

## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/7/2017
Job End Date:	5/8/2017
State:	Texas
County:	Ward
API Number:	42-475-37142-00-00
Operator Name:	FELIX ENERGY HOLDINGS II, LLC
Well Name and Number:	UL Echo Canyon 20-17 2H
Latitude:	31.53484980
Longitude:	-103.16723380
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	11,318
Total Base Water Volume (gal):	16,598,044
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
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	89.80672	Density = 8.340
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.63336	

FDP-S1225-15	Halliburton	Surfactant					
				Listed Below			
PROP-CERAMIC-16/30 - 3200 LB SACK (101357976)	Halliburton	Proppant					
				Listed Below			
Cla-Web(TM) II	Halliburton	Clay Stabilizer					
				Listed Below			
Scalechek(R) SCP-2 Scale Inhibitor	Halliburton	Scale Preventer					
				Listed Below			
PROP-PREMIUM- 30/60, 50 LB SACK	Halliburton	Proppant					
				Listed Below			
AccessFrac LT material	Halliburton	Diverter					
				Listed Below			
Petro-Flo	Bio-Cide Internationa1	Biocide					
				Listed Below			
SAND-COMMON BROWN-20/40, BULK	Halliburton	Proppant					
				Listed Below			

SAND-PREMIUM BROWN-40/70, BULK	Halliburton	Proppant					
				Listed Below			
FDP-S1267-16	Halliburton	Additive					
				Listed Below			
OptiKleen-WF (TM)	Halliburton	Concentrate					
				Listed Below			
FDP-S1176-15	Halliburton	Friction Reducer					
				Listed Below			
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
				Listed Below			
SSA-1	Halliburton	Additive					
				Listed Below			
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant					
				Listed Below			
HYDROCHLORIC ACID	Halliburton	Solvent					
				Listed Below			

FDP-S1231-16	Halliburton	Surfactant					
				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	100.00000	9.42436	
			Hydrochloric acid	7647-01-0	60.00000	0.30250	
			Polyacrylate	Proprietary	30.00000	0.02872	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02872	
			Crystalline Silica, quartz	14808-60-7	100.00000	0.02700	
			Ethoxylated alcohols	Proprietary	30.00000	0.01909	
			Fatty nitrogen derived amides	Proprietary	30.00000	0.01878	
			Ethoxylated fatty acids	Proprietary	30.00000	0.01878	
			Isopropanol	67-63-0	30.00000	0.01878	
			Hydrotreated light petroleum distillate	Proprietary	30.00000	0.01878	
			Sodium perborate tetrahydrate	10486-00-7	100.00000	0.01082	
			Chlorine compound	Proprietary	30.00000	0.00719	
			Ammonium compound	Proprietary	30.00000	0.00719	
			Butyl alcohol	71-36-3	10.00000	0.00626	
			Sodium chloride	7647-14-5	5.00000	0.00503	
			9-Octadecenamide, n,n-bis-2(hydroxy-ethyl)-,(Z)	93-83-4	5.00000	0.00479	
			Castor oil, ethoxylated	61791-12-6	5.00000	0.00479	
			Ammonium chloride	12125-02-9	5.00000	0.00479	
			Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8	5.00000	0.00479	
			Glassy calcium magnesium phosphate	65997-17-3	100.00000	0.00334	
			Mullite	1302-93-8	100.00000	0.00277	
			Aluminum Silicate	1302-76-7	100.00000	0.00277	
			Sodium Chlorite	7758-19-2	8.35000	0.00260	

			Sintered bauxite	1318-16-7	100.00000	0.00131	
			Crystalline silica, cristobalite	14464-46-1	30.00000	0.00090	
			Silica, amorphous - fumed	7631-86-9	30.00000	0.00083	
			Alcohols	Proprietary	1.00000	0.00063	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Diethanolamine	111-42-2	1.00000	0.00063	
			Polyethylene glycol	25322-68-3	1.00000	0.00063	
			Methanol	67-56-1	60.00000	0.00062	
			Sodium Carbonate	497-19-8	2.00000	0.00062	
			Polylactide resin	Proprietary	100.00000	0.00048	
			Quaternary amine	Proprietary	1.00000	0.00048	
			Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1	30.00000	0.00031	
			Fatty acids, tall oil	Proprietary	30.00000	0.00031	
			Sodium Hydroxide	1310-73-2	1.00000	0.00031	
			Sodium Chloride	7647-14-5	1.00000	0.00031	
			Glutaraldehyde	111-30-8	1.00000	0.00027	
			Amine salts	Proprietary	1.00000	0.00026	
			Alcohols, C12-13, ethoxylated	66455-14-9	30.00000	0.00018	
			Aluminum silicate	1302-76-7	10.00000	0.00013	
			Olefins	Proprietary	5.00000	0.00012	
			Propargyl alcohol	107-19-7	10.00000	0.00010	
			Aluminum oxide	1344-28-1	5.00000	0.00007	
			Alcohols, C12-16, ethoxylated	68551-12-2	5.00000	0.00003	
			Amine	Proprietary	0.10000	0.00002	
			Titanium dioxide	13463-67-7	1.00000	0.00001	

			Iron oxide	1309-37-1	1.00000	0.00001	
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\* 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)