



Federal Railroad Administration
Office of Safety Assurance and Compliance
Hazardous Materials/Dangerous Goods Program

ANNUAL AUDIT PLAN
Tank Car Facilities

*Willing workers doing their best won't do it;
They have to know what to do, and then do their best .*
Dr. W. Edwards Deming

1 Background

- 1.1 As America strives to compete in a global marketplace, quality, now more than ever, is an integral part of the American industrial machine. In the railroad industry, quality is driving changes that will ultimately result in significant safety improvements at a lower net cost. As part of the quality change, the tank car industry is progressing through a combination of industry and Federal requirements to develop quality assurance programs. On September 21, 1995, the Research and Special Programs Administration (RSPA), in concert with the Federal Railroad Administration (FRA), published regulations requiring the development and implementation of a quality assurance program (QAP) at each facility that builds, repairs, or ensures the structural integrity of tank car structures, systems, and components. These regulations incorporate industry standards into Federal regulation and are found in 49 CFR Section 179.7. In addition, they require that facility employees receive written procedures and appropriate training to properly perform the tasks assigned. These requirements push the quality process to the first level (the worker). In addition to requiring a QAP at manufacturing facilities, Section 180.505 requires a QAP at all facilities that repair or qualify DOT specification tank cars and other tank cars used to transport hazardous materials.

The regulations became effective on July 1, 1998. In addition, tank car facilities have regulatory requirements that pre-date these changes pertaining to their activities regarding hazardous materials transportation. These include training employees and offering shipments of hazardous materials to carriers in compliance with Federal regulations.

2 Plan Design and Objective

- 2.1 Plan Design
The Annual Tank Car Audit Plan (the plan) utilizes a criterion, condition, cause and effect design. That is, the difference between the condition (outcome) and the objective is an indication of the extent to which the objective has been missed, achieved, or exceeded. In simpler terms, the difference between the audit team's observation and the regulatory requirements is an indication of the level of compliance and a measure of quality related to the end product (tank car safety.)

2.2 Objective

The plan is designed with three objectives. The first objective is to gauge and improve the level of compliance with Federal regulations at facilities where DOT specification tank cars and other tank cars used to transport hazardous materials are manufactured, repaired, inspected, tested, qualified, or maintained. The second objective is to provide improved uniformity with regard to inspection activities and facilitate on-the-job training through a program that brings inspectors together in a manner that is not generally possible. The third objective is to fortify the overall rail safety program through an improvement in quality at these facilities.

2.3 Plan Development and Oversight

The headquarters Hazardous Materials Division (RRS-12) will review the Plan annually and provide oversight to ensure compliance monitoring. RRS-12 will oversee the Plan and modify as appropriate utilizing information from each region, accident/incident information, and data from the regulated community. The Staff Director, Hazardous Materials Programs, with input from Headquarters Hazardous Materials Division staff, will keep FRA leadership advised of the status of the program each quarter.

3 The Team Approach

3.1

While inspectors routinely conduct audits of these facilities, time constraints generally restrict these inspection activities to one day or less and generally only one or two elements of the overall program. Chapter 3 of the Hazardous Materials Enforcement manual outlines the various aspects of Federal hazardous materials laws and regulations that are reviewed for compliance during routine inspections. The plan is a work product in FRA's initiative to improve quality in tank car manufacture, repair, and maintenance programs. The plan is an integral part of the Hazardous Materials Safety program because of the heavy reliance on tank cars to transport the majority of hazardous materials by rail.

In a report to Congress, entitled Aviation Safety - FAA Oversight of Aviation Repair Stations, Mr. Gerald L. Dillingham, Associate Director, Transportation Issues, Resources, Community, and Economic Development Division, Government Accounting Office, addressed the reasons that nationally established team inspections find deficiencies not normally found by individual inspectors.

