Submit within 45 days of well completion

Revised November 9, 2010

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

HYDRAULIC FRACTURING FLUID DISCLOSURE

☒ Original
☐ Amendment

1. API Number: 30-025-41330	2. Well Name: HELIX ENERGY 23 FEDERAL #001H
3. Well Number: 001H	4. Surface Hole Location: Unit Letter: D Section: 23 Township: 20S Range: 34E Feet from: 330 N/S Line: N Feet from: 330 E/W Line: W
5. Bottom Hole Location: Unit Letter: D Section: 23 Township: 20S Range: 34E Feet from: 330 N/S Line: N Feet from: 330 E/W Line: W	
6. Pool Name: WILDCAT G-06 S203406D;BONE SPRING	7. Pool Code: 97980
8. Operator Name and Address: LINN OPERATING, INC. 600 TRAVIS, STE 5100 HOUSTON, TX 77002	9. OGRID: 269324
10. Contact Name: Mary Corley	11. Phone Number: 432-423-7452x3125
12. Submitted by: LINN OPERATING, INC.	13. Date: 10-22-2014

I. HYDRAULIC FLUID COMPOSITION AND CONCENTRATION:

Trade Name	Supplier	Purpose	Ingredients	CAS # (if chemical Abstract applies)	Maximum Ingredient Concentration in Additive (% by mass)	Maximum Ingredient Concentration in HF Fluid (% by mass)
Water	Operator	Carrier	Water	7732-18-5	100%	87.5285%
Sand, White, 30/50	Baker Hughes	Proppant	Amorphous Silica (Non-Crystalline Silica)	NA	3%	11.6335%
Sand 12/ 20AZ	Baker Hughes	Proppant	Amorphous Silica (Non-Crystalline Silica)	NA	3%	0.1929%
Sand, White, 100 mesh	Baker Hughes	Proppant	Amorphous Silica (Non-Crystalline Silica)	NA	3%	2.1574%
WC-10 1 1 TRC	Baker Hughes	Nonionic Surfactant	Alcohols, C12-14, Ethoxylated	NA	3%	0.0625%
GW-4	Baker Hughes	Gelling Agent	Guar Gum, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.1867%
BF-9L, 200 gal tote	Baker Hughes	Buffer	Potassium Hydroxide, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0598%
SC-30 IBC tote	Baker Hughes	Crosslinker	Potassium Metaborate, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0930%
ClayCare, tote	Baker Hughes	Clay Control	Choline Chloride, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0441%
NE-90, 330 gl tote	Baker Hughes	Nonemulsifier	Alcohols, C12-14, Ethoxylated, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0429%
Iota-Plexis-24L, 350 gallon tote	Baker Hughes	Friction Reducer	Petroleum Distillate, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0425%
Tri-Mark Prime Solid	Baker Hughes	Surfactant	Alcohols, C12-14, Ethoxylated, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0410%
ALA-4	Baker Hughes	Crosslinker	Triethanolamine, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0340%
Alpha 125	Baker Hughes	Biocide	Glutaraldehyde, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0324%
Sustablend-W, 55 gal drum	Baker Hughes	Activator	Ammonium Chloride, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0608%
Enzyme G-1	Baker Hughes	Breaker	Hemicellulase Enzyme, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0041%
High Perm CRB	Baker Hughes	Breaker	Hydrotreated Light Distillate, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0025%
GBW-5	Baker Hughes	Breaker	Sodium Bromate, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0026%
Hydrate 20L	Baker Hughes	Anti Control	Methanol, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0007%
CI-27	Baker Hughes	Corrosion Inhibitor	Propargyl Alcohol, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0004%
MO-67	Baker Hughes	Gelling Agent	Petroleum Distillate, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0855%
Clay Master-5C	Baker Hughes	Clay Control	Choline Chloride, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0001%
GBW-30B	Baker Hughes	Breaker	Hemicellulase Enzyme, Non-Crystalline Silica (Non-Crystalline Silica)	NA	3%	0.0000%
Ingredients shown above are subject to 29 CFR 1910			Crystalline Silica (Quartz)	14808-60-7	100%	4.7921%
			Hydrotreated Light Distillate	64742-47-8	30%	0.1437%
			Sodium Chloride	7647-14-5	30%	0.1437%
			Ammonium Chloride	12125-02-9	30%	0.1437%
			Methanol	67-56-1	30%	0.0007%
			Petroleum Distillate	64742-47-8	30%	0.0855%
			Propargyl Alcohol	107-19-7	10%	0.0004%
			Hemicellulase Enzyme	NA	10%	0.0041%
			Choline Chloride	67-48-1	75%	0.0001%
			Triethanolamine	102-71-6	15%	0.0340%
			Alcohols, C12-14, Ethoxylated	68439-50-9	7%	0.0429%
			Alcohols, C12-14, Ethoxylated	68551-12-2	7%	0.0625%
			Glutaraldehyde	111-30-8	30%	0.0324%
			Quaternary Ammonium Compound	68424-85-1	7%	0.0021%
			Ethanol	64-17-5	5%	0.0015%
			Quaternary Ammonium Compound	61789-71-7	7%	0.0021%
			Isopropanol	67-63-0	30%	0.0091%
			Propylene Glycol	57-55-6	30%	0.0091%
			Polyethylene Glycol	25322-68-3	30%	0.0091%
			Hydrotreated Light Distillate	64742-47-8	30%	0.0128%
			Ammonium Chloride	12125-02-9	30%	0.0128%
			Alcohols, C12-14, Ethoxylated	68439-50-9	7%	0.0030%
			Alcohols, C12-14, Ethoxylated	68551-12-2	7%	0.0030%
			Methanol	67-56-1	30%	0.0013%
			Petroleum Distillate	64742-47-8	30%	0.0128