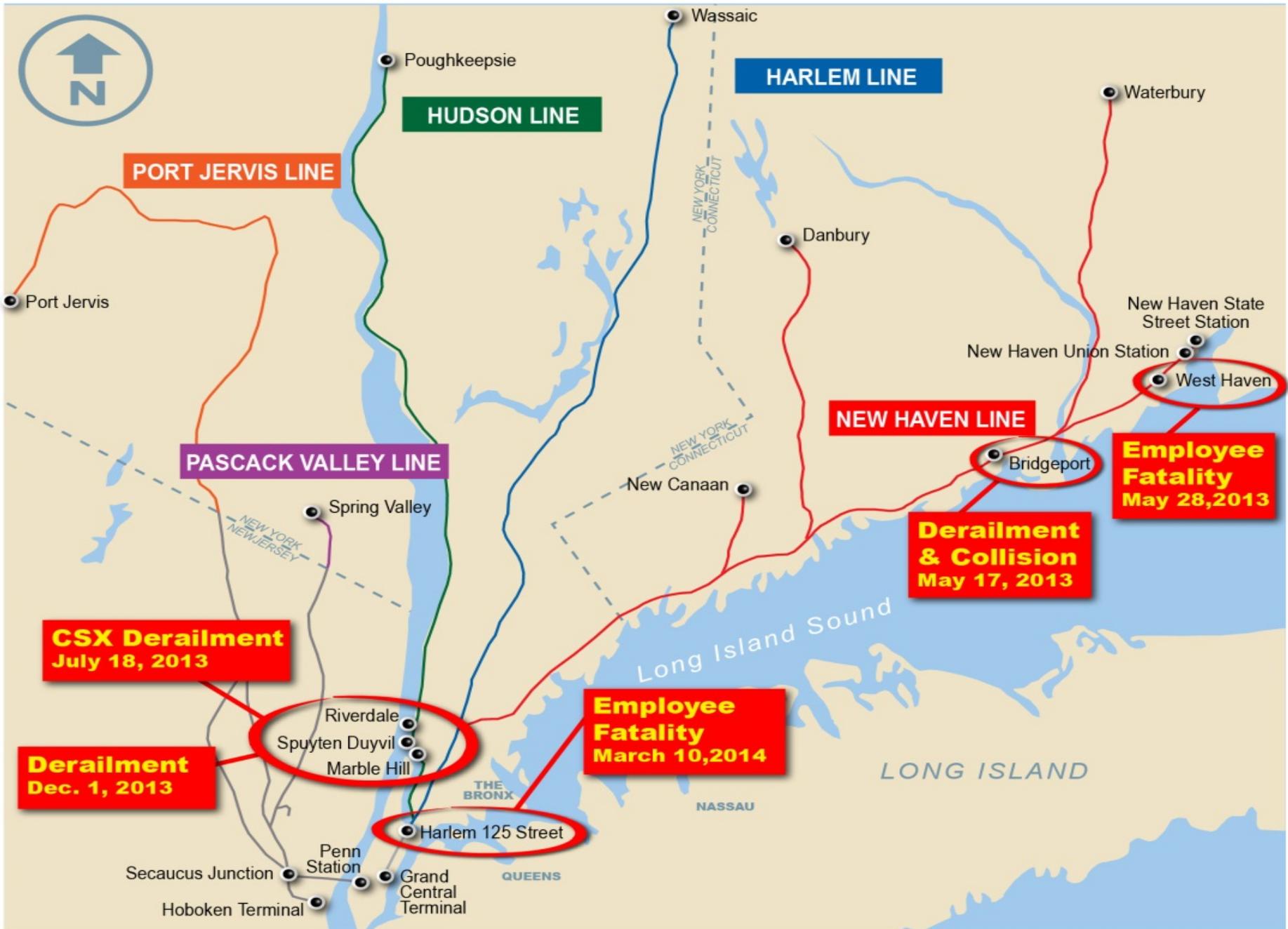




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Organizational Factors in Metro-North Railroad Accidents - Overview

Mike Flanigon



Organizational Relationships

- MTA
 - Metro-North Railroad
 - Long Island Railroad
 - New York City Subways & Buses
 - Bridges & Tunnels
- Federal Railroad Administration

Bridgeport - May 17, 2013

- Derailment of Metro-North passenger train 1548
- Subsequent collision involving Metro-North passenger train 1581
- Full team launched with Member Weener
 - 65 injuries
 - \$18.5 million damages

Bridgeport Safety issues include:

- Adequacy of FRA track inspection requirements
- Adequacy of Metro-North track maintenance programs
- Crashworthiness of Metro-North Kawasaki passenger cars

West Haven – May 28, 2013

- Metro-North passenger train 1559 struck track foreman
- Fatal injury to track foreman
- Primary safety issue: lack of redundant systems to protect work areas from train incursions

Bronx - July 18, 2013

- Derailment of CSX freight train on Metro-North tracks
- \$828,000 damages
- Primary safety issue: adequacy of Metro-North track maintenance program

Bronx – December 1, 2013

- Derailment of Metro-North passenger train 8808
- Full team launched with Member Weener
- 4 fatalities
- 61 injures
- \$9 million in damages

Bronx Safety issues include:

- Adequacy of train crew medical screening and monitoring
- Adequacy of operational safety oversight
- Crashworthiness of passenger rail cars

