Submit within 45 days of well completion

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

Revised November 6, 2013

1. WELL API NO. 30-015-40913

2. Well Name: RAVEN FEDERAL #016H

3. Well Number: 016H

HYDRAULIC FRACTURING FLUID DISCLOSURE

☒ Original

☐ Amendment

4. Surface Hole Location:
Unit:A Lot:A Section:7 Township:17S Range:31E
Feet from:727 N/S Line:N
Feet from:1000 E/W Line:E

5. Bottom Hole Location:
Unit:A Lot:A Section:7 Township:17S Range:31E
Feet from:727 N/S Line:N
Feet from:1000 E/W Line:E

6. latitude: 32.8542557 longitude: -103.9039001

7. County: Eddy

8. Operator Name and Address:
APACHE CORP
303 Veterans Airpark Lane
Suite 3000
Midland 79705

9. OGRID: 873

10. Phone Number: 432-818-1062

11. Last Fracture Date: 9/17/2015 Frac Performed by: ELITE

12. Production Type: O

13. Pool Code(s): 96831

14. Gross Fractured Interval: Confidential

15. True Vertical Depth (TVD): 8,322 ft

16. Total Volume of Fluid Pumped: 1,936,956 gals

17. Total Volume of Re-Use Water Pumped: N/A

18. Percent of Re-Use Water in Fluid Pumped: Not Disclosed

19. **HYDRAULIC FLUID COMPOSITION AND CONCENTRATION:**

Trade Name	Supplier	Purpose	Ingredients	(CAS #) Chemical Abstract Service #	Maximum Ingredient Concentration in Additive (% by mass)	Maximum Ingredient Concentration in HF Fluid (% by mass)
Water	Customer	Carrier/Base Fluid	Water	7732-18-5	100%	84.95444%
Sand (Proppant)	US Silica	Proppant	Silica Substrate	14808-60-7	100%	8.13137%
RCS (Proppant)	Momentive	Proppant	Silica Substrate	14808-60-7	100%	2.77896%
Hydrochloric Acid (15%)	CNR	Acidizing	Hydrochloric Acid	7647-01-0	38.8%	1.51627%
Claymax	Chemplex	Clay Stabilizer	Choline Chloride	67-48-1	62%	0%
4-N-1 Plus	Chemplex	Iron Control,Corr Inhib,Surfactant	Acetic Acid	64-19-7	80%	0%
			Methanol	67-56-1	10%	0%
Plexcide 24L	Chemplex	Biocide	Tetrahydro-3,Dimethyl-2H	533-74-4	24%	0%
Plexset 730	Chemplex	Activator	Secondary Alcohol Ethoxylate	84133-50-6	50%	0%
Plexsurf 240 E	Chemplex	Surfactant	Methyl Alcohol	67-56-1	10%	0.00824%
			Alcohol Alkoxylate	Proprietary	50%	0.04122%
Plexslick 953	Chemplex	Friction Reducer	Alcohol Ethoxylate Surfactants	Proprietary	8%	0.006%
			Hydrotreated Petroleum Distillate	64742-47-8	30%	0.02251%
			Polyacrylamide-co-Acrytic Acid	9003-06-9	31%	0.02326%
AMA 398	Chemplex	Biocide	Tetrahydro-3,Dimethyl-2H	533-74-4	98%	0%
Plexgel 907 LE	Chemplex	Polymer	Guar Gum	9000-30-0	50%	0%
			Mineral Oil	64742-47-8	55%	0%
			Bentonite Clay	14808-60-7	2%	0%
			Surfactant	68439-51-0	2%	0%
Plexbor 101	Chemplex	Crosslinker	Ethylene Glycol	107-21-1	9.99%	0%
			Potssium Metaborate	13709-94-9	30%	0%
			Potassium Hydroxide	1310-58-3	5%	0%
Plexgel Breaker 10L	Chemplex	Gel Breaker	Mannanase Enzymes	Proprietary	2%	0%
			Sodium Chloride	7647-14-5	15%	0%
Sodium Persulfate	Chemplex	Gel Breaker	Sodium Persulfate	7775-27-1	98%	0%
Buffer 11	Chemplex	PH Control	Potassium Hydroxide	1310-58-3	23%	0%
Greenhib 679	Chemplex	Scale Inhibitor	Glycerine	56-81-5	35%	0.01631%
			Proprietary	Proprietary	35%	0.01631%
			Water	7732-18-5	30%	0.01398%
Clayplex 650	Chemplex	Clay Stabilizer	Water	7732-18-5	60%	0.00066%
			Ethanaminium, 2-hydroxy-N,N,N-trimethyl-, chloride	67-48-1	35%	0.00038%
Plexcide 15G	Chemplex, LC	Biocide	Glutaraldehyde	111-30-8	14%	0.00308%
			Didecyl dimethyl ammonium chloride	7173-51-5	3%	0.00066%
			Alkyl dimethyl benzyl ammonium chloride	68424-85-1	3%	0.00066%
			Ethanol	64-17-5	3%	0.00066%

20. I, as Operator, hereby certify that the information shown on this disclosure form is true and complete to the best of my knowledge and belief.

Signature: Signed Electronically Printed Name: Emily Follis Title: Sr Prod Dept Asst

Date: 1/4/2016

E-mail Address: emily.follis@apachecorp.com

NMOCD does not require the reporting of information beyond MSDS data as described in 29 CFR 1910.1200. NMOCD does not require the reporting or disclosure of proprietary, trade secret or confidential business information.