

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

OCD-ARTESIA

RECEIVED

FEB 10 2010

FORM APPROVED  
OMB No. 1004-0137  
Expires: March 31, 2007

NMOCD ARTESIA

**SUNDRY NOTICES AND REPORTS ON WELLS**

*Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.*

**SUBMIT IN TRIPLICATE- Other instructions on reverse side.**

1. Type of Well  
☐ Oil Well ☐ ☒ Gas Well ☐ Other

2. Name of Operator  
**CHI OPERATING, INC.**

3a. Address  
**P.O. BOX 1799, MIDLAND, TEXAS 79702**

3b. Phone No. (include area code)  
**432-685-5001**

4. Location of Well (Footage, Sec, T, R., M., or Survey Description)

**2080' FNL & 660' FEL, SEC. 21, T21S, R29E**

5. Lease Serial No.  
**NM-03205**

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

~~891003250~~

8. Well Name and No. *Unit*  
**BIG EDDY FEDERAL #114**

9. API Well No.  
**30-015-26263**

10. Field and Pool, or Exploratory Area  
**BONE SPRING**

11. County or Parish, State  
**EDDY CO., NM**

**12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input checked="" type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection )

**WE PROPOSE TO PLUG BACK TO THE BONE SPRING ZONE, PROCEDURE ATTACHED.**

**SEE ATTACHED FOR  
CONDITIONS OF APPROVAL**

**SCANNED**

**JAN 13 2010**

14. I hereby certify that the foregoing is true and correct  
Name (Printed/Typed)

**ROBIN ASKEW**

Title **REGULATORY CLERK**

Signature

Date

**01/13/2010**

**THIS SPACE FOR FEDERAL OR STATE OFFICE USE**

Approved by

Title

Date

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

**FEB 8 2010**  
**/s/ Dustin Winkler**

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make or cause to be made any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction of the United States

(Instructions on page 2)

**BUREAU OF LAND MANAGEMENT  
CARLSBAD FIELD OFFICE**

November 17, 2008

## Fracture Stimulation Procedure

**Prepared for:** Chi Operating, Inc.  
P.O. Box 1799  
Midland, Texas 79701

SCANNED

JAN 13 2010

**Well:** Big Eddy Unit #114  
**Field:** Wildcat  
**County & State:** Eddy County, NM  
**Location:** Section 21, Township 21S, Range 29E  
**Formation:** Bone Spring Shale  
**Estimated BHST:** 146°F @ 7936'  
**Fracture Gradient:** 0.61 psi/ft (Calculated from lower shale)  
**Casing:** 5 ½" 17# N-80  
**Treating String:** 3 ½" 9.3# N-80 (8100 psi working pressure)

1. MIRU frac tanks and fill with water (see fluid specifications).
2. Send source water samples to service company for analysis and compatibility testing.
3. MIRU WOR and approximately 7500' of 3 ½" 9.3# N-80 workstring, pipe racks and cat walk.
4. ND well head and NU BOP's.
5. MIRU wireline perforators and RU lubricator.
6. RIH with 5 ½" composite plug and perforating guns.
7. Set composite plug and +/- 7500'.
8. PUH with wireline and perforate the Bone Spring Shale as follows:
  - 1 spf, 23 gram, 0.48" shots 120° phased from 7448'-7458' (6 Holes)
  - 1 spf, 23 gram, 0.48" shots 120° phased from 7428'-7434' (6 Holes)
  - 1 spf, 23 gram, 0.48" shots 120° phased from 7340'-7344' (4 Holes)
  - 1 spf, 23 gram, 0.48" shots 120° phased from 7362'-7366' (4 Holes)
  - 1 spf, 23 gram, 0.48" shots 120° phased from 7308'-7314' (6 Holes)
9. POOH with cased hole wireline, RD lubricator and release wireline equipment.
10. PU and RIH with 3 ½" tubing and packer with by-pass valve to +/- 7280' and set.
11. MIRU service company acid pump and transport.
12. RU acid pump to tubing and test pumping services line.

