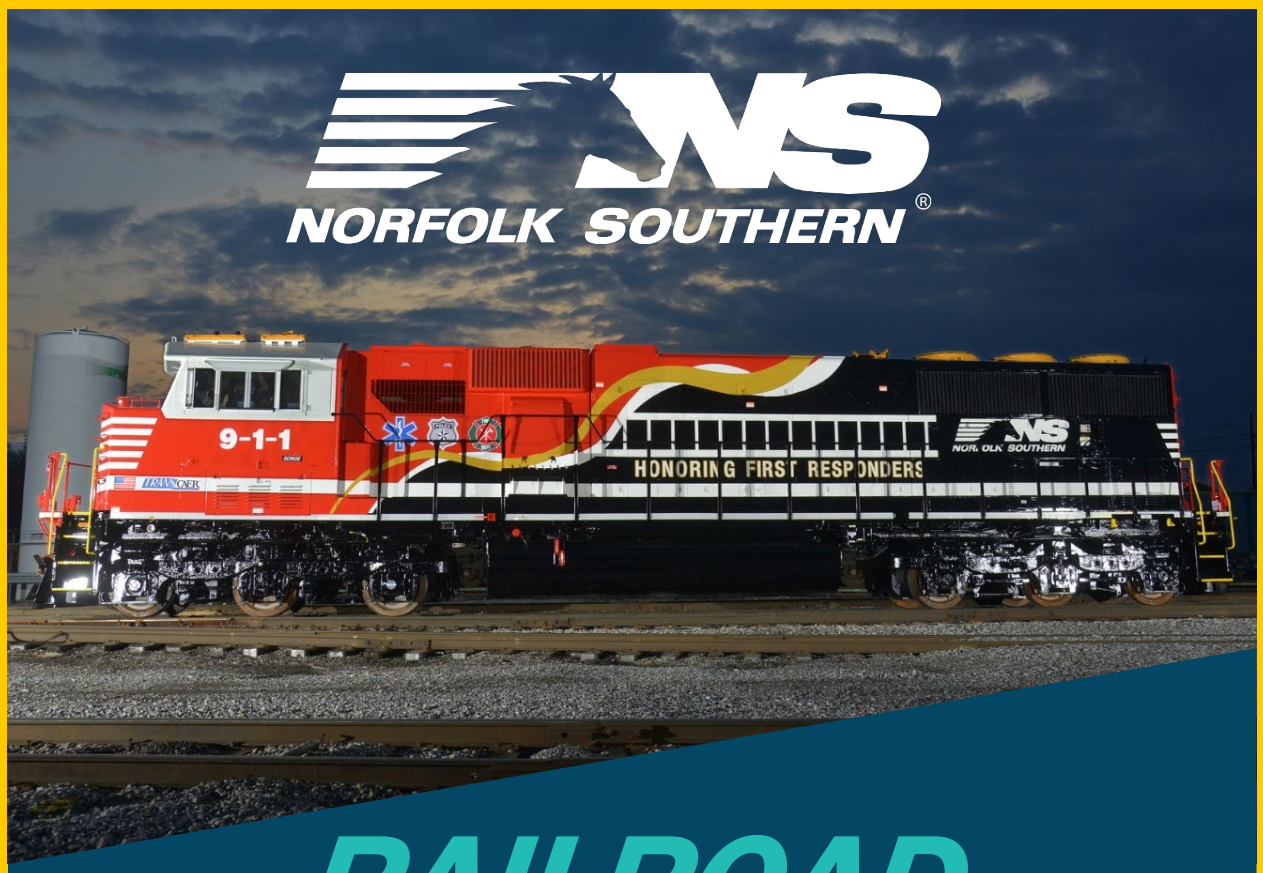
NORFOLK SOUTHERN®



RAILROAD EMERGENCY RESPONSE

NORFOLK SOUTHERN OAR
OPERATION AWARENESS & RESPONSE

Planning Guide

2025

WELCOME TO OAR

At Norfolk Southern, everything starts with Safety. Operation Awareness & Response (OAR) was launched in 2015 to educate the public about the economic importance of the safe movement of hazardous materials by rail and to connect emergency first responders in Norfolk Southern communities with information and training resources.

The goal of OAR is to strengthen relationships with the first responders across the NS network. Norfolk Southern has been providing safety training for emergency responders through community outreach programs such as TRANSCAER® for years. OAR will build on those efforts focusing on closer relationships with local and state agencies, increased training opportunities (classroom, web-based, and on-line resources), table-tops drills and participation in full-scale exercises, and providing better resources for emergency responders such as the AskRail mobile app that allows and first responders to use their mobile phones to look up commodity and response information on shipments. The OAR program also includes a continued commitment to providing emergency responders high-level training at the Security and Emergency Response Training Center (SERTC) in Pueblo, Co. In April 2016, Norfolk Southern unveiled a brand-new safety train, with a dedicated locomotive, specially equipped classroom box cars, and several tank cars for additional hands-on training along our lines.

Join OAR

Sign up to receive the latest OAR news, training schedules, and industry emergency response updates. Don't worry, we won't send you endless emails, just a quarterly newsletter with all the information included. Just go to: http://www.joinnsoar.com/join-oar.html.

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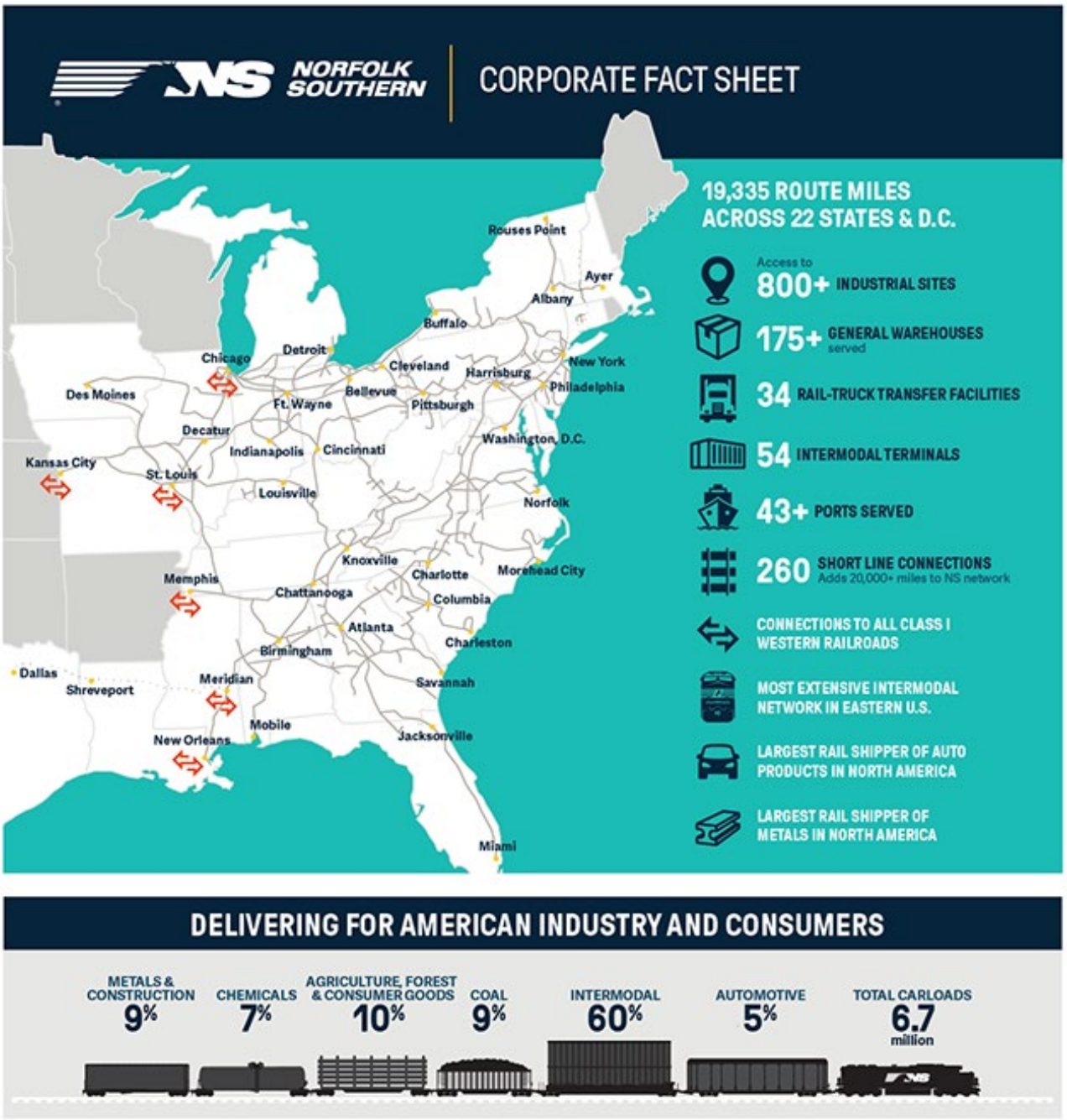
Introduction

Norfolk Southern Corporation is one of the nation's premier transportation companies. Its Norfolk Southern Railway Company subsidiary operates approximately 19,500+ route miles in 22 states and the District of Columbia, serves every major container port in the eastern United States, and provides efficient connections to other rail carriers. Norfolk Southern is a major transporter of industrial products, including agriculture, forest and consumer products, chemicals, and metals and construction materials. In addition, the railroad operates the most extensive intermodal network in the East and is a principal carrier of coal, automobiles, and automotive parts.



About this Planning Guide

The Norfolk Southern Emergency Response Planning Guide has been developed by Norfolk Southern Railway Company (Norfolk Southern) to assist local emergency response organizations in their efforts to plan for and respond to railway related incidents. It is also designed to be utilized as a reference resource, and to supplement training programs presented by Norfolk Southern to the emergency response community.

Because this Guide is designed to augment the local response plan(s), it is purposely brief to cover only the key information that would be needed by planners and response organizations if an incident involving Norfolk Southern should occur. The Guide is subdivided into four main sections, addressing Prevention, Preparedness, Recognition & Identification, and Response. Appendices are included which contain other pertinent railroad information. Important components of the Planning Guide include:

- Phone numbers and points of contact in the event of a Norfolk Southern related incident
- Notification procedures in the event of a hazardous materials incident
- Information on how to identify ownership of local rail lines
- Information pertaining to monitoring and air dispersion modeling
- Bridge and Tunnel incident considerations
- Hazardous materials shipping document descriptions and examples
- Rail car placarding requirements and sources of additional information on hazardous materials and hazard identification
- Additional resources available to Norfolk Southern and the Local Emergency Planning Committees (LEPCs) in the event of an incident
- Training and emergency response exercise opportunities are available from Norfolk Southern.

The information will assist local planners to prepare for and respond to any potential rail incident or emergency. This Plan is also designed to provide responders with accurate and efficient access to Norfolk Southern staff and resources, so that the necessary local and private resources can be engaged should the need arise.

Prevention

Accident and incident prevention are the primary focus and challenge of Norfolk Southern's Hazardous Materials Program, with the goals of minimizing risks to the community, maximizing employee and transportation safety while protecting the environment. These goals are accomplished throughout Norfolk Southern through a strict program of effective employee training, regulatory and rule compliance, and risk assessment. In addition, Norfolk Southern has a dedicated maintenance program designed to ensure ongoing proper maintenance of the operating system infrastructure. This includes frequent inspections and upgrades to rail equipment and track. In addition, Norfolk Southern coordinates with the shipper following any release or securement issue to ensure against recurrence.

Each day thousands of shipments of hazardous materials move by rail throughout the United States. While 99.998 percent of these shipments reach their destination without issue, incidents involving rail cars do occur.

The U.S. Railroad industry had made great strides in improving the safety of the transportation of hazardous materials over the last three decades. The industry has taken many steps to improve its safety culture by taking initiatives such daily job briefings and communicating with dispatchers regarding the number of hand brakes applied, the tonnage and length of the train or vehicle, the grade and terrain features of the track, any relevant weather conditions, and the type of equipment being secured. Operating and maintaining equipment is only part of the task of ensuring the successful movement of freight from Point A to Point B. Railways maintain comprehensive security programs to protect goods from damage and theft. Measured in ton-miles, about 40 percent of U.S. freight volume moves by rail — more than any other transportation mode. Thanks to their significant investment in technology, processes, and infrastructure, railroads are ready to move even more of this freight securely and safely.

Preparedness

The primary goal of transporting hazardous materials is to move every shipment in a timely manner from origin to destination safely and without incident. In the event of a hazardous materials incident, the goal becomes to (1) effectively prevent injuries, (2) minimize property damage, and (3) safeguard against significant environmental impact.

Preplanning and preparedness are essential to achieving timely and effective incident response. An effective state of preparedness is accomplished through good emergency planning and training, comprehensive emergency response exercises, and the performance of regular evaluations of the effectiveness of response plans.

To better facilitate emergency preparedness activities with local communities, Norfolk Southern is an active participant in the TRANSCAER® Program (Transportation Community Awareness and Emergency Response). TRANSCAER® is a nationwide community outreach program designed to address community concerns about the transportation of hazardous materials through planning and cooperation. The program provides assistance for communities to develop and evaluate their emergency response plans for hazardous materials transportation incidents.

Norfolk Southern encourages local emergency management and response groups to incorporate this Guide into their own plans and take the opportunity to preplan at the Norfolk Southern facilities in their area of responsibility. Local emergency response personnel should familiarize themselves with the layout and operation of Norfolk Southern properties in their area.

For information about TRANSCAER® efforts at the local level, or to obtain information about training opportunities with Norfolk Southern for their community, local planners may contact the Norfolk Southern, Attention: Director, Hazardous Materials, 650 W. Peachtree St. NW, Atlanta, GA 30308 or by email at HMTraffic@nscorp.com.

Coordination with Norfolk Southern Staff

Norfolk Southern has a staff of hazardous materials and environmental professionals who can respond as necessary to any incident or emergency. These personnel are strategically located throughout the Norfolk Southern Operating System and are available to assist company personnel and emergency responders in the mitigation of emergency situations.

Our hazardous materials and environmental personnel have a variety of response tools and resources available for use in an emergency. These personnel will work with other company officials and the local incident command personnel to ensure safe and efficient handling of the incident.

A map of the Norfolk Southern Operating System is included inside the back cover of this Guide and contact information for NS Emergency Response staff is provided in **Exhibit 1**. NS Emergency Response staff can also be contacted 24 hours a day, 7 days a week, and 365 days a year by calling the NS Police Communications Center (PCC) at 1-800-453-2530.

