

**Federal Railroad Administration  
Report to Congress**



**Operation Deep Dive  
Metro-North Commuter Railroad Safety Assessment**

**March 2014**

## Contents

<b>Executive Summary</b> .....	<b>1</b>
<b>1. Introduction</b> .....	<b>5</b>
<b>2. The Metro-North System</b> .....	<b>6</b>
<b>3. Operation Deep Dive</b> .....	<b>7</b>
<b>4. Findings and Recommendations</b> .....	<b>8</b>
4.1 Track Safety .....	8
4.1.1 Track Safety Findings .....	8
4.1.2 Directed Actions regarding Track Safety.....	8
4.2 Railroad Operating Rules .....	8
4.2.1 Railroad Operating Rules Findings.....	8
4.2.2 Directed Actions regarding Railroad Operating Rules .....	8
4.3 Qualification and Certification of Locomotive Engineers and Conductors.....	9
4.3.1 Engineer and Conductor Qualification and Certification Findings .....	9
4.3.2 Directed and Recommended Actions for Engineer and Conductor Qualification and Certification .....	9
4.4 Railroad Workplace Safety (Roadway Worker Protection).....	9
4.4.1 Railroad Workplace Safety Findings .....	9
4.4.2 Directed and Recommended Actions for Railroad Workplace Safety .....	9
4.5 Train Control Systems.....	10
4.5.1 Train Control Systems Findings .....	10
4.5.2 Directed Actions for Train Control Systems.....	10
4.6 Blue Signal Protection for Employees .....	11
4.6.1 Blue Signal Protection for Employees Findings .....	11
4.6.2 Directed Actions for Blue Signal Protection for Employees .....	11
4.7 Operations Control Center .....	11
4.7.1 Operations Control Center Findings .....	11
4.7.2 Directed and Recommended Actions for Operations Control Center.....	11
4.8 Maintenance-of-way Employee Fatigue .....	12
4.8.1 Maintenance-of-way Employee Fatigue Findings .....	12
4.8.2 Directed Actions for Maintenance-of-way Employee Fatigue .....	12
<b>5. Overarching Safety Concerns</b> .....	<b>12</b>
5.1 Overemphasis of On-time Performance.....	12
5.2 Ineffective Safety Department and Poor Safety Culture .....	13
5.3 Ineffective Training Department.....	14
5.4 Comprehensive Required Actions.....	14
<b>6. Next Steps</b> .....	<b>15</b>
<b>7. Conclusion</b> .....	<b>15</b>
<b>8. FRA’s Vision for the Next Generation of Safety</b> .....	<b>15</b>
<b>Appendix 1. Recent Metro-North Accidents and FRA Actions in Response</b> .....	<b>17</b>
<b>Appendix 2. Letter to MTA</b> .....	<b>20</b>

<b>Appendix 3. Operation Deep Dive Methodology .....</b>	<b>22</b>
<b>Appendix 4. FRA’s Vision for the Next Generation of Rail Safety .....</b>	<b>24</b>

## Executive Summary

This report of the Federal Railroad Administration (FRA) on its safety assessment of the Metro-North Commuter Railroad (Metro-North), called Operation Deep Dive, is provided to Congress pursuant to report language in the Fiscal Year (FY) 2014 Omnibus Appropriations Act.

Metro-North is the second largest commuter railroad in the Nation, serving New York, Connecticut, and New Jersey, with an annual ridership of almost 83 million people. Metro-North is a subsidiary agency of the Metropolitan Transportation Authority (MTA), a New York State Authority.

In 2013, four high-profile accidents occurred on Metro-North (Appendix 1).

