

From: [Hall, James](#)
To: [Goetze, Phillip, EMNRD](#)
Cc: [Muras, Katie](#)
Subject: [EXT] FW: Remuda SWD commissioning this week
Date: Friday, February 7, 2020 2:11:14 PM
Attachments: [image001.png](#)

Good Afternoon Phillip,

Please be advised that per our agreed protocol below to ensure the integrity of our Remuda SWD well operations, as a precaution we shut in our SWD operations on Sunday, Feb 2 due to a temporary increase in pressure of around ~440psi in the production casing annulus. After preparing the well as needed, the pressure was bled to 0 psi instantaneously, no fluids were observed at surface, and casing pressure returned to the observed normal operating range with no subsequent increase in pressure. We therefore concluded that no new communication pathway or pressure source was opened. The root cause was determined to be poroelastic effects due to nearby completion activity, which has now concluded. We plan to return the well to service on Saturday, Feb 8.

Please let me know if you would like any additional information, and have a good weekend, thanks.

James A. Hall Ph.D.

Regulatory Manager – Permian Basin



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From: Hall, James
Sent: Wednesday, August 14, 2019 12:37 PM
To: 'Jones, William V, EMNRD' <WilliamV.Jones@state.nm.us>; 'Sanchez, Daniel J., EMNRD' <daniel.sanchez@state.nm.us>; 'Goetze, Phillip, EMNRD' <Phillip.Goetze@state.nm.us>
Cc: Gahr, Jason <Jason_Gahr@xtoenergy.com>; Muras, Katie <Katie_Muras@xtoenergy.com>
Subject: RE: XTO SWD drilling schedule

Will, Daniel, Phillip,

As discussed at our recent meeting, we have reviewed our remediation options and the status of the Remuda SWD well and based on an extensive well integrity evaluation, we plan to operate the Remuda 1 SWD well as currently configured effective Tues 20th August. Provided below are details of the assessment as well as monitoring safeguards planned during operations:

Well Integrity Assessment

- We assess that the low cement top behind the 7" liner is unrelated to the pressure observed in the 7-5/8" x 9-5/8" annulus on the basis of a noise/temperature log that indicated a step change in temperature gradient and a noise event both originating at ~3,500'.
- Cement top behind the 7" liner is calculated to be ~11,900', ~3,200' above the 7" shoe and ~1,000' below the 9-5/8" shoe. This calculation used the cement slurry volume (reduced by 50% for partial returns during the job) and the caliper data acquired during open hole logging. We assess that the ~3,200' of good cement between the injection zone and the Cisco gas-bearing formation is an adequate barrier to prevent annular communication during injection operations. We further assess that remedial cementing operations to extend top of cement into the 9-5/8" shoe would have a low chance of success and, therefore, would likely impair wellbore integrity.
- We interpret that pressure communication in the 7-5/8" x 9-5/8" annulus originates at approximately 3,500' based on the results of the noise/temperature log run on 7/30. We have established a baseline static pressure which has been bled down twice since the issue was first identified:
 - July 23: pressure was observed to be 1700 psi static; it bled to 400 psi in 5 minutes, then built back to 1150 psi in 5 minutes after shutting back in
 - July 30: pressure was observed to be 1700 psi static prior to start of the noise log; it bled to 0 psi in 5 minutes, then built back to 1180 psi in 30 minutes after shutting back in.
- It is undetermined whether the pressure source is formation pressure or gas trapped during the cement job. No remedial options exist that would improve wellbore integrity at ~3,500'. We evaluated bullheading cement at surface but did not proceed with this option as it would preclude us from monitoring for and responding to potential changes in annular pressure during operations.

Well Operations Monitoring Protocol

- We will implement the following monitoring protocol and operational safeguards while disposing into the Remuda 1 SWD:
 1. Surface pressure transducers will be installed on the following:
 - a. 5-1/2" x 4-1/2" injection string
 - b. 5-1/2" x 7-5/8" annulus
 - c. 7-5/8" x 9-5/8" annulus
 - d. 9-5/8" x 13-3/8" annulus
 2. Baseline pressure on the injection string and all three annuli will be recorded and documented prior to injection startup and will be monitored for changes once injection begins
 3. If a 1,000 psi increase in pressure is observed on any of the annular pressure transducers, injection into the well will cease; flowback iron/manifold/tankage will be set and used for evaluation and NMOCD will be notified prior to recommencing water disposal

If you take exception to this plan please let XTO know. Thanks for your consideration,

Best regards,

James A. Hall Ph.D.

Regulatory Manager – Permian Basin



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