

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENTFORM APPROVED  
OMB NO. 1004-0135  
Expires: July 31, 2010**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.  
NMLC029509A

6. If Indian, Allottee or Tribe Name

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

**SUBMIT IN TRIPLICATE - Other instructions on reverse side.**1. Type of Well ☒ Oil Well ☐ Gas Well ☒ Other: UNKNOWN OTH8. Well Name and No.  
MALJAMAR AGI 22. Name of Operator  
FRONTIER FIELD SERVICES LLC ☒ Contact: MICHAEL W SELKE9. API Well No.  
30-025-426283a. Address  
MALJAMAR, NM 882603b. Phone No. (include area code)  
Ph: 505-842-800010. Field and Pool, or Exploratory  
AGI

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

Sec 21 T17S R32E Mer NMP SWSE 400FSL 2100FEL ☒  
32.813967 N Lat, 103.769748 W Lon11. County or Parish, and State  
LEA COUNTY, NM**HOBBS OCD**

APR 04 2016

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

**RECEIVED**

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 checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	Well Test
	<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 intervals. 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 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 when 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.)

Maljamar AGI #2 is a new well drilled from January 25, to March 10, 2016 in order to operate as an acid gas injection well in association with the currently operational Maljamar AGI #1. Geolex and Frontier propose that two Step-Rate Tests be conducted over four injection zones in the Wolfcamp Formation in accordance with NMOCC Order R-13443. The initial test will include only the lowest perforated interval and the second test will include the top three perforated intervals.

The procedure for the proposed Step-Rate Tests are provided in Attachment A and a current Well Bore Diagram is provided in Attachment B.

Please note that the recovery of a swab formation fluid sample will be attempted if it can be achieved within the constraints of safety, in light of AGI well No. 1 which is presently being used to dispose of acid gas in the same zone approximately 1,900 feet to the east.

**PROVIDE S.R.T. RESULTS  
TO SANTA FE OCD FOR  
APPROVAL**

14. I hereby certify that the foregoing is true and correct.

**Electronic Submission #334880 verified by the BLM Well Information System  
For FRONTIER FIELD SERVICES LLC, sent to the Hobbs**

Name (Printed/Typed) MICHAEL W SELKE

Title CONSULTANT TO FRONTIER

Signature (Electronic Submission)

Date 03/29/2016

**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

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.

**\*\* OPERATOR-SUBMITTED \*\* OPERATOR-SUBMITTED \*\* OPERATOR-SUBMITTED \*\***MWS/OCD  
4/4/2016

APR 05 2016



**Maljamar AGI 2  
30-025-42628  
Frontier Field Services, LLC  
Surface Location: Sec. 21, T. 17S, R. 32E**

**Notify BLM at (575) 200-7902 (Mr. Paul Swartz) a minimum of 24 hours prior to commencing work. Some procedures are to be witnessed. If there is no response, leave a voice mail with the API#, workover purpose and a call back phone number.**

- 1. Operator is required to have the BLM approved NOI procedure with applicable conditions of approval on location for this workover operation.**
- 2. The last two five minute surface pressure readings of each step (minimum of 30 minutes) are to be within 15 psig of each other. If not, hold that step injection rate past the 30 minute step until two consecutive pressure readings are within 15 psig. Record the average of those last two pressure readings and the average of the last two rates as the "Data Point" for that Step Number.**
3. Due to being within the Lesser Prairie Chicken habitat, this workover activity will be restricted to the hours of 9:00 am through 3:00 pm for the period of March 1 through June 15. Exceptions to these restrictions may be granted by BLM's Johnny Chopp at [jchopp@blm.gov](mailto:jchopp@blm.gov) and (575) 234-2227.
4. Subject to like approval by the New Mexico Oil Conservation Division.
5. BLM is requesting an available electronic copy (Adobe, pdf, or tiff) of a cement bond log record from the top of the injection interval to top of cement. The CBL may be attached to a email to Mr. Paul Swartz at [pswartz@blm.gov](mailto:pswartz@blm.gov).
- 6. If the wellhead shut in psig is not less than the approved injection pressure, bled the wellhead pressure below that approved injection pressure before beginning the Step Rate Test. Take a charted record of shut in psig for no less than 48 hours.**
7. Flow rates are to be controlled with a constant flow regulator, measured with a turbine flow meter calibrated within 0.1 bbl/min, and recorded on the SRT data sheet.

