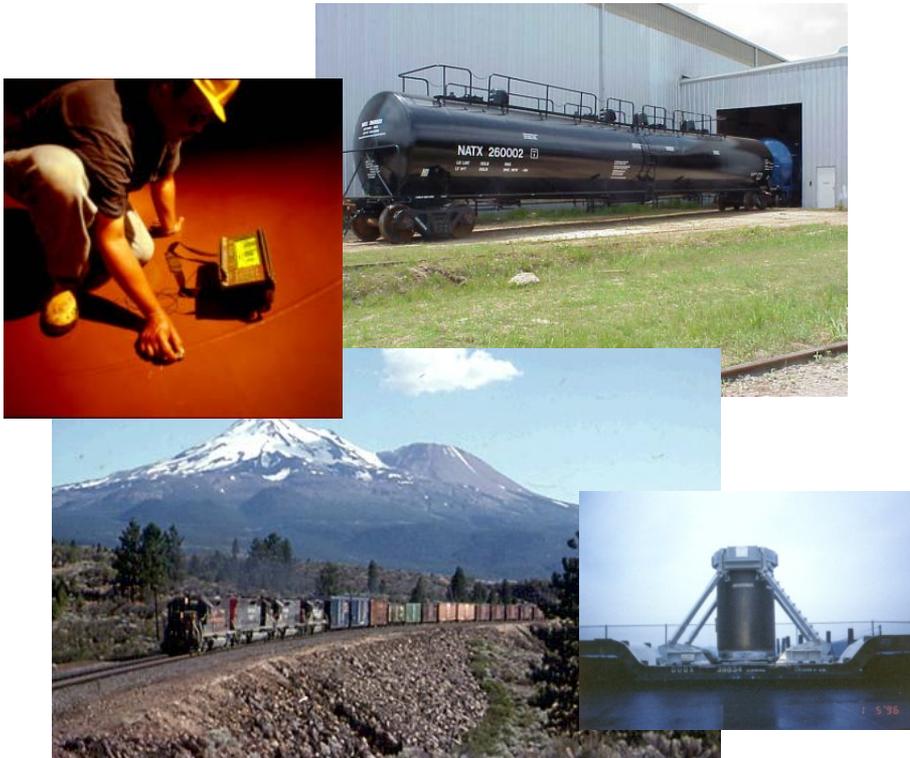


FRA Office of Safety Hazardous Materials Division



Kurt Eichenlaub
Railroad Safety Specialist

Introduction

HM Division Background

- Authority
- Goal
- Staffing
- Regulations

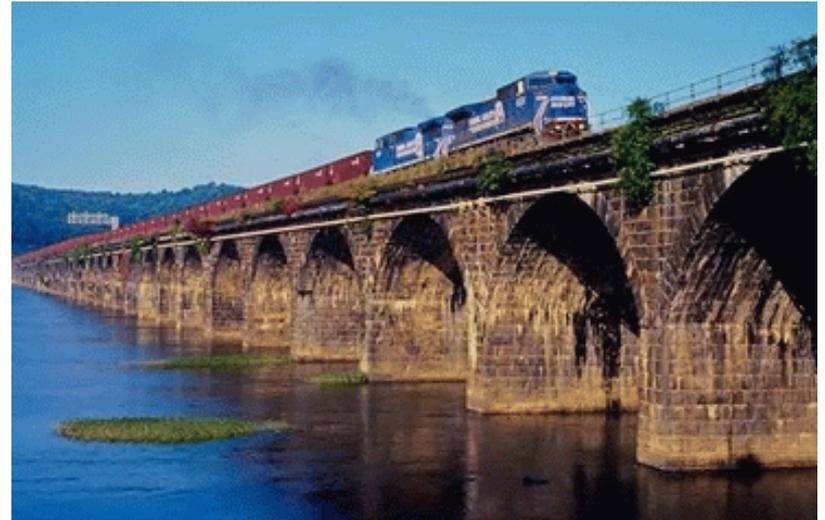
HM Division Activities

- Routine Inspections
- Intermodal Inspections
- Tank Car Facility Audits
- Incident Reduction Program
- Special Projects/Audits (NSPP)

Crude by Rail Rulemaking

Alternative Fuel Locomotives

One-Time Movement Approvals (OTMAs)



HM Authority

Within the U.S. DOT, the Pipeline and Hazardous Materials Safety Administration (PHMSA) is the operating administration responsible for promulgating the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180).

