	Scale Inhibitor					
			No Hazardous Components	NONE			
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
PTLAI171, PTLBW112, PTLFR200, PTLGL240, PTLSI372	PERFORMANCE TECHNOLOGIES	Breaker, Corrosion Inhibitor, Friction Reducer, Gelling Agent, Scale Inhibitor					
			Guar Gum	009000-30-0		0.14166	
			Petroleum Distillate Hydrotreated Light	064742-47-8		0.14166	
			Proprietary Clay	TRADE SECRET		0.14166	
			Proprietary Surfactant	TRADE SECRET		0.14166	
			Water	007732-18-5		0.07070	
			Proprietary Vinyl Copolymer	TRADE SECRET		0.05384	
			Sodium Chloride	007647-14-5		0.05037	
			Proprietary Oxyalkylated Fatty Acid Derivative	TRADE SECRET		0.05037	
			Proprietary Substituted Fatty Acid Ester	TRADE SECRET		0.05037	
			Proprietary Aliphatic Alcohol	TRADE SECRET		0.05037	
			Tetrasodium Ethylenediaminetetraacetate	000064-02-8		0.05037	

			Proprietary Polycarboxylic Acid Polymer	TRADE SECRET		0.01967	
			Proprietary Alkylene Oxide Block Polymer	TRADE SECRET		0.00066	
			Proprietary Methanol	TRADE SECRET		0.00066	
			2-Ethylhexanol	000104-76-7		0.00066	
			Diethylene Glycol	000111-46-6		0.00066	
			Copper Sulfate	007758-98-7		0.00057	
EC6111A	NALCO	Anti-Bacterial Agent					
			Water	007732-18-5		0.02799	

* 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%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)