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## PART QUALIFICATION IN THE RAILROAD INDUSTRY: A UNION PACIFIC PERSPECTIVE – PART 2

Submitted by Benedict Okine – Union Pacific Railroad

This article is a continuation from the previous issue. See last quarter's RSI Quality Newsletter for part 1 of this article.

### The Challenges of Part Qualification

Major manufacturers in the auto industry usually own the design, and have full knowledge and control over part specifications. The supplier must demonstrate with evidence that they are capable of producing the part with minimal quality issues. This is not always the case for the rail industry, especially with regard to locomotive components. OEM locomotive manufacturers own the design, and many update or change component specifications, while seldom communicating with the Class I's.

The aforementioned challenges often require us to do onboard locomotive component testing, which requires a lot of time for enough data to be gathered to make an objective decision for approval or rejection. Even this additional step does not provide full proof or evidence of long-term part quality. Additionally, the supplier may just present their "best-of-the-best" samples for trial. In other words, the approval process goes beyond just a trial on a locomotive. It must be done holistically with good insight into the manufacturing processes used to produce the part.

Executing a poor part approval process is just as bad as not having one. Even after passing approval requirements, Union Pacific has experienced cases where an item failed when it was subjected to field conditions. We've found the part approval process can miss important elements, such as the measurement of system appropriateness. This led us to misjudge the supplier's ability to consistently manufacture the item to our required standards. Potential failure modes were not identified through an FMEA, and the appropriateness of measurement systems were not accurately assessed. In other cases, we failed to correctly assess the capability of the supplier's key manufacturing processes among other requirements needed for a higher threshold of certainty.

A systematic approval process mitigates these risks. It compels the supplier to identify potential risks and implement appropriate control measures, and ensures appropriate measurement systems are in place for the part to be consistently manufactured or remanufactured. This is crucial as measurement results must lead to repeatability and reproducibility.

## Conclusion

It is important for Class I railroads to have their own standardized process that will consider the industry's peculiarities. The process must go beyond superficial checklists and fit checks; its objective should be to ensure that a robust system exists to assess the management of a part's production. A robust system must also react and adapt to changes in suppliers' manufacturing location, materials and introduction of new equipment.

The auto industry has made great strides in product quality assurance largely due to their formal approval processes such as the PPAP, which is widely adopted across the industry. The biggest challenge for a Class I railroad is translating its requirements to a supplier at the component level. This is due to railroads being laser focused on operating their locomotives and maintaining track, rather than engineering and designing some of the core components for its infrastructure. This makes the railroads' situation unique and places heavy reliance on suppliers and the OEMs for much of the detailed specification. Despite these challenges, the industry could benefit from the development of standard procedures for approval of suppliers, components and parts.

## AAR TANK CAR FACILITIES - CURRENT EVENTS

Submitted by Tom DeLafosse – Salco Products

### Tank Car Pressure Relief Valve Reporting

During a recent AAR/BOE audit of a C5 facility it was determined that the company did not have a procedure and supported training for updating Umler when adding a CID tag to the valves. The actual finding reads as follows: “*At the time of the C5s demonstration M-1002 audit the facility did not have a procedure for CID process*”.

Requirement reference: MSRP Section J, M-1003, Paragraph 2.15.6; states in part, “Establishing workmanship criteria in the clearest appropriate manner (e.g., written standards, reference standards, pictures, etc.).”

MSRP Section C-III, Appendix A, Paragraph 6.1.1.3 states in part, “Effective July 1, 2021, tank car service equipment tracking is required for all new and reconditioned pressure relief valves (PRV's) in addition to the marking requirements.”

### AAR Circular Letter C-13924, Issued January 10, 2022

AAR has published a revised *Manual of Standards and Recommended Practices*, (MSRP) Section J, Specification for Quality Assurance. The effective date of this release is July 1, 2022, allotting six months for M-1003 programs to be revised accordingly. Auditors will not identify nonconformance findings related to the new revision and QAPE until July 2022. However, AAR Accredited Auditors will immediately identify items of concern related to the revision to bring attention to the pending requirements. The updated 2022 Quality Assurance Program Evaluation (QAPE) checklist is available at: (<https://aar.com/standards/FAQ.html>)

### Visual Inspection (VT) Requirements

CPC-1376 was issued on March 19, 2021. This CPC addressed Hydrostatic Leak Testing and Visual Inspection (VT) requirements. The VT requirements are as follows:

With the revisions of the visual inspection (VT) NDT Method the industry through this CPC is being notified that visual weld inspection (VWI) that existed in the previous Appendix T will now become limited certification under VT for welds only. Additionally, the AAR Tank Car Committee (TCC) has committed to review the current Chapter 1 terms of “visual” and “visual inspection” within M-1002 and determine when visual

inspection must be conducted in accordance with Appendix T. It is the intent of the AAR TCC to complete this action prior to the republication of the M-1002.