Manhattan – March 10, 2014

- Electrician struck by Metro-North train 897
- Fatal injury to electrician
- Primary safety issue: Inadequate job briefings and oversight of Metro-North roadway worker programs

Overarching safety issues

- Adequacy of FRA external safety oversight
- Adequacy of Metro-North internal safety oversight
- Adequacy of MTA oversight



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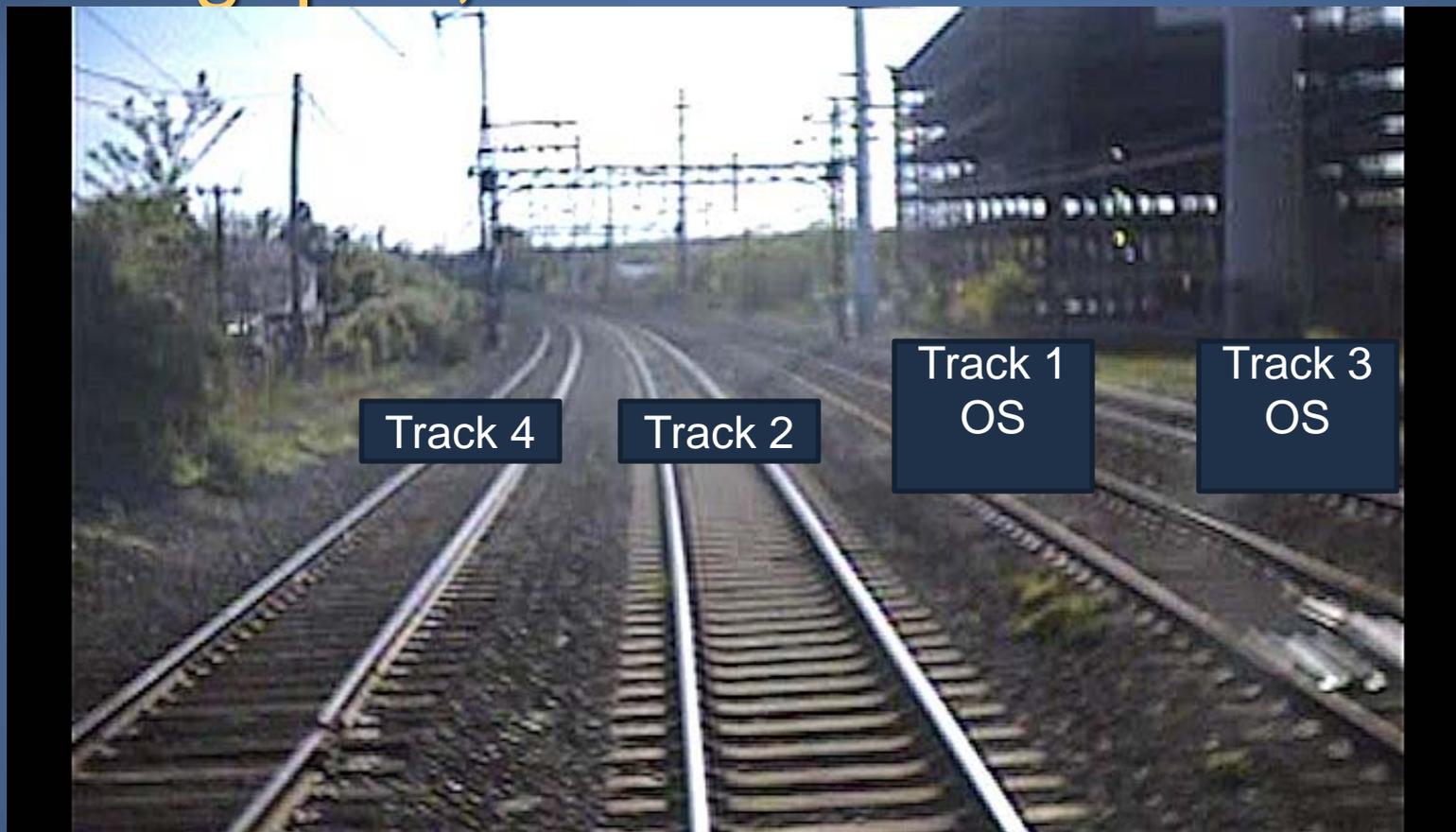


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Organizational Issues Related to Track Maintenance and Inspections

