

ADAPTING TO CHANGE: NORTH AMERICAN TANK CAR STANDARDS

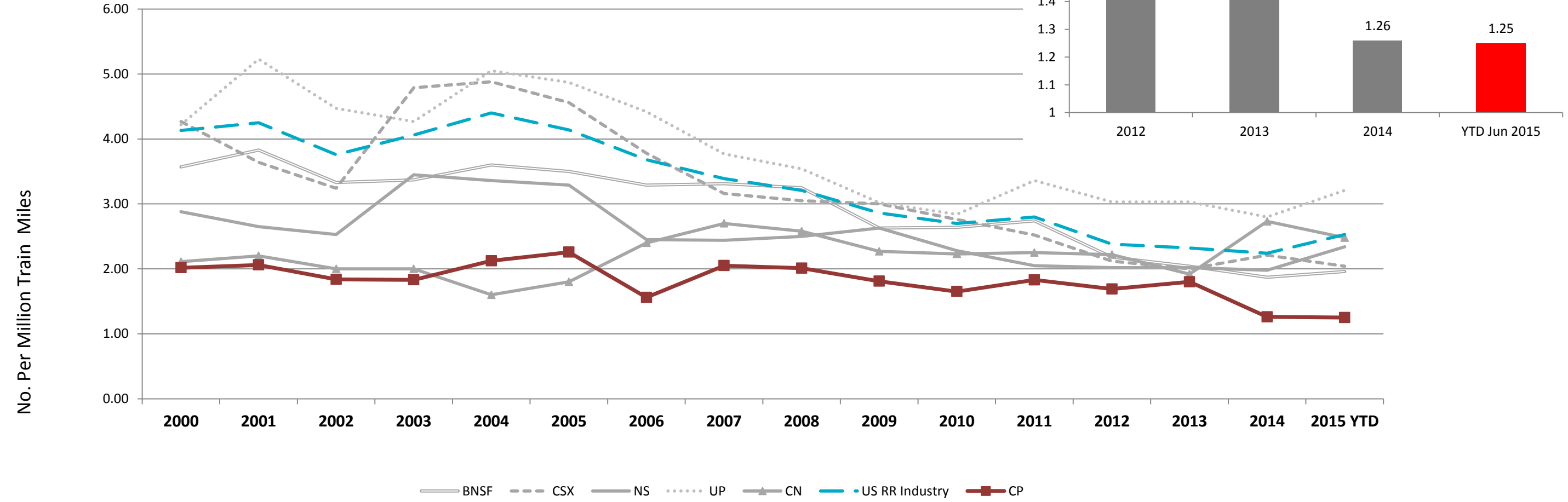


Glen Wilson
Canadian Pacific
SWARS, Dallas, October 2015



SAFETY

FRA Train Accident Rate 2001- YTD 2015

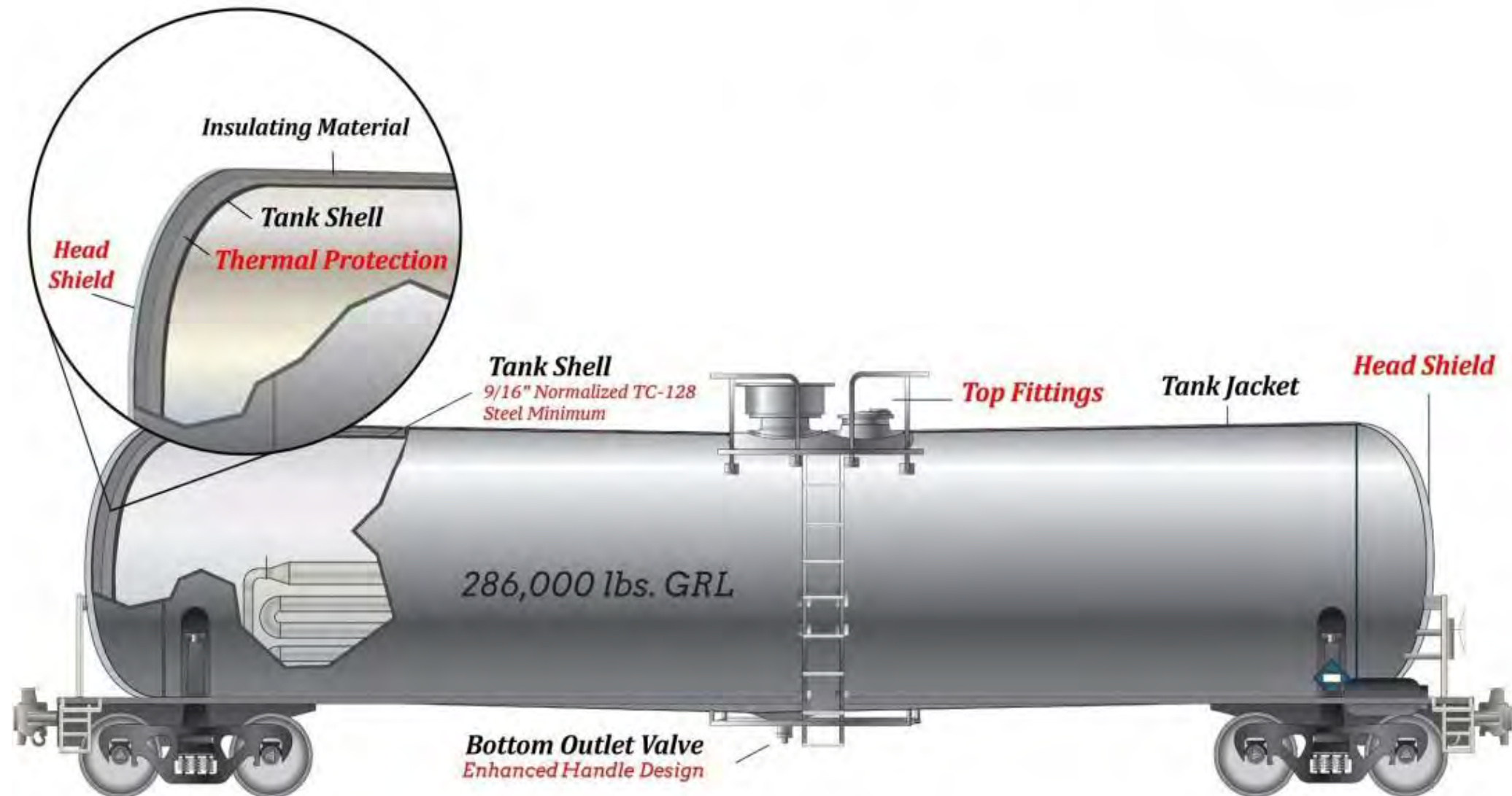


99.997% of hazmat rail shipments arrive without incident



CHANGES TO TANK CAR STANDARDS FOR FLAMMABLE LIQUIDS

New Construction Standards for the DOT/TC 117 are Harmonized



SAFETY BENEFITS OF THE DOT 117