13. Open by-pass valve on packer and annulus valve at surface.
14. Circulate and PU to spot 250 gallons 15% HCL across the perforated interval.
15. Close by-pass on packer and pressure up on tubing to breakdown the perforations and establish injection.
16. Once perforations/formation breaks down (estimate break at +/- 3500 psi), establish rate and switch to acid.
17. Pump 2000 gallons 15% HCL acid and increase rate to 8 bpm placing 52 – 7/8" 1.3 sp. gr. RCN ball sealers evenly throughout the treatment.
18. Flush and over flush acid with 65 bbls 2% KCL water.
19. Shut down pumping and record ISDP, 5, 10 and 15 minute post job wellhead pressures.
20. Shut in and secure the well and prepare for fracture stimulation.
21. MIRU flowback package and associated equipment.
22. MIRU fracture stimulation equipment.
23. Perform QA/QC on all fluids and proppants.
24. RU to fracture stimulate the Bone Spring Shale formation via 3 1/2" tubing at 40 bpm at an estimated STP of 7500 psi.
25. Pump approximately 2500 gallons slick water to load the hole and establish injection at 10 bpm.
26. Pump 2000 gallons 15% HCL acid at 10-15 bpm increasing injection rate once the acid is drawn from the tank.
27. Increase injection rate to the designed down hole rate of 50 bpm and pump the first stage fracture treatment as per pump schedule **Table A**.
28. Flush to the bottom perf with 65 bbls and shut down pumping.
29. Record ISDP and shut-in the well.
30. RD pumping equipment.
31. RU flowback iron and begin load recovery on a 18/64" choke or smaller.
32. Flow well via casing to recover load and test.

## **Fracture Stimulation Job Requirements**

### **Fluid Requirements:**

- a. Total fluid pumpable: 232,730 gals (5539 bbls).
- b. Thirteen (11) 500 bbl frac tanks 6059 bbls fresh water.
- c. Two 500 bbl frac tank containing 480 bbls concentrated (18%) KCL water.
- d. Total 15% HCL acid required is 2,000 gallons.

### **15# Borate Crosslink Fluid Requirements per 1000 gallons:**

- 3.75 gpt Guar gelling agent
- 2% KCL Water Base
- 1.0 gpt Surfactant
- 1.2 gpt borate crosslinker/buffer combination
- 0.5 ppt Oxidative breaker
- 0.25 gpt Bactericide

### **15% HCL Acid Requirements per 1000 gallons:**

- 1 gpt Corrosion Inhibitor (24 hours @ 145°F)
- 1 gpt Non-emulsifier
- 3 gpt Iron Control or 5000 ppm Iron protection
- 1 gpt Friction Reducer

### **Total Proppant Requirements:**

- 10,000 lbs 100 Mesh Sand
- 30,000 lbs 40/70 Mesh Ottawa Sand
- 90,000 lbs 30/50 Mesh Ottawa Sand

### **Equipment Requirements**

- Approximately 9,800 HHP or enough HHP to obtain 50 bpm at 8,000 psi.
- Chemical pumps capable of pumping three (3) Liquid additives at rates ranging from 0.5 gpm to 4 gpm with 100% backup for each.
- Treatment monitoring van capable of displaying all chemical additive rates during the treatment.
- Accurate and calibrated densimeters.
- Lab van capable of performing fluid break tests, sand sieve analysis and acid titration.

**TABLE A:**

Stage No.	Avg Slurry Rate (bpm)	Liquid Volume (U.S. gal)	Fluid Volume (bbbls)	Total Slurry Volume (U.S. gal)	Total Time (min)	Proppant Type	Prop conc. (lb/gal)	Prop. Stage Mass (lbs)
1	40	30000	714	15# Borate	17.9		0	0
2	40	10000	238	15# Borate	23.9	100 Mesh	0.25	2500
3	40	10000	238	15# Borate	29.9		0	0
4	40	10000	238	15# Borate	35.9	100 Mesh	0.25	2500
5	40	10000	238	15# Borate	41.8		0	0
6	40	10000	238	15# Borate	47.7	100 Mesh	0.5	5000
9	40	20000	476	15# Borate	59.0	40/70 Ottawa	0.25	5000
10	40	20000	476	15# Borate	70.3	40/70 Ottawa	0.5	10000
12	40	20000	476	15# Borate	81.6	40/70 Ottawa	0.75	15000
13	40	20000	476	15# Borate	92.9	30/50 Ottawa	0.5	10000
14	40	20000	476	15# Borate	104.2	30/50 Ottawa	0.75	15000
15	40	20000	476	15# Borate	115.9	30/50 Ottawa	1	20000
16	40	20000	476	15# Borate	126.8	30/50 Ottawa	1.25	30000
17	40	10000	238	15# Borate	132.8	30/50 Ottawa	1.5	15000
21	40	2730	65	Linear gel	134.4		0	0
<b>Totals:</b>		<b>232,730</b>	<b>5539</b>		<b>134.4</b>			<b>130,000</b>

Chi Operating  
NM-03205 – Big Eddy Unit #114  
API: 30-015-26263  
Eddy County, New Mexico

RE: Plug back and Recomplete NOI – Conditions of Approval

There is to be no surface disturbance beyond the existing pad. A closed loop system is to be used.

A CIBP is to be used in place of the composite plug proposed in steps 6 & 7.

A commercial well determination shall be submitted following six months of production, to determine if the well will require designation as a unit well.

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Submit subsequent report and completion report once work is completed.

DHW 020510