FRA is the operating administration responsible for enforcing the HMR related to the movement of hazardous materials by rail.

HM Division Goal

The goal of FRA's HM safety program is to manage the risks inherent to the transportation of HM by rail. Achievement of this goal requires reducing and eliminating risk, where possible, to protect the public and ensure the continuing economic viability of the Nation. The goal is cultivated through a variety of compliance tools including:

- Education
- Inspection
- System assessments
- Enforcement

HM Staffing

Headquarters

- Staff Director
- HM Specialists (6)
- QA Specialists (4)
- Packaging Engineers (1)

Eight Regions

- Regional Specialist (8)
- Federal HM Inspectors (53)
- State Inspectors

Regulatory Scope

- The HMR apply to any entity who:
 - Transports HM in commerce.
 - Causes HM to be transported in commerce.
 - Designs, manufactures, fabricates, inspects, marks, maintains, reconditions, repairs, or tests a package, container, or packaging component that is represented, marked, certified, or sold as qualified for use in transporting HM in commerce.
 - Prepares or accepts HM for transportation in commerce.
 - Is responsible for the safety of transporting HM in commerce.
 - Certifies compliance with any requirement of Federal HM transportation law (or its implementing regulations)
- FRA HM oversight includes:
 - Rail Hazmat Shippers
 - Rail Carriers
 - Tank Car Manufacturers
 - Tank Car Maintenance and Repair Facilities
 - Transloading Operators
 - Valve Manufacturers

Regulatory Structure

FRA is primarily responsible for enforcing the following parts of the HMR:

Part 171 – General information, regulations, and definitions

Part 172 – Hazardous materials table, special provisions, hazardous materials

communications, emergency response information, training requirements, and

security plans

Part 173 – Shippers—general requirements for shipments and packagings

Part 174 – Carriage by rail

Part 178 – Specifications for packagings

Part 179 – Specifications for tank cars

Part 180 – Continuing qualification and maintenance of packagings

HM Pre-transportation Functions

- 1) Determining the hazard class of a HM
- 2) Selecting a HM packaging
- 3) Filling a HM packaging
- 4) Securing a closure on a HM packaging.
- 5) Marking, labeling, or placarding a package to indicate that it contains HM.
- 6) Preparing a shipping paper.
- 7) Certifying a shipment as safe for transportation and in compliance with the HMR.
- 8) Providing and maintaining emergency response information.
- 9) Loading, blocking and bracing a HM package in a freight container or other conveyance.
- 10) Segregating a HM package from incompatible cargo.

HM Transportation Functions

The HMR define “transportation” generally as the “movement of property and loading, unloading, or storage incidental to that movement.” The HMR provide that transportation in commerce begins when a carrier takes physical possession of an HM for the purpose of transporting it, and continues until the HM is delivered to the destination indicated on a shipping paper. One exception to this general rule applies to rail transportation. Specifically, a railcar transporting HM is considered “in transportation” for purposes of the HMR until it is delivered to a “private track or siding.” This is true, even if the railcar is delivered to its final destination indicated on its shipping paper.

Regulatory Review and Reinvention

FRA's HM Division and Office of Chief Counsel work collaboratively with PHMSA to promulgate regulations that are related to the rail transport of hazardous materials. Headquarter HM division staff provide technical, chemical, engineering, and operating expertise to PHMSA, as appropriate. Additionally, HQ division personnel communicate suggestions for regulatory additions or amendments provided by the regional specialists and field inspectors.