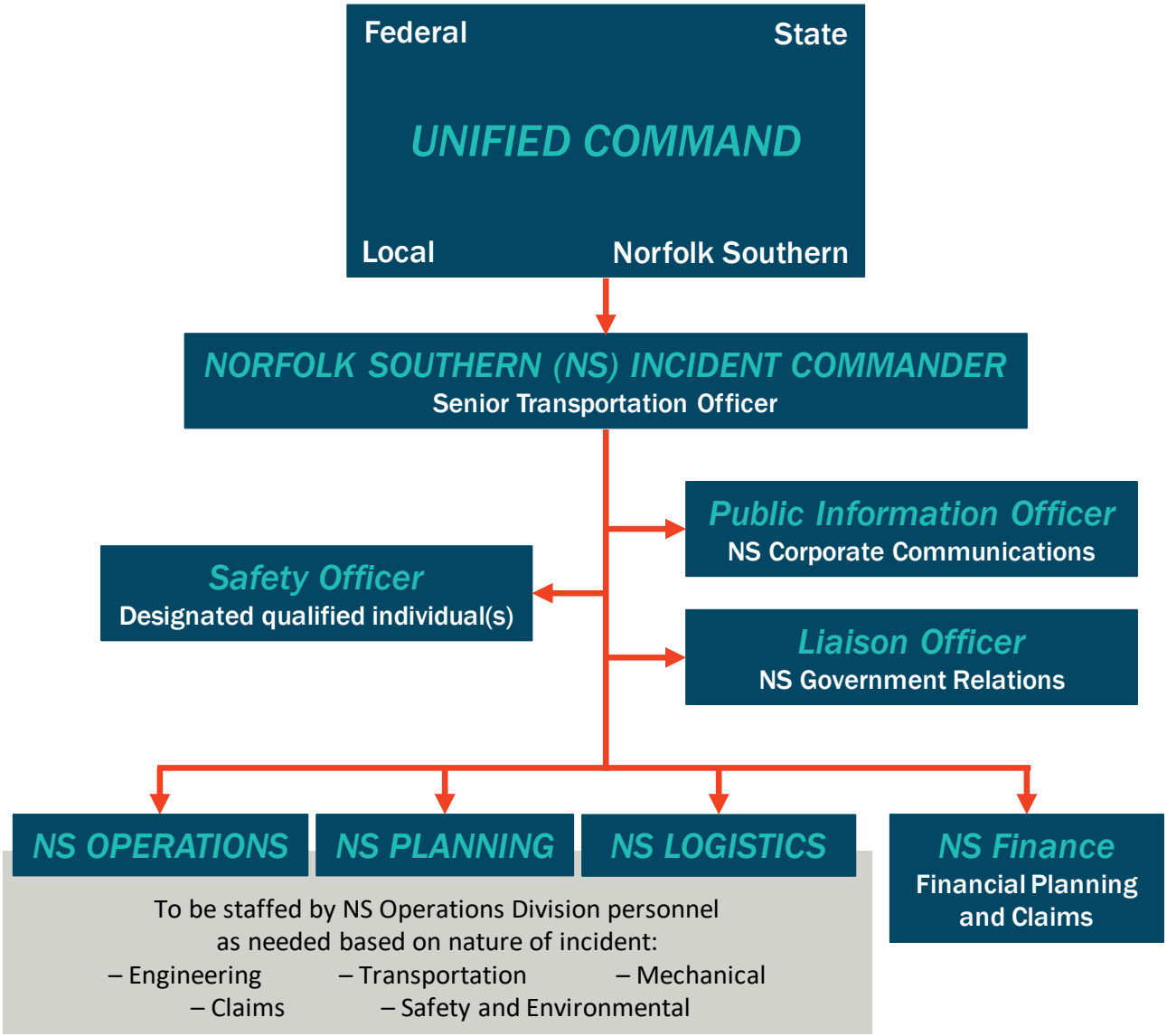
Exhibit 1
Norfolk Southern Emergency Response Personnel

NORFOLK SOUTHERN HAZARDOUS MATERIALS GROUP			
Name	Title	Location	Email
Robert Wood	Director Hazardous Materials	Atlanta, GA	Robert.Wood2@nscorp.com
Northern Region			
Scott Deutsch	Regional Manager Hazardous Materials	Pittsburgh, PA	Scott.Deutsch@nscorp.com
Brian Shanks	Manager Hazardous Materials	Elkhart, IN	Brian.Shanks@nscorp.com
Jon Rettig	Manager Hazardous Materials	E. Palestine, OH	Jon.Rettig@nscorp.com
Scott Gould	Manager Hazardous Materials	Bethlehem, PA	Scott.Gould@nscorp.com
Southern Region			
David Patten	Regional Manager Hazardous Materials	Greenville, SC	David.Patten@nscorp.com
Travis Lindsey	Manager Hazardous Materials	Roanoke, VA	Travis.Lindsey@nscorp.com
Jon Simpson	Manager Hazardous Materials	Louisville, KY	Jon.Simpson@nscorp.com
Elliott Austin	Manager Hazardous Materials	Birmingham, AL	Elliott.Austin@nscorp.com

NORFOLK SOUTHERN ENVIRONMENTAL OPERATIONS GROUP			
Name	Title	Location	Email
Bryan Naranjo	Director Environmental Operations	Atlanta, GA	Bryan.Naranjo@nscorp.com
Northern Region			
Chris Hunsicker	Regional Manager Environmental Operations	Pittsburgh, PA	Christopher.Hunsicker@nscorp.com
Bryan Salley	Manager Environmental Operations	St. Louis, MO	Bryan.Salley@nscorp.com
Robert Scoble	Manager Environmental Operations	Bellevue, OH	Robert.Scoble@nscorp.com
Greg Calhoun	Manager Environmental Operations	Altoona, PA	Greg.Calhoun@nscorp.com
Southern Region			
Troy Carpenter	Regional Manager Environmental Operations	Roanoke, VA	Troy.Carpenter@nscorp.com
Adam Motsinger	Manager Environmental Operations	Charlotte, NC	Adam.Motsinger@nscorp.com
Nathan Williams	Manager Environmental Operations	Atlanta, GA	Nathan.Williams@nscorp.com
Crystal McNeely	Manager Environmental Operations	Chattanooga, TN	Crystal.McNeely@nscorp.com

Unified Incident Command System

Norfolk Southern's emergency response personnel have extensive training and experience managing emergency incidents. This includes training on and the use of the Incident Command System. In the event of a large incident involving multiple government agencies and stakeholders, Norfolk Southern can operate in a Unified Incident Command System. Norfolk Southern would designate members to function as part of the command staff and in each of the various sections. Below is an overview showing how Norfolk Southern would organize.



Hazardous Material Traffic

Data on the common types of hazardous materials being transported through local communities are useful for local emergency planners in developing effective and realistic emergency response plans. In general, the types of hazardous materials transported by rail through local communities do not vary significantly from the national average. The typical variance may be in the ordering of the “Top 25” products that are transported through various communities (**Exhibit 2**). To request Hazardous Material Traffic information for your jurisdiction, see **Exhibit 3**.

EXHIBIT 2
Norfolk Southern 2024 Hazmat Traffic - Top 25 Commodities

Rank	Proper Shipping Name	Hazard Class	UN ID
1	FAK-Hazardous materials	N/A	N/A
2	Alcohols, n.o.s.	3	UN 1987
3	Elevated Temperature Liquid	9	UN 3257
4	Liquefied Petroluem Gas	2.1	UN 1075
5	Sodium Hydroxide Solution	8	UN 1824
6	Butane	2.1	UN 1011
7	Petroleum Crude oil	3	UN 1267
8	Petroleum Distillates, n.o.s.	3	UN 1268
9	Environmentally Hazardous Liquid n.o.s.	9	UN 3082
10	Sulfuric Acid	8	UN1830
11	Sulfur, Molten	9/4.1	NA 2448
12	Hydrocarbon Liquid, n.o.s.	3	UN 3295
13	Phosphoric Acid Solution	8	UN 1805
14	Hydrochloric Acid	8	UN 1789
15	Isobutane	2.1	UN 1075
16	Carbon Dioxide, Refrig. Liquid	2.2	UN 2187
17	Ethyl Alcohol Solutions	3	UN 1170
18	Phenol, Molten	6.1	UN 2312
19	Hypochlorite Solutions	8	UN 1791
20	Fuel Oil	CL	NA 1993
21	Chlorine	2.3	UN 1017
22	Potassium Hydroxide Solutions	8	UN1814
23	Methanol Solutions	3	UN 1230
24	Vinyl Chloride, Stabilized	2.1	UN 1086
25	Combustible Liquid, n.o.s.	CL	NA 1993

Total Loaded Hazmat Shipments in 2024: 455,637
Top 25 Commodities Accounts for 80.1% of all Hazmat Loads in 2024

FAK - Freight of All Kinds

To request Hazardous Material Traffic information for your jurisdiction, submit the Form to Request Hazardous Material Flow Information (**Exhibit 3**) along with a written request on official department letterhead. The cover letter and completed form must be sent to NS at HMTraffic@nscorp.com.

EXHIBIT 3
Norfolk Southern 2022 Hazmat Traffic - Top 25 Commodities

NORFOLK SOUTHERN

REQUEST FOR HAZARDOUS MATERIALS COMMODITY FLOW INFORMATION

Organization Requesting Information: _____

Contact Person: _____

Phone Number: _____

E-Mail Address: _____

Mailing Address: _____
(Street Address)

_____
(City, State, Zip)

Geographical Description of Area for Study: _____

_____

By signing below I acknowledge and agree to the terms set forth by Norfolk Southern Railway Company (NSRC) for use and dissemination of the NSRC Hazardous Materials Commodity Flow Information. NSRC considers this information to be restricted information of a security sensitive nature. I thus affirm and agree that the information provided by NSRC in this report will be used solely for and by bona fide emergency planning and response organizations for the expressed purpose of emergency and contingency planning. This information will not be distributed publicly in whole or in part without the expressed written permission of NSRC.

_____
(Signature of person requesting commodity flow information)

Return completed form and a letter on official stationery requesting the information to:

HMTraffic@nscorp.com

(For NSRC Use Only)

Initials of person responsible for approval: ____YES ____ NO Date: _____

Hazardous Materials Service Support:

Date Request Received: _____

Time Period Covered: _____

Date Report Sent: _____

Report sent via: ❑ E-Mail ❑ U.S. Mail

The document above is available for download from the following site:

WORD: https://www.norfolksouthern.com/content/dam/nscorp/pdf/oar/ns-hazmat-traffic-request-form%20(3).docx

PDF: https://www.norfolksouthern.com/content/dam/nscorp/pdf/oar/hazmat%20training%20request.pdf

Training and Exercises

Norfolk Southern is committed to preparing first responders on how to safely and effectively respond to incidents involving the railroad. Operation Awareness & Response (OAR) was launched in 2015 to educate the public about the economic importance of the safe movement of hazardous materials by rail and to connect emergency first responders in Norfolk Southern communities with information and training resources.

The goal of OAR is to strengthen relationships with the first responders across the NS network. Norfolk Southern has been providing safety training for emergency responders through community outreach programs such as TRANSCAER (www.TRANSCAER.com) for years. OAR will build on those efforts focusing on closer relationships with local and state agencies, increasing training opportunities.

Regular training and emergency response exercises help to facilitate safe and efficient operations during response. Norfolk Southern has emergency response plans in place to control and remediate hazardous materials incidents and to minimize the damage caused by them. However, due to the nature of the railroad network, Norfolk Southern recognizes that local emergency response personnel, such as firefighters, Emergency Medical Technicians (EMTs), and police will most likely be the first to arrive at the scene of a hazardous materials incident. Therefore, the best developed plans in place throughout the Norfolk Southern Operating System will not be 100% effective unless an efficient incident response capability is maintained by local communities along the right-of-way.

In response to this need, Norfolk Southern is an active participant in the TRANSCAER initiative. A portion of this program includes training for fire departments and other local emergency response organizations. Norfolk Southern works with Local Emergency Planning Committees (LEPCs) to coordinate participation in exercises and regularly conducts two levels of emergency preparedness exercises: tabletop exercises and full-scale exercises. Tabletop exercises are designed to have the participants practice problem solving, generate discussion, and resolve questions about handling an incident, through the tabletop analysis of various incident scenarios. Full scale exercises test existing local emergency procedures using props and equipment in the field, and tests emergency response plans, via the enactment of a full response to a mock incident.

The Norfolk Southern team provides a menu of emergency response training options. If you are an emergency responder (including: fire department, law enforcement, emergency medical services, hazmat response team, emergency management personnel, military, homeland security personnel, shippers, and customers) and are interested in training, please contact the nearest NS Manager Hazardous Materials (**Exhibit 1**) to discuss options and schedule a training event.

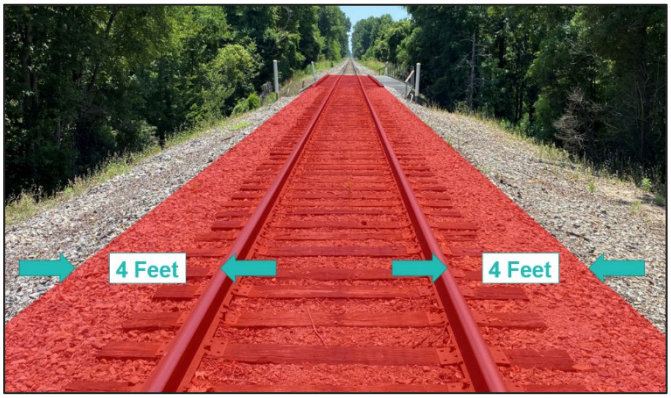
Railroad Safety Rules

The railroad is a very unforgiving environment because of the size, weight, and speed of trains. This section will cover some basic safety rules to keep yourself and your fellow first responders safe while responding to an incident involving the railroad.

Anytime you're on or near railroad property for an incident, call the railroad to tell them where you are located and what is going on to ensure your personnel are protected.
NS Police Communications Center 800-453-2530

Working Near or On the Tracks

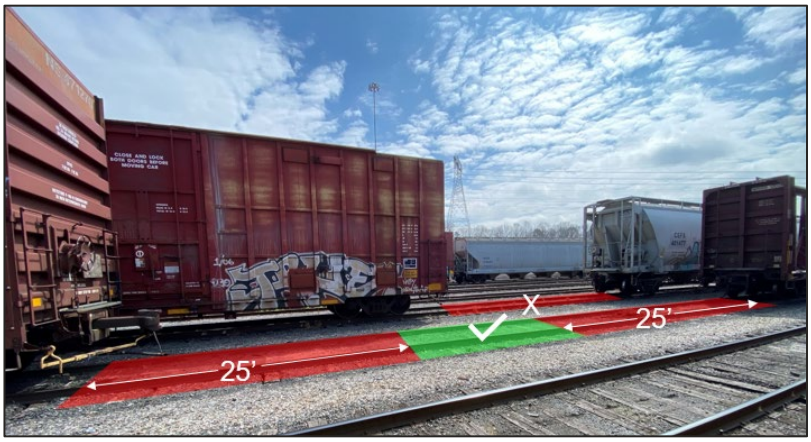
Anytime a response requires operating **on or near** railroad tracks, those onsite must maintain good situational awareness on how close they are to the tracks. Anyone or anything within **four feet** of the nearest rail is considered fouling the track which means they could be struck by a passing train or rail equipment. Position yourself and your equipment at least 25 feet away from the nearest rail. **If you find that you must obstruct the track, then you must contact the railroad (via the Police Communications Center) and receive positive verification from the railroad that it is safe to do so.**



Crossing the Tracks

The walking surface (ballast) is uneven and difficult to walk on; be careful! If possible, cross only at a grade crossing which provides a better walking surface. If you must cross tracks, stay at **least 25 feet** from the ends of rail equipment and look both ways to ensure no equipment is moving toward you. When near any track, expect a train to move in either direction at any time. Cross the tracks at a 90-degree angle to maximize the field of vision and do not linger on the tracks any longer than necessary. Be careful when crossing more than one track, parallel tracks may belong to two different railroad companies or be under the control of two different employees of the same company.

Ensure there is 50 feet of clearance between two pieces of standing equipment (while maintaining 25 feet of personal clearance from either side) before attempting to cross between them.



Vehicles should cross only at designated at-grade crossings and heed all crossing warning devices. Trains always have the right of way at a grade crossing regardless of response vehicles with lights and sirens activated. A train may require more than a mile to stop.

Locating Norfolk Southern Rail Lines

It is important for local emergency planners to familiarize themselves with the local rail lines to know the ownership of the rail lines and potential access routes for emergency response vehicles. As part of its grade crossing safety program, Norfolk Southern has posted a telephone hotline number (1-800-946-4744), along with the Federal Railroad Administration (FRA) unique Crossing Identification Number (shown on next page) at all Norfolk Southern crossings. This program allows people to report malfunctions in crossing safety devices to Norfolk Southern but can also be used by emergency responders to identify Norfolk Southern rail lines in the event of a railroad incident.

A listing of the railroad crossings and railroad mileposts within a community can be obtained by contacting the Police Communications Center (PCC) (1-800-453-2530). They can also provide data files of railroad crossings and mileposts locations compatible with CAD and GIS systems.

Grade Crossings

All NS Railroad incidents, including situations that could affect **PUBLIC SAFETY** or the **SAFE MOVEMENT of TRAINS**, should be reported to the NS Railroad Police Communications Center located in Atlanta, GA at **1-800-453-2530** or the number noted on the Emergency Notification Sign. This could include a stuck or stalled vehicle on a crossing, accidents at or near a crossing, or any event or situation taking place in which close clearance of train traffic may be a safety factor.

If a NS train needs to be stopped, remain on the line with the Police Communications Center (PCC) specialist until they have verified train traffic has been stopped. It is important to communicate to the NS Police the DOT crossing number (shown in bottom portion of sign) so that the specific road crossing can be quickly identified. Also, include the city, state and location of the incident along with a summary of what the incident is.

At each PUBLIC road crossing there is a post mounted sign, as shown below, identifying the railroad name, the DOT crossing number, and the emergency telephone number. The reflective sign is a minimum of 9”x12”.

Each PRIVATE Road Crossing is identified by the “Private Crossing” sign shown below on the left. The Emergency Notification Sign will be mounted to the post of the Private Crossing sign as well.

Rail Crossing Locator Mobile Application

The Rail Crossing Locator app was developed by the Federal Railroad Administration to provide users with access to the highway-rail grade crossing database and map features from a mobile device. The tool allows users to locate crossings by USDOT Crossing ID, address, or geo-location; access inventory records submitted by states and railroads; and view accident history. Users can also select from multiple base map features and identify railroad crossings by special characteristics. The information accessed in the mobile application is derived

from the Safety Data website using information submitted by States and Railroads. While this is an effective tool, please use the Emergency Notification System (ENS) information and contact number during an emergency situation. The Crossing Locator App is currently available for your Apple and Android Devices.

https://itunes.apple.com/us/app/rail-crossing-locator/id643005214?mt=8

https://play.google.com/store/apps/details?id=gov.dot.fra.RailCrossing

Freight Railroad Security

America's railroads have a long history of emphasizing security and law enforcement issues. The tragic events of September 11, 2001 have brought a significant amount of attention to the issue of the security of hazardous materials and military shipments in transportation. At Norfolk Southern and throughout the rail industry in the United States and Canada, much has been done to identify potential targets and develop appropriate countermeasures to minimize the potential opportunity of hazardous materials being transported by rail becoming viable terrorist targets.

