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October 6, 2016

**SUBJECT: AXLX 1702 PWHT INVESTIGATION**

Summary of the local post weld heat treat activities on the subject car.

AXLX 1702 was shopped in January, 2016 at Rescar Dubois, PA for a 5 year interior inspection required on chlorine tank cars per the Axiall Maintenance Manual. During the shopping, numerous spots of corrosion pits were detected in the bottom section of the tank shell. The corrosion spots (ranging from 0.015" to 0.060" deep) were weld repaired using approved procedures, certified welders and certified NDT technicians to inspect the work.

The events related to the tank shell repairs during the shopping were as follows:

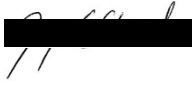

- 1) Interior cleaned (includes commercial blast)
- 2) Interior inspected - visual inspection and ultrasonic thickness (UTT) per AllTranstek, FM-232. Ultrasonic Thickness Testing.
- 3) Spots that were determined to be below the car owner designated minimum thickness of 0.744 were weld repaired per Rescar RSP-041, WPS-FCAW Pressure and Non-Pressure Tank Welding, E81T1-Ni1 Filler Metal, TC128 GR. B Welding and Weld Build-up. The welded spots were blended into the adjacent parent material using hand held grinders.
- 4) UTT to confirm minimum thickness at the spot of repair is achieved.
- 5) Magnetic particle inspected (MT) per AllTranstek, FM-230, Magnetic Particle Examination.
- 6) Local Post Weld Heat Treatment (LPWHT) per Rescar RSP-014.
- 7) Confirming MT inspection to verify there were no rejectable conditions detected.

Due to the numerous areas that required LPWHT, the LPWHT was performed in stages to better control the process. The stages were performed starting on May 27, 2016 with the final stage performed on June 09, 2016. The area of the tank car shell failure in the incident of August 28, 2016 received LPWHT on June 03, 2016.

The attached sketch provides a layout of the tank car shell repair locations and the chronological order of LPWHT. The layout depicts the 14" x 8" heating elements used to cover the repair spots. The attached layout was prepared using the LPWHT records. Rescar technicians use general layout plans to perform the LPWHT. The general layout is first sketched by the facility on a grid pattern. The layout is not to scale. Based on the shop sketch, the remote monitoring facility generates a general plan for heating element and thermocouple placement. This general plan is also not to scale.

The technician, in accordance with documented procedures and the training provided, placed heating elements over weld repaired areas per the general plan. The technician will note the cable numbers being used on the wrapping specification sheet (WSS) once the cycle is connected and ready to run. The remote monitoring facility monitors the temperature of each heating element. The monitoring facility ensures temperature ramp up limits are not exceeded, soak temperature is maintained for the required time frame and cool down rates do not exceed requirements. Temperature limits are specified in Rescar RSP-014 (in compliance with AAR, MSRP C-III, Appendix R). A successful cycle is confirmed by use of a temperature tracking chart. If there are anomalies detected, the remote monitoring facility and technicians on site are authorized to discontinue a single cable or the entire cycle.

NOTE: During review of the LPWHT records for AXLX 1702, there was no evidence of the process exceeding 1200°F. This includes successful and aborted runs.

  
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