Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date	6/12/2017
State:	New Mexico
County:	Eddy
API Number:	30-015-~~40461~~
Operator Name:	Apache Corporation
Well Name and Number:	Hummingbird Federal Com 16H
Longitude:	-103.831406
Latitude:	32.869478
Long/Lat Projection:	NAD27
Indian/Federal:	none
Production Type:	Oil
True Vertical Depth (TVD):	5,484
Total Water Volume (gal)*:	3,811,458

30-015-43481

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)**	Ingredient Mass lbs	Comments	Company	First Name
Water	Operator	Carrier/Base Fluid	Water	7732-18-5	100.00%	85.82767%	32,705,033			
Sand	TSS	Proppant	Silica Substrate	14808-60-7	100.00%	10.90017%	4,153,560		TSS	Bobby
15% HCL	Reagent	Acidizing	Hydrochloric Acid	7647-01-0	15.00%	0.31010%	118,165		Reagent	Larry
Chemplex 4-N-1	Chemplex	Combination/Iron Control	2-Ethylhexanol	104-76-7	10.00%	0.00151%	575		Chemplex	Dr. Henry
			Acetic Acid	64-19-7	85.00%	0.01284%	4,891			
			Alcohol Ethoxylate Surfactants	Proprietary	2.00%	0.00030%	115			
			Cocamide Diethanolamine Salt	68603-42-9	2.00%	0.00030%	115			
			Diethanolamine	111-42-2	2.00%	0.00030%	115			
			Methyl Alcohol	67-56-1	10.00%	0.00151%	575			
			n-olefins	Proprietary	1.00%	0.00015%	58			
			Propargyl Alcohol	107-19-7	1.00%	0.00015%	58			
			thiourea-formaldehyde copolymer	68527-49-1	2.00%	0.00030%	115			
BT Scale 2S	Blentech	Scale Inhibitor	PolyAcrylate	Proprietary	88.00%	0.00249%	950		Blentech	George
FR5560	Rockwater Energy Solutions	Friction Reducer	Surfactant Blend	Proprietary	10.00%	0.00783%	2,983		Rockwater Energy Solutions	Chris
			Distillates, Petroleum, Hydrotreated Light	64742-47-8	30.00%	0.02348%	8,948			
			Proprietary Polymer	Proprietary	30.00%	0.02348%	8,948		Rockwater Energy Solutions	Chris
MayoQuest 1900	Compass Chemical	Scale Inhibitor	Bis(hexamethylene)triamine(pentamethylenep hos phonic acid)	34690-00-1	50.00%	0.01504%	5,732		Compass Chemical	Neil
			Hydrochloric acid	7647-01-0	6.00%	0.00181%	688			
Clayplex 650	Chemplex	Clay Stabilizer	Calcium chloride	10043-52-4	2.00%	0.00031%	119		Chemplex	Henry
			Choline chloride	67-48-1	35.00%	0.00548%	2,089			
BT Surf 2	Blentech	Surfactant	Isopropyl alcohol	67-63-0	45.00%	0.01314%	5,007		Blentech	George