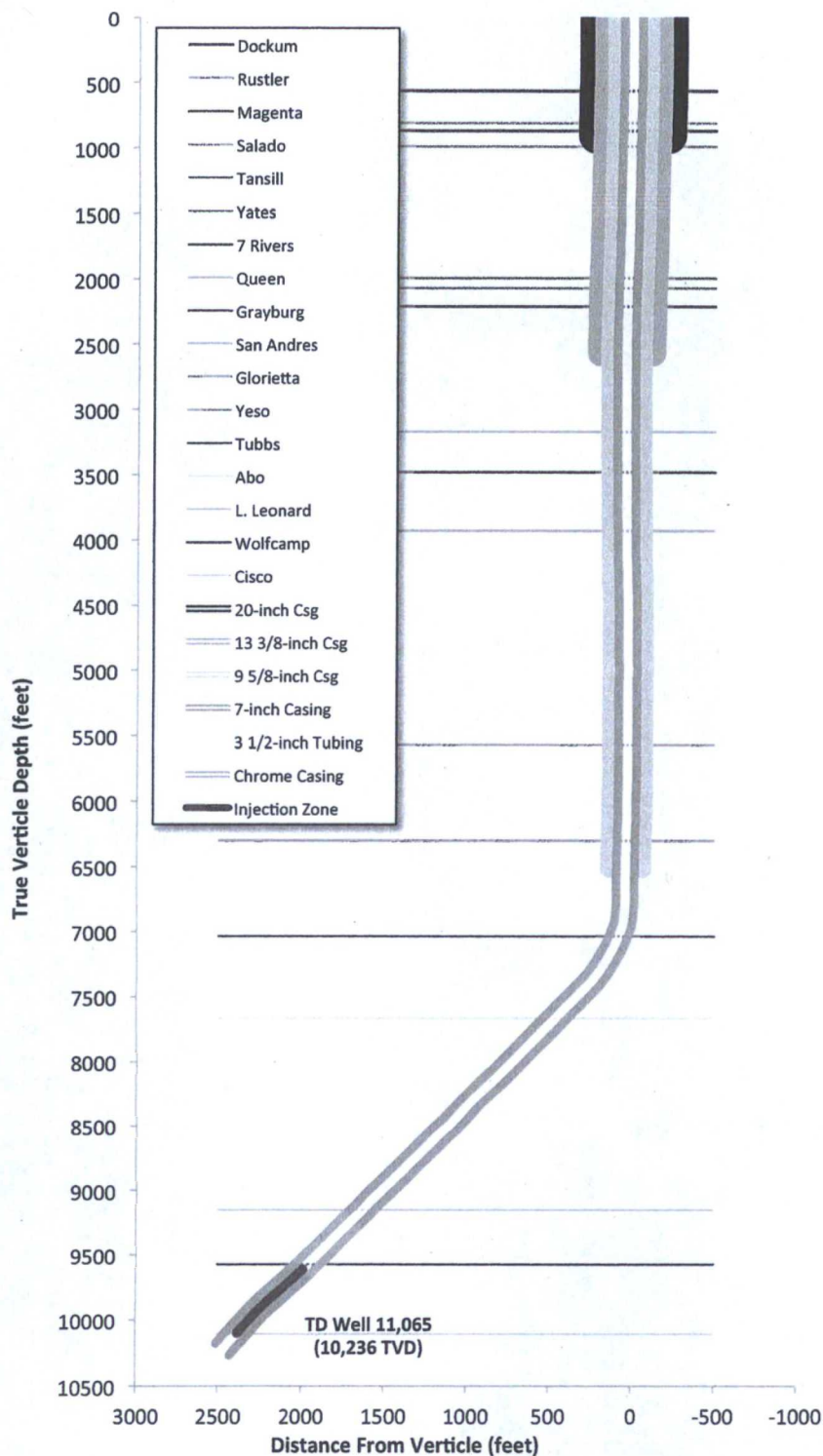
8. **Preform a minimum of seven steps, recording rates to  $\pm 0.1$  bpm, surface pressures and formation pressures collected to  $\pm 10$  psig in five minute intervals.** Use a down hole transmitting pressure device and a surface pressure device with accuracies of  $\pm 10$  psig. The five minute values are to be recorded on the SRT data sheet. **Use recorded time of rate changes to synchronize the formation pressure bomb and surface pressure readings with the bpm rate.**
9. When formation breakdown pressure is not achieved at the **targeted barrels per day rate**, the formation is accepting the injection fluid without fracturing, which is the **objective**. Shut in pressures and step rate pressures **taken at the perforations** will primarily be used to evaluate formation breakdown pressure.
10. Record surface and formation pressures at the instant of shut in, at five, ten, and fifteen minutes. The surface pressure transducer should be located between a pump shut off valve and the wellhead for these readings.
11. When the formation fracture pressure has been exceeded it may be evidenced by two rate-pressure combinations graphed with a slope less than the previous steps' slope of data.
12. Record the bottom hole Instantaneous Shut-in Pressure. After a fracture this ISIP is the minimum pressure that will hold this formation open, at this well. The maximum formation pressure BLM will approve is fifty psig less than the formation fracture pressure.