- On May 17, 2013, in Bridgeport, Connecticut, an accident occurred on Metro-North's New Haven Line, when an eastbound Metro-North train of 8 cars, traveling 74 mph, derailed and came to rest on an adjacent track. Approximately 20 seconds later, a westbound Metro-North train on that adjacent track struck the derailed train. As a result of the accident, more than 50 people, some seriously injured, were hospitalized, rail operations were suspended, and millions in property damage occurred.
- On May 28, 2013, a second accident occurred when a Metro-North train in West Haven, Connecticut, that was traveling 70 mph, struck and killed a Metro-North maintenance-of-way (MOW) employee who was part of a roadway work group performing railroad maintenance on a construction project.
- On July 18, 2013, a third accident occurred when a CSX Transportation freight train derailed while traveling over Metro-North's system. No one was injured, but property damage was significant.
- On December 1, 2013, the fourth accident occurred when a Metro-North train of 7 cars traveling south from Poughkeepsie, New York, to Grand Central Terminal in New York City, derailed as it approached the Spuyten Duyvil Station. All cars derailed and the front cab came to rest close to the Harlem River. Four passengers were killed, and more than 70 were injured. Rail operations were suspended, and millions of dollars in property damage alone was sustained.

On December 3, 2013, 2 days after the fourth and most serious of these accidents, FRA sent a letter to MTA expressing support for Governor Andrew Cuomo's directive that MTA hold a safety stand-down, and directing Metro-North to implement a Confidential Close Call Reporting System (C<sup>3</sup>RS) (Appendix 2). Additionally, FRA issued Emergency Order 29 and Safety Advisory 2013-08.

- Emergency Order 29, issued on December 6, 2013, required Metro-North to take immediate action to prevent excessive train speeds by identifying and prioritizing high-risk areas, modifying its existing signal system to ensure speed limits are obeyed, and

requiring a higher level of engagement and communication among operating crewmembers in areas in which major speed restrictions are in place.

- Safety Advisory 2013-08, issued on December 10, 2013, urged railroads to provide additional training, increase the frequency of operational testing, and reinforced the importance of communication between crew members. The purpose was to ensure that all railroads adhere to Federal regulations and railroad operating rules regarding maximum authorized train speed limits.

On December 16, 2013, FRA launched Operation Deep Dive, an assessment of Metro-North's operations and safety compliance. More than 60 technical and human factor experts comprising 14 teams, conducted a 60-day comprehensive safety assessment of Metro-North. With assistance from the Federal Transit Administration, these experts reviewed and assessed Metro-North's safety-related processes and procedures, its compliance with safety regulations and requirements, and its overall safety culture.

In assessing Metro-North, the Deep Dive team evaluated:

- Track, signal, and rolling stock maintenance, inspection, and repair practices;
- Protections for employees working on rail infrastructure, locomotives, and rail cars;
- Communication between the Mechanical and Transportation Departments at maintenance facilities;
- Operations Control Center procedures and rail traffic controller training;
- Compliance with Federal hours-of-service regulations, including fatigue management programs;
- Operational data collected to measure the efficiency of employees' comprehension and execution of all applicable Federal regulations;
- Locomotive engineer oversight;
- Engineer and conductor certifications; and
- Operating crew medical requirements.

Based on this evaluation, FRA identified three overarching safety concerns that affect all facets of Metro-North:

- An overemphasis of on-time performance;
- An ineffective Safety Department and poor safety culture; and
- An ineffective training program.

Within these three areas, FRA identified and prioritized specific safety concerns and directs Metro-North to take actions to mitigate the risks, shown in Table 1.

During Operation Deep Dive, FRA teams met regularly with Metro-North leadership and staff, who were very receptive to learning about the Deep Dive teams' findings and recommendations. Where appropriate and practicable, Metro-North immediately implemented corrective actions in response to the safety concerns that FRA identified. To further improve the safety of Metro-North's operations and procedures, FRA will continue its oversight in order to ensure that the

immediate improvements implemented during Deep Dive are reviewed, evaluated, and modified, as appropriate.

