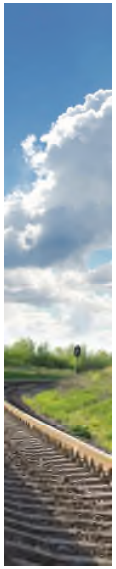

Railway Supply Institute, Committee on Tank Cars - HM-251 Position

Presentation to the White House
Office of Management and Budget
June 16, 2014

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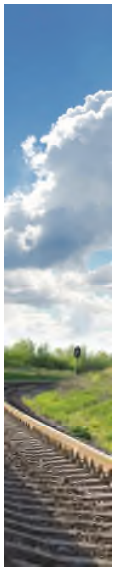
Railway Supply Institute Committee on Tank Cars

Member Companies:

- American Railcar
- CIT Rail
- GATX Corporation
- General Electric Railcar Services Corporation
- The Greenbrier Companies
- Trinity Rail Group, LLC
- Union Tank Car Company

- The RSI is committed to improving tank car safety
- Build 95 percent of tank cars operating in North America
- Own and lease 70 percent of tank cars in North America



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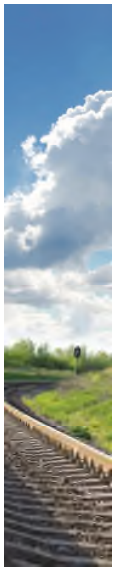
RSI-CTC – Long Standing Commitment to Safety

- Used data and sound engineering to improve tank car performance since 1970

- Our research has resulted in
  - Stronger structural designs
  - Enhanced puncture resistance
  - Improved fittings protection
  - Improved fire protection

Rail is a safe mode for shipping hazardous materials, in part due to RSICTC's long standing commitment to tank car safety



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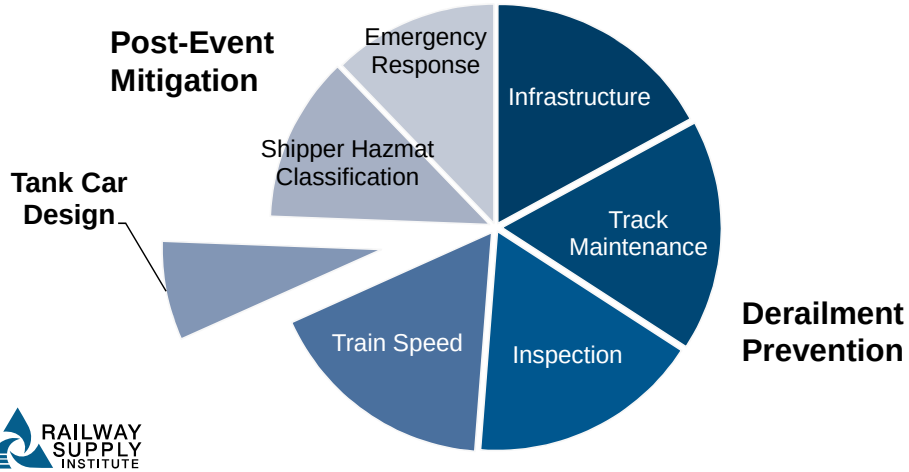
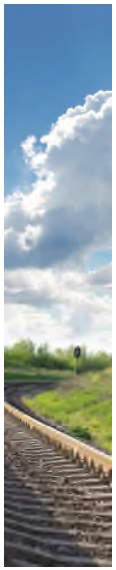
A Holistic Regulatory Approach Is Necessary

- **A bifurcated regulatory approach is not appropriate**– safe transportation of hazardous materials by rail requires simultaneous focus on the entire integrated system: infrastructure, maintenance, operations, product classification and equipment
- **Preventing derailments and collisions must be the highest priority**. Enhancing tank car design can mitigate post-event consequences in certain cases, but **it will not prevent derailments**.





