

## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	7/8/2019
Job End Date:	7/17/2019
State:	Texas
County:	Ward
API Number:	42-475-53776-00-00
Operator Name:	Abraxas Petroleum Corporation
Well Name and Number:	Woodberry 3 #201H
Latitude:	31.55958100
Longitude:	-103.13843900
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	10,863
Total Base Water Volume (gal):	11,155,956
Total Base Non Water Volume:	0



### 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
Water	Abraxas Petroleum	Carrier Fluid					
			Water	7732-18-5	100.00000	89.13827	
ICA-2	C&J Energy Services	Iron Control Additives					
				Listed Below			

HC-15	C&J Energy Services	Bulk Acid					
				Listed Below			
CS-5	C&J Energy Services	Clay Control Additives					
				Listed Below			
CI-7	C&J Energy Services	Acid Corrosion Inhibitors					
				Listed Below			
SI-9	C&J Energy Services	Paraffin & Scale Additives					
				Listed Below			
TX Local 100 mesh Sand	C&J Energy Services	Sand - Bulk - Texas					
				Listed Below			
SU-2	C&J Energy Services	Surfactants & Foamers					
				Listed Below			
DV-1F	C&J Energy Services	Diverting Agents					
				Listed Below			
FR-23	C&J Energy Services	Friction Reducer					
				Listed Below			
BR-6	C&J Energy Services	Gel Breakers					

				Listed Below			
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Crystalline Silica, quartz	14808-60-7	99.90000	10.38387	
			Water	7732-18-5	85.00000	0.13923	
			Aluminum Oxide	1344-28-1	1.10000	0.11434	
			Water	7732-18-5	100.00000	0.09143	
			Water	7732-18-5	47.00000	0.06674	
			Water	7732-18-5	100.00000	0.05088	
			2-Propenoic acid, polymer with 2-propenamide, sodium salt	25987-30-8	30.00000	0.04260	
			Distillates (Petroleum), Hydrotreated Light	64742-47-8	30.00000	0.04260	
			Buffering agents	Proprietary	22.00000	0.03124	
			Ethoxylated Alcohols (C10-C16)	68002-97-1	30.00000	0.02743	
			Hydrochloric Acid	7647-01-0	15.00000	0.02457	
			Water	7732-18-5	100.00000	0.01450	
			Iron Oxide	1309-37-1	0.10000	0.01039	
			Titanium Oxide	13463-67-7	0.10000	0.01039	
			Calcium Chloride	10043-52-4	20.00000	0.01018	
			Propylene Glycol	57-55-6	10.00000	0.00914	
			Alcohols, C12-15-branched and linear, ethoxylated propoxylated	120313-48-6	5.00000	0.00710	
			Nonylphenol Ethoxylate	127087-87-0	3.00000	0.00426	
			Proprietary	Proprietary	3.00000	0.00426	
			Potassium Chloride	7447-40-7	5.00000	0.00254	
			Citric Acid	77-92-9	70.00000	0.00183	
			DETA-Phosphonate sodium salt	22042-96-2	10.00000	0.00145	
			Water	7732-18-5	50.00000	0.00131	

			Sodium Perborate, Tetrahydrate	10486-00-7	100.00000	0.00123	
			Hydroxyethylcellulose	9004-62-0	1.00000	0.00091	
			Amorphous Silica	7631-86-9	1.00000	0.00091	
			Polydimethyl siloxane	63148-62-9	1.00000	0.00091	
			Proprietary Polysaccharide	Proprietary	1.50000	0.00076	
			Sodium Chloride	7647-14-5	5.00000	0.00073	
			Polyactide resin	9051-89-2	100.00000	0.00053	
			Ethylene Glycol	107-21-1	40.00000	0.00019	
			Acrylamide as residual	79-06-1	0.10000	0.00014	
			Dipropylene Glycol Monomethyl Ether	34590-94-8	20.00000	0.00009	
			Water	7732-18-5	20.00000	0.00009	
			Cinnamaldehyde	104-55-2	10.00000	0.00005	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	10.00000	0.00005	
			Formic Acid	64-18-6	10.00000	0.00005	
			Alcohol C12-15 Ethoxylate	68131-39-5	8.50000	0.00004	
			Isopropanol	67-63-0	2.40000	0.00001	

\* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

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

\*\*\* If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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)