**Table 1. Metro-North Safety Concerns and FRA’s Specific Directed Actions**

<b>Safety-Critical Concerns</b>	<b>FRA Directed Actions</b>
Track Safety Standards	<ul style="list-style-type: none"> <li>• Create a plan for the use of advanced inspection technology</li> <li>• Ensure track is maintained to Metro-North Track Standards</li> <li>• Collaborate with labor unions to increase the availability of off-hours maintenance time.</li> <li>• Improve training program for track inspection and maintenance</li> <li>• Analyze train schedules to determine whether there is sufficient time for inspection and maintenance of track</li> </ul>
Railroad Operating Rules	<ul style="list-style-type: none"> <li>• Change operating rules for operation of trains at grade crossings when certain conditions exist</li> </ul>
Qualifications and Certification of Locomotive Engineers and Conductors	<ul style="list-style-type: none"> <li>• Improve operational testing and inspections for operating crews</li> <li>• Conduct operational testing on main tracks</li> <li>• Improve training program for locomotive engineers and conductors</li> <li>• Analyze event recorder data as a part of operational testing</li> </ul>
Railroad Workplace Safety	<ul style="list-style-type: none"> <li>• Improve training program for roadway worker protection</li> </ul>
Train Control Systems	<ul style="list-style-type: none"> <li>• Improve training program for inspection and maintenance of signals</li> <li>• Analyze train schedules to determine whether there is sufficient time for inspection and maintenance of signals</li> </ul>
Worker Protection (Blue Signal Protection)	<ul style="list-style-type: none"> <li>• Improve training program for employees who maintain rolling stock</li> <li>• Ensure that blue signal protection is effective</li> </ul>
Operations Control Center	<ul style="list-style-type: none"> <li>• Review and address risk for fatigue</li> <li>• Mitigate noise distractions</li> <li>• Improve training program for employees who dispatch trains</li> <li>• Improve rules governing the use of panel blocking devices to ensure that they cannot be inadvertently removed</li> </ul>
Maintenance-of-Way Employee Fatigue	<ul style="list-style-type: none"> <li>• Review and address risk for fatigue</li> <li>• Improve training program all Maintenance of Way employees, particularly track inspectors and supervisors</li> </ul>

## **Comprehensive Directed Actions**

1. Effective immediately, Metro-North's senior leadership must prioritize safety above all else, and communicate and implement that priority throughout Metro-North.
2. Within 60 days, Metro-North shall submit to FRA a plan to improve the Safety Department's mission and effectiveness. Metro-North must evaluate the structure, organization, and responsibilities of the Safety Department to ensure that it is communicating effectively throughout Metro-North, and that it is providing effective leadership and oversight on safety issues. Metro-North must ensure that the staff of the Safety Department conducts safety meetings at all levels of the organization and provides appropriate in-person monitoring of field activities and personnel.
3. Within 60 days, Metro-North shall submit to FRA a plan to improve the training program. The senior leadership of Metro-North must evaluate the structure, organization, and responsibilities of the Training Department to ensure that it develops, implements, and leads an effective training program for all operating departments. Metro-North shall evaluate the existing recordkeeping system and take corrective action to ensure that accurate records are created, maintained, and readily accessible to appropriate employees.

## **Conclusion**

Metro-North must never compromise safety in the interest of the reliability of its train schedule or the efficiency of its railroad operations. The findings of Operation Deep Dive demonstrate that Metro-North has emphasized on-time performance to the detriment of safe operations and adequate maintenance of its infrastructure. This led to a deficient safety culture that has manifested itself in increased risk and reduced safety on Metro-North. This is a severe assessment, and it is intended as an urgent call to action to Metro-North's leadership as they work to develop a comprehensive plan to turn Metro-North into a model of safe railroad operations.

The FRA is encouraged by the many good employees who met with our Deep Dive teams and were interviewed for this report. Their dedication and desire to turn Metro-North into a safe, professional railroad serving the citizens of New York, New Jersey, and Connecticut will provide Metro-North's new leadership with a solid foundation upon which to make immediate improvements and effect long-term cultural change.

## 1. Introduction

The Metro-North Commuter Railroad (Metro-North) is the second largest commuter railroad in the Nation, with an annual ridership of almost 83 million people.<sup>1</sup> Metro-North is a subsidiary agency of the Metropolitan Transportation Authority (MTA), a New York State Authority.

In 2013, four high-profile accidents occurred on Metro-North (Appendix 1).