Many FAA inspectors responsible for conducting individual inspections said that, because they have many competing demands on their time, their inspections of repair stations may not be as thorough as they would like. Second, team inspections make use of checklists or other job aids to ensure that all points are covered. Although FAA's guidance requires inspectors to address all aspects of repair stations operations during routine surveillance, it does not prescribe any checklist or other means for assuring that all items

are covered. The lack of a standardized approach for routine surveillance increases the possibility that items will not be covered. Finally, inspectors believe team inspections help ensure that their judgments are independent because most team members have no ongoing relationship with the repair station. By contrast, individual-inspector reviews are conducted by personnel who have a continuing regulatory responsibility for the facilities and, therefore, a continuing working relationship with the repair station operator.

Mr. Dillingham's statement bears significant relevance to this program. The use of teams to conduct audits of these facilities will result in an increase in the identified deficiencies at each facility that can be corrected and therefore a greater level of safety.

3.3 Audit Team Description

The team will consist of a Technical Representative from the HQ Hazardous Materials Division (RRS-12), the Lead Auditor, and a sufficient number of other Hazardous Materials Specialists and Inspectors to support the auditing needs of the facility and scope of the audit. Larger facilities such as tank car manufacturing sites may require as many as 12 team members to adequately accomplish the facility audit within the prescribed timeframe. The personnel requirements will be developed during the site selection process. Special emphasis will be placed on selecting team members who have similar facilities of the same company in their respective regions. The Lead Auditor will be selected by the Staff Director (HM) with input from the regional HM Specialist and headquarters technical representative. The Lead Auditor will be an employee within the region that the tank car facility is located, unless previously approved by the above individuals. Regional Specialists may, in consultation with the Staff Director, Hazardous Materials Program, increase regional personnel based upon availability.

3.4 Team Assignment

The following breakdown outlines the roles and responsibilities of the team members under the Plan. While each member is an integral part of the overall team, it is important that individual roles are identified to maximize the limited time available for the audit.

3.4.1 Lead Auditor

The Lead Auditor bears overall responsibility for the audit process. He/she is responsible for ensuring adherence to the timeline and scope. He/she shall ensure that all findings are communicated to the team and the facility. In addition, the Lead Auditor is responsible for:

- " Coordinating activities during the actual audit, compilation of data, and preparation of the report of findings to the facility.
- " Generating the final report with assistance from the HQ Representative.

- " Leading all discussions with facility representatives and providing guidance in the noncompliance decision-making process.
- " Serving as the point of contact for all records acquired and ensuring all controlled records are properly returned to the facility.
- " Ensuring timeliness of report and coordinating final action with headquarters and regional personnel.
- " Ensuring the overall safety of the audit team during the time in facilities.

3.4.2 Headquarters Technical Representative

The Headquarters Technical Representative is responsible for the planning of the audit as well as providing necessary technical guidance on matters pertaining to the audit. He/she serves as the technical expert on matters related to the audit and assists the Lead Auditor in ensuring uniform application of the regulations. In addition, the Technical Representative is responsible for:

- " Coordinating lodging and local travel arrangements with the assistance of regional staff.
- " Providing technical information to team members related to compliance questions that may arise.
- " Coordinating with regional personnel and gathering information during the audit preparation phase.
- " Leading the initial discussion at beginning of the pre-audit team meeting and the post-audit team meeting phase.
- " Communicating the scope of the audit during the pre-audit team meeting.
- " Assigning team member responsibilities, with input from the Team Leader and Legal Representative (when available), to adequately utilize the technical expertise each individual brings to the process.
- " Serving as team safety representative and providing input on shop safety during pre-audit team meeting.

3.4.3 Team Members

Each Team Member is an integral part in the overall performance of the audit team. He/she is responsible for conducting the portion of the audit assigned to him/her. He/she is responsible for communicating all findings to the Lead Auditor. In addition, each team member is responsible for:

- " Conducting audits pertaining to assigned responsibilities.
- " Providing input to the Team Leader for the report of findings, and assisting in activities as assigned.
- " Ensuring safety of self and others within the audit team during the audit.

3.4.5 Legal Representative

A Legal Representative (from RCC) will not always accompany audit team. However, if not accompanying the team a line of communication will be established to enable a source of legal guidance and maintain continuity in matters related to the audit. The Legal Representative will be responsible for:

- " Providing legal guidance during the audit process.
- " Reviewing findings to assist in the decision-making process.
- " Assisting in the review of the final report and coordinating actions after issuance of final report.
- " Providing input to Headquarters staff on necessary changes to regulations in an effort to improve the quality and safety of rail transportation of hazardous materials in tank cars.

