Crude Oil Quality Association – Seattle, WA

BNSF Railway – Crude by Rail – Incident Preparedness and Response

June 6th, 2013

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Manager, Hazardous Materials Field Operations & Emergency Response
BNSF Railway
Content

1. BNSF Railway – The System
2. Hazardous Material Transportation
3. Emergency Planning/Preparedness
4. Accident Prevention
5. Emergency Response
• 32,500 Miles of Track, 40,000+ employees
• Operating in 28 States, 2 Canadian Provinces
• Over 6,000 Locomotives
• Over 225,000 rail cars on the system
• 2012 – 1.4 Million Hazardous Material Shipments
• 2013 Capital Investment of $4.1 Billion
• BNSF can move 1-ton of freight approximately 500 miles on 1-gallon of fuel
• 2013 BNSF will conduct a pilot test using a LNG powered locomotive to haul freight
Examples of Types of Releases

- Any identifiable release is reportable under DOT regulations

Non-Accident Release

Accident Release
Tank Cars with NARs by Year
US & Canada

Source: AAR/BOE NAR data
Top Commodities for NARs 2012 - US & Canada 2012

- Petroleum Crude Oil: 108
- Alcohols NOS: 67
- Fuel Oils: 36
- LPG: 35
- Hydrochloric Acid Solution: 25
- Molten Sulfur: 23
- Gasoline: 18
- Flammable Liquid NOS: 16
- Petroleum Distillates: 16
- Anhydrous Ammonia: 16
- Argon: 13
- Envir Haz Substances: 13
- Sulfuric Acid Solution: 12
- Corrosive Liquid NOS: 11
- Caustic Soda Solution: 11

Source: AAR/BOE NAR data
NARs per 1,000 Originations
Selected Commodities – All carriers US & Canada

Source: AAR/BOE Annual Hazmat Reports
Percent of NARs Occurring on Loaded Trips
12 Months Ending June 2012 – All Carriers US & Canada

Top 16 commodities, in order of total NARs

- Petroleum Crude Oil: 98%
- Alcohols NOS: 78%
- Hydrochloric Acid Solution: 64%
- Molten Sulfur: 95%
- Fuel Oils: 86%
- LPG: 83%
- Flammable Liquid NOS: 87%
- Petroleum Distillates: 79%
- Anhydrous Ammonia: 57%
- Corrosive Liquid NOS: 88%
- Sulfuric Acid Solution: 93%
- Caustic Soda Solution: 92%
- Phosphoric Acid Solution: 92%
- Argon: 83%
- Envir Haz Substances: 82%
- Waste Flammable Liquid: 46%

Source: AAR/BOE NAR data
Crude Oil NAR Trend

Source: AAR/BOE NAR data
Crude Oil Shippers with Multiple NARs 2012 – All Carriers US & Canada

Source: AAR/BOE NAR data
Top Specific Causes for Crude Oil NAR’s 2012 – All Carriers US & Canada

- Manway - bolts loose: 46
- Manway - gasket deteriorated: 15
- Manway - gasket missing: 9
- Liquid line - threaded valve loose: 5
- Gasket - misaligned: 4
- PRV - overloaded tank: 4
- VRV - valve stuck open: 4
- Liquid line - valve open, closure plug open: 3
- Liquid line - valve closed, closure plug worn: 3
- Sample line - closure plug missing, valve open: 3
- Bottom outlet - cap loose, valve closed: 2
- VRV - unidentified specific problem: 2
- VRV - cap o-ring misaligned: 2

17 other causes had 1 NAR each

Source: AAR/BOE NAR data
Crude Oil – DOT Class 3 Hazardous Material

• Currently for BNSF, US “Crude by Rail” consists of mainly transportation from various Shale oil sources (i.e Bakken, Eagle Ford, Permian Basin etc).

• Some other types of crude are transported in more limited quantities (i.e Canadian Oil Sands Products etc)

<table>
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<th>Year</th>
<th>LDD SHPMTS</th>
<th>RESIDUE SHPMTS</th>
<th>TOTAL SHPMTS</th>
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<td>39,514</td>
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<td>2012</td>
<td>152,926</td>
<td>162,678</td>
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% Change: 299.16% 311.70% 305.53%
2012 Crude Oil Release Stats (BNSF Railway)

FY 2012 – 315,604 Total Shipments

• >1,200 Unit Crude Oil Trains

• 0 Accident Releases

• 16 Crude Oil Non-Accident Releases (NAR’s – Shipper Securement/QC issues), average release was <3 gallons

• 2012 BNSF FRA Rail Accident Rate of 1.88 (per million train-miles), Lowest in BNSF History – Currently at 1.98 for 2013 YTD
Low Pressure Tank Car – DOT 111A100W1

Top Fittings

- Tank Shell – 7/16” Thick
- Steel – TC 128 B (most), normalized
- Protective Features –
  - Pressure Relief Device
  - BOV Shear bolts
  - Roll over protection (some)
  - Head Shields (some)
- Capacities – Generally 28,000-32,000 G
- Non-Jacketed (no thermal protection or insulation)
Planning/Preparedness
Community Training

Community focus is on training responders and providing interpretative information. Training is available via instructor lead or computer based training.