- On May 17, 2013, in Bridgeport, Connecticut, an accident occurred on Metro-North's New Haven Line, when an eastbound Metro-North train of eight cars, traveling 74 mph, derailed and came to rest on an adjacent track. Approximately 20 seconds later, a westbound Metro-North train on that adjacent track struck the derailed train. As a result of the accident, more than 50 people, some seriously injured, were hospitalized. Rail operations were suspended and several million dollars in property damage occurred.
- The second accident occurred on May 28, 2013, when a Metro-North train in West Haven, Connecticut, that was traveling 70 mph struck and killed a Metro-North maintenance-of-way (MOW) employee who was part of a roadway work group performing railroad maintenance.
- The third accident occurred on July 18, 2013, when a CSX Transportation freight train derailed while traveling over Metro-North's system. No one was injured, but property damage was significant.
- On December 1, 2013, the fourth accident occurred when a Metro-North train of 7 cars traveling south from Poughkeepsie, New York, to Grand Central Terminal in New York City, derailed as it approached the Spuyten Duyvil Station. All seven rail cars derailed with the front cab coming to rest close to the Harlem River. Four passengers were killed, and more than 70 were injured. Rail operations were suspended and millions of dollars in property damage alone was sustained.

On December 3, 2013, 2 days after the fourth and most serious of these accidents, the Federal Railroad Administration (FRA) sent a letter to MTA expressing support for Governor Andrew Cuomo's directive to MTA hold a safety stand-down, and directing Metro-North to implement a Confidential Close Call Reporting System (C<sup>3</sup>RS) (Appendix 2). Additionally, FRA issued Emergency Order 29 and Safety Advisory 2013-08.

---

<sup>1</sup> <http://web.mta.info/mta/network.htm#statsmnr>

- Emergency Order 29, issued on December 6, 2013, required Metro-North to take immediate action to prevent excessive train speeds by identifying and prioritizing high-risk areas, modifying its existing signal system to ensure speed limits are obeyed, and requiring a higher level of engagement and communication among operating crewmembers where major speed restrictions are in place.
- Safety Advisory 2013-08, issued on December 10, 2013, urged railroads to provide additional training, increase the frequency of operational testing, and reinforced the importance of communication between crew members. The purpose was to ensure that all railroads adhere to Federal regulations and railroad operating rules regarding maximum authorized train speed limits.

On December 16, 2013, FRA launched an assessment of Metro-North’s operations and safety compliance. This report describes FRA’s process, findings and recommendations.

## 2. The Metro-North System

Metro-North’s three main lines—the Hudson, Harlem, and New Haven Lines—run northward from midtown Manhattan to suburban New York and Connecticut (Figure 1). Metro-North maintains the equipment and infrastructure, and operates and controls the trains on each of these main lines out of Grand Central Station. West of the Hudson River, Metro-North also maintains the infrastructure for the Port Jervis and Pascack Valley Lines over which NJ Transit (NJT) operates from NJT’s terminal to Rockland and Orange counties. The NJT maintains the equipment and operates and controls the trains on these lines.

**Figure 1. Map of Metro-North Railroad**



### 3. Operation Deep Dive

Each of the 14 teams within Operation Deep Dive reviewed Metro-North’s relevant records, documents, plans, policies, and procedures. They also conducted field inspections and made observations at various locations on the railroad’s system by riding trains and other railroad on-track equipment and by walking along the tracks. The teams conducted inspections at all of Metro-North’s major mechanical facilities and yards, except West of the Hudson River where NJT conducts operations. Table 2 lists the teams and their respective areas of expertise. Deep Dive’s methodology is further explained in Appendix 3.

**Table 2. Deep Dive Teams and Areas of Expertise**

<b>Team Name</b>	<b>Area of Expertise</b>
Track Maintenance, Inspection, and Repair	Federal Track Safety Standards
Roadway Worker Protection (RWP)	Federal RWP Regulations
Electric Traction (ET)	Metro-North Policies and Procedures
Positive Train Control (PTC)	Installation of PTC system known as Advanced Civil Speed Enforcement System (ACSES) II.
Blue Signal Protection	Federal Blue Signal Regulations
Signal Maintenance, Inspection, and Repair	Federal Signal and Train Control Regulations
Rolling Stock Maintenance, Inspection, and Repair	Federal Motive Power and Equipment Regulations
Hours of Service (HOS)	Federal Hours-of-Service Regulations
Fatigue Management Programs/Fatigue Evaluation of Maintenance-of-way Employees	Metro-North Fatigue Management and Policies
Engineer/Conductor Certification	Federal Engineer and Conductor Certification Regulations
Efficiency Testing Programs	Federal Efficiency Testing Regulations
Operating Crew Medical Records	Federal Medical Regulations
Operations Control Center	Metro-North Policies and Procedures
System Safety Program Plan	American Public Transportation Association Guidelines and FRA Guidelines