Conditional Probability of Release (CPR) for Tank Car Configurations

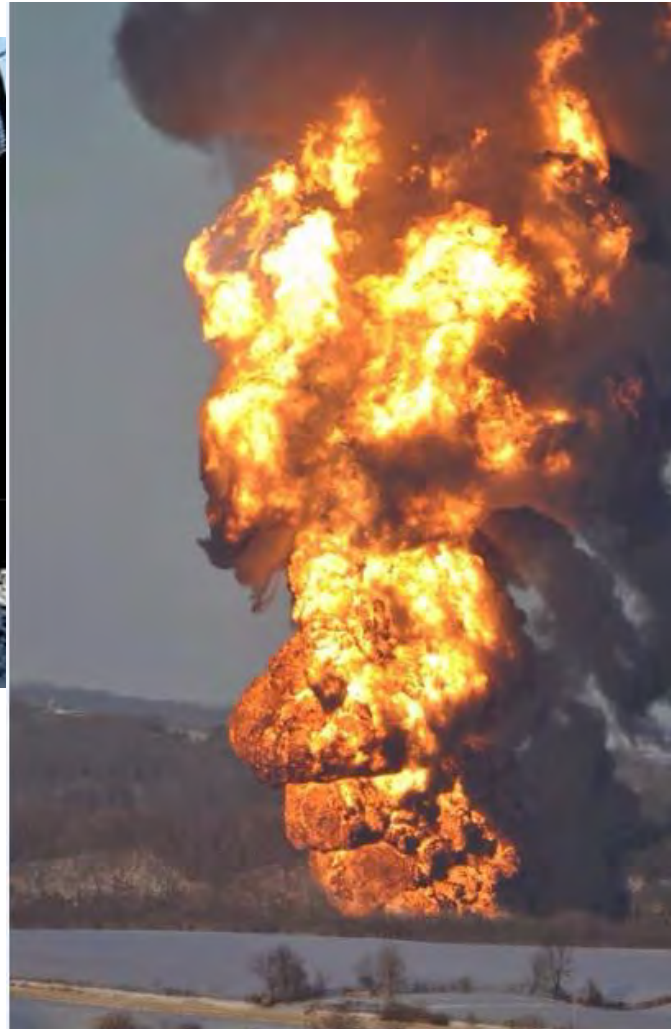
Individual Car CPR			
Car Category	Tank Car Features	CPR (%)	CPR >100 gal. (%)
Legacy DOT 111	7/16" shell	26.6	19.6
	7/16" shell, JKT	12.8	8.5
CPC-1232 DOT 111 without JKT	1/2" shell, HHS, TFP	13.2	10.3
CPC-1232 DOT 111 with JKT	7/16" shell, JKT, FHS, TFP	6.4	4.6
CPC-1232 DOT 111 with 1/2" Shell & Jacket	1/2" shell, JKT, FHS, TFP	5.2	3.7
DOT 117 with 9/16" Shell & Jacket	9/16" shell, JKT, FHS, TFP	4.2	2.9