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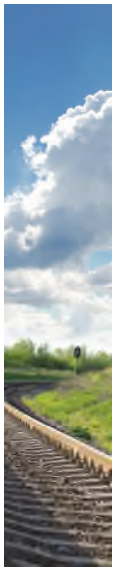
Given that our area of expertise is tank car design, the remainder of our presentation is focused on the tank car aspect of post-derailment mitigation



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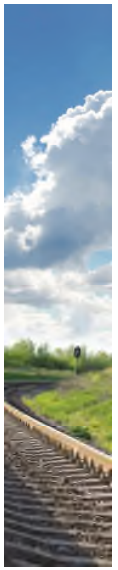
Comprehensive Tank Car Standards

New regulations on tank car design standards should address all types of DOT-111s in Class 3, crude oil and ethanol service:

- Existing “Legacy” DOT-111s
  - Built to existing DOT regulatory requirements
- CPC-1232 “Good Faith” Tank Cars
  - Recently built tank cars already in service
  - Tank cars in the order backlog
- “Future” Tank Cars to be Ordered



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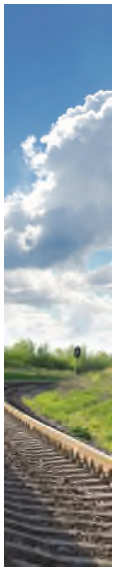
Modification Requirements Should Distinguish Between Legacy and Good Faith Cars*

- **"Legacy" Cars Represent Best Modification Candidates:** Legacy cars modified as proposed by RSI would yield significant improvements in the probability of release during certain types of derailments. The existing fleet has a substantial number of "Legacy" tank cars in crude oil and ethanol service.
  - Existing "Legacy" Tank Cars (all flammable liquids) – 80,500
    - Crude Oil: Non-Jacketed – 22,800; Jacketed – 5,500
    - Ethanol: Non-Jacketed – 29,200; Jacketed – 100
- **Recently Built "Good Faith" Cars Already Have Many Enhancements:** Industry has recently made a significant investment ($7 billion) to build Good Faith CPC-1232 tank cars to new standards with key safety enhancements. This voluntary standard was finalized in 2011 after an extensive review and design process conducted jointly by tank car owners, manufacturers, shippers, and railroads.
  - "Good Faith" CPC-1232s in service (all flammable liquids) – 17,300
    - Crude Oil: Non-Jacketed – 9,400; Jacketed – 4,850
    - Ethanol: Non-Jacketed - 480 ; Jacketed – 0
  - "Good Faith" CPC-1232s in the order backlog through 2015 - 37,800
    - Crude Oil: Non-Jacketed – 12,500; Jacketed – 25,300
    - Ethanol: 0



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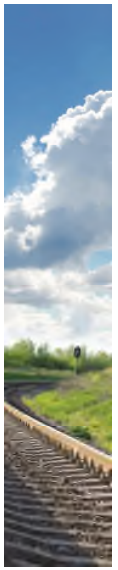
* Population numbers are based on AAR 2013 Q4 tank car numbers

Core Modification Principles

The modification requirements for non-jacketed Legacy DOT-111s should incorporate the following:

- **Prioritize Cars Used in Unit Trains/Large Blocks**: Using a risk based approach, prioritize modification of crude oil and ethanol tank cars, which are shipped in unit trains and large blocks of cars
- **Minimize Modal Shift**: Recognize unintended negative safety consequences and economic impacts that could be caused by modification requirements that result in modal shift
- **Minimize Capacity Losses:** Limit economic impacts by preserving capacity that can be safely used and limiting out of service time required to implement modifications.
- **Account for Limited Shop Capacity**: Recognize limited shop capacity and car cleaning resources already dedicated to ongoing periodic inspections, maintenance, and requalification
- **Recognize Existing Backlog**: Account for the existing backlog of tank cars on order and the resources needed for new tank car construction as it relates to production capacity constraints



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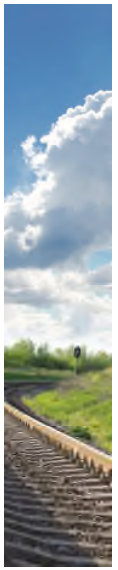
RSI Modification Proposal: Cost Impact

- Full cost of modification includes: enhancements to the tank, out-of-service time, upgrades to non-tank components
- Excluding out-of-service time and non-tank upgrades total cost of RSI modification proposal is **$3.6 billion**
- Costs that result in shifts of hazmat transport to other modes may result in unintended safety consequences and economic impacts for the petroleum industry and consumers
- Capacity losses due to premature retirements and excessive out of service time will impact crude production and economic growth

