CLASS 3 FLAMMABLE LIQUIDS
ELEMENTS FOR SAFE TRANSPORTATION BY RAIL

“Holistic Approach”

− Prevention – Railroad, Tank Car Focus
− Mitigation – Railroad, Tank Car, Shipper Focus
− Response – Railroad, Emergency Responders, Shipper, Tank Car Focus

PREVENTION

— Infrastructure

— Inspection
PREVENTION (Cont.)

— Maintenance

— Detectors
Mainline Derailment Causes

- **Track**: 44%
- **Human**: 14%
- **Misc.**: 12%
- **Wheels**: 8%
- **Bearings**: 8%
- **Axles**: 2%
- **Draft Components**: 3%
- **Locomotives**: 3%
- **Truck Components**: 3%
- **Other Equipment**: 3%
- **Signal**: 1%

Note: The “Misc.” category includes pending investigations. “Locomotives” category includes all equipment causes associated with locomotives.

Source: FRA (Accessed March 25, 2015)
MITIGATION

— Operating Requirements

**Increased Track Inspections**
- At least one additional internal rail inspection each year above Federal Railroad Administration (FRA) requirements on crude oil routes, Effective: March 25, 2014
- At least two Geometry Car inspections each year on crude oil routes, Effective: March 25, 2014
- BNSF-SPECIFIC ACTION: Increasing rail detection testing frequencies along critical waterways (BNSF currently at 2x FRA frequency; going to 2.5x with this change), Effective: April 1, 2015

**Increased Trackside Safety Technology**
- Additional Hot Bearing Detectors (HBD) on crude oil routes (max 40 mile spacing), Effective: July 1, 2014
- BNSF-SPECIFIC ACTION: HBD spacing of 10 miles on crude routes that parallel critical waterways
- BNSF-SPECIFIC ACTION: Key Train stopped by HBD must set out the indicated car
- BNSF-SPECIFIC ACTION: KEY trains with Level II Wheel Impact Load Detector (WILD) defect (120 – 140 KiloPound (Kips)) will be handled as a LEVEL I defect (immediate set-out), Effective: March 25, 2015

**Rail Risk-Based Traffic Routing Technology**
- Use of Rail Corridor Risk Management System (RCRMS) to determine the most safe and secure routes for crude trains of 20 or more loaded cars, Effective: July 1, 2014

**Lower Speeds**
- Implemented nationwide speed restriction: 50 mph for all Key Trains (20 or more cars hazmat; one car Toxic Inhalation Hazard/Poisonous Inhalation Hazard (TIH/PIH)) Effective: July 1, 2014
- Municipal speed restriction: 40 mph for crude oil trains with Department of Transportation (DOT-111) tank cars moving through High Threat Urban Areas (HTUA), Effective: July 1, 2014
- BNSF-SPECIFIC ACTION: 35 mph for all shale crude oil trains through municipalities of 100k or larger, Effective: March 25, 2015

— Routing
MITIGATION (Cont.)

— Product Containment Performance (Tank Car)

— Thermal Performance (Tank Car)
MITIGATION (Cont.)

— Product Characteristics
RESPONSE

— Training

— Equipment
RESPONSE

– Community Outreach

– Train Information
AUTHORITIES

— Regulations

• U.S. Department of Transportation (DOT)
  — Pipeline and Hazardous Materials Safety Administration (PHMSA)
  — Federal Railroad Administration (FRA)

• Transport Canada (TC)
  — Transportation of Dangerous Goods Directorate (TDG)

• Secretariat of Communications and Transportation - Federal Government of Mexico

— Industry Standards

• Association of American Railroads (AAR)
• Railway Association of Canada (RAC)
— Recommendations

- National Transportation Safety Board (NTSB)
- Transportation Safety Board Canada (TSB)

“Harmonization is Key for a North American Interchange Rail System”
TANK CAR REGULATORY STATUS


— Transport Canada in “Consultative Period” Regulatory Update Provided March 11, 2015 Final Rule Release Expected to Coincide with US DOT / PHMSA
— Harmonization of Technical Requirements for Newly Constructed Tank Cars and Modified Tank Cars Expected

— Scope of Regulatory Action Differs
  • PHMSA Product and Operations Oriented, TC Product Oriented
  • Timeline for Existing Tank Car Compliance Differs

“Regulatory Certainty Necessary to Proceed”
TANK CAR 101

— Shell

— Ceramic Fiber Blanket
TANK CAR 101 (Cont.)

- Insulation
- Jacket
TANK CAR 101 (Cont.)

— Head Shields

— Manway
TANK CAR 101 (Cont.)

— Multi – Housing

— Bottom Outlet Valve
DOT-117 TANK CAR (Anticipated)

— Product Containment Performance
  • 9/16” Thick Normalized Steel Tank
  • 1/8” Steel Jacket, 1/2” Full Height Head Shields
  • Top Fittings Protection
  • Positive Engagement Bottom Outlet Valve Handle

— Thermal Performance
  • 1/8” Steel Jacket and Head Shields
  • Ceramic Fiber Blanket
  • Pressure Relief Valve
DOT – 117 TANK CAR (Anticipated)

- 9/16" Steel Tank
- ½" Full Height Head Shield
- 1/8" Steel Jacket
- Bottom Outlet Valve
- Ceramic Fiber Blanket
- Top Fittings Protection
DOT-117R MODIFIED TANK CAR (Anticipated)

— Product Containment Performance
  • Existing 7/16” or ½” Steel Tank
  • 1/8” Steel Jacket, 1/2” Full Height Head Shields
  • Enhanced Fittings Protection
  • Positive Engagement Bottom Outlet Valve Handle

— Thermal Performance
  • 1/8” Steel Jacket and Head Shields
  • Ceramic Fiber Blanket
  • Pressure Relief Valve
TRINITYRAIL READINESS

— Active Participant in Regulatory Process in USA and Canada – Railway Supply Institute
— Design, Prototype, Production of New Tank Cars in Compliance with Expected DOT-117 Regulations
— Design, Prototype, Production of Eight Variants of Modifications for Three Classes of Existing Tank Cars. Focused on Possible DOT-117R Regulations
— Expanding New Tank Car and Modification Facilities

“Achieve Premier Performance in Support of Our Customers”