Cy Gura

Metro-North Track Maintenance at Bridgeport, CT

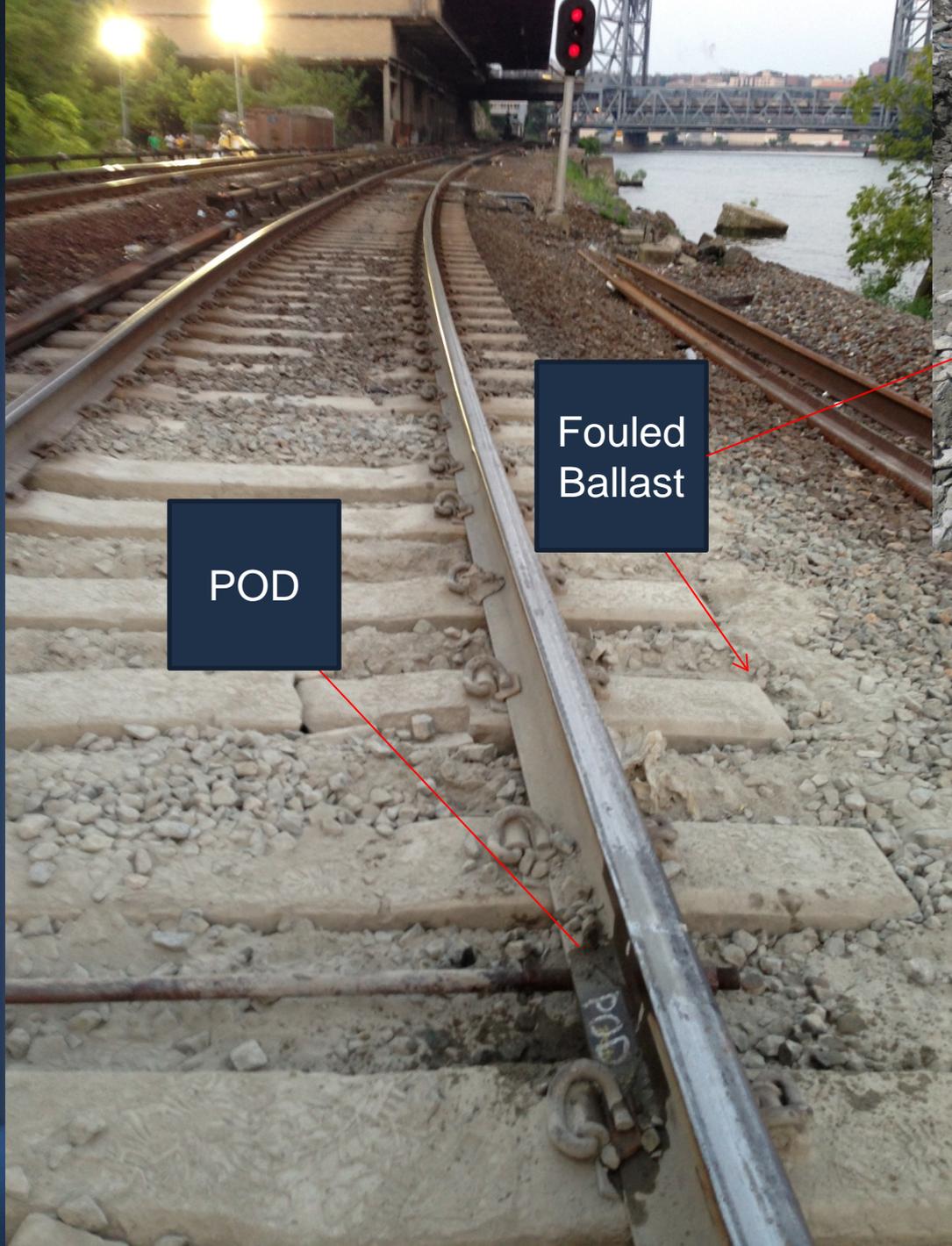


Metro-North Bridgeport Track Inspections

- No adjustments to track inspection procedures during long term track outage
- Track inspection records lacked required measurements
- Maintenance trends were not analyzed
- Emphasis of on-time train performance

FRA Track Inspection Requirements and Oversight

- Deficiencies in FRA track inspection requirements
- NTSB issued recommendations to the FRA and Metro-North
- Insufficient FRA oversight



NTSB

Track Maintenance and Inspection at July 18th Bronx, NY

- Neither the walking track inspection nor the FRA track geometry track inspection vehicle identified the combined track deficiencies



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Organizational Factors Related to Roadway Worker Protection

Ted Turpin

West Haven Accident

- Procedures were in place
- Protection from trains obtained
- Protection was improperly removed
- Single point failure – no redundancy

Manhattan Accident

- Procedures were in place
- Protection from trains obtained
- Briefing was required
- Briefing failed

Roadway Worker Protection

- Identify hazards working near tracks
 - Employee input
- Analyze risks
 - Determine single point failures
 - Severe consequences
- Establish mitigate risks
 - Provide redundancy
 - Audit employee compliance

Safety Risk Management

Did not identify safety risks

- No redundant procedures
- No compliance auditing
- No employee reporting

Employee Safety Concerns

- Power department employees feared reporting hazards
- Good faith challenges were uncommon
- No close call reporting process
- Ineffective identifying safety risks

FRA Oversight

- Did not require redundant protection
 - Could prevent employee fatalities
- Limited Inspections
 - Primarily daytime
 - Seldom on weekends
 - No employees recalled seeing inspectors

Summary

- Metro-North Railroad did not identify and resolve safety issues
- FRA's inspections ramped up only after significant accidents



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**Organizational Factors and
Medical Certification
on the Railroad:
FRA, Metro-North, MTA**

Mary Pat McKay



Risk Factors for Obstructive Sleep Apnea

- Male
- Obesity
- Snoring
- Daytime sleepiness
- High blood pressure
- Age
- Large neck circumference
- Large hip circumference

Risk Factors for Obstructive Sleep Apnea

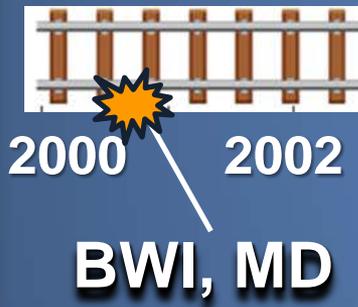
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Medical Conditions and Rail Accidents