Modification	Cost / Existing Tank Car	Out-of-Service Time (per car)
High Capacity Pressure Relief Valve • If done at Requalification • Not at Requalification	 • $2,100 • $3,400	 • No add'l time • 5 weeks
Bottom Outlet Valve Handle Removal • If done at Requalification • Not at Requalification	 • $300 - $600 • $300 - $600	 • No add'l time • 5 weeks
Trapezoidal/Conforming Head Shield	• $17,500	• 5 weeks
Top Fittings Protection (TFP) • Assuming Existing Nozzle • Assuming New Nozzle	 • $6,000 • $24,000	 • 7 weeks • 7 weeks
TFP (new nozzle) + Jacket + Full Head Shield • Thermal Insulation • Cost of trucks, if upgradable	• $63,500 • Add'l $3,700 • Add'l $16,500	• 12 weeks • No add'l time • No add'l time



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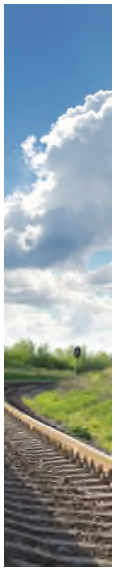
* Costs will vary depending on car design and modification. All costs estimates are as stated in RSI's Comments on HM-251 in Docket No. PHMSA 2012-0082, filed Dec. 5, 2013.

RSI Modification Proposal: Scope and Feasibility

- The tank car population impacted by RSI's modification proposal includes 29,200 ethanol and 22,800 crude oil non-jacketed, legacy DOT-111 tank cars
- RSI's proposed modification for non-jacketed legacy tank cars will require a substantial commitment of resources and a disruption to service
  - Estimated direct cost to modify crude oil and ethanol tank cars is **$2.57 billion.**
  - Modifications include: full height head shields, a jacket, improved top fittings, ½ inch thermal blanket, pressure relief device, re-configured bottom outlet valve handle
  - An estimated average of 565 direct labor hours would be needed to modify each tank car → 29.4 million direct labor hours to complete all the impacted cars
  - Each tank car would be out of service for about 12 weeks
  - **Timing:** Prioritize crude oil and ethanol tank cars for modification by requiring accelerated phased compliance for these commodities
- Given the scope of the proposal, RSI anticipates approximately 28% of the existing fleet would be prematurely retired rather than modified



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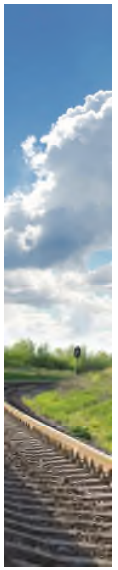
RSI Modification Proposal: Tank Capacity Impacts

- Adding features that decrease tank car capacity will require more tank cars to carry the same quantity of commodity, resulting in the negative safety consequences associated with increased number of cars, as well as higher transportation costs, lower well head prices, and higher delivered crude costs.

Existing Design	Modification	Capacity Change*
CPC-1232, Non-Jacketed	Add Jacket	- 3,437 gallons

- Non-jacketed Legacy tank cars can be modified with minimal capacity change by upgrading to 286 Gross Rail Load (GRL)

Existing Design	Modification	Capacity Change*
Legacy, Non-Jacketed, 263 GRL	Add Jacket	- 2,000 gallons
Legacy, Non-Jacketed, 263 GRL	Add Jacket, Upgrade to 286 GRL	Negligible change



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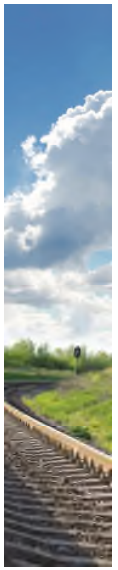
* These are estimates for a typical DOT 111 tank car, but actual values may vary by individual tank car builder. Actual capacities will vary by outage and product density.

Primary Impact: Mode Choice

Background

- Between 2009 and 2012 US Crude oil Production Increased from 2.0 billion barrels to 2.4 billion barrels. In 2013 production increased to 2.7 billion barrels.
- Much of this new production has occurred in new locations (e.g., Williston Basin in North Dakota/Montana) that are not well served by existing pipelines.
- The nation's crude oil pipeline network is currently operating at high levels of capacity utilization, and has not been able to expand to accommodate rapidly increasing crude production.
- Rail and barge transportation have played a critical role in moving this new oil to refineries. Rail and barge have largely played a complimentary rather than a competitive role.
- Over the 2009-2012 period roughly 30 percent of new oil production has moved by rail. The corresponding fraction for the Williston Basin is roughly 75 percent.