JKT – jacketed; HHS – half-height head shield; FHS – full-height head shield; TFP – top-fittings protection



TANK CAR THERMAL PROTECTION

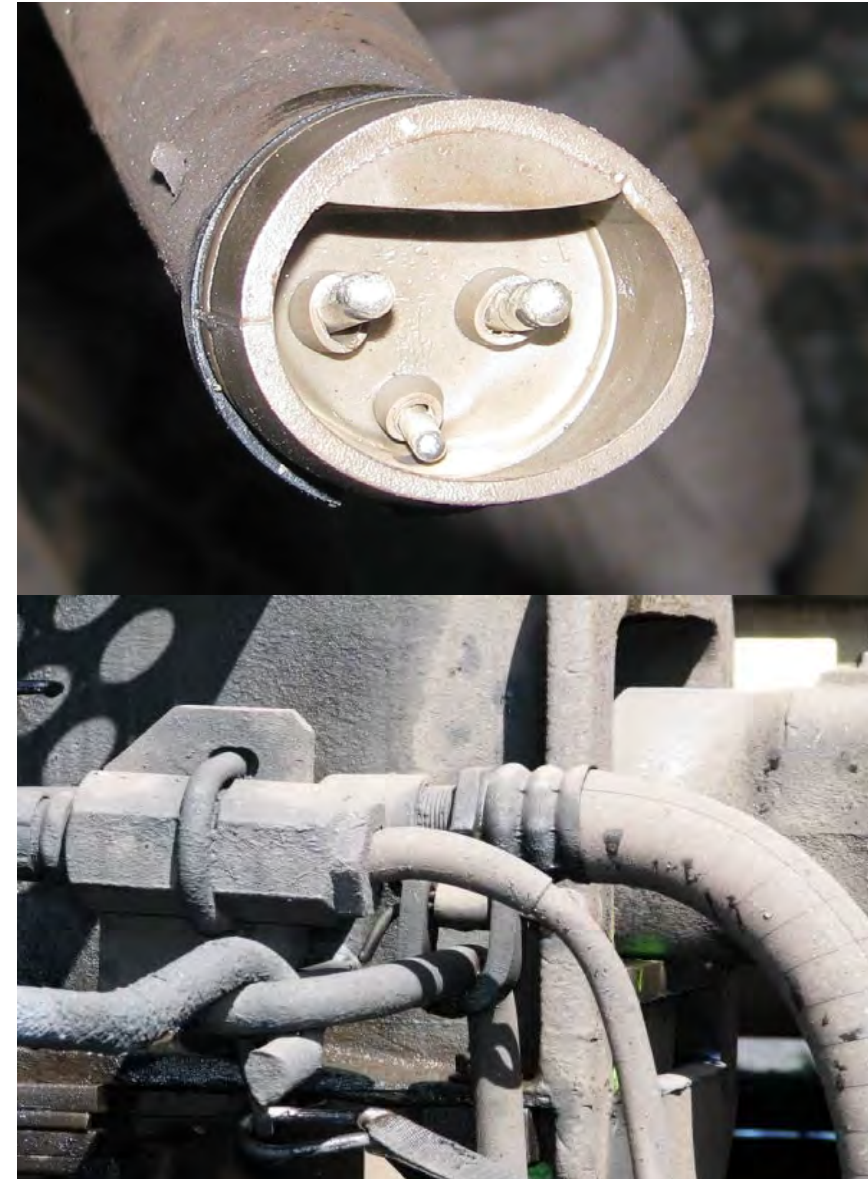
SAFETY BENEFITS MUST INCLUDE BOTH DERAILMENT SURVIVAL & EXPOSURE TO FIRE



ECP BRAKES

COSTLY, INEFFECTIVE & HAVE NO RELATIONSHIP TO THE REASONS TANK CAR STANDARDS ARE CHANGING

- Not required in Canada, but required in the U.S. for trains with >70 flammable liquid tank cars
- ECP has been in very limited service for over 15 years and has yet to meet the reliability standards required
- DOT analysis flawed and skewed; ECP:
 - Has no significant safety benefits
 - Has no significant business benefits
 - Would substantially impair network fluidity
 - Would be extremely costly



REGULATORY CHALLENGES

THE STANDARD FOR CARS BUILT AFTER OCTOBER 1ST IS THE SAME, BUT IMPORTANT DIFFERENCES EXIST AFFECTING HOW TANK CARS ARE USED

- Application of the new standard:
 - Canada: all tank cars containing flammable liquids (FL)
 - United States: tank cars containing FL that will move in a block of >20 or a train containing >35 FL cars in total (High Hazard Flammable Trains)
- ECP Brakes required in the U.S. for trains with 70 FL cars or more (High Hazard Flammable Unit Trains); no requirement in Canada
- Sequencing of deadlines emphasizes commodities in Canada but packing groups in the U.S. (see next slide)

IMPLEMENTATION TIMELINE CHALLENGES

TIMELINES	Canada	United States
October 1, 2015	All cars built after this date must meet the new 117 standard	Fully harmonized with Canada
January 1, 2017	N/A	Report to DOT on tank car construction progress
May 1, 2017	DOT 111 non-jacketed (NJ) cannot transport any crude oil (all packing groups)	N/A
January 1, 2018	N/A	DOT 111 NJ cannot transport any PG I in HHFT