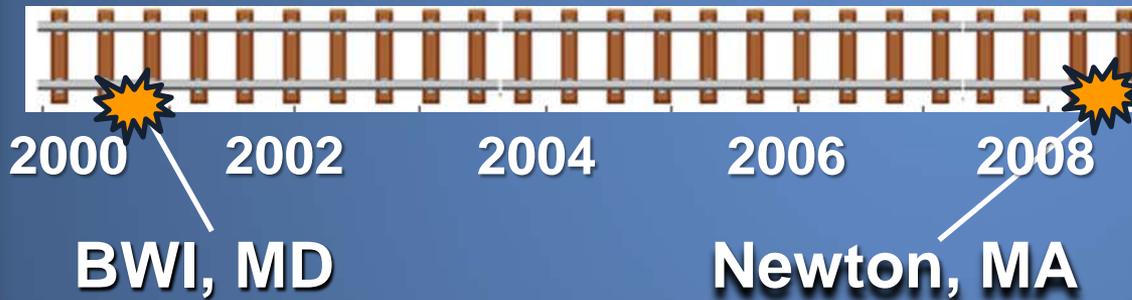


	Railroad Accident
	Rail Transit Accident

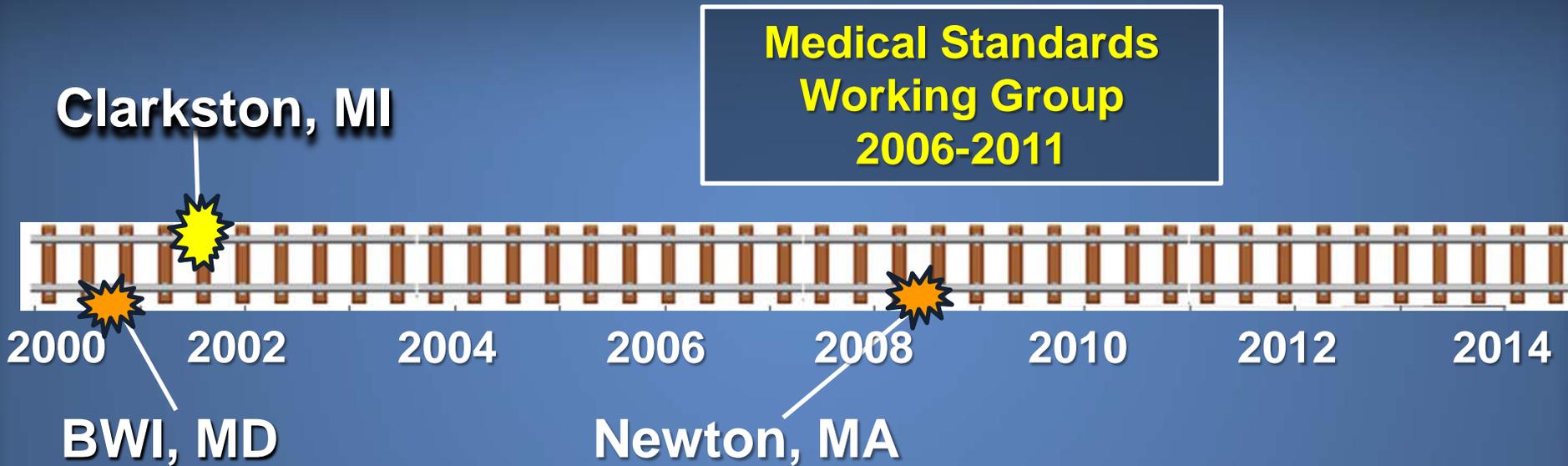
Medical Conditions and Rail Accidents



Medical Conditions and Rail Accidents