National Security Effort

The nation's railroads, through an effort initiated by the Board of Directors of the Association of American Railroads (AAR), are in close regular contact with the U.S. Department of Homeland Security (DHS), Transportation Security Administration (TSA), Federal Bureau of Investigation (FBI), U.S. Department of Defense (DoD), United States Coast Guard (USCG) and the security and intelligence office of the U.S. Department of Transportation (DOT). Additionally, the AAR has a 24/7 Operations Center, the Railway Alert Network (RAN) to coordinate all freight railroad security actions with federal intelligence agency actions and plans.

Commitment and Vigilance

Norfolk Southern remains deeply committed to the safe transportation of hazardous materials by rail. We also recognize that now, more than ever, this also means maintaining high levels of security.

As we move forward and deal with these potentially serious threats within our country, we ask your assistance in being vigilant and reporting any unusual persons or activities on or near railroad property.

Any unusual activities involving Norfolk Southern property should be reported to the Norfolk Southern Police Communications Center (PCC) at 1-800-453-2530.

Recognition and Identification

Recognizing the various railcar types will aid first responders in identifying the types of products they may contain and the hazards they may represent. In addition, understanding how locomotives work and which components are located where will tell first responders what hazards may be present. Finally, railroad shipping documents come in various formats and understanding how these documents are laid out will help those using it access the information more quickly and effectively.

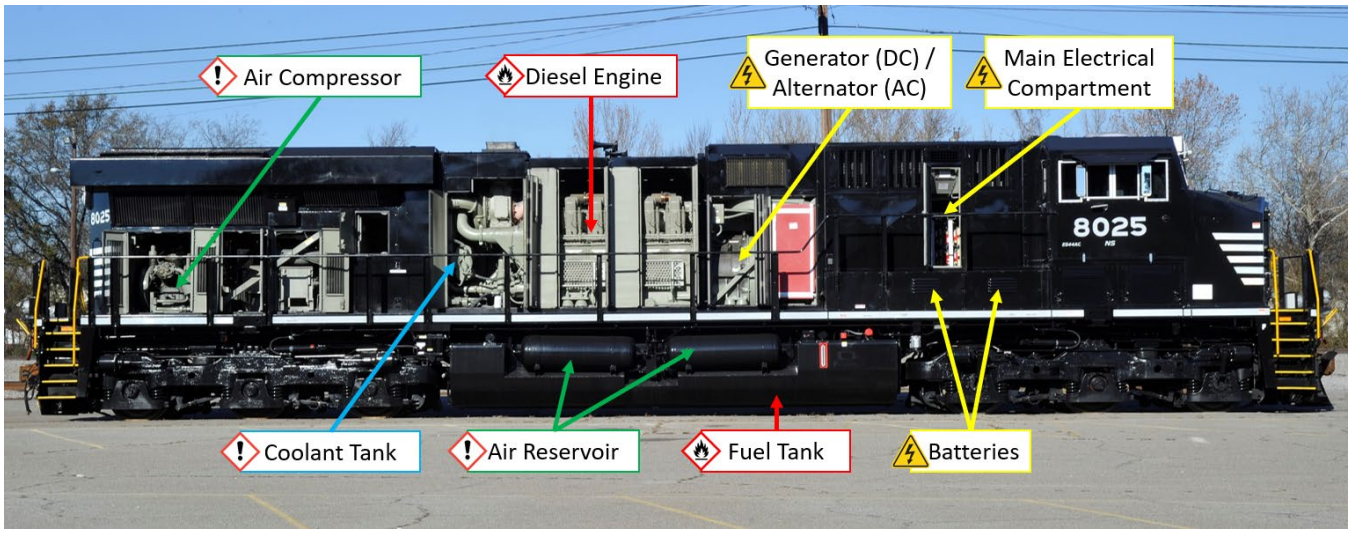
Locomotives

Today freight railroads rely almost exclusively on diesel electric locomotives to move freight trains throughout North America, the locomotive's sheer size, its horsepower, and the electrical output its produces deserves a great deal of respect and some very careful action from emergency responders. It is no ordinary vehicle, and response to an incident involving a locomotive is much more complicated than that of other vehicle emergencies.

Locomotive Typical Specifications and Capacities

- Length: 73 Feet
- Height: 15 Feet
- Width: 10 Feet
- Weight: 460,000 Pounds
- Diesel Tank: 3,000 – 7,000 Gallons
- Engine Oil: 500 Gallons
- Coolant Water: 450 Gallons
- Battery Acid: 50 Gallons
- 600 Volts DC or 30,000 Volts AC
- 1700+ AMPS

Diesel electric locomotives at their core are electrical generators on wheels. The electrical power generated is directed to the traction motors which applies torque to the axles through gear boxes that make up the drive assembly. This drive assembly, including the traction motors, can have the fields reversed to be used as part of the braking system when the locomotive is moving downgrade or slowing the train to a stop. The excess energy generated, when these motors are reversed, is known as dynamic braking. The dynamic braking grids that are located on the upper part of the locomotive, can become extremely hot during braking operations and may glow red. They may even be hot enough to melt and cause a fire.

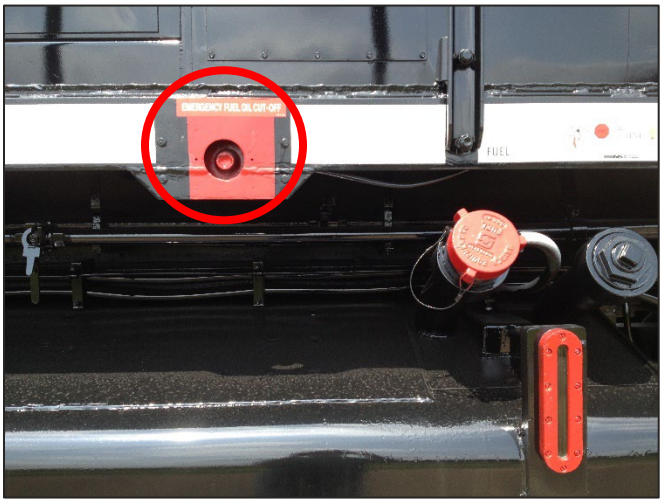


Locomotive Emergency Shutdown

In the event of an emergency involving a locomotive (locomotive fire), the affected locomotive must be safely shutdown. **First responders should only shutdown the locomotive experiencing the emergency. The other locomotives should remain running to maintain the air brake system.** Below are the steps to shutting down a locomotive.

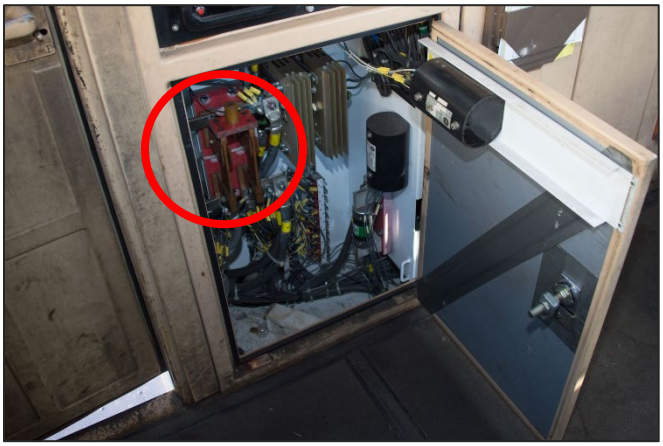
1. Emergency Fuel Shutoff

Press and hold any of the Emergency Fuel Shutoff buttons and the locomotive will shut down within a few seconds. The emergency fuel cutoffs are located on both sides of the locomotive fuel tank near the fill port, and another will be in the cab on the back wall behind the engineer's control stand. Each location will be clearly marked with a red button and label stating, "EMERGENCY FUEL CUTOFF".



2. Battery Disconnect Switch

It is also recommended that the electrical systems be isolated and make the systems as energy free as possible. This can be accomplished by entering the cab, based on whether it is safe to do so, then opening the cabinet door on the back wall marked "Battery Disconnect Switch" and disengaging the knife switch located inside. Please be aware that AC locomotives will have large capacitor banks that will still be energized, even if the battery isolation switch is open.



Avoid using water on high voltage electrical equipment, use a dry chemical extinguisher when possible.

Rail Car Markings

Location of Key Markings/Stencils

Left Side:

- Reporting Mark/Number
- Load Limit (LB/KG)
- Light Weight (LB/KG)

Right Side:

- Commodity Name (if required)
- Specification and Qualification Stencil
- Placard

REPORTING MARK AND CAR NUMBER: The car Reporting Mark (Initial) and Number is a series of letters and numbers used by the railroads to identify rail cars and their contents. The reporting mark, usually three to four letters, identifies the car's owner (marks ending with an X denote that the car is not owned by a railroad) and is followed by up to six digits, e.g., OARX 584583. The reporting mark and number are the rail car's unique identifier and are required to be marked on both sides and both ends of the railcar. Think of it as a license plate for a railcar.

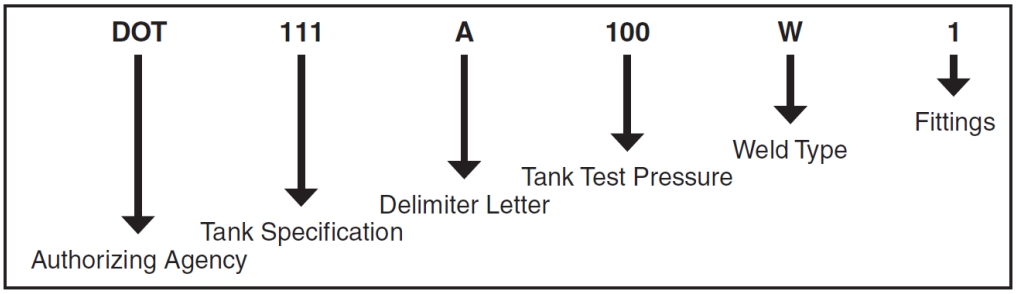
COMMODITY NAME: DOT requires that certain hazardous materials have the commodity name stenciled on the side of the tank car. These products include all compressed gases and all poison by inhalation hazard materials. Some shippers also voluntarily put the commodity name on their cars.

PLACARDS: Square-On-Point display that indicates the Primary and possibly Secondary hazard of the product present. The UN ID number may be displayed in the center of the placard or on an orange panel. The DOT Hazard Class number is displayed in the bottom corner of the placard. (See Placarding Chart)

Additional Markings – Tank Cars

QUALIFICATION STENCIL: Provides the location the last periodic inspection was last performed and when the next qualification event is due. The pressure relief device type will be listed along with the start to discharge pressure as well.

SPECIFICATION STENCIL: This stencil will indicate the type of tank car it is along with information about how the car is constructed as detailed below.



Authorizing Agencies

AAR — Association of American Railroads
CTC — Canadian Transport Commission
DOT — US Department of Transportation
TC — Transport Canada

Tank Specification

General Service
111, 115, 117, 211

Pressure Tanks
105, 112, 114, 120

Delimiter Letter

A — No special feature
S — Equipped with head puncture protection
T — Thermal protection & head protection
J — Jacketed with Thermal protection & head protection
P — Existing general service tank car that meets performance standards for a Class-117A
R — Existing general service tank car that has been retrofitted to conform to the prescribed retrofit or Class-117A performance standards
H — Tank Car used to transport toxic by inhalation materials built to the DOT HM-246 safety standards

Tank Test Pressure: Hydrostatic test pressure (not the burst pressure)

Weld Type:

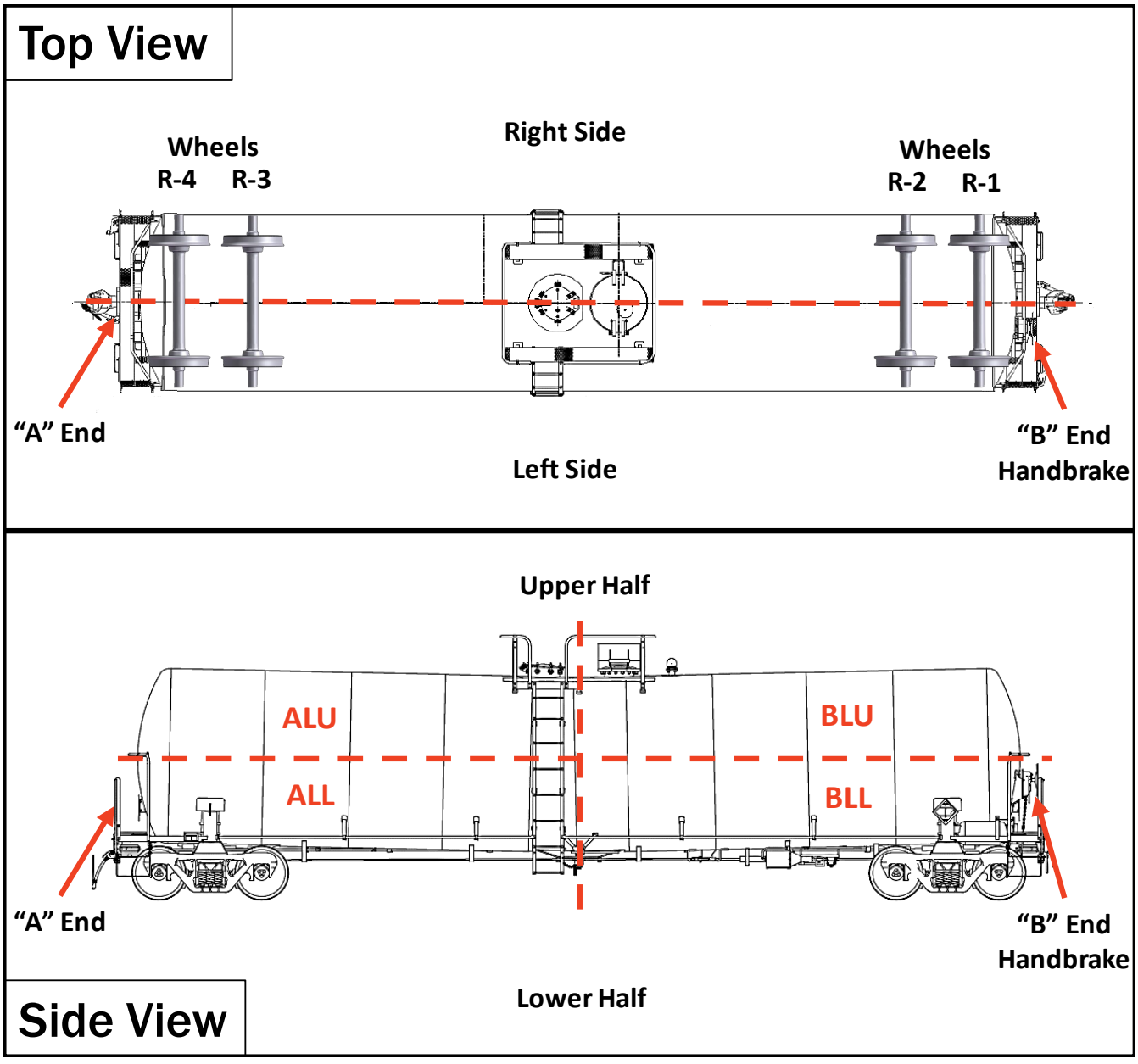
W — Fusion Welded Tank
AL — Material of construction is aluminum.
I — Tank cars built after March 16, 2009, and before December 28, 2020, used for transportation of PIH/TIH materials built to the HM-246 safety standard.

Fittings: Indicates allowed fittings, linings, etc. as shown in chart

Fittings	Insulation	Bottom Outlet	Bottom Washout	Other
1	Optional	Optional	Optional	
2	Optional	Prohibited	Optional	
3	Required	Optional	Optional	
4	Required	Prohibited	Prohibited	
5	Optional	Prohibited	Prohibited	Lined
6	Optional	Optional	Optional	
7	Optional	Prohibited	Prohibited	

Orientation of a Rail Car

Rail cars do not have a front or back because they can move in either direction. Origination of a rail car is based on the location of the handbrake on the rail car. This is called the "B" end of the car, and everything is oriented from this location. The below illustration shows the orientation of a rail car including how to count the wheels and how the car is subdivided into sections.



Rail Car Types

There are numerous types of rail cars moving across North America. This section will provide a summary of the most common car types, the products they typically carry, and some of their features.