During the course of Deep Dive, FRA interviewed management and staff at all levels, including employee representatives of the various crafts, from the Transportation, Engineering, Mechanical, Signal, Electric Traction, Safety, and Training Departments. The FRA conducted more than 50 formal and informal interviews. The FRA team members also attended various Metro-North safety meetings and monitored training classes.

In its regulatory role, FRA routinely inspects Metro-North for compliance with Federal regulations. The FRA initiated Deep Dive in order to go beyond standard regulatory inspections and to comprehensively analyze the operations at Metro-North that are known to affect safety so that we could identify areas in which improvements can be made. The FRA will use the results

of Deep Dive to identify areas of risk on Metro-North and to ensure that both Metro-North and FRA are doing everything possible to ensure the safe operation of the railroad and the safety of its employees and the public.

## **4. Findings and Recommendations**

The FRA found specific safety-critical shortfalls that affect all aspects of Metro-North. The FRA is directing certain actions and recommending others to Metro-North to address these shortfalls.

### **4.1 Track Safety**

#### ***4.1.1 Track Safety Findings***

The FRA found that the overall track inspection process needs to be improved. There are three primary areas of concern: (1) inadequate supervision of the track program and inadequate training of track inspectors, (2) the general state of Metro-North's track maintenance, and (3) the lack of time available to complete track inspections or repair.

#### ***4.1.2 Directed Actions regarding Track Safety***

- T1. Develop a plan to use advanced inspection technology to increase the effectiveness of track inspections.
- T2. Ensure track is maintained to Metro-North Track Standards and provide FRA with a plan that ensures Metro-North maintains these standards.
- T3. Collaborate with labor unions to increase the availability of off-hour maintenance time.
- T4. Improve the quality and consistency of training for track inspectors and other engineering department employees as part of an overall Metro-North training program.
- T5. Analyze train schedules to determine if there is sufficient time for inspection and maintenance of track.

### **4.2 Railroad Operating Rules**

#### ***4.2.1 Railroad Operating Rules Findings***

The FRA's assessment revealed that Metro-North does not comply with several Federal requirements for operating rules for the operation of trains over grade crossings under certain conditions. The FRA will strictly enforce all applicable regulations.

#### ***4.2.2 Directed Actions regarding Railroad Operating Rules***

- O1. Make changes to the operating rules for the operation of trains at grade crossings to comply with FRA regulations.

## **4.3 Qualification and Certification of Locomotive Engineers and Conductors**

### ***4.3.1 Engineer and Conductor Qualification and Certification Findings***

To ensure the proficiency and professionalism of railroad operating crews, Federal regulations require railroads to conduct unannounced operational testing to ensure that operating crews take the required actions in specific situations. The FRA's review identified four issues that Metro-North must address: testing and monitoring, compliance with stop signals, gaps in training, and disorganized records. Many supervisors do not follow the industry standard of conducting at least one face-to-face meeting annually with each locomotive engineer and conductor to review the employee's performance, convey operational testing results, and explain Metro-North's expectations. Metro-North does not train any of its testing officers on how to conduct operational testing, does not have documentation regarding the required qualifications of each testing officer, does not provide its testing officers with a copy of its program, and fails to review its operational testing and accident data every 6 months.

### ***4.3.2 Directed and Recommended Actions for Engineer and Conductor Qualification and Certification***

- E1. Improve operational testing and inspections for operating crews.
- E2. Conduct operational testing for train and engine crews on revenue trains on main track, including approach signal, stop signal, and restricted speed tests.
- E3. Improve the quality and consistency of training for operating crews as part of an overall Metro-North training program.
- E4. Document testing requirements and test results to improve the utility of the program as part of a robust testing and observation program.
- E5. Analyze on a routine basis the data from event recorders as part of the operational testing program.
- E6. Recommend that Metro-North establish a mentoring program to enhance the training of new train and engine service employees.