March 1, 2018	DOT 111 jacketed cannot transport any crude oil	DOT 111 jacketed cannot transport any PG I in HHFT
April 1, 2020	CPC 1232 NJ cannot transport any crude oil (all packing groups)	CPC 1232 NJ cannot transport any PG I in HHFT
January 1, 2021	N/A	HHFUT with 70 or more cars of PG I must be operated with ECP brakes or will be restricted to 30 mph
May 1, 2023	DOT 111 (jacketed or NJ) cannot be used to transport any ethanol	DOT 111 (jacketed or NJ) cannot transport any PG II in HHFT; AND any HHFUT with 70 or more cars of any flammable liquid must be operated with ECP brakes or will be restricted to 30 mph
July 1, 2023	CPC 1232 NJ cannot transport any ethanol	CPC 1232 NJ cannot transport any PG II in HHFT
May 1, 2025	CPC 1232 jacketed cannot transport any class 3 flammable liquids, meaning all class 3 shipments must be in a TC 117 compliant tank car.	CPC 1232 jacketed cannot transport any PG I or PG II in HHFT; AND modifications must be done to top and bottom valves for any DOT 111 or CPC 1232 that will transport PG III in HHFT.



LOOKING AHEAD

- The new construction standard took effect on October 1st so all new cars must now be built to meet the DOT 117 standard going forward
- Agency appeals to the DOT and court appeals of the final rule remain outstanding
- All tank cars being built or retrofitted have thermal protection standards consistent with protection for 800 minutes of pool fire exposure – expect this to be formally codified somewhere
- All stakeholder industries support eliminating ECP brakes from the requirements of the rule and it is a key issue in the appeals
- Both cross-border and domestic US movements of flammable liquids will pose unprecedented challenges starting in 2017 unless the issues are addressed