Even though this statement was issued in the CPC and was also announced at the October 2021 Tank Car Meetings, M-1002 applications are being rejected because applicants are not listing their VT personnel certified to inspect things other than welds. The AAR/BOE auditors are also writing up findings on facilities for this same issue.

The AAR Director, Tank Car Safety has stated the following already requires VT inspections be performed by certified personnel:

- The Federal regulations 180.509 (d) and (k), 511 (h) and 517 (b) requires “qualification” and “maintenance” events be performed by trained and certified personnel with written inspection reports completed;
- Appendix D, Section 3.1.2 states that: “All of the inspections mentioned herein shall be conducted in accord with the requirements of 49 CFR Part 180 and AAR Specification M-1002, Appendix T”.
- CPC-1376 revised Appendix T to make direct visual weld inspection “limited”;
- The essential variables for VT are defined in Appendix T, Section 13.1;
- VT training requirements are defined in Table T.1 for “Direct Visual”, (the Level III has the flexibility to do a limited certification to reduce those hours as applicable);
- The AAR Director, Tank Car Safety believes VT requires certification to Appendix T for “qualification” and “maintenance” events other than welds, which C6r facilities do;
- C6r certified facilities need to follow the car owners’ procedures when inspecting the fittings plate sealing surfaces, etc. when changing valves and maintaining the qualification event dates stenciled on the sides of the car;
- If the car owners’ procedures are silent on the VT inspection requirements, then each company should have their Level III define those requirements to supplement the car owners’ instructions, or refuse the work; and
- The only things AAR still needs to define (according to the AAR Director, Tank Car Safety) are the inspection requirements for general VT inspections other than qualification and maintenance events.



## Have an Idea for an Article?

Please submit your drafts to Gary Alderson at [alderson@alltranstek.com](mailto:alderson@alltranstek.com).  
or Alfredo Ricardo at [ricardo@alltranstek.com](mailto:ricardo@alltranstek.com)

## Interested in Joining RSI QAC?

Contact Lee Verhey at [verhey@rsiweb.org](mailto:verhey@rsiweb.org).



## Not Getting the Newsletter and Want to Subscribe?

Contact Lee Verhey at [verhey@rsiweb.org](mailto:verhey@rsiweb.org).

## RSI-100 WHY IT WAS DEVELOPED AND WHAT IS IT

Submitted by Tom DeLafosse – Salco Products

On October 8, 2019 the *Pipeline and Hazardous Materials Safety Administration* (PHMSA) revised the definition of what a “Tank Car Facility” consisted of. Prior to this both FRA and AAR interpreted that any part of the manufacturing process of service equipment required AAR facility certification. Simple tasks like burning a shape from plate, drilling a hole in a flange, rolling a piece of steel to form a tank insert, all had to be done under the control of an M-1002 and M-1003 certified facility.

PHMSA’s revised definition eliminated the requirement to have service equipment manufactured by an AAR M-1002 and M-1003 certified facility. To be clear, AAR still requires facility certification for instruments, safety relief devices and valves, but FRA’s enforcement authority was removed from all service equipment manufacturers.

Because FRA now has no oversight of companies that manufacture “service equipment” they have moved their enforcement efforts to the tank car builders and repair shops in the areas of Purchasing/Subcontracting and Incoming Inspection. The federal references they point to is 49 CFR 179.7 (4) (5) and (f). The requirement, as well as how they apply them are follows:

(4) Procedures to ensure that the fabrication and construction materials received are properly identified and documented. (**Note:** *This applies to purchasing/subcontracting and incoming inspection. If your procedures do not address your incoming inspection requirements, the FRA violation will reference this section*)

(5) A description of the manufacturing, repair, inspection, testing, and qualification or maintenance program, including the acceptance criteria, so that an inspector can identify the characteristics of the tank car and the elements to inspect, examine, and test at each point. (**Note:** *This applies to Production, Inspection, and Test Planning, If your PITP doesn’t identify how you meet this, the FRA violation will reference this section*)

(f) No tank car facility may manufacture, repair, inspect, test, qualify or maintain tank cars subject to requirements of this subchapter, unless it is operating in conformance with a quality assurance program and written procedures required by paragraphs (a) and (b) of this section. (**Note:** *If a facility identifies their incoming inspection criteria and are not following them, the FRA violation will reference this section*).

AAR’s M-1003 requirements are clear in Chapter 2, elements 2.9 and 2.10.