Provide BLM with the tabulated "STEP RATE TEST DATA for BLM, CFO" data. Submit a (BLM Form 3160-5 subsequent report (dated daily) via BLM's Well Information System; <https://www.blm.gov/wispermits/wis/SP> (email Mr. Paul Swartz for instructions) describing all wellbore activity.



**Well Name: Maljamar AGI #2 (API: 30-025-42628)**

Surface Location: Section 21(O), T17S-R32E, (400' FSL & 2100' FEL)  
Lea County, New Mexico



**CONDUCTOR (30-in) to 82 ft**

**SURFACE CASING:**  
20", 94 lb/ft, J55, BTC at 900 ft in 26-in hole, cement to surface

**1st INTERMEDIATE CASING:**  
13 3/8-inch, 61 lb/ft, J55, BTC at 2,567 ft in 17.5-in hole, cement to surface

DV Tool in 9 5/8-in casing at 5,278 ft

**2nd INTERMEDIATE CASING:**  
9 5/8-inch, 40.0 lb/ft, HCL-80, LTC at 6,524' (6,523 ft TVD) in 12 1/4-inch hole, cement to surface (both stages)

**PRODUCTION CASING:**  
7-inch, 29 lb/ft, HCL-80, LTC in 8 3/4-inch hole at 11,048 ft (10,222 ft TVD) with 16 joints of 7", 32 lb/ft, CRA G3-110 VAM Top HC from 9,794 to 10,239 ft (9,237 to 9,587 ft TVD) cement to surface (both stages)

DV Tool in 7-in casing at 9,323 ft (8,870 ft TVD)

**PERFORATIONS:**  
10,266 - 10,304 ft MD  
10,534 - 10,549 ft MD  
10,637 - 10,678 ft MD  
10,739 - 10,900 ft MD  
(9,608 - 10,100 ft TVD)

BHL at TD: Section 21(M), T17S, R32E  
(355' FSL & 713' FWL), Lea Co., NM

**GEOLEX**  
INCORPORATED

**Frontier Energy Services Maljamar AGI #2**

Completion Information in Directional Hole  
Sec 21, 17S, 32E, 400' FSL & 2100' FEL, Lea Co NM

**Attachment B**

**March 29, 2016**

OPERATOR NAME: Frontier Energy Services

NMOCC Order: R-13443

Order Date: October 7, 2015

WELL: Maljamar AGI #2 (NEW WELL)

