

**National Transportation Safety Board
Safety Forum on Transportation of Crude Oil and Ethanol**

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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

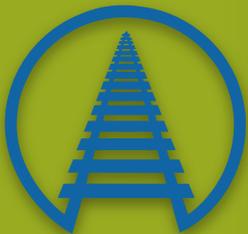
“W” indicated fusion welded

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

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

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 ½ inch thick steel tank for unjacketed cars and a minimum ¾ 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 ½ inch thick half height head shields at both ends of the tank car to improve puncture resistance.

Latest Rail Industry Proposal:
Requires ½ 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 ½ inch thick steel tank OR a ¾ inch thick steel jacket.

Latest Rail Industry Proposal:
Requires the addition of both a 9/16 inch thick steel jacket around the tank car and thermal protection.



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?

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