Pressure Tank Car

- Protective housing
- No visible valves
- No bottom outlet
- Usually has a jacket, headshields, & thermal protection/insulation
- Accounts for 20% of North American tank car fleet

Commodities

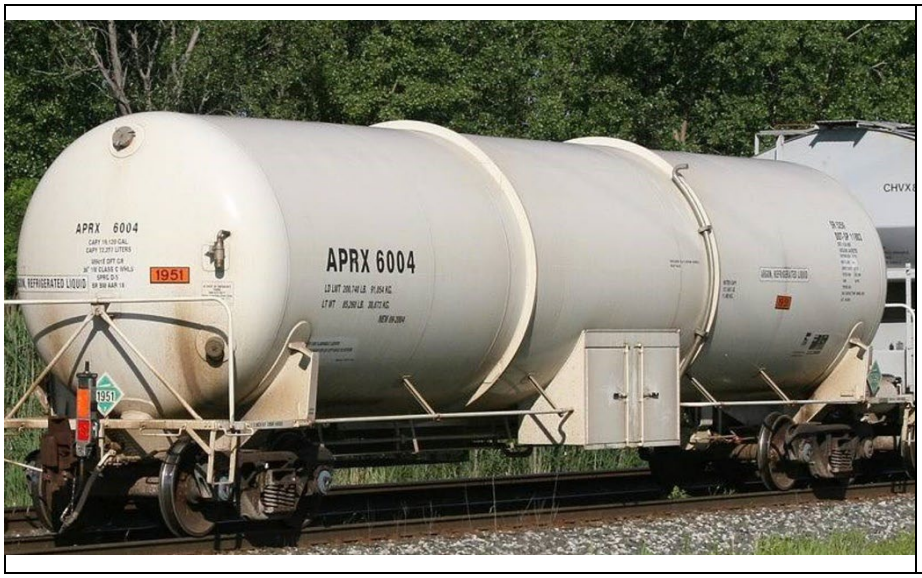
- Compressed Liquefied Gases
- Toxic Inhalation products
- Highly hazardous liquids

General Service Tank Car

- Multiple fittings visible on top of tank car
- May have bottom outlet valve.
- May have jacket and insulation.
- Accounts for 80% of North American tank car fleet

Commodities

- Transports liquids and semi-solids products
- Hazardous and non-hazardous products



Cryogenic Tank Car

- Valve box on side of tank car or at end
- May have vents extending from box to top of car.
- Accounts for less than 1% of North American tank car fleet

Commodities

- Cryogenic liquefied compressed gases
- Product temperatures - 130ºF or colder
- Flammable and non-flammable gases

Box Car

- Various lengths and sizes
- May be insulated.
- Single or double doors of each side

Commodities

- Bulk and non-bulk products
- Raw materials and finished goods.
- Very limited number of hazardous materials shipments

Refrigerated Box Car

- Diesel powered refrigeration unit.
- 300-600 gallon fuel tank
- Engine battery with acid
- Potential ignition source

Commodities

- Perishable goods
- Refrigerated and frozen foods

Covered Hopper

- Constructed of steel or aluminum
- Various configurations of bottom discharge assemblies

Commodities

- Dry powder or pelletized materials
- Non-haz products like flour, grain, plastic pellets and cement
- Hazardous products like fertilizers and oxidizers

Open Top Hopper

- Constructed of steel or aluminum
- Not normally used to transport hazardous materials.

Commodities

- Rock and other aggregates
- Coal
- New and used railroad cross ties

Gondola

- Various heights and lengths
- Hazardous materials will be in weather tight package when transported in gondolas.

Commodities

- Scrap metal, pipe, rebar, other metal products
- Railroad cross ties
- Contaminated soil and debris (haz & non-haz)

Flat Car

- May be equipped with bulkheads on each end
- May have securement devices for vehicles and equipment.

Commodities

- Lumber, pipe, steel plates, and other bulky items
- Machinery, heavy equipment

Auto Carrier

- Capable of carrying up to 18 automobiles
- Single level, bi-level, and tr-level configuration inside
- Typical hazards associated with vehicles.

Commodities

- Sedans, pickup trucks, SUVs etc.
- Cargo vans

Railroad Intermodal Equipment

Intermodal Well Car

- Available in 1,3, and 5 well configurations
- Containers single and double stacked in cars
- 20’, 40’,45’, 48’ and 53’ containers
- 20’ and 40’ portable tanks

Commodities

- Typically finished goods
- Bulk and non-bulk packages
- Mixed loads of hazardous materials possible

Intermodal Flat Car

- Available in 1,3, and 5 section configurations
- Can accommodate trailers or containers
- 20’, 40’,45’, 48’ and 53’ trailers or containers
- 20’ and 40’ portable tanks

Commodities

- Typically finished goods
- Bulk and non-bulk packages
- Mixed loads of hazardous materials possible

Intermodal Tank Container

- 20’ & 40’ configurations
- Metric fittings and threads
- 20’– 6,900 gallons (liquid)
- 40’– 12,400 gallons (gas)

Commodities

- Liquids, Gases, and semi-solids/powders
- Hazardous and Non-hazardous commodities
- Placarded as a bulk package

Railroad Shipping Documents

During any incident involving the railroad it is extremely important to identify the materials involved in the incident. There are two types of railroad shipping documents First is the Train Consist which is a document that provides a numerical list of every rail on a train listed from front to rear when a train is traveling between its origin and destination. The second type of shipping document is a Waybill. The waybill is the railroad's version of a bill of lading and is available for cars not part of train. **Both documents may be in a paper or electronic format.**

The Train Conductor is required to have the train consist available and must be updated when railcars are picked up or dropped off. A waybill is obtained from a railroad supervisor at the rail yard and are not kept on the railcar. Additionally copies of the shipping documents can also be obtained from the NS Police Communication Center and NS HazMat personnel.

Shipping Document Information

Shipping documents for railcars containing hazardous materials will provide the following information when applicable:

Car Initials and Numbers (reporting marks): One of the most important pieces of information to obtain to access information on the car's contents.

Load or Empty: The shipping paper will indicate if the car is loaded or contains a residue.

Shipper and Consignee: Shipper area will show who shipped the car and where it originated; Consignee area will show who is receiving the shipment and the destination.

ID Number: Indicates the 4-digit UN (United Nations) or NA (North American) identification number.

Proper Shipping Name: DOT name of the hazardous material.

Hazard Class: Shows the appropriate hazard class or division number of product (refer to **Exhibit 8**). A secondary hazard class may be shown for Domestic moves; however, they are required internationally.

Packing Group: A grouping of hazardous materials indicating relative severity of a material within its hazard class. Required except for classes 2 or 7 or ORMD's. PG I or I shown using roman numerals, great danger; PG II or II, medium danger; PG III or III minor danger.

Quantity: The shipping paper will indicate how much product is being shipped, if loaded.

Emergency Response Phone Number: 24-hour phone numbers supplied by the shipper.

Toxic Inhalation Hazard/Poison Inhalation Hazard (TIH/PIH): indicates certain gases or liquids that cause health problems if inhaled.

Hazard Zone: Applies to TIH/PIH materials. Zones are A through D, with A being most toxic.

Reportable Quantity: The letters **"RQ**", where required indicate that the material is also classified as a hazardous substance and that a release of the hazardous material, over a specified amount, necessitates notifying the National Response Center.

Standard Transportation Commodity Code (STCC): A number assigned by railroads for the specific product being shipped. STCC's begin with the numbers "49" for HazMat or "48" for Hazardous Waste. These STCC's are often referred to as Hazardous Materials Response Codes (HMRC).

Marine Pollutant: Release of the product into a waterway will harm the environment.

Limited Quantity: LTD QTY, a product with a labeling and packaging exception.

ERG Guide No.: Train consists will provide the ERG guide number for each hazardous material shipment on a train. It will be part of the shipping description for each hazmat material in the train.

Freight Train Consist Example

Exhibit 6

```
CARS IN THIS     CONSIST COUNT FROM HEAD TO REAR 187A111

TRAIN ID:
     BIRMINGH AL          ON DUTY: _____________    OFF DUTY: _____________

                                                                **CARS SET OUT**

SEQ INIT   NUMBER L/E    DEST/OFFJCT NXRD      TON CONSIGNE  S T C C TYPE TIME  TRACK  LINE

001 NS      E07925 E                                          0000000 D127  NO WAYBILL
002 NS      E07916 E                                          0000000 D127  NO WAYBILL

03   TBOX 662796 L       KIMBROUG AL AGR        80 INTERNAT 4024115 A606 _______ _______ _________
                         PLTF
                         EOCC EQUIPPED CAR
04   OLNX 032003 E       MCINTOSH AL NS         33 OLIN COR 4930228 T055 _______ _______ _________
                         ENDORSED AS HAZARDOUS MAT
                         *************************          1       TNK
                         *         HAZARDOUS     *
                         *         MATERIALS     *          RESIDUE: LAST CONTAINED
                         *************************          UN1789
                                                            HYDROCHLORIC ACID
                                                            8//PG II
                                                            RQ (HYDROCHLORIC ACID)
                                                            EMERGENCY CONTACT:
                                                             CCN 16299
                                                             1-800-424-9300
                                                            HAZMAT
                                                            STCC=4930228
                                                            ERG GUIDE NO.
                                                            157
     TO/CONSIGNEE:                                  FROM/SHIPPER:
       OLIN CORP                                      OLIN CHLOR ALKALI
       PRODUCTS CHARLESTON     TN

                         CLASS 8 (CORROSIVE MATERIAL) >DANGEROUS<
                         HM1 PIT GROUP 4 RESIDUE TANK CAR

05   NS     245259 L     NEW ORLE LA UP         94 WR GRACE 3295231 C113 _____________ ______ ______
06   NS     245160 L     NEW ORLE LA UP         95 WR GRACE 3295231 C113 _____________ ______ ______
07   NS     245236 L     NEW ORLE LA UP        110 WR GRACE 3295231 C113 _____________ ______ ______
08   NS     245052 L     NEW ORLE LA UP         94 WR GRACE 3295231 C113 _____________ ______ ______
09   NS     245091 L     NEW ORLE LA UP        101 WR GRACE 3295231 C113 _____________ ______ ______
10   NS     245334 L     NEW ORLE LA UP        102 WR GRACE 3295231 C113 _____________ ______ ______
11   NS     245133 L     NEW ORLE LA UP        101 WR GRACE 3295231 C113 _____________ ______ ______
12   NS     245027 L     NEW ORLE LA UP        100 WR GRACE 3295231 C113 _____________ ______ ______
13   PPGX 012437 E       NEW ORLE LA UP         35 PPGINDUS 3295973 C114 _____________ ______ ______

                         LIGHT LONG CAR
14   SHQX 042482 E       NEW ORLE LA UP         33 TOKCARCB 2899610 C113 _____________ ______ ______
```

Locomotives

Sequence Numbers

Rail Car Initial & Number

Identification Number

Hazmat Class

24 Hr. Emergency Contact Number

Shipping Name

Packing Group

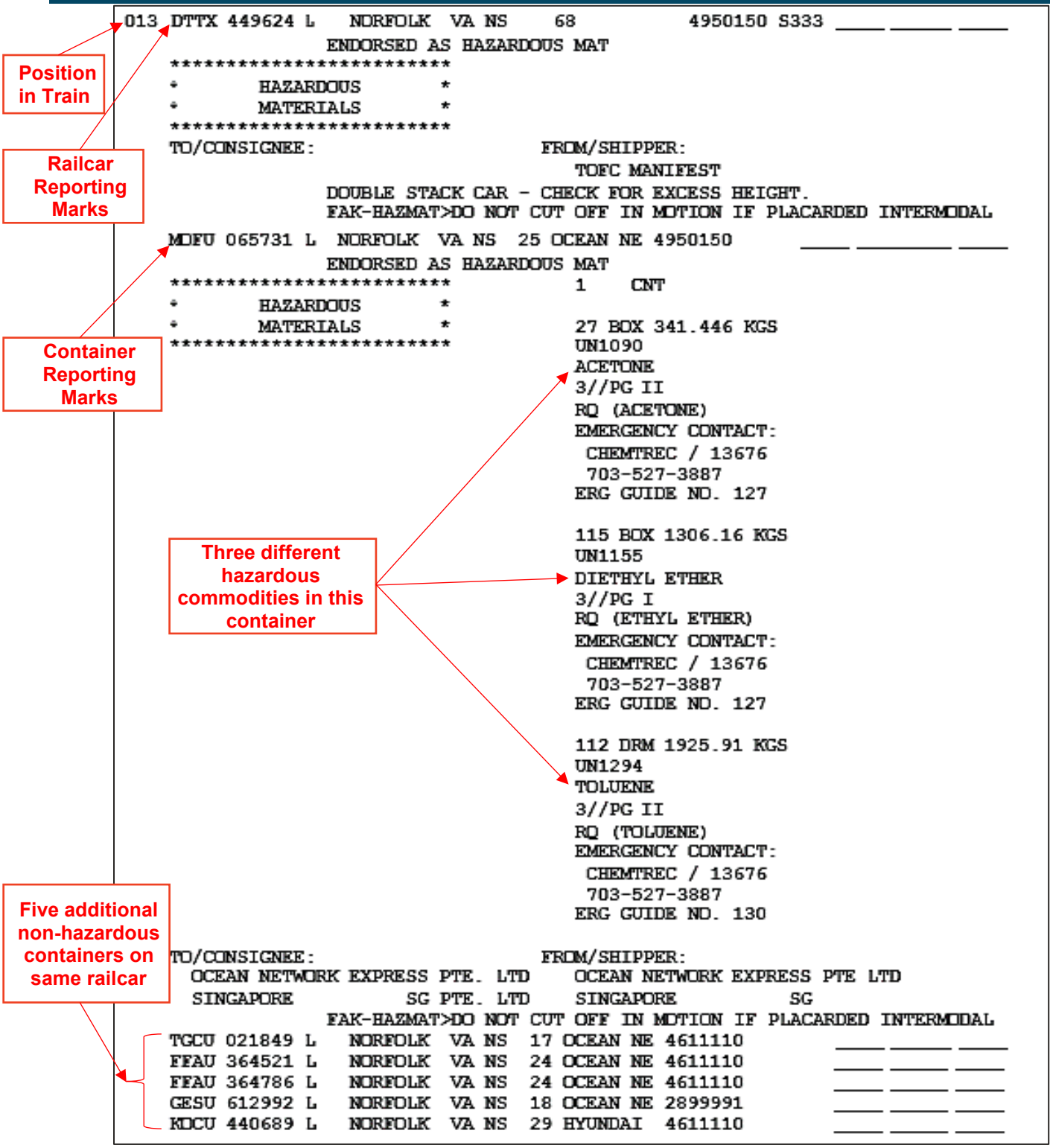
Reportable Quantity

Emergency Response Guidebook

Intermodal Train Consist Example

Intermodal railcars can transport multiple trailers/containers on a single railcar therefore the train consists for intermodal trains are slightly different from freight trains. The trailer/containers will be listed below the railcar they are attached to.

Exhibit 7



Position in Train Document

Exhibit 7

Norfolk Southern Railway Company
Notice of Rail Cars & Intermodal Units Containing Hazardous Materials

Train#: 130A706 Location: BIRMINGH AL 08/07/23 8:40 AM

The following rail cars & intermodal units containing hazardous materials are located in your train. They must be positioned in your train in accordance with the train placement chart. Revision columns are to be used to make placement changes enroute.

INIT	NUMBER	LE	CONTAINER INIT NUMBER	LE	COMMENT	I.D. NO.	TRAIN POSITION	REVISION 1st	2nd	3rd
UTLX	212293	L				1230	006			
UTLX	210298	L				1230	007			
UTLX	211124	L				1230	008			
UTLX	212564	L				1230	014			
OLNX	712342	L				1824	031			

Exhibit 7A
Document updated after picking 10 rail cars and placing them on the headend of the train. (Revisions will be written in on the "REVISION" column as shown below)

Norfolk Southern Railway Company
Notice of Rail Cars & Intermodal Units Containing Hazardous Materials

Train#: 130A706 Location: BIRMINGH AL 08/07/23 8:40 AM

The following rail cars & intermodal units containing hazardous materials are located in your train. They must be positioned in your train in accordance with the train placement chart. Revision columns are to be used to make placement changes enroute.