AAR Delegated Authority

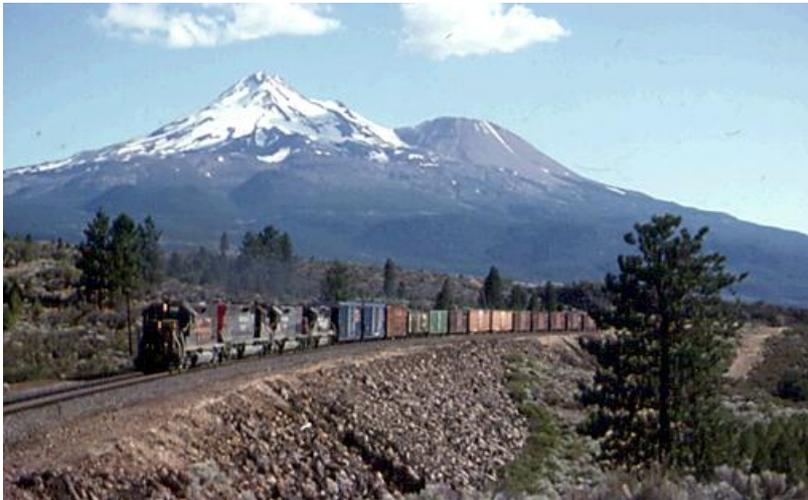
Authorities delegated to the Association of American Railroads (AAR)

- Development of Standards and Interchange Rules
 - M-1001 Freight car design standards
 - M-1002 Tank Car Specifications
 - M-1003 Quality Assurance Program
 - Field and Office Manuals
- Approval of tank car and component designs
- Certification of tank car facilities

HM Activities

- Hazardous Materials Incident Reduction Program
- Tank Car Quality Assurance Program Audits
- Spent Nuclear Fuel and High-Level Nuclear Waste Program
- Rulemaking, Approvals, and Special Permits
- Partnerships in Domestic and International Standards-Related Organizations (e.g., AAR, ASME, Transport Canada, IAFC)
- Interagency partnerships (e.g. TSA, PHMSA, USCG, FMCSA)
- Education, Safety Assurance, Compliance, and Accident Investigation
- Hazardous Materials Routing and Security Audits (RCRMS)

Routine inspections



- Railroad Carriers
- Shippers
- Transload Operators
- Manufacturers
- Tank Car Facilities

Intermodal Assessments



- Shipping papers
 - EDI
 - Certifications
- Training
- Marking
- Labeling
- Placarding
- Packaging selection
- Packaging performance
- Blocking and bracing
- Securement to rail car

Tank Car Facility Audits



- Facility certifications
- Quality assurance audits
- Maintenance plans
- Written (work) instructions
- In-process work
- Hazard communication
- Training

Hazmat Incident Reduction Program



- Reduce releases of hazmat from
 - Accidents
 - Non-accidents (NARs)
- Routine inspections
- Investigations
- Data analysis
- Design improvements
- Partnerships and education
- Enforcement

Non-Accident Releases (NAR)

