Hydraulic Fracturing (HF) Fluid Product Component Information

State:	PA
County:	Tioga
API Number:	37-117-20372-00
Operator Name:	Talisman Energy USA Inc.
Well Name:	DCNR 587 (02-008-04)
Completion End Date:	2/5/2011
Total Volume Pumped (bbl):	86177
True Vertical Depth (TVD):	8111

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients**	Ingredient Concentration in additive (% by volume)*	Ingredient concentration in HF fluid (% by volume)*
Water	-	Creates a fracture network and carries sand to fractures	Surface Water	100.0%	94.16657%
Sand	TRICAN	When the pressure is released the sand placed will hold the fracture open	Silicon Dioxide	95.0%	5.36615%
Friction Reducer	TRICAN	Reduces friction between the fluid and the pipe	Hydrotreated light petroleum distillate	14.860000%	0.008093%
			Ammonium Chloride	0.580000%	0.000316%
Scale Inhibitor	TRICAN	Mitigates scale formation on tubulars and perforations	No Hazardous Component		
Biocide	TRICAN	Eliminates bacteria in carrier fluid	2,2 - Dibromo-3-Nitrilopropionamide	5.0%	0.001153%
Acid	TRICAN	Dissolves cement and material near the wellbore to provide pumping pressure relief	Hydrogen Chloride	7.5%	0.001311%
Corrosion Inhibitor	TRICAN	Prevents precipitation of metal oxides	Methanol	32.6%	0.000034%
			Propargyl alcohol	3.6%	0.000004%
Iron Control Agent	TRICAN	Prevents the corrosion of the pipe	Acetic acid	44.9%	0.000039%
			Citric Acid	17.7%	0.000015%

* Information is based on the maximum potential for concentration and thus the total may be over 100%
** Ingredients include only the hazardous components as defined by the guidelines outlined for Material Safety Data Sheets (MSDS) sheets
All component information listed was obtained from supplier Material Safety Data Sheets (MSDS). The Occupational Safety and Health Administration (OSHA) sets 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 (i). As a result, the Operator does not have the legal authority to disclose any supplier "proprietary", "trade secret", or "confidential business information".