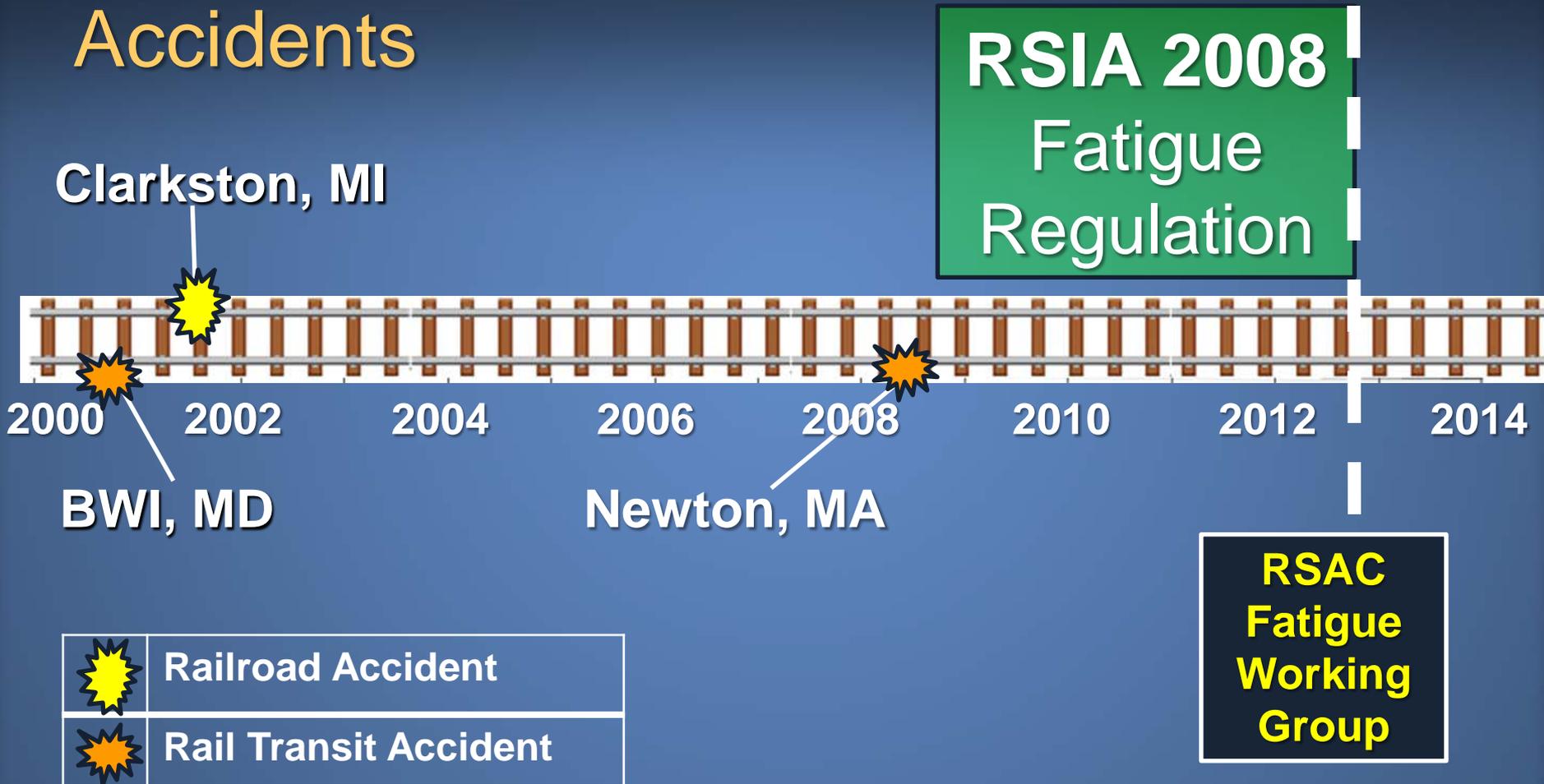


Medical Conditions and Rail Accidents



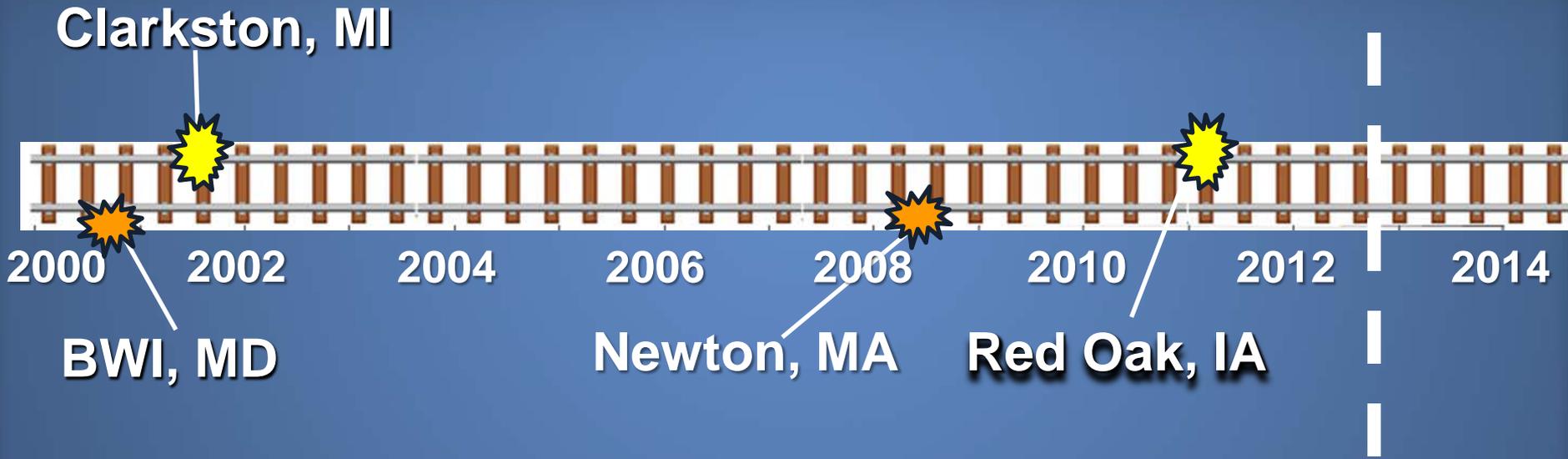
	Railroad Accident
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Medical Conditions and Rail Accidents