Training topics include:
- Train list / shipping papers
- Placards
- Equipment
- Incident Assessment
- Hands-on equipment in field – Instructor lead

Recipient of TRANSCAER® National Award – Last 10 consecutive years
Local Responder Training

“Centerpiece of our training efforts”
Emergency Planning

Community Hazardous Materials Flow Study Support:

- Security Sensitive Information – Distributed on a “need to know basis”

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<th>STCC NUMBER</th>
<th>DESCRIPTION</th>
<th>CLASS CODE</th>
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<th>LOADED CAR COUNT</th>
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Emergency Preparedness and Planning

SERP Identifies how the BNSF responds to Incidents

Contents:
1. Notifications, Public Affairs, Hazard ID, Incident Classification, Incident Management, Resource Utilization, Safety & Health, Reported Chemical Exposures, Terminating an Incident, Roles and Responsibilities, Security of HAZMAT shipments

Appendices:
• LERP’s (Local Emergency Response Plans)
  1. Developed for our Large Fixed Terminals
  2. Contains Site/Location Specific Information/Resources
  3. Conduct Drills at over 45 locations per year (full scale or TTX)
• LRP’s (Local Reaction Plans)
  1. Specific Location Threats – Pueblo Weapons Depot etc.
  2. Environmental Sensitivities – Geographical Response Plans/Strategies
Geographical Response Plan
Support/Development – Water Response

Public Plans

• Northwest *(w/ additional quick access reference documents)*
• Coastal
• Mississippi River
• Working w/ EPA + others on Plans in ND, MT, WY

Rail Specific

• Kootenai River (MT)
• Columbia River CCP’s
• Colorado River (CO)
• Wind River (WY)
• Middlefork Flathead/Glacier Park – In development (MT)
Accident Prevention
Railroad Engineering/Accident Prevention

On-Board Devices examples:
1. 23 Channel Event Recorders, cameras
2. GPS – Locomotives, some Railcars
3. Positive Train Control 2015 Mandate

Wayside Detector examples:
1. Warm Wheel/Bearing Detector
2. Wheel Impact Load Detector (WILD)
3. Trackside Acoustical Detector
4. Truck Performance Detector
5. Dragging Equipment Detector

Engineering examples:
1. Track Geometry Measurements
2. Rail Flaw Detector
3. Slide Detectors, Earthquake Monitoring

Operating Practices/Accident Investigation + others
Emergency Response
# Incident Notification

## Service Interruption Desk (SID)
- **Dispatchers:** Trick, Chief
- **Svc Region/Division:** AVP if merited, Supt, Asst Supt, Supt Ops, REE, Tmstr, Roadmaster
- **NOC personnel:** GST / AGST, Corridor Supt, Signal, Mechanical, Maint. Of Way
- **Foreign Line Railroad** (when involved)
- **Federal and State Agencies:** FRA, NTSB, EPA, DOT, Commerce Commission, etc.
- **Shipper, CHEMTREC, Canutec, etc**
- **Shipper Protocol - See H**
- **BNSF Hazmat**
- **BNSF Environmental:** (when lading/fuel spilled)
- **BNSF Responsible Care:** (IF spill involved)
- **Alpha Page:** Howard Horn

## First Call

## Resource Operations Call Center (ROCC)
- **Civil Emergency Response Agencies**
- **Resource Protection Special Agent**
- **Damage Prevention** (IF loads involved)
- **General Claims**
- **Freight Claims** (IF loads involved)
- **AAR, Monica Cicioni** (IF Military Shipment involved) NO VMX
NIMS Incident Command System

- BNSF Railway will initiate, manage and maintain a rapid, aggressive, well coordinated, and effective response

- BNSF hazardous material responders, contractors, operations supervisors and train crews will work within the Unified Incident Command Structure
Response: Hazmat GIS
Hazmat GIS – Misc. Sensitive Feature Layers
BNSF HAZMAT Responder Locations

February 2013

212 Responders at 60 Locations
AR-AFFF Fire Trailer Program

1. Designed to address the surge in Ethanol and Crude Oil shipments.

2. Provide equipment, supplies and contract Firefighters in response to polar solvent and fire incidents

- Currently 16 trailers throughout system location based on HM routes – NW = Pasco, WA
Emergency Breathing Air Trailers

1. Currently 5 Trailers on the system (NW = Pasco, WA)

2. Provides an extended supply of Breathing air for HM Incidents.

3. Supplied Air setups available for Heavy Equipment Operators
BNSF Tactical Toxicology (Tac Tox) Program

1. Utilized to provide rapid data acquisition and real time air monitoring results for incidents throughout our system.

2. CTEH
   - 24 hour access to PhD Toxicologists and Dispersion Modelers
   - Utilize Safer® Star Air Dispersion Model offering topographical model input

   - PID, 4 gas monitor, Kestrel weather meter, Solar Irradiance meter, Detector Tubes/pump, GPS, Calibration gasses and equipment.