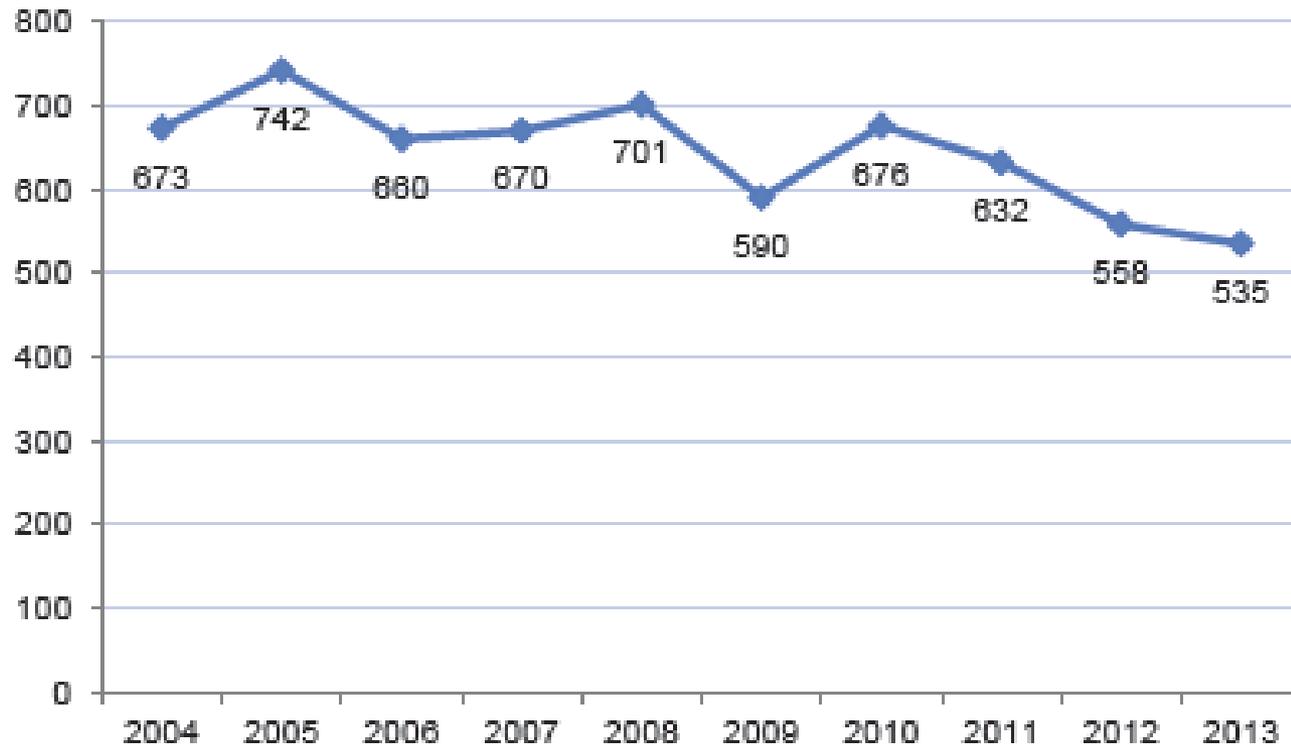
FRA safety metrics (performance measures) include accident data related to each mode

- MP&E – Equipment
- Track
- Signals
- Operating Practices

Since HM is very rarely the cause of derailment/accidents program performance is measured by the number of NARs.

Non-Accident Releases (NAR)

Number of Tank Car Non-Accident Releases, U.S. and Canada: 2004-2013



Non-Accident Releases (NARs)

- FRA Grant Funded Guidance
- Training Seminars
 - Reno, NV: July 2013
 - Billings, MT: September 2013

Home Page // Railroad Safety // Divisions // Hazardous Materials // Hazmat Training and Outreach // HM Training Seminar - September, 2013 Billings, MT

HM Training Seminar - September, 2013 Billings, MT

Seminar Announcement
Registration Form - September 17-19, 2013

PRESENTATIONS AND GUIDANCE DOCUMENTS:

- [HM Seminar Opening Remarks](#)
- [Guidelines for Hinged and Bolted Manway Assembly](#)
- [Training and Security Requirements](#)
- [Hazmat Filling Limits](#)
- [Tank Car Storage Issues](#)
- [Book Cause Analysis](#)
- [AAR NAR Reduction Committee](#)
- [Shipping Papers & Training Records](#)
- [One Time Movement Approvals](#)
- [New Regulations for Tank Cars in Packing Group I and II Service](#)
- [Module 1 Examination Before Shipping Based on AAR Pamphlet 34](#)
- [Leak Test for Plant Operators](#)
- [Training and Performance Assurance of Crude Oil Operating Personnel](#)
- [Reducing NARs Through Tank Car Qualification](#)
- [Jamesbury Valves and Fittings for Crude Oil Tank Cars](#)
- [BNSF Crude-By-Rail](#)
- [Midland Valves for Pressure Cars](#)
- [Midland Valves for General Purpose Cars](#)
- [Waste Management - Overview and Options](#)
- [Six Sigma Fluid Seal Management Program](#)



