NATIONAL TRANSPORTATION SAFETY BOARD
Investigative Hearing
Norfolk Southern Railway general merchandise freight train 32N derailment with subsequent hazardous material release and fires, in East Palestine, Ohio, on February 3, 2023

GROUP	H
EXHIBIT	
13	

Agency / Organization

Norfolk Southern

Title

Security and Emergency Response Training Center Transportation Specialist Refresher Module 11 Vent and Burn (Dec. 2013)

Transportation Specialist Refresher

Module 11: Vent and Burn

December 2013

Introduction

- Consider if after damage assessment, the tank car cannot be moved safely, there is no way to transfer the product and other problems arise.
- Vent and burn may provide a solution; implementing this activity takes time.
- Resources are not always readily available; it may be your only option.

Enabling Learning Objectives

1. Identify the potential situations that a vent and burn options may be needed.

2. Identify the various risks involved in a vent and burn operation.

3. Identify the considerations for a vent and burn operation.

Enabling Learning Objectives

4. Learn the permitting process to accomplish a vent and burn.

5. Learn the proper steps to prepare for and complete a vent and burn

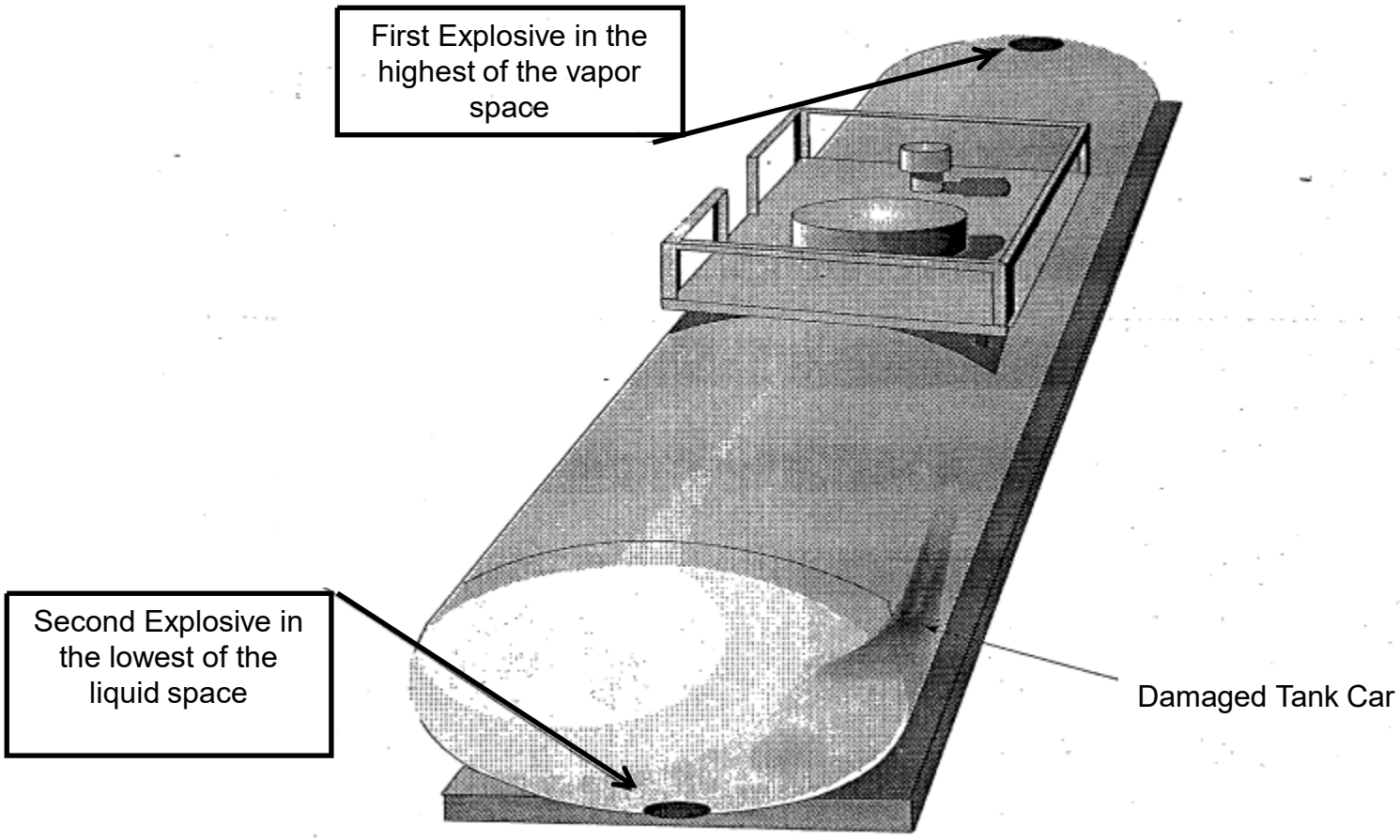
Vent and Burn

- Emergency response procedure designed to quickly and effectively release railroad tank car internal vapor pressure and liquid products.
- Use when all other emergency product removal methods have been considered and rejected.

Operations

- Two explosive charges are used to cut holes in the tank car.
  - First charge is at the highest point of the tank car, over the product vapor space.
  - Second charge is placed at the lowest point of the liquid space to allow drainage of the product.
  - A safe containment pit, where it is expected to be burned in a controlled setting, is prepared.

Placement of Charges



Operational Considerations

- The product(s) involved
- The container type(s)
- The proximity of the tank to other tanks, buildings, and habitation
- The topography of the surrounding area, (hills and waterways)
- The weather conditions

Operational Considerations

- Fire and vapor suppression personnel
- Excavating equipment
- The type of soil
- The availability of the explosives expert
- The availability of the proper explosives

Products

- Some compressed gases and some flammable or combustible liquids.
- Discuss with the product manufacturer.
- Only Products with no secondary hazard of "Poison - Inhalation Hazard" should be considered for this procedure.

Products

- Flammable or combustible liquids
  - Alcohols
  - Petroleum products
  - Esters
  - Ketones
- Corrosives, oxidizers, or poisonous liquids would require evaluation on an individual basis.