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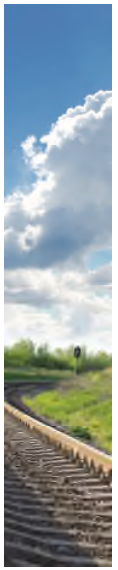
No Realistic Alternatives to Rail

No Near Term Alternatives: Significant curtailment of tank car capacity likely to result in significant curtailment of crude production because there are no near term alternatives to rail transportation.

- **Pipeline** – network is already near maximum capacity utilization,
  - Political and economic barriers to expansion prevent accommodation of rapidly increasing crude production
- **Trucks** – it would take 4-5 trucks to move the equivalent crude oil capacity of 1 rail tank car, and up to 600 trucks to move the equivalent of one unit train
  - Truck cost per mile is up to 1000% higher than rail
  - Movement of some crudes may required specialized vehicles
  - Truck fleet required for large scale crude transportation simply doesn't exist
  - Would be economically feasible only for short haul movements (e.g., Eagle Ford to Gulf Coast)



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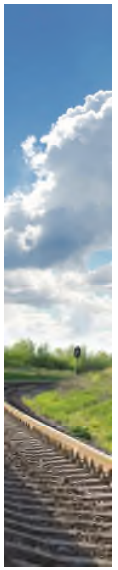
Water Transport Is Not a Substitute for Rail

- **Barge** – compliments, but cannot replace rail transportation. It is constrained by:
  - Geography of waterway system
    - Icing conditions and constrained lock geometry limit transportation of crude on the Upper Mississippi
  - Time, cost and political barriers limit trans-load terminal construction
  - The capacity of the tank barge fleet is limited
- Examples of complementarity between barge and rail in movement of Williston Basin crude:
  - Rail transport to Albany NY, combined with water transport to East Coast refineries
  - Rail transport to St. Louis MO, combined with water transport to Gulf Coast refineries
  - Rail transport to Anacortes WA, combined with water transport to West Coast refineries



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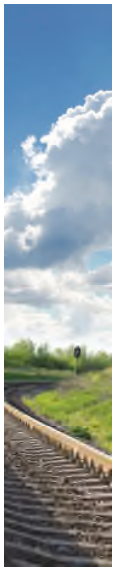
Secondary Impacts – Economic Effects

Reducing the capacity for rail transportation may have unintended economic and environmental consequences.

- Between 2009 and 2013 US crude oil production Increased from 2.0 billion barrels to 2.7 billion barrels. Approximately 30% of new oil production has moved by rail, with 75% in the Williston Basin in North Dakota/Montana moving by rail.
- Higher transportation costs lead to lower well head crude oil prices and higher delivered oil prices
  - Truck costs $0.27/ton mile vs. rail costs $.02/ton mile and barge costs $0.007/ton mile
  - Source: National Waterways Foundation
- Without an economically feasible way of moving crude to refining centers, production will cease
- These changes will lower domestic crude production and decrease economic activity



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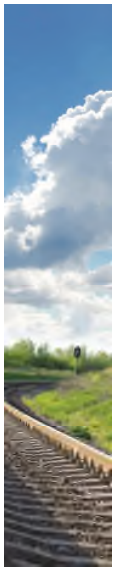
Secondary Impacts – Adverse Safety and Environmental Effects

- Increased spillage from greater reliance on truck transport
  - Truck spill rate is 10.41 gals/ton mile
  - Rail spill rate is 4.89/ton mile
  - Barge spill rate is 2.59/ton mile
  - Source: Texas Transportation Institute

- Carbon emissions increase from greater reliance on truck transport
  - Truck CO2 emissions rate is 172g/ton mile
  - Rail CO2 emissions rate is 21g/ton mile
  - Barge CO2 emissions rate is 16g/ton mile
  - Criteria pollutant emissions also increase from greater reliance on truck transports
  - Source: Texas Transportation Institute



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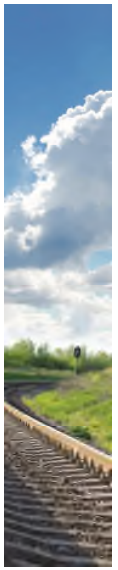
RSI Proposal

Modifying Existing Tank Cars



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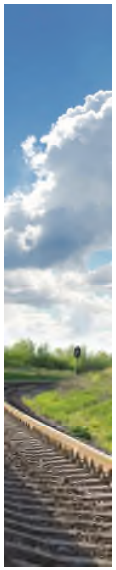
RSI Proposal - Modifying Legacy DOT-111s

Modification requirements should incorporate the core principles: prioritize risk, modal shift, limited shop capacity, existing backlog.