3.5 Findings

The Lead Auditor shall be responsible for generating a Report of Findings during the post-audit team meeting phase of the process. The Report of Findings shall include a compilation of all inspection reports developed during the audit process. The Lead Auditor will present the report of findings to the appropriate facility personnel during the post-audit team/facility meeting. The facility will be given ten (10) working days to provide the Lead Auditor with any information they deem appropriate for inclusion in the final report. The Lead Auditor will generate the final report within 25 working days of the post-audit team/facility meeting with the help of RRS-12 personnel.

4 Facilities Covered Under the Plan

4.1 The Plan includes a selection of the various types of facilities that comprise the tank car facility industry. The Association of American Railroads has designated classifications for these facilities based upon the type of work they are certified/registered to perform. These classifications are:

- A Certified to fabricate, assemble, repair, alter and convert tank car tanks.
- B Certified to assemble, repair, alter, or convert tank car tanks.
- C Certified to repair, alter, or convert tank car tanks.
- D Certified to fabricate or repair tank car tanks. Confined to tank car tanks that are moved to and from the facility without trucks (running gear).
- E Certified to conduct tank car qualifications per 49 CFR Part 180.
- F Registered to manufacture, recondition, repair, or retest tank car service equipment.
- G Registered to remove and replace tank car service equipment or change gaskets.
- L Registered to install, qualify, or repair interior linings and coatings in tank cars which transport corrosive commodities.

4.2 Facilities that are registered (vice certified) are not required to maintain an AAR M-1003 Quality Assurance Certification but are required, under Federal regulations, to have a Quality Assurance Program in place. These facilities are not evaluated by AAR auditors as part of the AAR Program although there are internal audit requirements and these facilities may have AAR auditors conduct reviews on a voluntary basis to ensure compliance. Such facilities must apply for registration through Appendix B of the AAR Tank Car Manual.

5 Audit Components

5.1 The audit will consist of a complete review of the facility's compliance with various hazardous materials transportation laws and regulations. The following components will be evaluated for compliance as applicable:

5.1.1 AAR/TCC Certification

Appendix B of the AAR Tank Car Manual requires any tank car facility performing welding on tank cars to have a valid certificate on file for fabrication, alteration, conversion, or welded repairs. The audit will verify that the facility has the appropriate certificate on file as required based upon the work conducted. In addition, the audit will verify that the facility has the minimum personnel and equipment, or subcontractor, as described in Appendix B.

5.1.2 QAP Audit Components

At a minimum the following Federal requirements will be verified at each facility.

- " The tank car facility has a valid AAR certification or registration on file.
- " That the facility is complying with its Manual. In other words, Say what you do in the manual, and then do what you say.
- " That the QAP manual has at least the elements described in 179.7(b).
- " That only qualified personnel perform welding on the tank and non-destructive inspection and test.
- " That written procedures are provided to its employees to ensure that the work on the tank car conforms to the specification, AAR approval, and the owner's acceptance criteria. In general, tank car owners will provide the written procedures to the tank car facility for redistribution.
- " That each facility has a training program in accordance with Subpart H of part 172 to ensure compliance with specific emphasis on the requirements pertaining to job specific requirements and knowledge of the QAP.

It is important to note that 49 CFR 179.7(a) requires that each tank car facility have a QAP approved by the AAR. The approval includes the facility's QAP manual. Section 179.7(f) requires each company to comply with the approved QAP Manual and the written procedures or cease work. To ensure that the AAR includes key elements in their approval of QAP, section 179.7(b) lists the elements deemed essential for good quality assurance.

5.1.3 Maintenance Plans

The audit shall verify that each person performing fabrication, maintenance, alteration, or preventative maintenance on a tank car, or to an appurtenance on a tank car, uses the methods, techniques, and practices prescribed in the current maintenance manual or assembly drawings prepared by the manufacturer, car owner, or lessor. (See 179.7(a)(2), (b)(5), and (d) and the Association of American Railroads Tank Car Manual Appendices A, B, C, D, E, M, R, T, W, and Y.)

