Outline

1. History of Tank Car Standards
2. What Role does AAR Play visa-vi PHMSA – FRA
3. Role of the Tank Car Committee
4. Tank Car Characteristics
5. Fleet Statistics
6. Life of a Tank Car
7. Population Change over Time
8. AAR Position on Crude Oil and Ethanol TC’s
9. Retrofits
History

- Recommended Practices for Tank Cars first appeared in 1903 – Master Car Builder’s Association – Tank Car Committee formed
- 1910 RP’s adopted as standards
- July 1, 1925 – Interstate Commerce Commission issued specifications
- 1927 ICC required design approval by TCC
- April 1, 1967 became DOT regulations
Classification System for Tank Cars

DOT 111 A 100 W 3

- Delineator for insulation, fittings, lining or tank material
- “W” indicated fusion welded
- Test pressure PRV usually 75% of this number
- S = head protection  T = Thermal  J = both
- Class of car (non pressure 103, 104, 111) etc.
- Authorizing agency - DOT, TC, AAR
AAR’s Role in Tank Car Standards

- DOT/TC regulations dictate
- AAR standards exceed DOT/TC regulations
- AAR has delegated authority to:
  - approve applications for construction, alteration, repair or conversion of tank cars
  - certify and register facilities engaged in; fabrication, alteration, conversion, repair and qualification of tank cars; manufacture, reconditioning, repair or test of service equipment; removal and replacement of service equipment and gaskets; installation, qualification and repair of interior linings and coatings for materials corrosive to the tank
Role of the Tank Car Committee

- Considers and approves (subject to conformance with DOT and Transport Canada regulations) all proposed revisions to the AAR Specifications for Tank Cars (M-1002)

- Monitors tank car performance trends through close coordination with shipper/car owner interests, and initiates responsive actions such as Circular Letters, Maintenance Advisories, and Early Warnings letters to address potential problems, as necessary
## North American Tank Car Fleet

<table>
<thead>
<tr>
<th></th>
<th>Crude Oil</th>
<th>Ethanol</th>
<th>Other FL’s</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of tank cars in</td>
<td>334,869</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North America</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of DOT-111’s</td>
<td>228,036</td>
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<td></td>
</tr>
<tr>
<td>Non Jacketed DOT-111’s</td>
<td>22,821</td>
<td>29,202</td>
<td>26,595</td>
<td>66,526</td>
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<td>Jacketed DOT-111’s</td>
<td>5,545</td>
<td>102</td>
<td>9,358</td>
<td>13,927</td>
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<tr>
<td>Non Jacketed CPC-1232’s</td>
<td>9,402</td>
<td>481</td>
<td>2,373</td>
<td>11,703</td>
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<tr>
<td>Jacketed CPC-1232’s</td>
<td>4,843</td>
<td>0</td>
<td>1,487</td>
<td>5,588</td>
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<tr>
<td>Total</td>
<td>42,611</td>
<td>29,785</td>
<td>39,813</td>
<td>97,744</td>
</tr>
</tbody>
</table>

1. Including cars making at least one loaded shipment in 2012-2013
2. Some cars transported more than one type of commodity in the study period so column totals are not additive
Important Characteristics of Tank Cars

EVOLUTION OF RAIL INDUSTRY TANK CAR STANDARDS FOR CRUDE OIL

The railroad industry is proposing to increase the federal tank car design and construction standards for new tank cars used to transport crude oil. This proposal comes after a previous upgrade proposal which the industry voluntarily adopted and has been observing since October 2011. This graphic shows the additional tank car components included in the latest rail industry proposal.

- **High Capacity Pressure Relief Valve**
  - Current Standard: No requirement
  - Latest Rail Industry Proposal: Requires a high capacity pressure relief device to protect against a rise in internal pressure resulting from fire. Provides for faster release of product.

- **Top Fittings Protection**
  - Current Standard: Requires top fittings protection to protect the integrity of valves and fittings used to load product in the event of an accident.
  - Latest Rail Industry Proposal: Contains the same requirement.

- **Steel Tank**
  - Current Standard: Requires a minimum 9/16-inch thick steel tank for jacketed cars and a minimum 1/4-inch thick steel tank for jacketed cars.
  - Latest Rail Industry Proposal: Requires a minimum 9/16-inch thick steel tank.

- **Head Shields**
  - Current Standard: Requires minimum 1/8-inch thick half-height head shields at both ends of the tank car to improve puncture resistance.
  - Latest Rail Industry Proposal: Requires 1/8-inch thick full-height head shields at both ends of the tank car.

- **Bottom Outlet Handles**
  - Current Standard: No requirement
  - Latest Rail Industry Proposal: Requires bottom outlet handle reconfiguration to prevent the handle from inadvertently opening the bottom outlets in the event of an accident.

- **Jacket and Thermal Protection**
  - Current Standard: Requires a minimum 1/8-inch thick steel tank or a 1/8-inch thick steel jacket.
  - Latest Rail Industry Proposal: Requires the addition of both a 1/8-inch thick steel jacket around the tank car and thermal protection.

85% improvement in safety

9/16” shell
AAR Position on Crude Oil and Ethanol

• Crude oil: 9/16” shell, jacket thermal protection, top fittings protection, bottom outlet handle protection with appropriately sized pressure relief device

• Ethanol: Minimum 7/16” shell, jacket, thermal protection, top fittings protection and bottom outlet handle protection with appropriately sized pressure relief device
Other Issues

• Service life of a tank car – 50 years max – 30 to 40 economic life
• Expected future demand – crude oil growth will continue to increase the size of the tank car fleet
• Retrofits – AAR would like to see an aggressive retrofit/phase out program which factors in current shop capacity
Thank You

Questions?

Robert E. Fronczak
Assistant Vice President Environment & Hazardous Materials
Association of American Railroads
425 Third Street S.W.; Suite 1000
Washington, DC 20024
Phone: (202) 639-2839
Fax: (202) 639-2930
Email: RFRonczak@aar.org