INIT	NUMBER	LE	CONTAINER INIT NUMBER	LE	COMMENT	I.D. NO.	TRAIN POSITION	REVISION 1st	2nd	3rd
UTLX	212293	L				1230	~~006~~	16		
UTLX	210298	L				1230	~~007~~	17		
UTLX	211124	L				1230	~~008~~	18		
UTLX	212564	L				1230	~~014~~	24		
OLNX	712342	L				1824	~~031~~	41		

Electronic Shipping Documents

Norfolk Southern is transitioning from paper shipping documents to electronic shipping documents. During this transition First Responders are likely to encounter one or both document types. Most importantly, both documents provide the same information just in different formats. Electronic documents always for real-time updates to train consists,

Railcar Waybill Examples

Exhibit 8
Loaded Waybill

```
******************555 -          NORFOLK SOUTHERN          - 555
*    HAZARDOUS     *           *** (PAGE 001 OF 003) *** IMAGE ID E1123006143755
*    MATERIALS     *         HAZARDOUS SER 6844173607
******************        EDI-BOL MERCHANDISE WAYBILL
                                 ****REPRINT****
                              08/02/23 11:24A                    W20

UTLX  421534  T096 PLATE C CAR
              T                                    55'05" 07/30/23     424830
               B
                                                    VERSION  2  EDI
                                                   23610     06:47

  58686   BAYPORT              TX          55831      KINGSPOT              TN

                                           55555      ATLANTA AOC           GA
                 R         802-9016                                      6033820439
                                        PBW CHEMICAL CO
NS   MEMPH,UP                           ATTN ACCOUNTS PAYABLE
                                        100 N WILLIAMS RD PO BOX 911
                                        KINGSPORT          TN376625000

         DLS RESINS COMPANY                    07-30-23 06:43  0172934610
CARE OF :GOULD TERMINALS
         12211 PORT ROAD
         SEABROOK           TX77586

                                        PBW CHEMICAL CO
                                        ATTN ACCOUNTS
                                        PAYABLE
RATED TO ROUTE: CODE                    100 N WILLIAMS RD PO BOX 911
NS                                      KINGSPORT          TN376625000

                                                 SHIPPER WEIGHT AGREEMENT
                                  07-30-23
DELY ORDER#: 0090801514                                          157,595
RATED TO NS   MEMPHIS       TN                                   75,200
SEAL 1 - 4102992
SEAL 2 - 4102993                                                  82,395


   1TC  HAZARDOUS MATERIAL        OSA    82395 ACCOUNTING RULE 11 SHIPMENT
        1 CAR 82395 LBS                      WAYBILL NOT TO BE INCLUDED
        UN1715                               IN INTERLINE SETTLEMENT
        ACETIC ANHYDRIDE
        8(3)//PG II
        RQ (ACETIC ANHYDRIDE)
        EMERGENCY
        CONTACT:
         PBW CHEMICAL                  82395   TOTAL
         CCN#7321
         8004249300
```

Exhibit 8A
Residue Waybill

```
******************802 -         NORFOLK SOUTHERN         - 802
*   HAZARDOUS    *           *** (PAGE 001 OF 002) *** IMAGE ID E1123006143755
*   MATERIALS    *         HAZARDOUS SER 6844173610
******************         *    EMPTY WAYBILL     *
                             ****REPRINT****
                                08/02/23 11:24A                  W20

UTLX  421534  T096 PLATE C CAR
              T                                    55'05" 07/30/23     424830
               B
                                                     VERSION  1  EDI
                                                    23610     00:01

  58686   BAYPORT              TX         55831      KINGSPOT             TN


                 R         802-9016
                                        PBW CHEMICAL CO
NS   MEMPH,UP                          ATTN ACCOUNTS PAYABLE
                                        100 N WILLIAMS RD PO BOX 911
                                        KINGSPORT          TN376625000

         DLS RESINS COMPANY                      07-30-23 06:43  0172934610
CARE OF :GOULD TERMINALS
         12211 PORT ROAD
         SEABROOK           TX77586

                                        PBW CHEMICAL CO
                                        ATTN ACCOUNTS
                                        PAYABLE
                                        100 N WILLIAMS RD PO BOX 911
                                        KINGSPORT          TN376625000




                                                                  82,395

                 4908110

   1TC  HAZARDOUS MATERIAL       OSA            FREE
        RESIDUE: LAST CONTAINED
        UN1715
        ACETIC ANHYDRIDE
        8(3)//PG II
        EMERGENCY
        CONTACT:
         PBW CHEMICAL                  82395   TOTAL
         CCN#7321
         8004249300
```

Placarding and Hazard Classes

The Code of Federal Regulations (CFR), 49 CFR Part 172, prescribes that square-on-point shaped placards must be placed on the outside of certain bulk container rail cars carrying hazardous materials, or residues of such materials. Placards must also be placed on the exterior of some intermodal containers carrying amounts of hazardous materials in excess of certain regulatory thresholds. Placards can tell the responder the DOT hazard class involved and thus provide a general idea of the hazards present and preliminary response requirements. Keep in mind that many materials possess characteristics of more than one hazard class, and therefore hazard class information should generally not be used independently. Check shipping paper for more details.

UN/DOT Hazard Classes

Hazardous materials are classified for transportation according to their chemical and/or physical properties. There is one worded class and nine numeric classes, some of which may be divided into divisions. A hazardous material is assigned to only one class, even if it meets the definition of more than one hazard class. **Exhibit 9** lists the hazard classes and divisions.

Exhibit 9 **Numbered Classes and Divisions**
1 — Explosives
1.1 — Explosive with mass explosion hazard
1.2 — Explosive with projection hazard
1.3 — Explosive with predominantly fire hazard
1.4 — Explosive with no significant blast hazard
1.5 — Very insensitive explosive; blasting agent
1.6 — Extremely insensitive detonating substance
2 — Gases
2.1 — Flammable gas
2.2 — Non-flammable, nonpoisonous (nontoxic) compressed gas
2.3 — Gas poisonous (toxic) by inhalation
3 — Flammable Liquids
4 — Flammable Solids and Reactive Solids/Liquids
4.1 — Flammable solid
4.2 — Spontaneously combustible material
4.3 — Dangerous when wet material
5 — Oxidizers and Organic Peroxides
5.1 — Oxidizer
5.2 — Organic peroxide
6 — Poisonous (Toxic) Materials and Infectious Substances
6.1 — Poisonous (toxic) material
6.2 — Infectious substance
7 — Radioactive Materials
8 — Corrosive Materials
9 — Miscellaneous Hazardous Materials
Worded Classes
Combustible Liquid

Placarding Chart

Placards for Hazardous Materials by Hazard Class

Class 1 (Explosives)

Division 1.1
(Explosive with Mass Explosion Hazard)

Division 1.2
(Explosive with Projection Hazard)

Division 1.3
(Explosive with
Predominantly a Fire Hazard)

Division 1.4
(Explosive with no Significant
Blast Hazard)

Division 1.5
(Very Insensitive Explosive)

Division 1.6
(Extremely Insensitive Explosive)

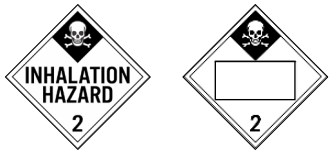
Class 2 (Gases)

Division 2.1
(Flammable Gas)

Division 2.1 (Flammable Gas in
Cryogenic Form in DOT-113 Tank Car)

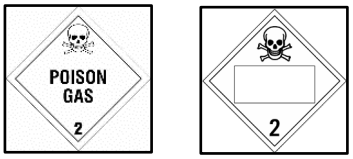
Division 2.2
(Non-Flammable Gas)

Division 2.3 Zone A
(Poison Gas)



Division 2.3 Other than Zone A
(Poison Gas)

International Placard



NOTE: The word "Toxic" can be used in place of the word "Poison"

May appear in conjunction with U.S. "Poison" Gas Placard (Inhalation Hazard Class 2) on Canadian or International Shipments

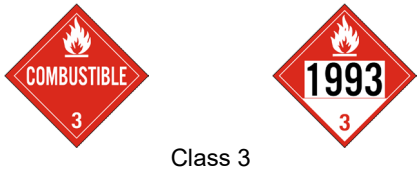
Division 2.2 Oxygen

United States Canada
Anhydrous Ammonia

Class 3 (Flammable Liquids)

Class 3
(Flammable Liquids)

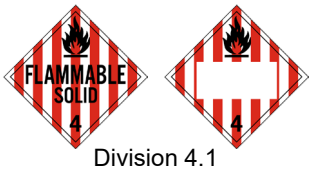
Class 3 (Combustible Liquids)



Class 3
(Combustible Liquids)

Placards for Hazardous Materials by Hazard Class

Class 4 (Flammable Solids & Reactive Solids/Liquids)



Division 4.1
(Flammable Solid)

Division 4.2
(Spontaneously Combustible)

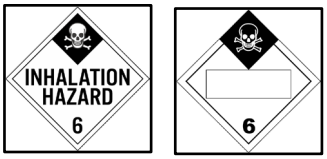
Division 4.3
(Dangerous When Wet

Class 5 (Oxidizers & Organic Peroxides)

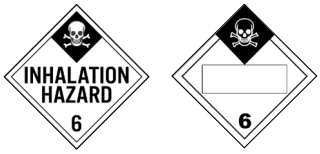
Division 5.1
(Oxidizer)

Division 5.2
(Organic Peroxide)

Class 6 (Poisonous Materials)



Division 6.1 Zone A
(Poison or Toxic Inhalation Hazards (PIH or TIH)



Division 6.1 Zone B
(Poison or Toxic Inhalation Hazards (PIH or TIH)

Division 6.1 PG I
(Other than Poison or Toxic Inhalation Hazards (PIH or TIH), PG II, or PG III

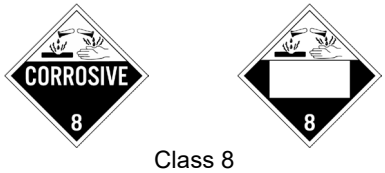
Division 6.1
PG III only

NOTE: The word "Toxic" can be used in place of the word "Poison"

Class 7 (Radioactive Materials)

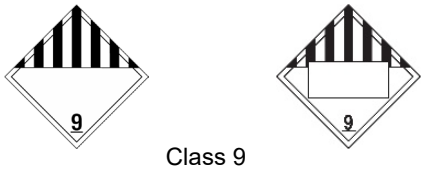
Class 7
(Radioactive Material)

Class 8 (Corrosive Materials)



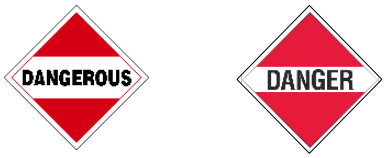
Class 8
(Corrosive Material)

Class 9
(Miscellaneous Hazardous Material)



Class 9
(Miscellaneous Hazardous Material)

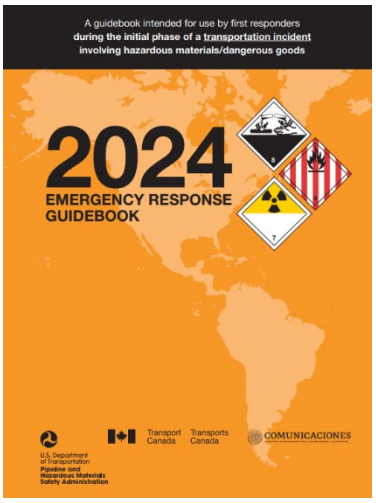
Dangerous Placard
(Mixed Load)



United States

Canadian

Emergency Response Guidebook



The Emergency Response Guidebook (ERG) contains general emergency response information for hazardous materials incidents. To use the guides (orange bordered pages), you must know either the DOT 4-digit identification number (yellow bordered pages), the proper shipping name (blue bordered pages), or the placard affixed to the car. To save time, NS train consists list the ERG Guide Number in the shipping description for all hazmat cars. The Emergency Response Guidebook also contains initial isolation and protective action distances (green bordered pages) for specific commodities.

This guidebook will assist responders in making initial decisions enroute or upon arriving at the scene of a hazardous materials incident. It should not be considered as a substitute for emergency response training, knowledge, or sound judgment. It is primarily designed for INITIAL RESPONSE at a hazardous materials incident occurring on a highway or railroad.

A copy of the ERG can be downloaded here: ERG2020-WEB.pdf (dot.gov). There are also ERG mobile apps available for download here: ERG2020 Mobile App | PHMSA (dot.gov).

AskRail Application

The AskRail application is a collaborative effort among the emergency response community and all Class I railroads. The app provides first responders, from all 50 states and eight Canadian provinces, with immediate access to accurate, timely data about the type of hazardous materials a railcar is carrying so they can make an informed decisions about how to respond to a rail emergency. It is available for mobile devices and computers here: https://askrail.us/.

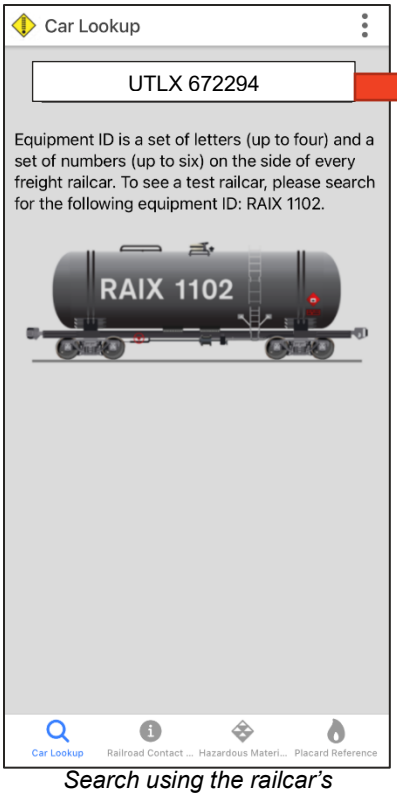
AskRail serves emergency responders who arrive first to the scene of a rail emergency and who need to know the identity and location of railcars carrying hazardous materials. Through an easy-to-use mobile interface, emergency responders can query the contents of a railcar with a simple railcar ID search to see if a car is carrying hazardous material and, if so, what that material is.

With AskRail, emergency responders have immediate, secure access to accurate, critical data, sourced from railroads, which can help them make informed decisions and determine the next steps in their incident response.

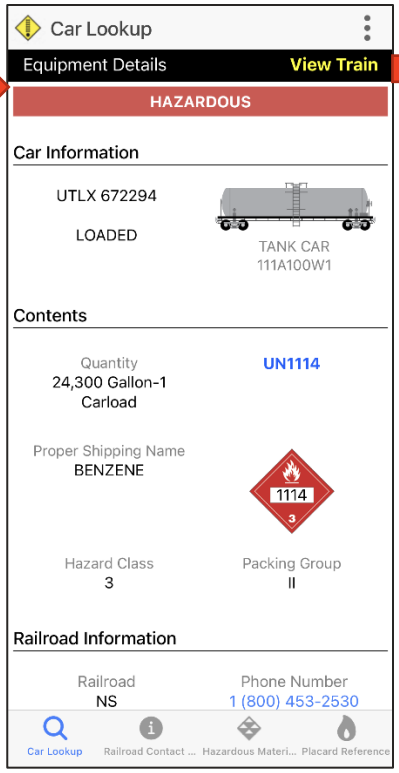
By performing an AskRail query using a railcar's reporting marks, emergency responders can view data such as:

- Loaded or empty status
- Car Type and a generic side view illustration of the car type
- Placard and UN/NA ID for identifying hazardous materials
- Proper shipping name, hazard class, and packing group
- Train consist details when the railcar is part of a train
- Railroad name
- Emergency contact information for all six Class I railroads, many Short Lines, and Amtrak

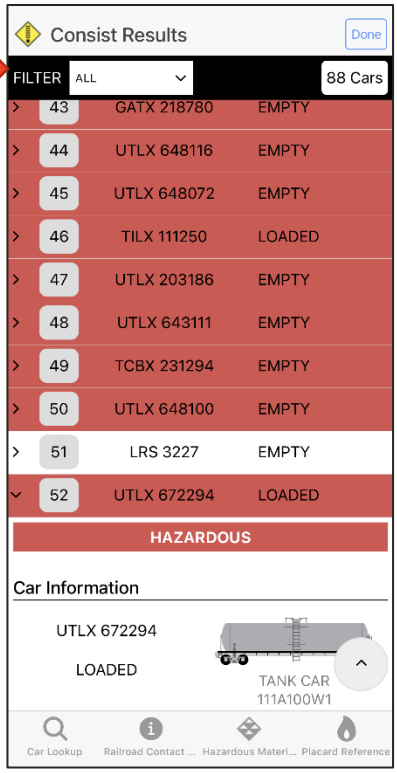
AskRail also includes a list of the 125 hazardous materials most commonly shipped by rail and integrates information from the Pipeline and Hazardous Materials Safety Administration's Emergency Response Guidebook (ERG). Below are some of the many features of the AskRail app.