Medical Conditions and Rail Accidents

**RSIA 2008
Deadline**

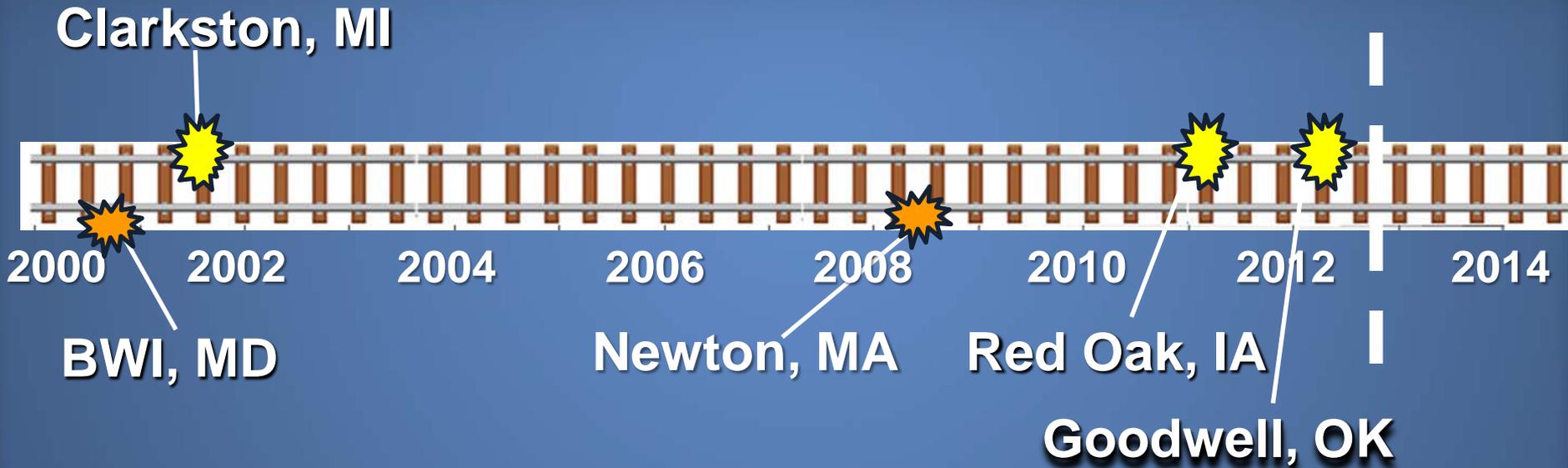


	Railroad Accident
	Rail Transit Accident



Medical Conditions and Rail Accidents

**RSIA 2008
Deadline**



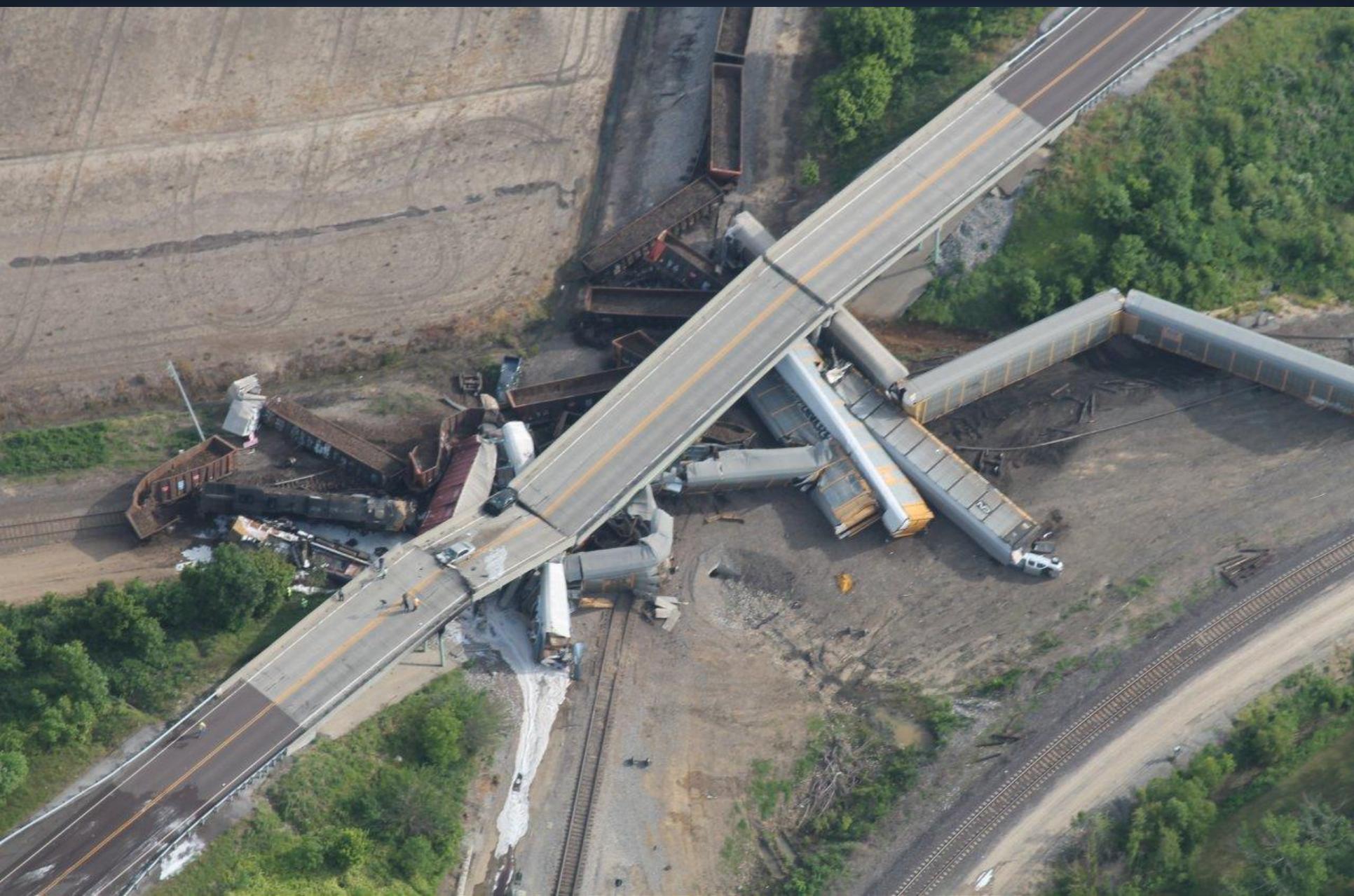
	Railroad Accident
	Rail Transit Accident



