FLORENCE COPPER

FLORENCE COPPER INC.
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April 22, 2019
HA File No. 132473-003

Mr. David Albright
U.S. Environmental Protection Agency, Region 9
Drinking Water Protection Services, WTR-3-2
75 Hawthorne Street
San Francisco, California 94105-3901

Re: Mechanical Integrity Demonstrations, PTF Injection Wells
Production Test Facility, UIC Permit No. R9UIC-AZ3-FY11-1
Florence Copper, Florence Arizona

Dear Mr. Albright:

Florence Copper Inc. (Florence Copper) has completed temperature decay logs (temperature logs) and radioactive tracer (RAT) logs at the Production Test Facility (PTF) injection wells in support of Part II Mechanical Integrity Demonstration. The tests were completed in accordance with Part II.E.3(a)(ii)(b) and Appendix D of the Underground Injection Control Permit No. R9UIC-AZ3-FY11-1; Conditional Authorization to Commence Injection for the PTF letter dated December 14, 2018; and the Approval of Temperature Logging Procedure for the PTF letter dated January 31, 2019. Florence Copper also attempted to run RAT logs on the injection wells, but experienced complications related to injection solution chemistry which prevented successful use of the RAT tool.

Temperature Logging

Prior to conducting the temperature decay logs all downhole equipment was removed and the well was shut in. Injection tubing was removed from each injection well the day before temperature logging was conducted, with work being completed no later than 7:00 p.m. each day. Temperature logging was started after 7:00 a.m. the following day, ensuring a shut-in time of at least 12 hours at each injection well. Shut in times reported on the temperature logs indicate time between runs. Below is a summary of temperature decay logging results.

I-01 Temperature Logging

Prior to conducting the temperature decay log all downhole equipment was removed and the well was shut in for a period of more than 12 hours. Temperature logs were run on the well at 7:18 a.m. and 11:50 a.m. on March 5, 2019. The results of the temperature logging are included in Attachment 1.

I-02 Temperature Logging

Prior to conducting the temperature decay log all downhole equipment was removed and the well was shut in for a period of more than 12 hours. Temperature logs were run on the well at 7:31 a.m. and 12:40 p.m. on March 1, 2019. The results of the temperature logging are included in Attachment 1.

Taseko

I-03 Temperature Logging

Prior to conducting the temperature decay log all downhole equipment was removed and the well was shut in for a period of more than 12 hours. Temperature logs were run on the well at 8:41 a.m. and 1:54 p.m. on March 1, 2019. The results of the temperature logging are included in Attachment 1.

I-04 Temperature Logging

Prior to conducting the temperature decay log all downhole equipment was removed and the well was shut in for a period of more than 12 hours . Temperature logs were run on the well at 8:35 a.m. and 1:06 p.m. on March 5, 2019. The results of the temperature logging are included in Attachment 1.

RAT Logging
I-04 Radioactive Tracer Logging

On March 3, 2019 a Radioactive Tracer survey was attempted at injection well I-04. A slug of Radioactive Tracer (Sodium Iodide 131) was introduced into the flow stream at approximately 100 feet above the top perforation from a downhole ejector tool. The slug passed the detectors but did not clear out and return to normal background levels. The detectors were pulled out of the well and checked with a radiation detection monitor and were found to be coated with the radioactive tracer. The detectors could not be wiped clean, so they were removed and replaced with a new set. The water injection rate was increased in an attempt to flush the wellbore. The new detectors were run into the well and the detectors were again found to be coated with the tracer material following the run and were removed from the well and replaced a second time. This process was repeated a third time with the same result, the survey was then aborted.

Upon examination of the detector, the contractors found that the tracer had adhered to the detectors resulting in a false continuous detection. The tracer was also found to adhere to other pipe and equipment surfaces in the wellbore. The PTF lixiviant is a dilute acid solution that contains metals and dissolved mineral material from the oxide ore body. The results of the RAT logging attempt indicate that interaction between the PTF lixiviant and the radioactive tracer solution caused some of the Sodium Iodide 131 compound to precipitate out of solution, coating the detectors and all equipment and surface within the well. Based on these results, it is evident that RAT logging is not effective in the PTF injection wells due to incompatibility of the tracer solution and the lixiviant.

Summary

The temperature logging results for all injection wells show no anomalies that would indicate that there is flow behind the well casing. The temperature logs for each logging event are parallel to each other in the cemented zone and there is little to no differential between the two runs in each logging event.

RAT logging runs at injection I-04 was ineffective due to incompatibility of the tracer solution and the lixiviant solution, resulting in precipitation of the tracer which subsequently adhered to all surfaces within the well. Consequently, RAT logging is not an effective method for demonstrating Mechanical Integrity Testing Demonstration at the PTF injection wells.