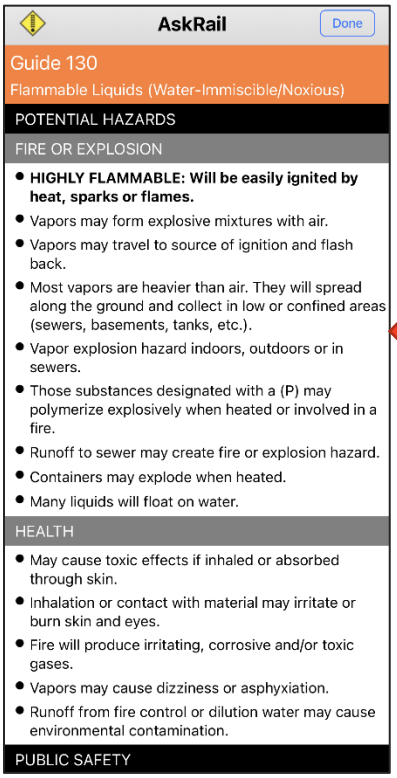
Search using the railcar's reporting marks.



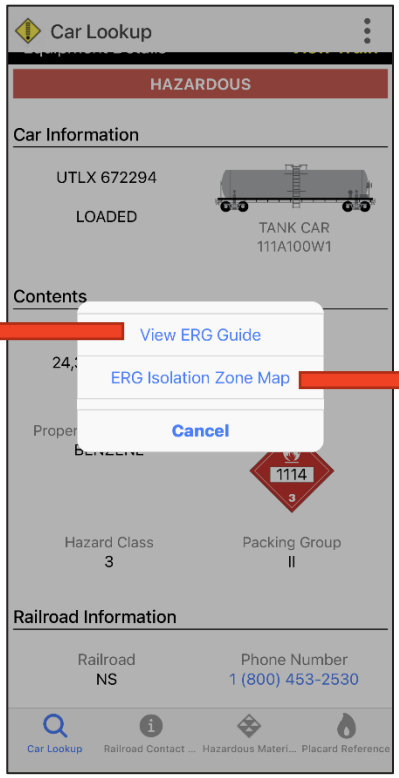
View railcar and commodity details including RR contact info.



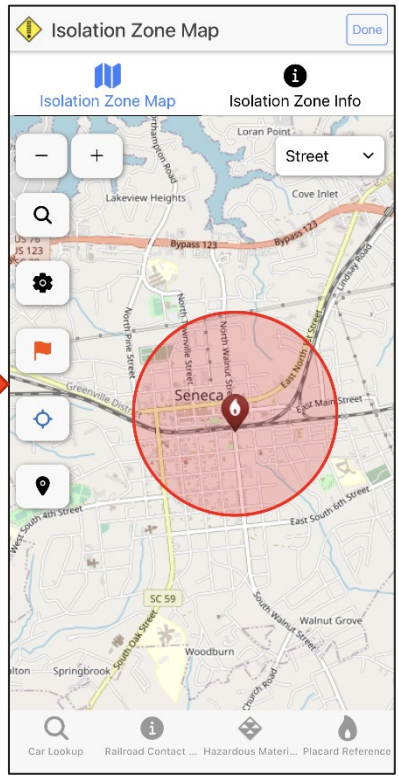
Select "View Train" to view the train consist details



View the ERG Guide for the commodity in the specific railcar.



Tapping the placard icon will give a popup to view the ERG or an isolation zone map.



Answer popup questions and isolation distance is calculated then plotted on local area map.

Response

Norfolk Southern will respond to all known hazardous material incidents involving equipment in transportation over the Norfolk Southern Railway system or incidents that have the potential to affect Norfolk Southern train operations. Norfolk Southern's primary objectives at the scene of any incident are to:

- Protect life and health;
- Protect property and the environment;
- Cooperate with and assist governmental authorities; and
- Comply with local, state, and federal regulations.

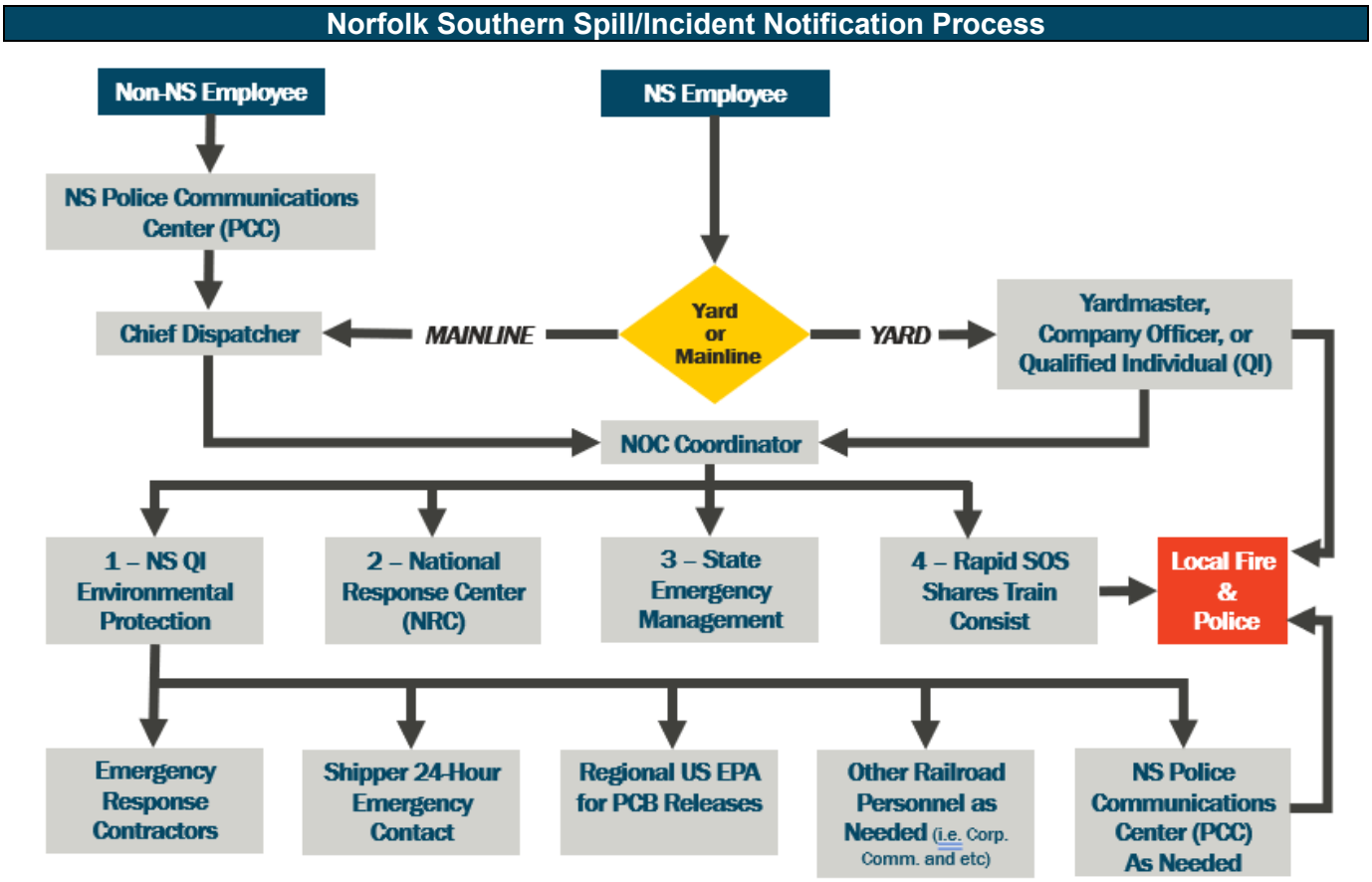
Incident Notifications

Norfolk Southern values the time and resources of the first responder community and not every incident requires a response by local first responders. Various state and federal laws require timely notification of releases of hazardous materials, petroleum products, and spills affecting a waterway. In addition to making notifications when required by law, Norfolk Southern will also notify Local Fire & Police if any of the following criteria are met:

- Fire, smoke, violent ruptures, or explosions
- Leaking tank cars placarded *Poison Gas* or *Flammable Gas*
- Leaking tank cars with moderate or major leaks (level II or III incidents)
- Leaks (hazardous or non-hazardous) which enter yard drains, drainage ditches, culverts, sewers, or water courses; or threaten to do so
- A situation exists of such a nature that, in the judgment of the carrier, should be reported even though it doesn't meet aforementioned criteria (i.e., a continuing danger to life and health at the scene of the incident)
- Spills, discharges, or releases that go or threaten to go beyond company property or create an emergency situation or result in an evacuation
- Any other situation as deemed appropriate by the individual making the notification calls

Depending on the type and location of the incident, notifications to local fire and police could be made by Norfolk Southern's Police Communication Center, by a railroad supervisor, and/or an employee at the scene of the incident. Below is a flow diagram of Norfolk Southern's spill/incident notification process.

Norfolk Southern has recently partnered with Rapid SOS to aid in the sharing of train consist information with First Responders. Based on the GPS location of a rail incident, Rapid SOS identifies the local agency having jurisdiction over the incident and provides NS contact information for the Emergency Communication Center (ECC) for that agency. The NS Operation Center will reach out to this ECC and proactively provide train consist information along with any other pertinent information about the incident.



Norfolk Southern Response Resources

In the case of most derailments or spills, local responders do not have the equipment or expertise to handle large spill cleanup or railroad re-railing operations. Norfolk Southern recognizes its role in providing this specialized expertise and equipment to mitigate an incident. Norfolk Southern maintains standing contracts and agreements with various suppliers of these services. Personnel are trained and equipped with all levels of protective equipment for operations in close proximity to spilled products, and leak and spill control equipment to contain product from leaking packages.

Examples of these contractors are provided below.

- Railroad re-railing and wreck response contractors provide heavy equipment such as cranes, off track lifting equipment, heavy earth moving equipment, and the operators and ground crews to lift and re-rail damaged rail cars and locomotives.
- Emergency response (HazMat) contractors provide vacuum equipment, pumping equipment, and cargo tanks for the recovery of spilled products.
- Containers and heavy equipment are available for recovery of solid materials.
- Environmental recovery contractors provide technical expertise in the on-site remediation or removal of contaminated water, soil, or debris from the incident site.
- Industrial hygiene and public health contractors provide technical expertise and equipment to perform on-site and off-site soil, air, and water sampling. These contractors are also used to develop work and exclusion zones, and to document any exposures.

Norfolk Southern's internal resources include a number of departments/groups with employees who are subject matter experts in their respective fields. These departments and groups include:

- Transportation Department is responsible for the movement of all trains and equipment on the railroad. During an emergency, the senior transportation manager onsite will serve as the railroad's incident commander
- Mechanical Department inspects, maintains, and repairs all railcars and locomotives on the NS system. During an emergency, the mechanical manager will handle the re-railing or removal of any damaged railcars or locomotive.
- Engineering Department is tasked with building and maintaining track, signals, bridges, and other infrastructure. During an emergency, engineering teams will make all necessary repairs to restore the track to normal service.
- Environmental Protection is compromised of the Hazmat Team and Environmental Operations Teams. These teams work together to contain and remove any spilled materials (haz or non-haz) and to mitigate any potential environmental impacts
- Railroad Police patrol and enforce the law on all railroad properties. During any incident, they provide assistance with site security and access control to the scene.
- Damage Prevention works with shippers to address damaged railcars and losses of lading including the transfer of non-hazardous commodities from damaged equipment following an incident.
- Casualty Claims assists property owners, residents, business owners, and others who may have been impacted by a railroad incident.
- Corporate Communications interfaces with Public Information Officers from local agencies and with the media to provide accurate information about incidents involving the railroad.

Air Monitoring and Modeling

In the aftermath of a chemical transportation accident, timely and accurate information is critically important to saving lives and resources. To help incident commanders more competently assess the potential impacts of a release on a community along Norfolk Southern lines, we use a network of specialized contractors with state-of-the-art plume modeling technology.

Properly relaying information to the general public is extremely important both before and after an emergency occurs. To assist in this effort, as well as gathering toxicological and chemical information, Norfolk Southern has retained the services of contractors with modeling experience to operate the new technology systems, if the need arises.

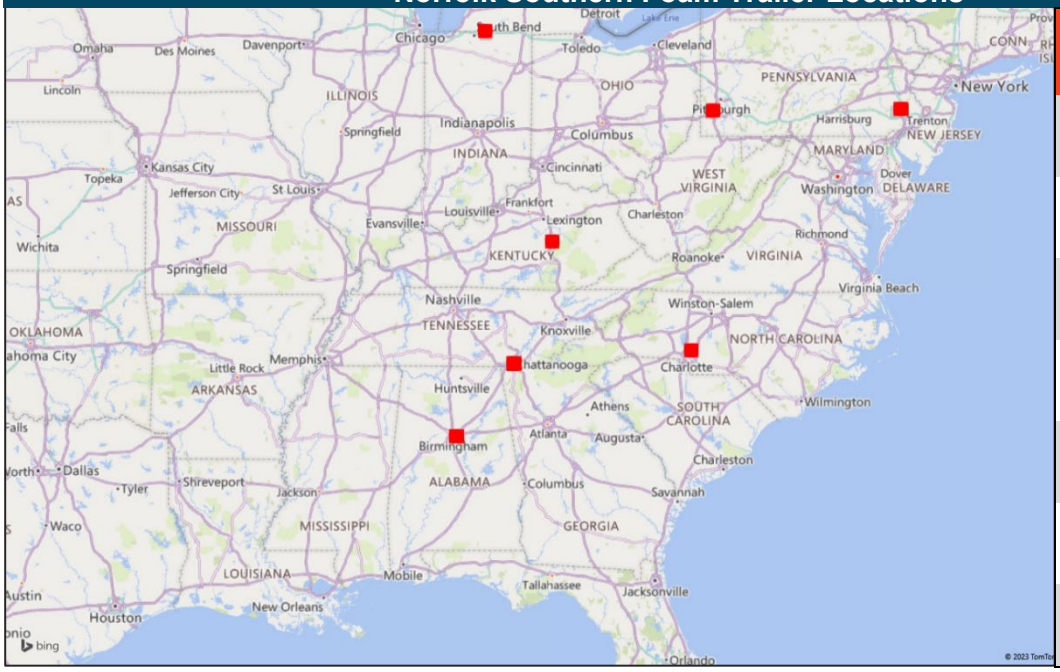
Local Resources

Norfolk Southern is a rail transportation company. In general, NS does not maintain resources such as firefighting or water supply equipment, emergency medical personnel or medical transport services, command posts and canteens, or large-scale communications equipment.

During an emergency operation, Norfolk Southern relies upon local emergency officials to provide these types of resources. The senior or designated Norfolk Southern official will coordinate with the local Incident Commander to obtain these local resources. Local resources will remain under the control of the local authority.

In the event of an extended duration incident, NS will work with the Incident Commander to transition these resources to other vendors and contractors hired by NS to reduce the burden on local resources. NS does maintain trailers of non-fluorinated firefighting foam strategically located across the NS system to supplement local supplies when the need arises.

EXHIBIT 4
Norfolk Southern Foam Trailer Locations



City	State
Birmingham	AL
Elkhart	IN
Berea	KY
Charlotte	NC
Philadelphia	PA
Pittsburgh	PA
Chattanooga	TN

External Response Resources

There are several private and governmental organizations capable of providing emergency response assistance in the event of emergencies involving hazardous materials.

EXHIBIT 5
External Response Resources

Organization	Telephone Number
CHEMTREC	800-424-9300
U.S Coast Guard; National Response Center (NRC)	800-424-8802
Nuclear Regulatory Commission	301-951-0550
Department of Energy	202-586-8100
U.S. Environmental Protection Agency	US EPA Regional Offices[1]

[1] https://www.epa.gov/aboutepa/regional-and-geographic-offices

How to Respond to Railroad Incidents

Every rail incident is unique and poses its own hazards/challenges but there is a process that can be applied regardless of the incident type to guide responders through the incident. D.E.C.I.D.E., a risk-based decision-making process, is a tool developed by Ludwig Brenner that guides responders through a systematic approach which minimizes risk and creates continuity and accountability. The D.E.C.I.D.E. process is a continuous assessment cycle.

D - Detect the presence of hazardous material

E - Estimate the likely harm without intervention

C - Choose response objectives

I - Identify your action options

D - Do the best option

E - Evaluate progress

The D.E.C.I.D.E. process will assist in conducting a site assessment and determining a course of action to mitigate releases on the scene of a rail incident. The goal is to use a proven methodology that provides responders a proper mindset, preventing rushing in, rather handling a safely and thoroughly.

Anyone likely to be involved in a hazardous materials response should read Ludwig Benner's article "D.E.C.I.D.E. In Hazardous Materials Emergencies" which can be found at the below web address: http://www.ludwigbenner.org/HMdocs/DECIDE_reprint.pdf

The "Railroad Hazardous Incident Checklist", included in the appendices of this book, is an incident checklist modeled on D.E.C.I.D.E. and modified for use on railroad incidents.