The audit shall also verify that each tank car owner has a system in place to evaluate the performance of the tank structure, systems, and components. For example, 180.511(a) and (b) state that there must be no leakage from or failure of the tank before the next inspection and test interval. This section implies that the interval may be less than the regulatory nom.

The audit shall also verify that the facility or owner has a system in place to determine that the inspection and test technique employed, including the accessibility of the area and the sensitivity and reliability if the inspection and test technique, and the minimum detectable crack length. See 179.7(b)(10). This section requires the facility or the tank car owner to qualify both the inspection and test procedure and the employee to obtain a high probability of defect detection.

5.1.4 Tank Car Qualification Components

The following table provides a guide to the various regulations that will be reviewed to determine compliance with the tank car qualification requirements. Implementation dates for these qualification requirements are July 1, 1998 for tank cars without a metal jacket and July 1, 2000 for tank cars with a thermal protection system or metal jacket. The audit team will review recent qualifications of tank cars that have been performed in accordance with 49 CFR 180.509 as well as qualifications of cars conducted prior to the implementation dates.

Qualification of &	Tests and Inspections	§180.509(*)
Tank	Visual Inspection	d
	Structural Integrity Inspection	e
	Safety System Inspection	h
	Leakage Pressure Test	j
	Thickness ¹	f
Service Equipment	Service Equipment	k
Lining/Coating	Linings and Coatings	i

5.1.5 Hazardous Materials Communication/Securement Requirements

The audit shall include a review of the facilities compliance with Federal hazard communication/package securement requirements found in 49 CFR. Those requirements include ensuring that:

- " Shipments made under a DOT exemption or FRA approval comply with the terms and conditions of the exemption or approval.
- " Shipping papers comply with the regulations (Subpart C of Parts 172 and Sections 171.12, 171.12 a, and 174.24).
- " Packages of hazardous materials are marked as required (Subpart D of Part 172).
- " Packages are labeled or placarded as required (Subparts E or F of Part 172).
- " Materials are properly classified (applicable sections in Part 173).

- " Packages are properly inspected prior to offering for transportation in accordance with 49 CFR 173.31(d).
- " Hazmat employees are properly trained (Subpart H of Part 172)

6 Training Evaluation

6.1 The Plan provides a mechanism to conduct a third level evaluation of previous training as well as facilitating a method to identify future training needs. RRS-12 and RCC, within their scope, will ensure the FRA Safety Improvement and Development Team (SIDT) is appropriately involved in accomplishing this objective. They will provide assistance to develop, coordinate, publish, and distribute appropriate guidance documents and training classes to facilitate effective oversight by the FRA workforce and compliance by the subject facilities. As part of the Plan, the members will conduct an evaluation of the training previously provided by FRA and will provide input into future needs. SIDT personnel will assist in developing the tools for conducting such evaluations.

7 Equipment Requirements

7.1 Each member of the audit team will be responsible for providing his/her personal safety equipment as indicated below. In addition, each team member should consider bringing additional equipment to aid in conducting the audit. A short list of additional equipment is provided for information in planning and as an aid to inform inspectors of additional equipment to assist in the auditing process. The Headquarters Technical Representative will make the additional equipment available, when possible, to the team members.

7.1.1 Safety Equipment

The following safety equipment shall be provided by each member of the audit team and worn as appropriate:

- | | |
|----------------------------|------------------------------------|
| " Hard Hat | " Hearing Protection (as required) |
| " Safety Glasses | " Safety Gloves (as required) |
| " Safety Shoes (steel toe) | " Safety Coveralls (as required) |

Hearing protection, safety gloves, and safety coveralls should be available but may not be required depending on the nature of the activities being observed.