Preferred Conditions

- Other cars containing hazardous products will not be adversely affected by the operation.
- Experience personnel in the method are available.
- Suitable precautions can be taken to protect people and property.

Preferred Conditions

- Suitable vent and burn equipment is available:
  - Explosimeter
  - Appropriate explosive charges
  - Fusees
  - Incendiary grenade with provision for remote operation
  - Excavation equipment

Inherent Risks

- Use of improper explosive charges
- Failure could result in a violent rupture
- First charge to explode may displace other charges from their proper positions
- No control of the flow of contents
- Last viable option because inherent hazards

Safety Precautions

- Limit site access
- Appropriate personal protective equipment
- Air Monitoring
- Evacuate to safe location (violent rupture or toxic cloud)
- Expert selection and placement of explosives

Safety Precautions

- Air traffic restrictions over the site
- Ensure coordination and liaison all parties
- Firefighting equipment and extinguishing agents standing by at the edge of the evacuation zone
- Control ignition sources

Plan Operation

- Determine tank car capacity and quantity of material
- Select burn pit location at least 250 ft. upwind (ideally)
- Prepare a checklist of equipment
- Prepare a plan for setup, implementation, and shutdown
- Prepare a site safety plan

Agency Contacts

- Federal-
  - Federal Railroad Administration (FRA)
  - Environmental Protection Agency (EPA)
- State-
  - Explosive licensing and permitting
  - Emergency situations
  - Health and safety or environmental divisions
- Local officials-
  - Police or sheriff departments

Set up Operation

- Conduct Safety Briefing
  - Person in charge
  - Properties of products
  - Signals for emergency shutdown
  - Evacuation routes
  - Setup procedures
  - Shutdown procedures

Implement Operation

- Place explosives at highest and lowest points.
- Place four to six lighted fusees near burn pit, and remotely operated incendiary grenade in the bottom of the pit.
- Detonate the charge at the highest point.
- After pressure has reduced in the tank, detonate the charge at the lowest point on the tank car.

Vapor Space

Liquid Space

The Result

Shutdown Operation

- Examine to ensure that no product remains
- Purge any remaining vapor
- Ensure it is safe to move by monitoring

Conclusion

Participants have been given information to:

- Identify the decision processes for vent and burn operations.
- Identify various risks involved.
- Identify considerations for safe vent and burn operations.
- Identify protocols used in developing a Planning Guide.
- Identify conditions that must be present before vent and burn begins.