

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
OMB No. 1004-0137  
Expires: January 31, 2018

**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.*

5. Lease Serial No. NM-033312A

6. If Indian, Allottee or Tribe Name

**SUBMIT IN TRIPLICATE - Other instructions on page 2**

1. Type of Well

☐ Oil Well ☐ Gas Well ☒ Other Natural Gas Storage

2. Name of Operator Enstor Grama Ridge Storage and Transportation, LLC

3a. Address 20329 State Hwy 249, Suite 500  
Houston, TX 77070

3b. Phone No. (include area code)  
(281) 374-3050

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)  
126' FSL and 1048' FEL of Section 4, Township 22S, Range 34E

7. If Unit of CA/Agreement, Name and/or No.  
14-08-0001014277 (NMNM-70953X)

8. Well Name and No. GRM UNIT #8

9. API Well No. 30-025-39922

10. Field and Pool or Exploratory Area  
Morrow Formation, Grama Ridge

11. Country or Parish, State  
Lea County, NM

**12. CHECK THE 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"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input checked="" type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	Possible wellhead and tubing repair
	<input type="checkbox"/> Convert to Injection	<input 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 must 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 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

GRM UNIT #8 failed the NMOCD 2017 MIT/Bradenhead pressure test due to communication between the production tubing and production casing/liner. As a result of the failed test, the well was immediately shut-in. After review and analysis, the most probable cause of the communication is a casing leak at a depth of 12,668', between the liner hanger and production packer. Proposed remediation/repair efforts include installing a new liner hanger, isolation packers, and production tubing as detailed in the attached Scope of Work and Workflow Diagram. The estimated completion date for the project is September 2018. This well workover will also be included in the 2018 Plan of Operations.

\*Please note that the well will remain shut-in pending completion of repairs and successful NMOCD-witnessed MIT/Bradenhead pressure test.

**HOBBS OCD**  
**NOV 20 2017**  
**RECEIVED**

**Accepted for Record Only**

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

Nick Nicodemus

Director, Land & Regulatory Affairs

Title

Signature

Date

11/17/2017

**THE 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

**SUBJECT TO**

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 to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

**Accepted for Record Only**

*MAB/OCD 11/20/2017*



	<b>Enstor Operating Company, LLC</b> <b>GR Transportation &amp; Storage, LLC</b> <b>Scope of Work: GR #8 Workover</b>	<b>Document Number</b> <b>UG-GR#8-2017</b>	
		<b>Revision</b>	<b>1</b>

## **OVERVIEW**

NM OCD requires Grama Ridge Well #8 to undergo workover to eliminate communication between 4-1/2" 13.5# production liner and 4-1/2"/2-7/8" tubing. Schlumberger temperature survey indicated the 4-1/2" liner was leaking at 12,668' WLM. Top of the 4-1/2" liner is at 11,224' MD and Baker Model 22 FA30 packer is set at 12,717' MD'. So the 4-1/2" liner has potential leak at +/- 49' above Baker Model 22 FA30 packer. Annulus pressure was 1,230 psi. GR Well #8 MIT/Bradenhead pressure test failed due to communication between tubing and annulus. Schlumberger ran tubing caliper survey that indicated 20 tubing joints have 9% or greater wall loss. These joints are identified below.

## **SCOPE**

CONTRACTOR must prepare detailed workover program to complete the following operations:


### **Phase I:**

- 1.) CONTRACTOR will use roustabout crew to remove flow lines from xmas tree. CONTRACTOR will RU pump truck, frac tank with gas buster, 2" iron and choke manifold. Kill tubing with 100 bbl of 10 ppg 120-130 viscosity CaCO3 pill and 66 bbl of 10 ppg brine. Bleed off gas pressure on tubing, annulus, and braden head.
- 2.) Consult with Baker representative concerning Baker BXN landing nipple and blanking plug. RU wire line unit. Pressure test lubricator to 5,000 psi. MU gauge ring and junk basket for 2-7/8" 6.5# L-80 tubing. Run gauge ring/junk basket to 2.313" BXN landing nipple below 22FA30 pkr at 12,717' MD. There is a 2.205" No-Go located at 12,722' MD and EOT is at 12,725' MD. MU blanking plug on wireline and set plug in BXN nipple. Bleed off tubing pressure. Pressure test tubing to 2,000 psi for 30 minutes on chart.
- 3.) If blanking plug cannot be set in 2.313" BXN landing nipple at 12,717' or pressure test on tubing fails, RU coiled tbg unit with inflatable packer or RBP. Set inflatable packer or RBP just above 2.313" landing nipple @ 12,722'. Pressure test tubing to 2,000 psi for 30 minutes on chart. If pressure test fails, set packer just above 2.313" landing nipple at 12,706'. Pressure test tubing to 2,000 psi on chart for 30 minutes. If tubing fails pressure test, pressure test 2-7/8" 6.5# L80 tubing at 10,992' MD with inflatable packer to 2,000 psi for 30 minutes on chart. Continue to pressure test tubing with coiled tbg and packer to determine source and location of potential tubing leak.