7.1.2 Additional Optional Equipment

The following optional equipment is provided as a guide in determining additional equipment that may be useful, but not necessary, in conducting the audit:

- | | |
|------------------------|---------------------------|
| " Flashlight | " Welding Shield/Lens |
| " Mirror | " Weld Measurement Gauges |
| " Magnifying Glass | " Camera |
| " Ruler/Measuring Tape | |

8 Information Sources

8.1 The following list of materials will serve as a basis for the audit resource and reference library. The headquarters technical representative will make the information available to the members of the team during the audit. Additional resources may be provided as available by any team member.

- " 49 CFR Parts 100 to 185
- " Facility Quality Assurance Program manual
- " AAR, Manual of Standards and Recommended Practices, Section C- Part III, Specification for Tank Cars, M-1002
- " AAR, Manual of Standards and Recommended Practices, Section J, Specifications for Quality Assurance, M-1003
- " AWS QC-1-88, Standard for AWS Certification of Welding Inspectors
- " AWS QC-2-93, Recommended Practice for the Training, Qualification, and Certification of Welding Inspector Specialist and Welding Inspector Assistant
- " AWS/ANSI B1.11-88, Guide for Visual Inspection of Welds
- " AWS, Welding Inspection Manual
- " AWS, Railroad Welding Specification - Cars and Locomotives, ANSI/AWS D15.1-93
- " Audit Checklist

9 Timeline and Components

9.1 The following schedule and component outline provides the timeline for the audit and all activities that support the audit plan.

9.1.1 Plan Development (Annual)

- Shop Selection - Site selection and scheduling per received input
- Lead Auditor Selection - By Staff Director with Regional input.
- Plan Communication - Forwarded to HQ and Regional staff

9.1.2 Audit Preparation (prior to the audit)

- Team Selection - By HQ Technical Rep with input from Regional staff
- Travel Planning - Coordinated through HQ Technical Rep and Region
- Site Survey - By Regional Inspector assigned to facility

9.1.3 Pre-Audit Team Meeting (Monday p.m.)

- Scope - Discussion of audit and activities
- Team Member Assignments - By HQ Technical Rep with input from Lead Auditor
- Process Review - Lead Auditor provides timeline and process review
- Work Tools - Discussion of use of checklist and optional equipment
- Safety Discussion - Shop safety/equipment usage discussion

- 9.1.4 Pre-Audit Team/Facility Meeting (Tuesday a.m.)
 - Safety Issues - Discussion with facility personnel
 - Scope/Responsibilities - Details of Audit and FRA contact identification
 - Timeline/Plan - Overview of audit process and expectations
 - Site Overview - Layout of facility and personnel by Facility Manager
- 9.1.5 Audit (Tuesday p.m. through Thursday a.m.)
 - Data Collection - Records as appropriate to document observations
 - Observations - Visual inspections of various processes
 - Paperwork Review - Review of records
 - Historical Review (Cross-Team) - Review of previous work completed
- 9.1.6 Post-Audit Team Meeting (Thursday p.m.)
 - Review of Findings/Observations - Presentations by team members
 - Data Evaluation - Open discussion and team based review
 - Status of Nonconformances - Corrections/deficiencies/ violations
 - Nonconformance Decision-Making - Future action/expectations
 - Training Evaluation - Third level review of previous FRA training/future needs
- 9.1.7 Post-Audit Team/Facility Meeting (Friday a.m.)
 - Report of Findings - Lead Auditor presents to facility
 - Input Discussions - How facility can provide input to final report
- 9.1.8 Final Report Development (within 25 work days)
 - Development process - Team input/Lead Auditor with RRS-12 assistance
 - Facility Input/Response - within 15 working days of ROF
 - Nonconformance Issue Information - Decisions on future actions to facility
 - Dissemination - Copies to HQ, Region, Facility, and team members
- 9.1.9 FRA Follow-up Actions (as required)
 - Penalties - Civil or criminal actions through RCC
 - Recalls - Written notices per 49 CFR 180.509(b)(4)
 - Prohibitions - Compliance Orders prohibiting activities
 - Individual Liability - Penalty actions against an individual
- 9.2 Daily Debriefs

There will be a debriefing session at the end of each audit day to discuss the day's findings and review the plan of events for the following day.
- 9.3 Inspection/Audit Reports

Each team member will record his/her findings and account for their time at the end of each day on an Inspection Report (Form FRA F6180.96). A copy of the report will be provided to the Lead Auditor for findings compilation along with the normal distribution. In addition reporting under the FRA Daily Activity Report is required if applicable.