To aid the tank car facilities and their suppliers, RSI formed a team that developed RSI-100 which is a voluntary recommended practice. There are 8 Product Conformance Plans (PCP’s) contained within this standard. Schedule A lists a breakdown of all the Critical to Conformance (CTC) requirements when ordering parts that fall within these PCP’s. Schedule B lists the documentation requirements for companies that are party to this standard that must be provided with each shipment.

For suppliers with a robust quality assurance program, oversight of the PCP’s audits of their Quality Assurance Program are not required, but oversight to compliance with the PCP’s must be documented on RSI-100-2 form. Suppliers without a robust Quality Assurance Program must be audited per the requirements of RSI-100-1 Checklist. For companies choosing to use this voluntary standard, incorporating its requirements into your Quality Assurance Program is required. Evidence of training is also required along with noting the responsible party who will ensure the standards requirements are met.

A much more detailed summary of how this standard came to be and its background, along with the standard itself can be downloaded for free from RSI's web site: <https://www.rsiweb.org/data-technical-resources/rsi-100-standard/>

## **AAR Tank Car Committee Meetings**

Submitted by Gary Alderson - AllTranstek

The meetings are being held April 18-21, 2022, in Oklahoma City, Oklahoma, at the Omni Oklahoma City Hotel. The meetings that are open to the public will be held on Wednesday April 20, from 1 pm until 6 pm, and on Thursday April 21, from 8 am until 6 pm. Meeting and hotel information can be found at:

<https://www.aar.org/tank-car-committee-meeting-materials/>

## **AAR QUALITY ASSURANCE CURRENT EVENTS**

### **AAR MSRP, M1003, Section J Revision**

On January 10, 2022 the AAR issued Circular Letter C-13924 notifying the industry of the revised *Manual of Standards and Recommended Practices*, (MSRP) Section J, Specification for Quality Assurance. The effective date of this release is July 1, 2022, allotting slightly less than six months for M-1003 programs to be revised accordingly. Auditors will not identify nonconformance findings related to the new revision and QAPE until July 2022. However, AAR Accredited Auditors will immediately identify items of concern related to the revision to bring attention to the pending requirements. The updated 2022 Quality Assurance Program Evaluation (QAPE) checklist is available at: (<https://aar.com/standards/FAQ.html>)

Note: As part of the revised M1003, Section J, Appendix C (View and Interpretations) has been removed. Much of the content of appendix C has been incorporated into Section J. The Views and Interpretations can still be viewed on the AAR QAC Frequently Asked Questions (FAQ) page. You can find a link in the Useful Links section at the end of the newsletter.



## AAR Quality Assurance Conference

Submitted by Donna Jacobi – Amsted Rail Company, Inc.

The annual AAR Quality Assurance Conference is back to being in-person after being virtual in 2021. It will be held April 12 – 14, 2022 in Fort Worth, Texas. Registration is now open.

# AAR 34<sup>TH</sup> ANNUAL QUALITY ASSURANCE CONFERENCE

April 12-14, 2022

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**Tuesday - Thursday, April 12-14:**

### Tentative Sessions

*Sessions presented by AAR QAC members  
and railway industry professionals*

- AAR QA Committee Q&A Sessions
- Audit Findings & Best Practices
- M-1003 New Revisions
- Rail Supply Institute Update
- Keynote Address (to be announced)
- AAR Technical Committee Updates
- 7.1 Nonconformance Data
- Health of the M-1003 Program
- FRA Presentation

*While this conference is designed as a forum for the AAR Accredited Auditors, anyone interested in the M-1003 auditing process is invited to attend this great learning event!*

For more information, please contact Don Guillen or Mark Rusovick at [QA@aar.com](mailto:QA@aar.com)



## USEFUL LINKS

[Railway Supply Institute](#)

[AAR Circulars](#)

[RSI QAC & Previous Newsletters](#)

[MSRP Publication Current Revision Status](#)

[RSI Tank Car Resource Center](#)

[AAR Online Material Nonconformance Reporting System \(Chapter 7\)](#)

[Registry of M-1003 Certified Companies](#)

[AAR FAQ Page includes QAPE](#)

[M-1003 Frequently Asked Questions](#)

[American Society for Quality - Training](#)

[RSI 100](#)

[AAR M-1003 Certification on-line Application](#)

[AAR M1003, Section J Specification for Quality Assurance](#)

[AAR Training Schedule](#)

### THE FOLLOWING RSI QAC TEAM MEMBERS WORKED ON THIS NEWSLETTER:

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Tom DeLafosse – Salco Products

Donna Jacobi – Amsted Rail

Alfredo Ricardo – AllTranstek

Michael Ruby – TrinityRail

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