Attendance and Securement

The Federal Railroad Administration (FRA) has issued special instructions stating:

> ***"Anytime emergency responders have been on, under, or between rail equipment, the equipment must not be left unattended until an inspection for proper securement is performed by a qualified railroad employee."***

After managing a response involving rail equipment, ensure someone for NS arrives on scene to take control of the equipment before first responders leave the scene. If no one from NS has responded to the incident, notify the NS **Police Communications Center (PCC) at 1-800-453-2530** and request someone respond to the scene.

Special Considerations for Unique Incident Types

Norfolk Southern operates in 22 states across a variety of terrains and water bodies. There will be additional challenges when responding to incidents involving bridges and tunnels. In addition, there are a number of utilities present in the railroad right of way. Finally, there are unique challenges when dealing with passenger trains and certain hazardous materials. This section will touch on some of these unique conditions and cover several special considerations.

Train Derailments

Train derailments have a number of hazards to first responders in addition to the hazards associated with any of the commodities being carried in the railcars. **RESIST RUSHING IN!** Responders should first assess a derailment scene from a distance to determine the presence of any hazardous materials and their associated hazards. A copy of the train consist should be obtained to identify the commodities involved in the derailment.

Once it has determined to be safe to approach a derailment scene, First Responders must be on the lookout for tripping hazards like poor walking conditions, car parts, broken cross ties and other track material that may have been disturbed during the derailment. Use caution around rail that is bent or no longer spiked in place because rail could be under tension and be at risk of striking someone if it dislodges. Do not step in piles of spilled material or pools of standing liquids as they may be a hazardous material with unknown hazards. Avoid climbing on derailed rail equipment as there is a risk of it moving or shifting with additional body weight. Evaluate each rail car before climbing to determine whether its stable to climb on or protected against shifting.

It is common for locomotives to be damaged during a derailment and leaking diesel fuel, battery acid, engine oil, and/or chemical toilet liquid. Air hoses between rail cars and air reservoirs on locomotive could remain charged with up to 120 PSI of air pressure. Do not try to separate air hoses under pressure as they come apart violently. Locomotives have a number of electrical hazards that must be safeguard against. Make sure derailed locomotives are shut down and the battery disconnect switch has been disengaged. Ensure all circuit breakers on the back wall of the locomotive cab are in the off position. Any exposed wires should be treated as if they are energized until determined otherwise.

Fires Involving Rail Equipment

Train derailments can result in fires involving railcars and/or locomotives because during derailments there are typically sparks from impacts and sliding metal components and if combustible or flammable material is present if could ignite. Besides derailments, fires involving rail equipment can occur for a number of other reasons. Regardless of the cause of the fire, most of the tactics are the same.

Most locomotive fires originate in the engine compartment and are typically a hydrocarbon fire, but electrical fires are possible on locomotives. For all locomotive fires, first responders should shut down the locomotive on fire by pressing one of the three emergency shutdown buttons then pulling the battery disconnect switch. Ensure all circuit breakers on the back wall of the locomotive cab are in the off position.

All engine compartment doors have top and bottom latches. These latches should be operated using a pike pole from the ground because locomotive walkways are very narrow and can be obstructed once compartment doors are opened. Use a dry chemical fire extinguisher or water, if necessary, to extinguish the fire.

Rail cars containing non-hazardous materials can check fire for various reasons. This includes boxcars of paper, gondolas of cross ties or scrap metal, auto racks with finished automobiles, and hopper cars containing coal to just name a few.

Tunnels Incidents

An incident in a tunnel involving a release of hazardous materials may create a greater risk than one in an open area. Toxic vapors are not readily dissipated and may displace air normally available for breathing. Fire may consume the air available for breathing leading to an oxygen deficient atmosphere.

Extreme care must be taken not to introduce additional hazards into the tunnel. The generation of a hazardous atmosphere from gasoline or diesel-powered equipment, welding or burning fumes, chemical agents, and/or illuminating equipment may multiply the hazards already present.

Following is a list of additional factors to consider when responding to a rail incident inside a tunnel:

- Air monitoring — initial survey and continuous during response.
- Use of SCBA or respirator as determined by air monitoring results.
- Possible high temperatures due to presence of fire.
- Structural failure due to initial impact or fire/chemical damage.
- Tunnel lining type — stone, timber, steel, concrete or combination.
- Access points — portals, ventilation shafts, emergency exits, and inspection manways.
- Variation in track grade may produce a chimney effect.
- Tunnel length, curvature, gradient, height and width should be determined.
- Visibility may be limited or non-existent due to smoke, soot, chemical vapors.
- Communications may be difficult or impossible using radios or cell phones.
- Communication and lighting devices should be intrinsically safe.
- A personnel log must be kept of all people entering and exiting the tunnel.
- Ventilation units may be beneficial to remove fumes and vapors, however, may also cause spreading of plume and fueling a fire.
- Foam generators may be an effective tool for fighting a tunnel fire.
- Determine presence of electric, gas, water, fiber optic and pipeline utilities.
- Best alternative may be to seal the tunnel and smother the fire.
- Communication between the ends of the tunnel, especially, to control entry.

Norfolk Southern has developed a Tunnel Emergency Action Plan which includes a detailed list with specifications for all tunnels on the system.

Bridge Related Incidents

Response to emergency situations on elevated structures create distinct challenges due to the possibility of excessive heights and lengths along with the various building materials used in the construction of a span. Open, closed or non-existent deck walkways must be navigated with extreme caution, as some structures are not designed for pedestrian traffic.

Railroad and emergency response personnel must consider employee and public safety first priority followed by environmental concerns.

Various possible scenarios may exist when responding to an incident involving an elevated structure. Emergency responders must consider a bridge may span over populated areas, streets or highways, waterways, or other railroad right of ways. Coordination with responders and railroad representatives concerning conditions at location of incidents is imperative.

If passenger rail service is involved, any injured persons or those in need of special assistance (the very young, old and/or disabled) should be located, and assistance shall be provided to the maximum extent possible under the given circumstances.

Following is a list of additional factors to consider when responding to a rail incident on an elevated structure:

- Determine accessibility issues and required special assistance.
- Consider need for the U.S. Coast Guard, helicopter, and high level rescue team.
- Consider impact on area dwellings and places of businesses.
- Consider closing and rerouting public and private access routes.
- Consider closing and rerouting navigable waterway traffic.
- Consider need for specially equipped boats, barges and emergency seafaring equipment.
- Consider need for downstream pollution control measures.
- Notify downstream communities of possible impacts.
- Notify other rail carriers whose movements may be impacted.
- Consider structural damage due to fire or derailed equipment.
- Identify critical systems (electric, communications, water, sewer, pipeline, etc.) present.
- Consider industrial hygiene issues (air monitoring, lead paint on steel structures).

Additional hazards associated with bridges may include areas with limited natural airflow. Airborne chemical concentrations may become elevated in these areas.

Pipelines and Utilities on Railroad Right of Ways

Many railroad rights-of-way contain underground pipelines which transport hazardous materials. These pipelines may be in a common right-of-way, in a parallel right-of-way, or actually cross the right-of-way and run under the tracks. Typical pipeline commodities include natural gas, liquefied petroleum gas, gasoline, kerosene, diesel fuel and other petroleum products.

A railroad incident which results in a derailment, requires heavy equipment operations in the right-of-way, or otherwise disturbs the right-of-way has the potential of damaging underground pipelines. Derailed cars and locomotives can directly impinge on a pipeline. Loads imposed on a pipeline from a derailed train or cleanup equipment, or striking the pipeline with digging equipment can result in immediate or future failure. Therefore, the presence of underground pipelines carrying hazardous materials must always be considered when responding to a rail incident.

Following is a list of additional factors to consider when responding to a rail incident which may be adjacent to a pipeline:

- Look for posted pipeline markers and warning signs.
- Identify and notify the pipeline owner/operator.
- Determine the commodity transported through the pipeline.
- Determine if the pipeline may have been breached.
- Look for pools of liquid, hissing sounds, odors indicating a release.
- Leave the area immediately if a release is discovered.
- Do not touch, breathe, or make contact with vapors or liquids.
- Do not light a match, start an engine, use a telephone, switch lights on/off.
- Notify local emergency responders through 911 system.
- Warn others in the area and restrict access.

Pipeline operators have their own emergency response protocols when notified of possible damage to one of their lines. Immediate identification and notification of the pipeline operator is very important to minimize any release.

Other Railroad Right of Way Utilities

In addition to pipelines, there may also be fiber optic cables or other buried communication lines. There are utilities like water, sewer, and power often crossing or running parallel in the right of way. These lines are usually marked with signs on posts. To be certain, always check with the railroad Engineering Department and call an 811 service before digging on any right of way.

811 Know what's below. Call before you dig.

Radioactive Material Incidents

Response to incidents involving radioactive material involves specialized equipment and trained personnel. Local emergency responder's primary consideration will be safely isolating the scene (controlling access) and preventing the spread of material to protect the public and minimize environmental impact.

This section describes initial response actions a first responder should take when arriving at the scene of a transportation incident involving radioactive material. The DOT Emergency Response Guidebook should be used to help make informed decisions about the types of hazards involved and the initial precautions to take in an emergency.

The U.S. Department of Energy will provide qualified emergency response personnel to provide assistance in minimizing hazards to the public from any radiological emergency regardless of magnitude or source. Their telephone number is (202) 586-8100. DOE uses a regional approach in providing assistance ranging from advice and consultation to actual response by specially equipped and trained teams of product specialists.

The following is a list of additional factors to consider when responding to a rail incident involving a radioactive material:

- Notify federal, state and local radiological control agencies.
- Do not enter the scene unless necessary to evacuate, administer first aid or rescue victims.
- Minimize the time in the incident area.
- Maintain as much distance as possible from the radioactive material package.
- Do not touch damaged packages or spilled material.
- Use available material for shielding whenever possible.
- Isolate the area to minimize exposure and reduce the spread of material.
- Alert local medical facilities that possible contaminated patients may be transported.
- Consider gross decontamination if a release has occurred.

Norfolk Southern has developed a Radioactive Shipment Emergency Action Plan which includes a detailed description of emergency response activities associated with an incident involving radioactive materials.

Passenger Trains

At many locations, passenger rail entities operate commuter and passenger trains on NS owned and operated tracks. When operating on NS, these trains are under the operational control of an NS train dispatcher. In the event of an emergency involving a passenger train, NS officials will coordinate with emergency response personnel, and the passenger rail entity officials to manage the passengers and mitigation of the emergency. Notifications of the incident will be essentially the same as for other emergency situations. NS, in conjunction with officials from the passenger railroad, will respond to an incident to provide needed services and resources.

Passenger service on NS is primarily operated by AMTRAK and any incidents should be reported immediately to the NS Police Communications Center at 1-800-453-2530. NS Police will contact AMTRAK.

Further information regarding AMTRAK and passenger train emergency planning is available online at Amtrak Police Department[1] and Operation RAILSAFE | Amtrak Police[2].

[1] https://police.amtrak.com/home.html

[2] https://police.amtrak.com/resources/operation-railsafe.html

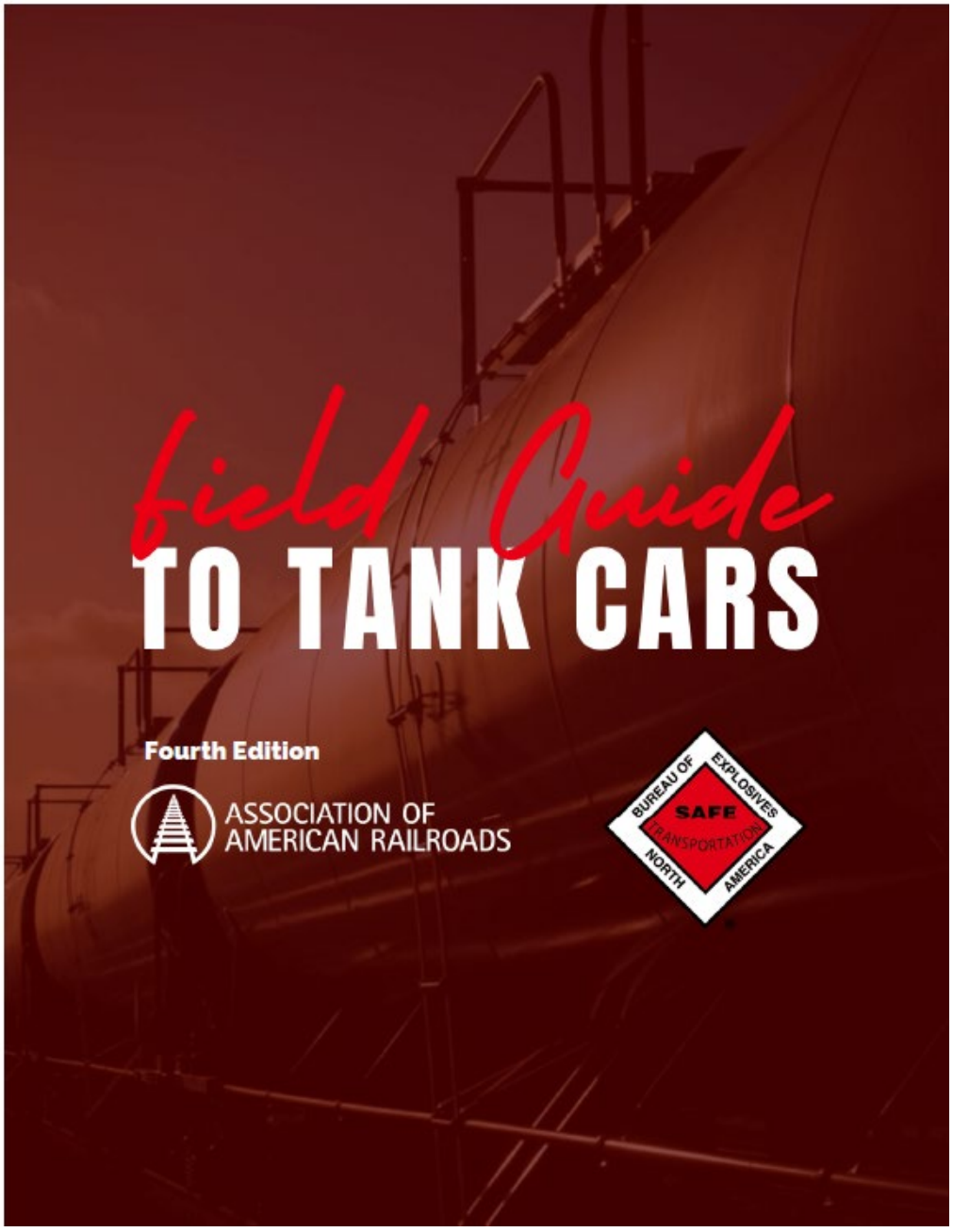
Appendices

Field Guide to Tank Cars

Association of American Railroads Field Guide to Tank Cars is intended to be used by emergency responders and others involved with railroad tank cars. It provides information on the types, safety systems, stenciling, markings and valves & fittings of tank cars utilized to transport regulated (hazardous materials/dangerous goods) and nonregulated commodities. This manual is an excellent resource for better familiarization of tank car equipment.

For a free download click here: AAR Field Guide to Tank Cars

The Field Guide to Tank Cars can also be found in the AskRail App on the “About” tab.



NS Media Contacts

Norfolk Southern procedures provide that communications with the media should be addressed through the local Incident Command System (ICS) by a Public Information Officer (PIO).

If a member of the media requests information from Norfolk Southern or seeks to talk with a NS public information representative, such requests/queries will be coordinated through Norfolk Southern's corporate communications main office: unless their representative is present at an incident site.

For Media Inquiries Concerning Norfolk Southern please contact:	
Norfolk Southern Corporate Communications:	**Media.Relations@nscorp.com**
After Hours:	**1-800-453-2530**

Online Resources

Organization	Web Website
American Chemistry Council	www.americanchemistry.com
American Short Line & Regional Railroad Association	www.aslrra.org
AMTRAK	www.amtrak.com
AskRail®	www.askrail.us
Association of American Railroads	www.aar.org
CANUTEC (Canadian Transport Emergency Centre)	www.tc.canada.ca/en/dangerous-goods/canutec
Center for Toxicology and Environmental Health	www.cteh.com
CHEMTREC (Chemical Transportation Emergency Center)	www.chemtrec.com
Chlorine Institute	www.chlorineinstitute.org
Emergency Planning and Community Right-to-Know	www.epa.gov/epcra
Emergency Response Guide (ERG) Mobile App	www.phmsa.dot.gov/hazmat/erg/erg2020-mobileapp
Emergency Response Guide (ERG) Online	www.phmsa.dot.gov/hazmat/erg/erg2020-english
Federal Emergency Management Agency	www.fema.gov
Federal Railroad Administration	www.fra.dot.gov
National Oceanic & Atmospheric Administration	www.noaa.gov
National Safety Council	www.nsc.org
National Transportation Safety Board	www.ntsb.gov
Norfolk Southern Corporation	www.nscorp.com
Operation Awareness & Response (OAR)	www.joinnsoar.com
Security and Emergency Response Training Center	www.sertc.org
State Emergency Response Commissions Contacts	www.epa.gov/epcra/state-emergency-response-commissions-contacts
TRANSCAER®	www.transcaer.com
Transport Canada	www.tc.canada.ca/en
Transportation Technology Center	www.ttc-ensco.com
U.S. Coast Guard	www.uscg.mil
U.S. Department of Transportation	www.dot.gov
U.S. Environmental Protection Agency	www.epa.gov
U.S. Fire Administration (National Fire Academy)	www.usfa.fema.gov
U.S. National Response Team (Oil & HazMat Response)	www.nrt.org

Glossary of Terms

ACID
Any chemical which undergoes dissociation in water with the formation of hydrogen ions. Acids have a corrosive effect on metals and may cause severe tissue burns. Acids turn litmus paper red and have a pH value of 0 to 6.