GUIDELINES FOR HINGED AND BOLTED MANWAY ASSEMBLY

Assembly Instructions for the Ethanol Industry



Special Projects (NSPP) 2015

- Crude Oil Unit Train Focused Inspections
 - HQ/Multi-Region Inspection Team.
 - Intercept and Thoroughly Inspect Crude Oil Unit Trains at 1,500 mile inspection points.
- One-Time Movement Approval Compliance
 - Monitor quality of OTMA requests and focus resources on entities with recurring compliance issues.
- NAR Reduction and Root Cause Analysis
 - Conduct in depth investigation of NARs to identify root causes.

Alternative Fuel Locomotives



- Railroads exploring alternative fuels such as LNG and CNG to power locomotives.
 - Fuel Cost Savings
 - Lower Emissions
- Fuel Tenders
 - CNG high pressure tube cylinders
 - LNG cryogenic tank cars or portable tanks
 - Manifold to locomotives modified to burn diesel and natural gas mixtures
- FRA Hazmat/MP&E Team Evaluating Safety Risks and Concurring on Test Programs

A screenshot of the U.S. Department of Transportation Federal Railroad Administration website. The page is titled "LNG Tenders / Locomotives" and contains the following text:

Obtaining FRA Approval for Testing Liquefied Natural Gas (LNG) and Compressed Natural Gas (CNG) Locomotives and Tenders

AUTHOR: Robert C. Lauby

SUBJECT: Hazardous Materials, Locomotive Standards (Safety & Noise)

ABSTRACT: A letter to the AAR, ASURRA, and the American Public Transportation Association. The letter provides an overview of FRA authority to regulate LNG and CNG locomotives and tenders. The letter also summarizes the key elements of information necessary to facilitate timely evaluation and Approval by FRA of testing programs to evaluate the efficiency, feasibility, and reliability of LNG and CNG powered locomotives and fuel tenders.

[Click here to view the file](#)

Letter to BNSF: FRA Authority to Regulate Dual-Fuel Locomotives and Fuel Tenders

AUTHOR: Michael J. Logue

SUBJECT: Hazardous Materials, Locomotive Standards (Safety & Noise)

ABSTRACT: A letter to BNSF providing overview of FRA authority to regulate dual-fuel locomotives and fuel tenders. Specifically, the letter clarifies that FRA regulations apply to dual-fuel locomotives and fuel tenders.

Crude By Rail Rulemaking

- HM-251 NPRM Published 08/01/2014 (
- Hazmat: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains (HHFT); Docket No. PHMSA-2014-17764
- Comment Period Closes 09/30/2014



Crude by Rail Rulemaking

- Crude Oil Sampling and Testing Program
 - Applies to all mined gases and liquids (e.g., crude oil)
 - Frequency of sampling and testing
 - Ensure sampling methods are representative of the entire mixture
 - Statistically justify sample frequencies
 - Offeror must certify the program, document sampling and testing, and make information available to DOT personnel, upon request.

Crude by Rail Rulemaking

- Definition of High-Hazard Flammable Train
“means a single train carrying 20 or more carloads of a Class 3 flammable liquid.”

Crude by Rail Rulemaking

- Rail Routing Risk Assessment (§ 172.820)
 - Applies to all trains that meet the definition of a HHFT
 - Safest most secure rail route must be chosen in consideration of 27 risk factors

Crude by Rail Rulemaking

- Notification to State Emergency Response Coordinators
 - RRs must notify SERCs in writing of the frequency and routing of trains carrying 1 million gallons (approx. 35 tank cars) of Bakken crude oil through each state.
 - Codifies language contained in an existing Emergency Order.

Crude by Rail Rulemaking

- Speed Restrictions:
 - 50 MPH speed restriction for all HHFT network wide.
 - Speed restriction options for HHFTs with old DOT111 tank cars:
 - Option 1: 40 MPH max speed network wide
 - Option 2: 40 MPH max speed HTUAs
 - Option 3: 40 MPH max speed in 100,000 populations density areas.