10 Future Actions

10.1 Based upon the findings, the actions taken by the facility, and guidelines published in 49 CFR Part 209, the team will make a determination of the appropriate actions to take. If available, guidance from the Legal representative will be considered at this point. In addition, actions that entail more than individual liability or recommendations for penalties, will be processed through the Staff Director, Hazardous Materials Programs. It shall be the responsibility of the Lead Auditor to develop a list of recommendations of action.

10.2 Potential Actions

As indicated in the FRA Hazardous Material Enforcement Manual, FRA does not have to take a formal enforcement action every time it discovers or learns of a deviation from the Federal railroad safety laws. FRA has enforcement discretion: it can choose which cases to pursue based on its resources and on what it believes to be the best method of promoting compliance. Moreover, when FRA decides that enforcement action is called for, it has a range of enforcement tools (discussed below) and has the authority to choose those best suited to the circumstances. One of these tools (the emergency order) can be used to address an immediate hazard even if no existing law has been violated. Civil penalties are one option. Emergency orders, compliance orders, and injunctions are a possibility, as is criminal prosecution. In the hazardous materials area, a penalty of up to \$27,500 per day of violation is possible where a grossly negligent violation, or pattern of repeated violations, has created an imminent hazard of death or injury to persons, or has caused death or injury. FRA's policy statement, found in 49 CFR Part 209, sets forth factors to be considered in making enforcement decisions. Teams should make determinations on appropriate actions during the post-audit team meeting phase. In certain cases it may be necessary to defer a determination until information on corrective actions taken has been received from the facility.

10.2.1 Civil Penalty Action

Where the team has decided that merely reporting the findings to the company and discussing the need to improve compliance is unlikely to have a sufficient deterrent effect under the circumstances, the team may decide to recommend civil action as a tool. If recommendations for penalty actions are determined as the course of action, the individual inspector identifying the deficiency will be responsible for preparing the report (Form FRA F6180.67) and forwarding through the Lead Auditor to the appropriate region.

10.2.2 Criminal penalty Action

Under 49 U.S.C. § 5124, a person willfully violating the Federal hazardous materials transportation safety law, or the regulations implementing it, is liable for criminal prosecution. If the inspector believes that a criminal violation exists, the Lead Auditor will seek guidance from the Legal Representative as early in the investigation as possible. If the Office of Chief Counsel, after a legal evaluation of

the evidence, concurs with a recommendation to pursue criminal sanctions, the Chief Counsel will refer the case to the Department of Transportation's Office of Inspector General.

10.2.3 Recalls

49 CFR 180.509(b)(4) provides for a mechanism to require the requalification of tank cars. This authorization requires that the team determine, on the basis of probable cause, that the tank car or fleet of tank cars may be in an unsafe operating condition. If the team makes a determination that activities performed at the facility may have resulted in this condition, the Lead Auditor and HQ Technical Representative will seek guidance from the Legal Representative and the Staff Director, Hazardous Material Programs, as soon as possible.

10.2.4 Emergency Orders

As provided in the Federal railroad safety laws, at 49 U.S.C. § 20104, Emergency Orders may be issued by the Federal Railroad Administrator when he has determined, through testing, inspection, investigation, or research, that an unsafe condition or practice, or a combination of unsafe conditions or practices, creates an emergency situation involving hazard of death or injury to any person. The Administrator may impose such restrictions or prohibitions as may be necessary to correct the emergency situation. If a determination that an emergency condition exists, the Lead Auditor and HQ Technical Representative will seek guidance from the Legal Representative and Staff Director, Hazardous Materials Programs, as soon as possible.

10.2.4 Individual Liability

Individual liability is a tool that should be considered in any situation where deterring a particular individual's noncompliance is what is most needed. This tool is especially useful where the violation arose from the individual's own choice. If a team determination to recommend actions against an individual they shall seek guidance from the Legal Representative and the Regional Specialist as soon as the determination has been made.