Medical Conditions and Rail Accidents

**RSIA 2008
Deadline**





Medical Conditions and Rail Accidents

**RSIA 2008
Deadline**





Metro-North Medical Program

- Triennial medical evaluation
 - FRA vision and hearing testing
 - Medications
 - Routine screening questionnaire
- Last updated standards 1995
 - Could not identify OSA
- Plans to evaluate all engineers

Long Island Railroad Medical Program

- Triennial FRA vision and hearing testing
- Standards do not mention OSA
- Not more likely to have identified OSA than Metro-North

New York City Transit

- Protocols include OSA evaluation and treatment
- Medical history form includes OSA questions
- Likely would have identified the engineer's OSA



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Organizational Factors: Metro-North Railroad

Loren Groff

Organizational Culture

- Identified concerns with Metro-North
 - NTSB investigative hearing
 - FRA *Operation Deep Dive*
 - Public statements by incoming Metro-North President
 - MTA *Blue Ribbon Panel*
- Focus on personal injury and on-time performance over operational and infrastructure issues

Managing Organizational Safety

- Formal program to identify and address safety problems before they result in injury or damage
- Common safety management system approaches include four elements
 - Safety policy
 - Safety risk management
 - Safety assurance
 - Safety promotion

System Safety Program Plan (SSPP)

- Required by New York State Public Transportation Safety Board (PTSB)
- Defines the roles and responsibilities for each division
- Describes training, operational tests, inspections, investigation, emergency response, and safety programs

System Safety Program Plan (SSPP)

- Plan stated, “Metro-North's commitment to the SSPP will permeate every aspect of railroad operations”
- However, little evidence of hazard identification, assessment, and risk reduction procedures as described in the SSPP

Priority One Safety Program

- The core of Metro-North safety programs
 - Focused on employee safety
 - Share concerns through a system of safety committees
- In practice, operating divisions were reluctant to share problems

Safety Department

- History of successfully reducing worker injuries
- Not involved in risk assessments for operational decisions
- Internal safety audits described in the SSPP were not being conducted

Risk Management and Safety Assurance

- A typical risk management program includes procedures to:
 - Identify safety hazards
 - Assess risks
 - Implement controls
 - Monitor effectiveness

Accident and Near-miss Investigations

- Opportunity to correct known safety deficiencies before they cause accidents
- Train derailment at Bridgeport and employee fatality at West Haven were preceded by close-call events

Safety Data Monitoring

- Opportunity to identify and correct developing problems before an accident
 - Joint bar failures
 - Speed and operational data
- On-time performance is not a safety metric

Voluntary Safety Reporting

- The Metro-North *Priority One* program included an safety help line for employees to report safety concerns
 - Only one call in the preceding year
- Employees may be reluctant to report problems out of fear of negative consequences

Close Call Reporting System (C3RS)

- A voluntary, confidential program for reporting safety concerns
 - Third-party management
 - Agreements between labor, management, and the FRA
- Metro-North is working with its labor unions and FRA to establish a C3RS program

Oversight and Enforcement

- System safety and risk management programs do not eliminate the need for oversight
 - Safety briefings
 - Speed limit compliance
 - Operational tests

Training

- Investigations identified concerns with Metro-North training
 - Experience with track repairs
 - Manager qualifications to conduct operational tests
 - Reliance on on-the-job training



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Organizational Factors: Metropolitan Transportation Authority

MTA Oversight Prior to Accidents

- Metro-North president and the MTA provided with limited safety information
 - Performance and finances
 - Briefings on major accidents
 - Summary data on employee and customer injuries

MTA Safety Committee

- MTA-level safety committee replaced by individual committees in 2012
- Board-level safety review and safety report discontinued
- Re-established in 2014

Safety Efforts Across MTA Divisions

- Safety concerns were not shared across all MTA properties
- Regular review of safety and operational data could identify issues and trends across MTA properties

Response to Multiple Investigations

- Multiple investigations, audits, and reviews from series of Metro-North accidents
 - Require significant resources
 - May identify safety mitigations applicable to other MTA properties



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FRA's National Inspection Plan

Michael Hiller

Background:

- 2004: OIG recommended the FRA target inspection and enforcement efforts to address safety using trend analysis
- 2005: FRA issues the NIP - a data driven risk based model
- Previously, FRA had a less structured, less consistent, and less data-driven approach for planning inspections

Overview:

- Optimize FRA's ability to reduce accident rate
- Provides guidance to regional office
- Involves a 3-step process

