Hydraulic Fracturing Fluid Product Component Information Disclosure

10/28/2012	Fracture Date:
California	State:
Kern	County:
0403047157	API Number:
Occidental of Elk Hills, Inc.	Operator Name:
366-15R	Well Name and Number:
-119.489054	Longitude:
35.314466	Latitude:
NAD83	Long/Lat Projection:
Oil	Production Type:
10,124	True Vertical Depth (TVD):
169,821	Total Water Volume (gal)*:

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
3% KCL Water	Operator				100.00%	42.41680%	Density = 8.500
4% KCL Water	Operator				100.00%	42.61701%	Density = 8.500
C CERAMIC PROP	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	30.00%	3.97163%	
			Mullite	1302-93-8	100.00%	13.23876%	
			Phenol / formaldehyde resin	9003-35-4	5.00%	0.66194%	
VERSAPROP	Halliburton	Proppant	Aluminum silicate	1302-76-7	65.00%	0.22975%	
			Corundum	1302-44-56	65.00%	0.22975%	
LOSURF-300M™	Halliburton	Surfactant	1,2,4 Trimethylbenzene	95-63-6	1.00%	0.00041%	
			Ethanol	64-17-5	60.00%	0.02434%	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00%	0.01217%	
			Naphthalene	91-20-3	1.00%	0.00041%	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-,branched	127087-87-0	10.00%	0.00406%	
MO-67	Halliburton	Buffer	Sodium hydroxide	1310-73-2	30.00%	0.03097%	
VICON NF BREAKER	Halliburton	Breaker	Chlorous acid, sodium salt	7758-19-2	10.00%	0.00966%	
			Sodium chloride	7647-14-5	30.00%	0.02898%	
SUPERSET W	Halliburton	Activator	Methanol	67-56-1	60.00%	0.03976%	
			Ethoxylated Nonylphenol	Confidential Business Information	60.00%	0.03976%	
LGC-36 CBM	Halliburton	Gelling Agent	Paraffinic solvent	Confidential Business Information	60.00%	0.35841%	
CL-28M CROSSLINKER	Halliburton	Crosslinker	Crystalline silica, quartz	14808-60-7	5.00%	0.00541%	
			Borate salts	Confidential Business Information	60.00%	0.06495%	
K-38	Halliburton	Crosslinker	Disodium octaborate tetrahydrate	12008-41-2	100.00%	0.04588%	
FE-1A ACIDIZING COMPOSITION	Halliburton	Misc Additive	Acetic acid	64-19-7	60.00%	0.00950%	
			Acetic anhydride	108-24-7	100.00%	0.01584%	
LOSURF-300M™	Halliburton	Surfactant	1,2,4 Trimethylbenzene	95-63-6	1.00%	0.00045%	
			Ethanol	64-17-5	60.00%	0.02704%	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00%	0.01352%	
			Naphthalene	91-20-3	1.00%	0.00045%	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-,branched	127087-87-0	10.00%	0.00451%	

MO-67	Halliburton	Buffer	Sodium hydroxide	1310-73-2	30.00%	0.01933%
FE-1A ACIDIZING COMPOSITION	Halliburton	Misc Additive	Acetic acid	64-19-7	60.00%	0.00317%
			Acetic anhydride	108-24-7	100.00%	0.00528%
K-38	Halliburton	Crosslinker	Disodium octaborate tetrahydrate	12008-41-2	100.00%	0.00707%
BE-3S BACTERICIDE	Halliburton	Biocide	2,2 Dibromo-3-nitrilopropionamide	10222-01-2	100.00%	0.00141%
			2-Monobromo-3-nitrilopropionamide	1113-55-9	5.00%	0.00007%

^{*} Total Water Volume sources may include fresh water, produced water, and/or recycled water

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(i) and Appendix D.

^{**} Information is based on the maximum potential for concentration and thus the total may be over 100%