### **Phase II:**

- 4.) If production tubing fails pressure test and tubing leak can be identified, wireline operations will be conducted to set tubing patch(s) across potential tubing collars/leaks. Once patch(s) are set. Pressure test production tubing to 2,000 psi for 30 minutes on chart.
- 5.) If the production tubing is successfully pressure tested to 2,000 psi for 30 minutes and the well continues to have sustained annulus pressure, the well needs to be fully killed for workover rig operations. RU wireline, pressure test lubricator to 5,000 psi, and perforate 4-1/2"/2-7/8" tubing at 60'



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above Baker 22FA30 pkr at 12,717' MD. Pump and circulate 350 bbls of 10 ppg brine into wellbore. Bleed off gas pressure and ensure annulus and braden head are dead.

6.) If Baker blanking plug cannot be set in BXN landing nipple, CONTRACTOR will set RBP by wireline inside 4-1/2" 15.5# casing at 2,500' MD psi. Pressure test plug to 2,000 psi for 15 minutes.

7.) Move on workover rig with crew and RU on well. RD xmas tree and send tree to FMC or Cameron for refurbishment (wing valves are leaking). RU BOP/BOPE and conduct BOP/BOPE pressure test on chart: 500 PSI low and 5,000 psi high. Recover RBP and rekill well if necessary.

8.) CONTRACTOR will consult with Baker representative to determine most efficient method to release 20FA/SA30 seal assembly from Baker 22FA30 permanent packer at 12,717' MD. PU on tubing and rotate anchor latch to release tubing from packer. POOH with 4-1/2" and 2-7/8" tubing and lay down in singles. 4-1/2" 24FA30 packer has max OD of 3.609" and seal bore is 2.5 inch ID. Schlumberger tubing caliper survey has indicated a 9% or greater wall loss on the following joints: 93, 104, 119, 132, 160, 172, 185, 190, 198, 205, 207, 216, 217, 231, 240, 247, 274, 295, 296, and 326. These specific joints are to be removed from tubing string and junked. Contractor will visually inspect exterior tubing body for cracks and pitting and junk any joint with excessive pitting and cracks. Contractor and Operator will make joint determination to rethread tubing after visual inspection is completed.

9.) If seal assembly cannot be released from Baker FA packer, CONTRACTOR will jet cut tubing +/- 30' above permanent Baker packer and POOH with tubing. Laydown tubing in singles.

10.) CONTRACTOR will consult with Weatherford or Knight Oil Tools to determine most efficient fishing program to recover cut tubing, seal assembly, and permanent Baker 22FA30 pkr. Pick up work string (2-7/8" 7.8# P110 PH6) with fishing bottom hole assembly and conduct fishing operations. CONTRACTOR will burn over permanent packer at 12,717'. CONTRACTOR will recover fish or push fish into rathole below Morrow "C" perforations at 13,030' MD. CONTRACTOR will clean out 4-1/2" 13.5# liner to bottom of Morrow perfs at 13,030' MD.

11.) CONTRACTOR will run Schlumberger USIT and Casing Caliper Log from surface to 12,811' MD. CONTRACTOR and Operator will review logs and determine potential location of gas leak from 7" 29# casing and 4-1/2" liner.

12.) CONTRACTOR will RIH with 4-1/2" 13.5# drillable BP and work string. Contractor will set drillable BP at +/- 60' above Morrow perfs at 12,811' MD. CONTRACTOR will RIH with 4-1/2" 13.5# test packer and pressure test plug to 2,000 psi for 30 minutes. Release test packer and set test packer at TOL at 11,224' MD. Pressure test 4-1/2" 13.5# liner annulus to 2,000 psi for 30 minutes and pressure test 4-1/2" liner to 3,000 psi for 30 minutes. If pressure test fails, CONTRACTOR will locate location of liner leak. Recover 4-1/2" 13.5# test packer.

13.) CONTRACTOR will RIH with 7" 29# P110 test packer, set test packer at 11,224' MD being just above 4-1/2" TIW IB-SC RRP liner hanger (with LX liner top packer & tie-back receptacle). Pressure test 7" 29# casing to 3,000 psi for 30 minutes on chart. If pressure test fails, CONTRACTOR will determine location of 7" 29# casing leak. Recover 7" 29# P110 test packer.

14.) Lay down most of the rental work string in singles. PU and set RBP with work string in 7" 29# casing at +/- 2,000'. Pressure test RBP to 2,000 psi for 30 minutes on chart. Recover rental work string and lay down in singles.

15.) ND BOPS and place dry hole tree on tbq head. Move off workover rig.



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### **Phase III:**

16.) Move on workover rig and crew. RU flow lines, choke manifold, and rig tank with gas buster. Bleed down well to tank. ND dry hole tree and NU BOPs. Pressure test BOP. PU rental work string and recover RBP.