ALKALI
Any chemical substance that in water solution is bitter and is irritating or caustic to skin and mucous membranes, turns litmus paper blue and has a pH value greater than 7.0. Alkalis are also referred to as bases. They may have a corrosive effect on metals and cause severe tissue burns.

APPEARANCE
A description of a substance at normal room temperature and normal atmospheric conditions. Appearance includes the color, size, and appearance.

ASKRAIL®
AskRail is a free mobile application that provides immediate access to accurate, near real-time information about railcars carrying hazardous materials on a train. It serves emergency responders who arrive first to the scene of a rail incident and helps them make informed decisions about how to respond to a rail incident.

AUTO-IGNITION TEMPERATURE
The temperature at which a closed, or nearly closed container must be heated in order that a flammable liquid, when introduced into the container, will ignite spontaneously or burn.

BONDING
The interconnecting of two objects by means of a clamp and bare wire. Its purpose is to equalize the electrical potential between the objects to prevent a static discharge when transferring a flammable liquid or gas from one container to another. The conductive path is provided by the clamps which make contact with the charged object and a low resistance flexible cable which allows the charge to equalize.

COMBUSTIBLE LIQUID
As defined by DOT as any liquid having a flash point at or above 141°F (60.5°C), but below 200°F (93°C), except any mixture having components with flash points of 200°F (93°C) or higher, the total volume of which makes up ninety-nine percent (99%) or more of the total volume of the mixture.

CORROSIVE
As defined by DOT, a corrosive material is a liquid or solid that causes visible destruction or irreversible alterations in human skin tissue at the site of contact. In case of leakage from its packaging — a liquid that has a severe corrosive rate on steel. Two common examples are sodium hydroxide and sulfuric acid.

EXPLOSIVE
A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure or high temperature.

FLAMMABLE LIQUID
As defined by DOT is any liquid having a flash point below 141°F (60.5°C), except any mixture having components with flash points of 100°F (37.8°C) or higher, the total of which make up ninety-nine percent (99%) or more of the total volume of the mixture.

FLAMMABLE SOLID
A solid, other than a blasting agent or explosive that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change or retained heat from manufacturing processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard.

FLASH POINT
The temperature at which a liquid will give off enough flammable vapor to ignite if an ignition source is present.

HAZARDOUS MATERIALS
Hazardous materials are defined as *"a substance or material which the Secretary of Transportation has determined to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce."*

The term "hazardous material" includes hazardous substances, hazardous wastes, elevated temperature materials (HOT or MOLTEN), and marine pollutants.

IGNITABLE
Capable of being set afire.

IMPERVIOUS
A material that does not allow another substance to pass through or penetrate it.

INCOMPATIBLE
Materials which could cause a dangerous reaction from direct contact with one another.

INSULATION
A material used to maintain the temperature of the lading contain in a tank car. It may be made from fiberglass, rock wool, foam, cork, etc.

LC_{50}
(**L**ethal **C**oncentration - 50) is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours and is usually measured in parts per million.

LD_{50}
(**L**ethal **D**ose - 50) means a dose of a substance when ingested, injected, or applied to skin produces death in 50% (one half) of a population of experimental animals. It is usually expressed as milligrams per kilogram (mg/kg) of body weight.

LOWER EXPLOSIVE LIMIT (LEL)
Lowest concentration (percentage) of a gas or vapor in air capable of producing a flash of fire in presence of an ignition source (arc, flame, heat). Concentrations lower than LEL are 'too lean' to burn. Also called lower flammable limit (LFL).

ORGANIC PEROXIDE
Any organic (carbon-containing) compound having two oxygen atoms joined together (-O-O-). Organic peroxides can be severe fire and explosion hazards.

OXIDIZER
A compound that spontaneously evolves oxygen either at room temperature or under slight heating. DOT defines it as a material that may, generally by yielding oxygen, cause or enhance the combustion of other materials. Chlorate, permanganate, and nitrate compounds are examples of oxidizers.

POISON (TOXIC)
A material that can cause short and/or long-term systemic health problems and possibly death, through inhalation, ingestion, or absorption.

POISON INHALATION HAZARD (PIH) OR TOXIC INHALATION HAZARD (TIH)
A DOT designation for gases and certain high vapor pressure liquids which, through the inhalation of small amounts, can cause severe health effects and even death.

POLYMERIZATION
Polymerization is a chemical reaction in which one or more small molecules combine to form larger molecules. Some materials are shipped with an inhibitor (or stabilizing agent) to delay polymerization and are limited in the amount of time they can be in transportation. A hazardous polymerization occurs when a reaction occurs (due to loss of inhibitor, contamination, or exposure to heat) at a rate which releases large amounts of energy in a confined space such as a tank car.

PYROPHORIC
Any liquid or solid that will spontaneously ignite in air at or below a temperature of 130°F (54.5°C).

REACTIVITY
The tendency of a substance to undergo chemical reaction with the release of energy. Undesirable effects — such as pressure buildup, heat, formation of noxious, toxic, corrosive, or flammable by-products may occur because of the reactivity of a substance to heating, burning, direct contact with other materials or conditions in use or storage.

REDUCING AGENT
A reducing agent is a chemical or substance which combines with oxygen or loses electrons to the reaction. In a reduction reaction (which always occurs simultaneously with an oxidation reaction) the reducing agent is the chemical or substance which combines with oxygen or loses electrons in the reaction.

SOLUBILITY IN WATER
A term expressing the percentage of a material (by weight) that will dissolve in water at ambient temperature. Solubility information can be useful in determining spill cleanup methods and fire-extinguishing agents and methods for a material. Terms used to express solubility are:

Negligible..... < 0.1%

Slight..... 0.1 to 1.0%

Moderate..... 1 to 10%

Appreciable ..... More than 10%

Complete..... Soluble in all proportions

SPECIFIC GRAVITY
The weight of a material compared to the weight of an equal volume of water, an expression of the density of the material. Example: if a volume of a material weighs 8 pounds, and an equal volume of water weighs 10 pounds, the material is said to have a specific gravity of 0.8. Materials with a specific gravity of less than 1.0 will float on water. Materials with a specific gravity greater than 1.0 will sink to the bottom. Most (but not all) flammable liquids have a specific gravity of less than 1.0 and (if not soluble) will float on water.

SPONTANEOUSLY COMBUSTIBLE
A material that ignites as a result of retained heat from processing, or which will oxidize to generate heat and ignite, or which absorbs moisture to generate heat and ignite.

TOXIC (POISON)
A solid, liquid, paste, or semi-solid substance which is known (or presumed on the basis of animal testing) to be as toxic to humans as to afford a hazard to health during transportation. Exposure can cause short and/or long-term systemic health problems and possibly death, through inhalation, ingestion, or absorption.

UPPER EXPLOSIVE LIMIT (UEL)
Highest concentration (percentage) of a gas or vapor in air capable of producing a flash of fire in presence of an ignition source (arc, flame, heat). Concentrations higher than UEL are ‘too rich’ to burn. Also called upper flammable limit (UFL).

VAPOR DENSITY
The weight of a vapor or gas compared to the weight of an equal volume of air, an expression of the density of the vapor or gas. Materials lighter than air have vapor densities less than 1.0. Materials heavier than air have vapor densities greater than 1.0. The vapors from materials with vapor densities greater than 1.0 are likely to migrate to low lying areas — along or under floors, in sumps, sewers and manholes, in trenches and ditches — where they may create fire or health issues or displace oxygen.

WATER REACTIVE
A chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

Acronyms

Acronym	Meaning
ACC	American Chemistry Council
AAR	Association of American Railroads
BNSF	Burlington Northern Santa Fe Railroad
CFR	Code of Federal Regulations
CHEMTREC	Chemical Transportation Emergency Center
CIA	Central Intelligence Agency
CN	Canadian National Railroad
CP	Canadian Pacific Railroad
CR	Conrail
CSXT	CSX Transportation, Inc.
DHS	Department of Homeland Security
DOD	United States Department of Defense
DOT	United States Department of Transportation
EBS	Emergency Broadcast System
EMS	Emergency Medical Services
EPA	United States Environmental Protection Agency
ERG	Emergency Response Guidebook
FBI	Federal Bureau of Investigation
FEC	Florida East Coast Railway
FEMA	Federal Emergency Management Agency
FRA	Federal Railroad Administration
GST	General Superintendent Transportation
HAZMAT	Hazardous Material
HAZWOPER	Hazardous Waste Operations and Emergency Response
HMERP	Hazardous Materials Emergency Response Plan
HMRC	Hazardous Materials Response Code
ICS	Incident Command System
KCS	Kansas City Southern Railroad
LEPC	Local Emergency Planning Committee
NA	North America
NENA	National Emergency Number Association
NIMS	National Incident Management System
NRC	National Response Center
NS	Norfolk Southern Railway Company
NTSB	National Transportation Safety Board
OAR	Operation Awareness & Response
OSHA	Occupational Safety and Health Administration
PCC	Norfolk Southern's Police Communications Center
PIH	Poison Inhalation Hazard (synonymous with TIH)
PIO	Public Information Officer
RQ	Reportable Quantity
SCBA	Self-Contained Breathing Apparatus
SDS	Safety Data Sheets
STB	Surface Transportation Board

STCC	Standard Transportation Commodity Code
STRACNET	Strategic Rail Corridor Network
TIH	Toxic Inhalation Hazard (synonymous with PIH)
TRANSCAER®	Transportation Community Awareness and Emergency Response
TSA	Transportation Security Administration
UN	United Nations
UP	Union Pacific Railroad
USCG	United States Coast Guard

Railroad Hazardous Incident Checklist*

Initial Actions

1. Determine exact location and railroad company involved by locating the blue Emergency Notification Sign (ENS) at the nearest highway grade crossing. Provide ENS information to your dispatch so they can notify the affected railroad. Have them relay details of incident and request rail traffic to be stopped (if needed).

2. **From a safe distance**, determine incident type and look for the presence of hazardous material packages or markings (placards, orange panels, etc.). Record the UN/NA numbers, placards numbers, commodity names, package types visible, and rail car reporting marks.

3. Using the ERG or AskRail, Isolate the area based on the most hazardous material identified in the incident. If materials involved are unknown and no fire is visible, use an initial isolation distance of 330 feet until more accurate information is available.

4. Prioritize removing persons from the isolation area and path of smoke/vapors. Eliminate all ignition sources including vehicles.

Site Assessment

1. Carefully observe incident before approaching. Evaluate each package for leakage (hissing sounds, vapor clouds, leaking liquid, odd smells, etc.). Look for other site hazards including downed or damaged utilities, derailed rail cars, and other unsafe site conditions.

2. Estimate the potential harm the incident is likely to have if no action is taken. How much product is there? What are the hazards of the materials involved? Is it contained to the site? How will the material and/or package react under the current site conditions?

3. Choose the initial response objectives based on the available information. The first and most important is the safety of yourself and other responders. Protection of the public, environment, and property. Consider the prioritization of hazards.

4. Identify strategies that will achieve response objectives. Consider offensive, defensive, and non-intervention actions while evaluating risk versus benefit and the safety factors for the responders. Based on this evaluation, develop a tactical plan.

Response

1. Confirm with the railroad that all rail operations have ceased, and responders are protected from train movement before working on or near rail equipment at the incident location.

2. Implement the tactical plan. Continuously evaluate the effectiveness of the implemented plan and adjust tactics as needed to meet objectives and resolve incident.

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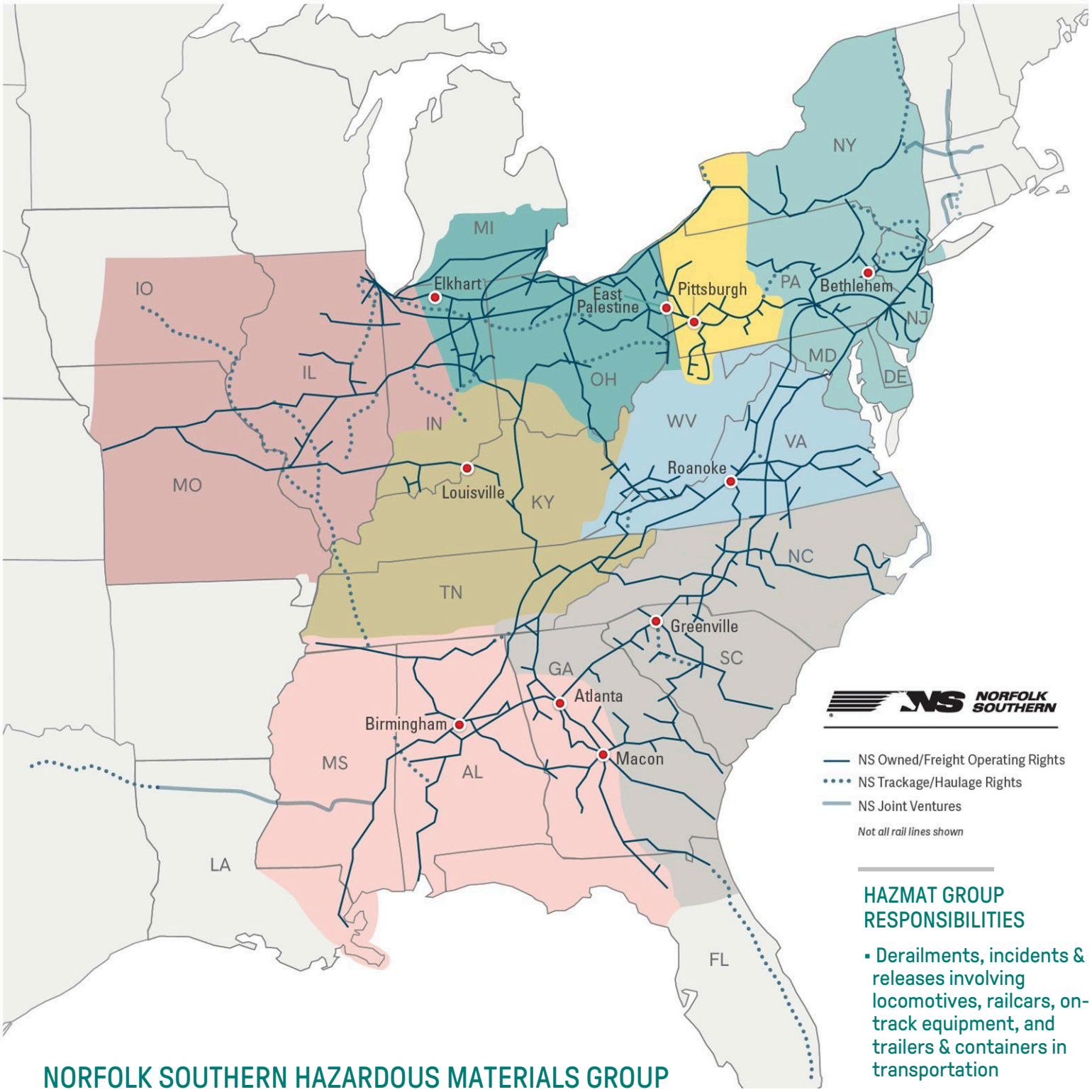
* Based in part on “D.E.C.I.D.E In Hazardous Materials Emergencies” by Ludwig Benner Jr.



HAZMAT GROUP RESPONSIBILITIES

- Derailments, incidents & releases involving locomotives, railcars, on-track equipment, and trailers & containers in transportation
- Crossing Accidents
- Fire & life safety incidents

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FOR INCIDENTS / EMERGENCIES INVOLVING NORFOLK SOUTHERN TRACK OR EQUIPMENT

CALL THE NORFOLK SOUTHERN*

PCC POLICE COMMUNICATIONS CENTER

1-800-453-2530

** Open 24 hours!*

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