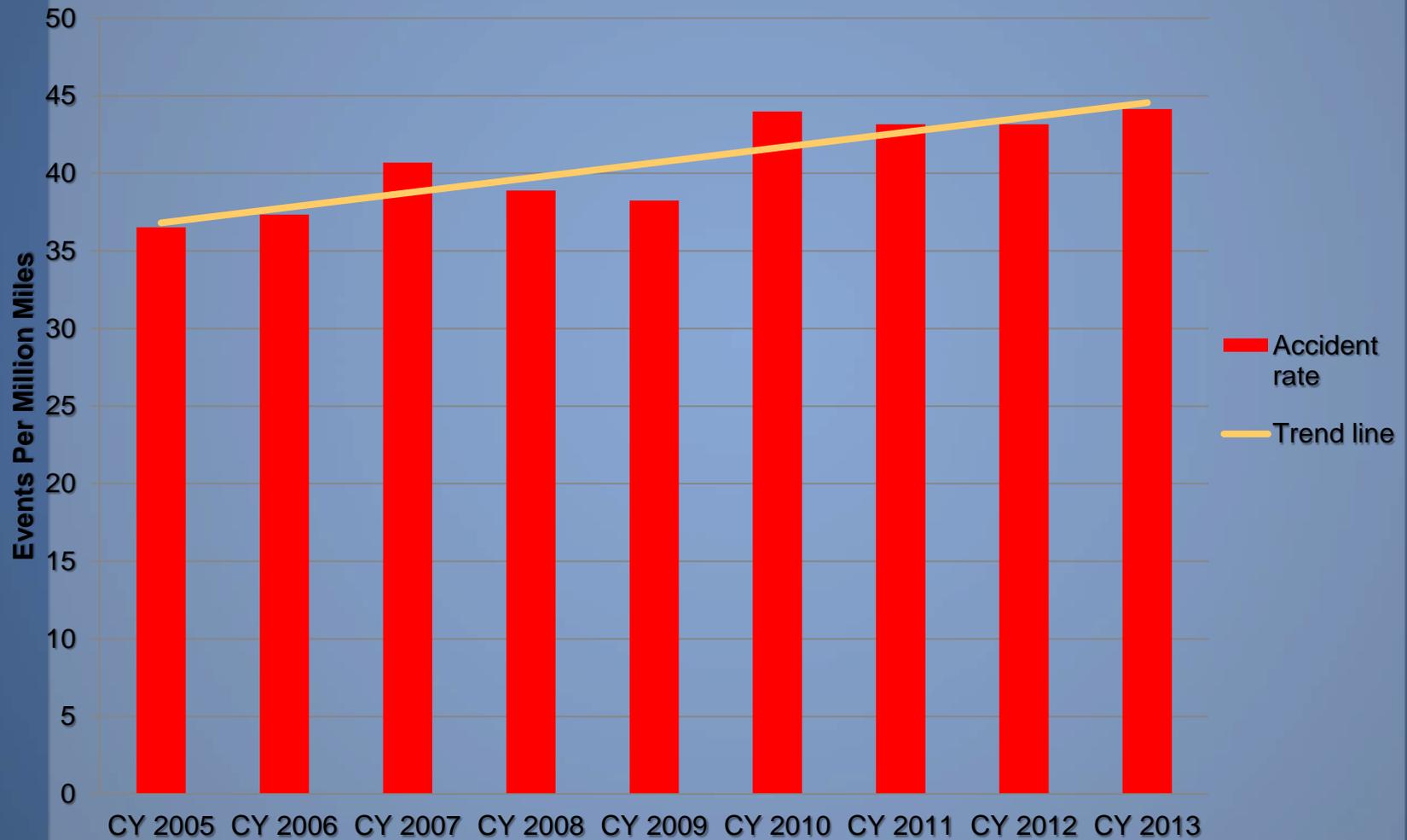
The NIP Process



NIP Challenges:

- Departure from historic compliance based regulation
- GAO report: “significant procedural and cultural change for FRA and the railroad industry”
- GAO report: NIP will require time and resources to become effective

Total Accidents & Incident Rate for Commuter Railroads & Amtrak (events per million train miles)



FRA Oversight at Metro-North:

- Prior to 2013, Metro-North had a very good record of safety
- FRA's presence was minimal
- FRA was on target with the NIP goals

Operation Deep Dive

- Initiated by the FRA
- Assisted by the FTA to review Metro-North
- Overarching Safety Concerns
 - Overemphasis of on-time performance
 - Ineffective safety department and poor safety culture
 - Ineffective training program

Findings:

- NIP is driven by lagging indicators
- Regulatory oversight was a low priority
- Despite lack of accidents, risk was not addressed



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Railroad Special Investigation Report –Summary of Issues

Mike Flanigon

Metro-North Organizational Factors

- Ineffective implementation of existing safety plans
- Safety department lack of engagement in operations
- Safety risk management deficiencies

Metro-North Organizational Factors

- Failure to analyze and act on existing data
- Ineffective system for employee safety reporting
- Inadequate operational testing
- Inadequate safety training for managers

MTA Organizational Factors

- Inconsistent safety practices among member rail agencies
- Board level focus on injuries
- Assumption that on time performance was an indicator of system safety

FRA Organizational Factors

- Inaction on medical standards
- Inaction on RWP redundant protection
- Commuter rail exemption
- National Inspection Plan driven by lagging indicators



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