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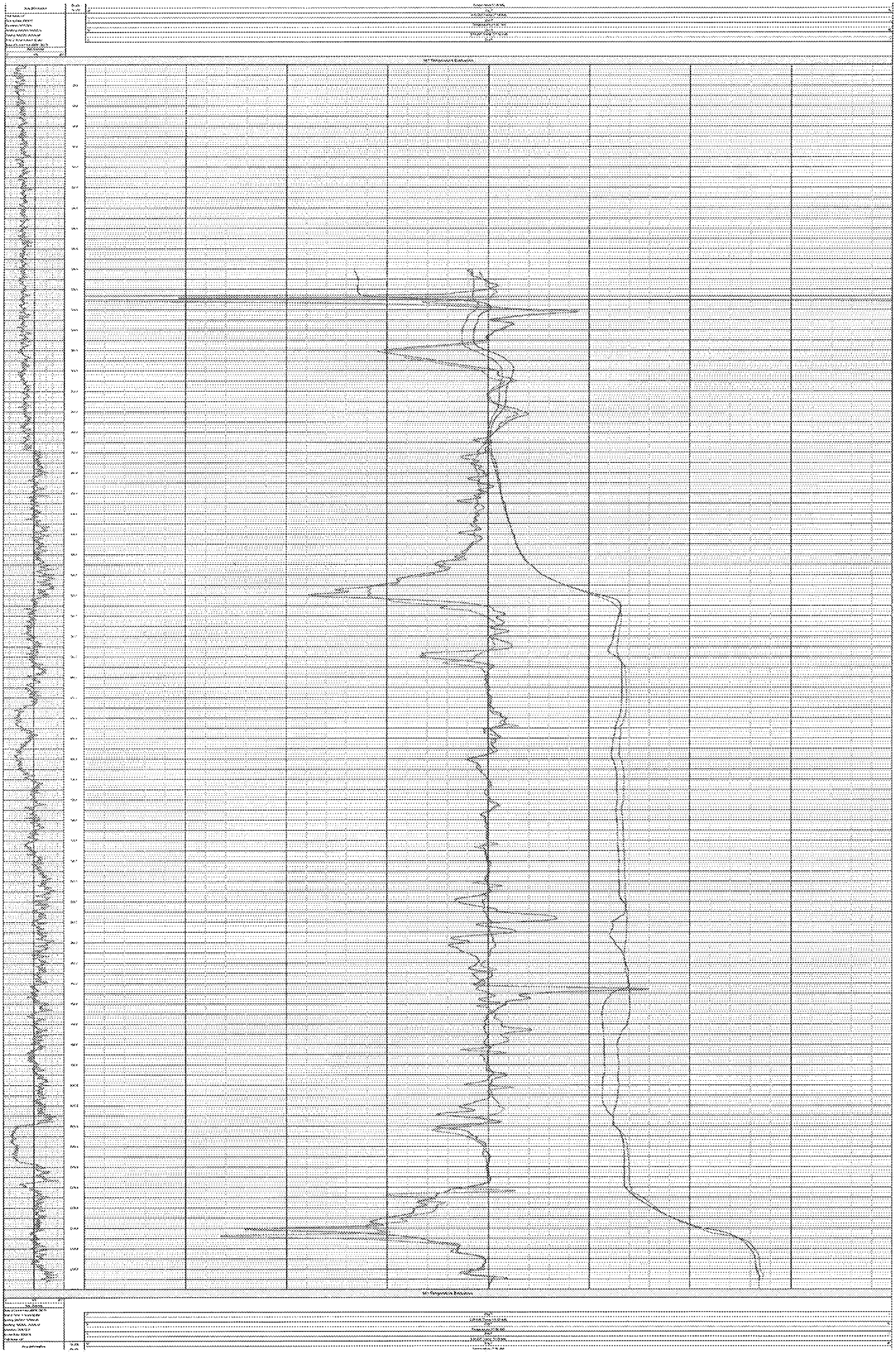
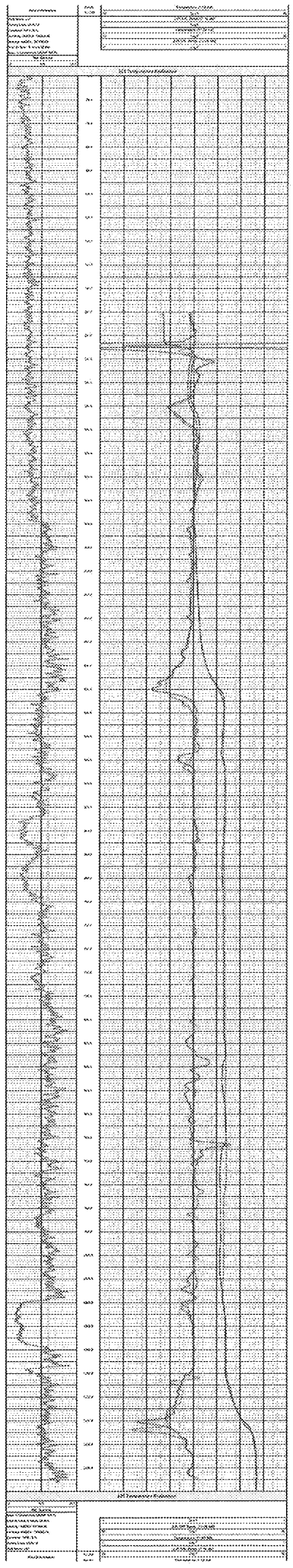
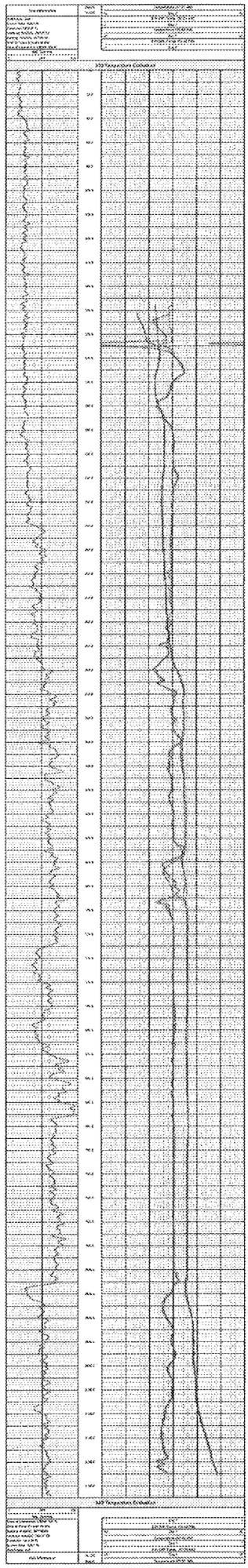
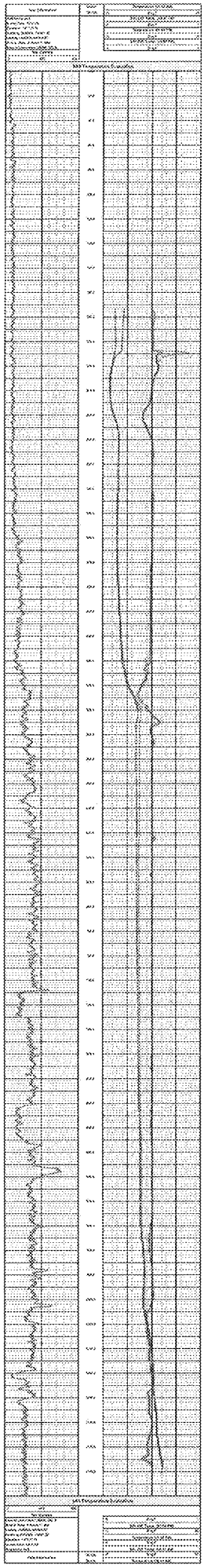
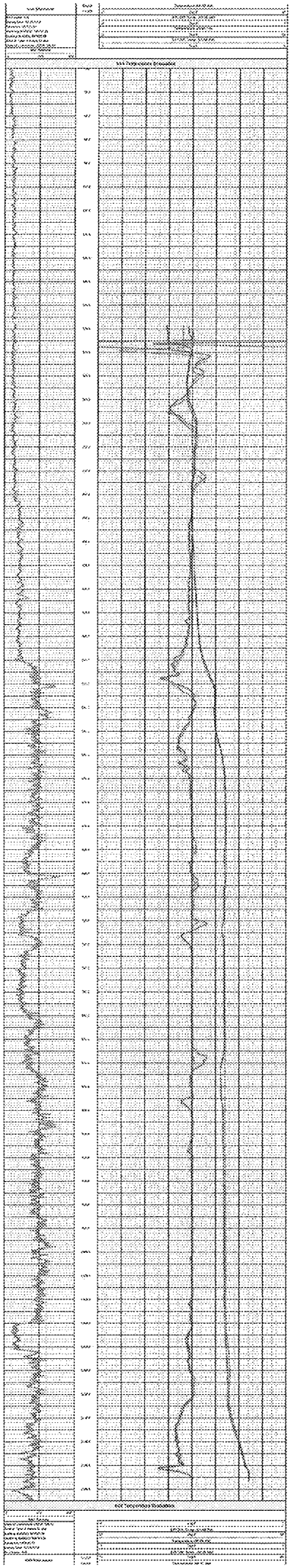
Please contact me at 520-374-3984 if you require any additional information.

Sincerely,
Florence Copper Inc.

Daniel Johnson
Vice President – General Manager

Enclosures:
Attachment 1 – Temperature Logs

cc: Maribeth Greenslade, ADEQ
Nancy Rumrill, USEPA

ATTACHMENT 1

Temperature Logs