Crude by Rail Rulemaking

- Enhanced Braking Requirements HHFT
 - ECP;
 - Two-way end of train device (EOT); or
 - Distributed power (DP)

Crude by Rail Rulemaking

- Require tank cars built after October 1, 2015 for transportation in HHFTs to meet criteria for one of three proposed options.
 - Option 1: FRA and PHMSA Designed Car, or equivalent
 - Option 2: AAR 2014 Tank Car, or equivalent
 - Option 3: Jacketed CPC-1232, or equivalent

Option 1: PHMSA and FRA Designed Car DOT 117A100W

- Bottom Outlet Handle: Handle Removed or designed to prevent unintended opening during accident
- GRL: 286K
- Head Shield: Full ½”
- PRD: Reclosing
- Shell Thickness: 9/16” minimum
- Jacket: 11-gauge weather tight
- Tank Material: TC128 Grade B Normalized Steel
- Top fitting protection: protection system sustaining rollover accident of 9 mph
- Thermal Protection: System in accordance with 179.18
 - Torch fire 30”
 - Pool fire 100”
- Braking: Electronic Controlled Pneumatic Brakes (ECP)

Option 2: AAR 2014 TC

- Bottom Outlet Handle: Handle Removed or designed to prevent unintended opening during accident
- GRL: 286K
- Head Shield: Full ½”
- PRD: Reclosing
- Shell Thickness: 9/16” minimum
- Jacket: 11-gauge weather tight
- Tank Material: TC128 Grade B Normalized Steel
- Top fitting protection: AAR Specifications for tank cars appendix E paragraph 10.2.1
- Thermal Protection: System in accordance with 179.18
 - Torch fire 30”
 - Pool fire 100”
- Braking: In train with Distributed Power (DP) or End of Train (EOT) Devices

Option 3: Enhanced CPC 1232 TC

- Bottom Outlet Handle: Handle Removed or designed to prevent unintended opening during accident
- GRL: 286K
- Head Shield: Full ½”
- PRD: Reclosing
- Shell Thickness: 7/16” minimum
- Jacket: 11-gauge weather tight
- Tank Material: TC128 Grade B Normalized Steel
- Top fitting protection: AAR Specifications for tank cars appendix E paragraph 10.2.1
- Thermal Protection: System in accordance with 179.18
 - Torch fire 30”
 - Pool fire 100”
- Braking: In train with Distributed Power (DP) or End of Train (EOT) Devices

Crude by Rail Rulemaking

- Phase out of older tank cars from HHFT:
 - PG I: October 1, 2017
 - PGII: October 1, 2018
 - PGIII: October 1, 2020

One-Time Movement Approvals

- HMG-127
 - Published January 31, 2012
 - Revision-3 October 18, 2013
 - Established three categories of OTMA
 - OTMA-1 (Traditional)
 - OTMA-2 (Written approval from FRA)
 - OTMA-3 (Standing Approval)



Hazardous Materials Guidance

Federal Railroad Administration, Office of Railroad Safety, Hazardous Materials Division
1200 New Jersey Avenue SE, Washington, DC 20590

Issue Date: OCT 18 2013	HM Guidance Number: HMG-127
Revision: 3	49 CFR Section(s) Affected: 174.50
Page: 1	Key Words: one-time movement approval (OTMA), leaking, defect, nonconformance, bulk package, bulk packaging, valve, fitting
Approved: <i>Robert C. Lundy</i> 10-4-2013	

ONE TIME MOVEMENT APPROVAL PROCEDURES



Ongoing Challenges/Goals

- NAR reduction
- OTMA compliance and demand
- Tank car design
- Identify and address trends in hazmat transportations
 - Increased volume
 - Unit trains of hazardous materials
 - Crude oil boom
- Risk reduction
 - Work with other disciplines to prevent derailments
 - Improve tank car survivability
- Tank car facility compliance
 - Demand continues to increase
 - Focus on production
- Update of regulations to adapt to changing transportation conditions

Thank you!