RSI Proposal Timing: Modify the fleet over a reasonable timeframe allowing for compliance through modification, re-purposing, or retirement. Prioritize modifications for crude oil and ethanol tank cars.

- Modify Existing, Legacy Non-Jacketed Crude Oil and Ethanol Tank Cars with:
  - Full height head shields
  - Jacket
  - Improved top fittings protection
  - ½ inch thermal blanket
  - Pressure relief device per TCC recommendations
  - Re-configured bottom outlet valve handle
  - Estimated direct cost for modifications: **$2.57 Billion**
- Modify Existing, Legacy Jacketed Tank Cars with:
  - Pressure relief device per TCC recommendations
  - Re-configured bottom outlet valve handle
  - Estimated direct cost for modifications: **$63 Million**
- Once modified, tank cars should remain in service their full statutory life



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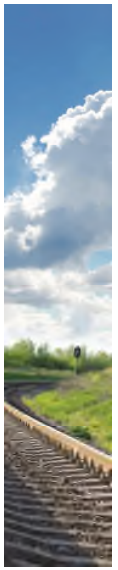
RSI Proposal - Modifying Good Faith CPC-1232s

RSI Proposal:

- Modify existing CPC-1232 jacketed and non-jacketed tank cars with:
  - Pressure relief device per TCC recommendations
  - Re-configured bottom outlet valve handle
  - Estimated direct cost for modifications: **$210 Million**
- Once modified, tank cars should remain in service for their full statutory life



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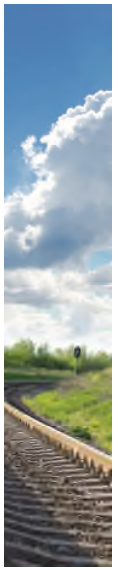
RSI Proposal

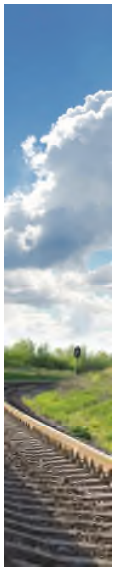
Newly Built Tank Cars



RSI Proposal - New Cars

Class 3, PG I and II, Including Crude Oil and Ethanol Tank Cars

- For new cars ordered after a date certain (determined by DOT), RSI recommends that new tank car features include:
  - Minimum 7/16 inch normalized steel tank
  - Full height head shields
  - Jacket
  - Top fittings protection
  - ½ inch thermal blanket
  - Pressure relief device per TCC recommendations
  - Re-configured bottom outlet valve handle
- Ongoing classification work may require some crude oils to be packaged in cars other than DOT-111s



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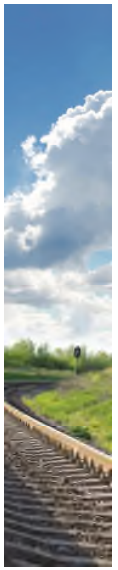
New Tank Car Production Capability

- The existing legacy non-jacketed crude oil/ethanol fleet, consisting of 52,200 tank cars, cannot be replaced overnight
- 34,000 Projected annual tank car industry new car production capacity, based on 2014 - Q1 deliveries and existing orders
  - A tank car ordered today will not be delivered until Q4 2015
- 60% After the backlog is satisfied, only 60% of the un-committed tank cars would be available for crude oil and ethanol service. The remaining 40% are required to meet new car demand for other commodities
- 55,400 New tank cars in the order backlog for 2014-2016 are currently under contract to meet existing shipment demand
  - 37,800 of those in the backlog are under contract for crude oil and ethanol



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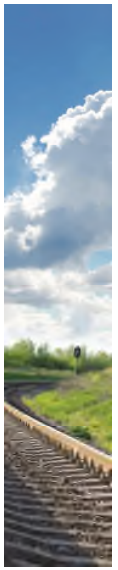
Questions

Q&A



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