API #: 30-025-42628

LEASE #: NMLC029509A

Surface Location: 400' FSL &amp; 2100' FEL, Sec 21(O), T17S, R32E, Lea Co., New Mexico

Bottom Hole Location: 355' FSL &amp; 713' FEL, Sec 21(M), T17S, R32E, Lea Co., New Mexico

**ADDITIONAL INFORMATION REQUIRED BY BLM FOR NOI****(adjust information for any change(s) on the day of the test)**

Data Collection Date: March 25, 2016 (update as necessary)

Testing Tubing Specification - O.D.: 2 7/8", Weight: 6.5 lbs, Grade: L-80, Coupling: 8rd EUE

Injection Tubing Specification - O.D.: 2 7/8", Weight: 6.5 lbs, Grade: L-80, Coupling: VAM Top,  
with 2 7/8", 6.5 lbs, G3, CRA 300 feet above the packer

Injection Packer Depth: 10,191 ft MD (9,550 ft TVD)

Top Injection Depth: 10,266 ft (9,608 ft TVD)

Generic Surface Injection Pressure (0.2 psig/vertical depth): 1,922 psig

Injection Fluid Wt.: 10 lbs/gal (NMOCD safety requirements prohibit use of actual acid gas for SRT)

Hydrostatic Pressure of Fluid at Top Injection Depth (injection fluid wt. (lbs/gal) x 0.052 x TVD): 4,996 psig

Injection Fluid Wt. (measured on-site with mud weight scale): \_\_\_\_ lbs/gal

Beginning Wellhead Pressure: 000 psig

Target Maximum Rate: 5,760 bbls per day (4.0 bbls/min)

**WELLBORE CONFIGURATION**

Current Wellbore Configuration:

20" Surface Casing: 0 – 900 ft. (26" Hole)

13-3/8" Upper Intermediate Casing: 0 – 2,567 ft. (17 1/2" Hole)

8-5/8" Lower Intermediate Casing: 0 – 6,524 ft. (12 1/4" Hole)

7" Product (Injection) Casing: 0 – 11,048 ft. [10,222 ft TVD] (8 3/4" Hole)

Total Depth: 11,065 ft. (10,236 ft TVD)

Proposed Perforations: 10,266 – 10,900 ft (9,608 – 10,100 ft TVD)

**INJECTION STREAM COMPOSITION, PRESSURES, AND RATE**Treated acid gas (TAG) composition is 30% H<sub>2</sub>S and 70% CO<sub>2</sub>

Maximum Injection Rate: Not to exceed 3.5 MMSCFD for either Maljamar AGI #1 or AGI #2, or both wells combined.

PREPARED BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE	REVISION	DATE
DTL	3/29/2016	MWS	11/23/2014	AAG	11/26/2014		



**Maximum Allowable Injection Surface Pressure: Initially not to exceed 3,028 psig for TAG, with possible increase to 3,200 psig (approved for Maljamar AGI #1) based on the results of the Step-Rate Test.**

## INTRODUCTION

This program presents the proposed steps for a step-rate test (SRT) followed by a short falloff analysis at the Frontier Energy Services Maljamar AGI #2 well in Lea County, New Mexico near at the Frontier Maljamar gas plant. It is intended as a guideline for the operations, since the actual conditions encountered during the work will dictate the appropriate action to be taken. Any significant deviation from the proposed program will require prior approval by the Geolex Project Manager and Frontier Energy Services.

Ultimately the treated acid gas (TAG) from the sweeteners will be variably composed of approximately 30% hydrogen sulfide (H<sub>2</sub>S) and 70% carbon dioxide (CO<sub>2</sub>) to be injected via Maljamar AGI Well #1 and AGI Well #2 at a combined rate not to exceed 3.5 MMSCFD and maximum allowable operational pressure (MAOP) of 3,200 psig for AGI #1 (currently operational) and 3,028 psig for AGI #2 (new well). Based on the results of the AGI #2 Step-Rate Test, an MAOP of 3,200 psig for both wells may be proposed.