17.) If necessary, RU WL to perforate for cement squeeze. Perforate 4-1/2" 13.5# liner at 4' with 2 JSPF and establish injection rate. If injection rate is not adequate, pump 500 gal of 15% HCL into perfs to obtain greater injection rate.

18.) CONTRACTOR will consult with Halliburton cementing representative and obtain squeeze cementing program for liner. Capacity of 6-1/8" open hole by 4-1/2" 13.5# liner is 34 bbl/177 sxs. CONTRACTOR will RIH with work string and Halliburton squeeze packer. Set packer inside 4-1/2" liner, pressure test annulus to 1,500 psi for 15minutes, and establish injection rate. Mix and pump cement squeeze volume. Pressure test squeeze to 3,000 psi for 15 minutes. Release pkr and circulate. WOC for 8 hours and pressure test squeeze perfs to 3,000 psi for 30 minutes on chart.

19.) CONTRACTOR will RIH with rock bit or cement mill on work string. Drill out cement from TOL to BP. Pressure test squeeze perfs to 3,000 psi for 30 minutes.

20.) CONTRACTOR will MU polishing mill on work string and clean out existing tieback receptacle with polishing mill.

21.) CONTRACTOR will make dummy run with new seal assembly for secondary liner top packer. And pressure test seals to insure tieback receptacle is clean. CONTRACTOR will install secondary TIW liner top packer in top of existing liner hanger. Pressure test seals to 3,000 psi for 30 minutes and set secondary liner top packer. Conduct pressure test to 3,000 psi for 30 minutes.

22.) CONTRACTOR will drill out bridge plug and clean out 4-1/2" liner to bottom of open perfs at 13,030' MD.

23.) CONTRACTOR will consult with TIW ([David.Lancon@tiwoiltools.com](mailto:David.Lancon@tiwoiltools.com)/337-856-7171) and purchase new permanent 4-1/2" 13.5# production packer (and with rupture disc in tailpipe) with seal assembly, blanking nipple, and WL entry guide. RU wireline unit and set permanent packer at +/- 12,700' MD.

24.) CONTRACTOR will consult with TIW and purchase isolation packer assembly. CONTRACTOR will sting new TIW seals into production packer at 12,700' MD. Pressure test seals to 3,000 psi for 30 minutes. CONTRACTOR will set new TIW isolation packer in 7" 29# casing at 11,000' MD.

25.) If the recovered 4-1/2" and 2-7/8" tubing is not rethreaded for rerunning in well, CONTRACTOR will purchase 11,000' of new 4-1/2" 15.5# L80 casing and 1,800' of new 2-7/8" 6.5# L80 tubing with premium threads. Ensure new mill tubing is properly inspected and certified.

26.) CONTRACTOR will RIH with anchor latch seal assembly with on/off toll and new 5" by 2-7/8" production tubing. Tubing will be pressure tested to 5,000 psi while running in hole. Ensure proper torque is applied for make-up.

27.) CONTRACTOR will latch seals into packer at 11,000' MD and pressure test seal assembly to 3,000 psi for 30 minutes. CONTRACTOR will rotate tubing to release on-off tool from anchor latch. Space out tubing and install tubing hanger.

28.) CONTRACTOR will displace annulus with 8.6 ppg 2% KCL and biocide/corrosion inhibitor. Latch on-off tool onto anchor latch and land tubing hanger. Pressure test casing to 3,000 psi to ensure on-off tool seals and tubing hanger are sealing properly.

29.) CONTRACTOR will install BPV in tubing hanger. Pressure test BPV to 2,000 psi for 30 minutes. ND BOPs and install refurbished tree. Retrieve BPV.

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30.) CONTRACTOR will conduct MIT (550 psi for 30 minutes) on tubing by casing annulus to meet NMOCD MIT requirements.

31.) RU coiled tubing unit and flow back equipment on well. RIH with coiled tubing to jetting water from tubing with nitrogen. Rupture ceramic disc in packer tailpipe assembly and wash thru liner to bottom of open perms to 13,030' MD.

32.) Acidize well as per Halliburton recommendations and displace out fluid with N2. Displace out all fluid and spent acid and flow well thru separator and choke for well cleanup. Demob workover rig and coiled tubing unit.

#### **Phase IV:**

33.) CONTRACTOR will purchase materials and prepare cutting, welding, and fabrication plan for modified flow line. Only one flow line will be modified.

34.) CONTRACTOR will have welder certified via Veriforce and complete OQ testing for X52 schedule 160 piping. Hot weld spool and flange to new piping and install on well to check fitting.

35.) CONTRACTOR will have welding inspector present for all work. Dry fit new spool piece to well and double check fitting. X-ray for weld inspection and conduct hydro test to 4,575 psi. Prime and paint. Torque all nuts and bolts and secure any valve supports with new u bolts.



Enstor Operating Company, LLC  
GRMU #8 Workover  
Workflow Diagram