## Set-up Requirements:

1. Re-enter well, drill DV tool, and tag float collar.
2. Run a Cement Bond Log (CBL) on the 7" production casing and perform a casing pressure test. CBL must be provided to the BLM ([pswartz@blm.gov](mailto:pswartz@blm.gov)) for approval prior to continuing with further operations.
3. Perforate the casing at Zone 4 (lowest) interval, approximately 10,739 to 10,900 ft MD (Interval: 9,968 to 10,100 ft TVD).
4. Run into hole with 2 7/8" work-string tubing and place retrievable packer approximately 75 feet above top perforation and attempt to swab formation fluid to the surface for laboratory sample(s) to verify no evidence of recoverable hydrocarbons. Report results to BLM for approval. A 24-hour notice must be given to the BLM prior to the SRT and the "Conditions of Approval" from this "Notice of Intent" must be on site prior to conducting the SRT.
5. Conduct SRT No. 1 on the Zone 4 perforations as described below. Upon completion remove SRT surface and down-hole measurement equipment and isolate Zone 4 from the zones above.
6. Perforate the casing at Zone 1, 2, and 3 intervals, approximately 10,637 to 10,678 ft MD, 10,534 to 10,549 ft MD, and 10,266 to 10,304 ft MD (Total Interval: 9,608 to 9,920 ft TVD).
7. Run into hole with 2 7/8" work-string tubing and place retrievable packer 75 feet above top perforation and attempt to swab formation fluid to the surface for laboratory sample(s) to verify no evidence of recoverable hydrocarbons. Report results to BLM for approval. A 24-hour notice must be given to the BLM prior to the SRT and the "Conditions of Approval" from this "Notice of Intent" must be on site prior to conducting the SRT.
8. Conduct SRT No. 2 on the Zone 1, 2, and 3 perforations as described below.

PREPARED BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE	REVISION	DATE
DTL	3/29/2016	MWS	11/23/2014	AAG	11/26/2014		



**Step-Rate Test Procedure (all tests):**

9. Verify synchronization of down-hole pressure recording device with surface pressure recording device with accuracies of +/- 10 psig and install down-hole pressure recording device.
10. Move in and rig up pump truck for step rate test. Connect piping to lubricator and test.
11. Verify operation and calibration (to 0.1 bbls/min) of constant turbine flow regulator(s) and surface recording equipment. Record surface and formation pressures from the instant of shut-in for a minimum of 15 minutes.
12. After approximately 3 hours after the emplacement of the down-hole transducer and recorder, begin the step rate test at rates and intervals shown below:

Proposed Step-Rate Test Intervals						
Step	Rate (bpm)	Time Intervals (minutes)*		Volume (bbls)		Maximum Cum (bbls)
		Minimum	Maximum	Minimum	Maximum	
1	0.25	30	20	5	8	8
2	0.5	↓	20	10	15	23
3	1.0	20	30	20	30	53
4	1.5	20	30	30	45	98
5	2.0	20	30	40	60	158
6	2.5	20	30	50	75	233
7	3.0	20	30	60	90	323
8	3.5	20	30	70	105	428
9	4.0	20	30	80	120	548
<b>Totals</b>		<b>160</b>	<b>240</b>			
		2.7	4.0	<b>Duration (hrs)</b>		

\* injection step can be extended up to 30 minutes to allow for pressure stabilization

13. Extend the final step of the test until all of the brine in the frac tank is utilized.
14. After the end of the final stage of the step rate test, continue to log the surface pressure for at least one hour or until initial pressure is returned.
15. Continue recording down-hole pressure and temperature data for 24 hours.
16. Remove pressure and temperature transducer and recorder.
17. Clean up and secure the site in preparation to continue with the well completion.

Note: All equipment/pipe associated with this operation shall be in compliance with applicable API and NACE specifications