## **4.4 Railroad Workplace Safety (Roadway Worker Protection)**

### ***4.4.1 Railroad Workplace Safety Findings***

The application of Roadway Worker Protection rules in the field is inconsistent. Metro-North does not train its maintenance-of-way testing officers on its operational testing program, and it fails to document the qualifications of each testing officer. Additionally, Metro-North has conflicting operating rules addressing cellular phone usage, which results in uncertainty and confusion. Cell phone usage appeared to be commonplace and accepted by maintenance-of-way employees.

### ***4.4.2 Directed and Recommended Actions for Railroad Workplace Safety***

- R1. Improve the quality and consistency of training for maintenance-of-way employees as part of an overall Metro-North training program.
- R2. Recommend that Metro-North consider a change to Metro-North's electronic device distraction policy to include maintenance-of-way employees when they are on or near tracks.

## **4.5 Train Control Systems**

### ***4.5.1 Train Control Systems Findings***

The Metro-North signal standards are extensive and detailed. However, Metro-North does not have a suitable recordkeeping system to ensure inspections and tests are performed on time. In addition, Metro-North significantly reduces the time allotted to the signal department to complete the required inspections and tests.

### ***4.5.2 Directed Actions for Train Control Systems***

- C1. Improve the quality and consistency of training for signal department employees as part of an overall Metro-North training program.
- C2. Analyze train schedules to determine if there is sufficient time for inspection and maintenance of signals.

## **4.6 Blue Signal Protection for Employees**

### ***4.6.1 Blue Signal Protection for Employees Findings***

The overall condition of rolling stock being operated by the Metro-North is good. However, the FRA team observed serious safety deficiencies in Metro-North's mechanical facilities, including noncompliance with blue signal protection regulations. Blue signals are used to prevent access to sections of track in maintenance facilities while employees are working on rolling stock.

### ***4.6.2 Directed Actions for Blue Signal Protection for Employees***

- B1. Improve the quality and consistency of training for employees who maintain rolling stock as part of an overall Metro-North training program.
- B2. Ensure that blue signal protection is effective, including the use of locking devices that prevent derails from being removed.

## **4.7 Operations Control Center**

### ***4.7.1 Operations Control Center Findings***

Approximately half of the dispatching workforce has fewer than 3 years of experience. Managers are not formally trained on how to perform operational testing for rail traffic controllers. Moreover, Metro-North has no sound barriers between the controllers or chief dispatchers, resulting in an increased risk for controller distraction. The teams also identified fatigue as a potential risk area. In some instances, panel blocking devices, used to safeguard tracks being repaired or inspected, have been inadvertently removed. This puts Metro-North passengers and employees at risk.

### ***4.7.2 Directed and Recommended Actions for Operations Control Center***

- X1. Evaluate the risk for fatigue for Operations Control Center employees, and develop a plan to mitigate that risk.
- X2. Develop a strategy to address noise that can distract rail traffic controllers and affect their ability to concentrate on critical safety duties.
- X3. Improve the quality and consistency of training for Operations Control Center employees as part of an overall Metro-North training program.
- X4. Improve rules governing the use of panel blocking devices to ensure that they cannot be inadvertently removed.
- X5. Recommend that Metro-North consider computer program modifications in accordance with commonly used safeguards in order to require verification of the cancellation of maintenance-of-way track authority before a panel blocking device is removed.

## **4.8 Maintenance-of-way Employee Fatigue**

### ***4.8.1 Maintenance-of-way Employee Fatigue Findings***

Metro-North practices increase maintenance-of-way employee overtime, and with it, the risk of fatigue and safety incidents. Although these employees generally work regular shifts, weekday and weekend overtime is common and sometimes extensive. In addition, as of February 2014, Metro-North had more than 100 vacancies owing to the retirement of maintenance-of-way employees.

### ***4.8.2 Directed Actions for Maintenance-of-way Employee Fatigue***

- M1. Analyze risks of maintenance-of-way employee fatigue as a result of scheduling and staffing. Develop a strategy, in collaboration with labor unions, to mitigate the risk of fatigue.
- M2. Improve the quality and consistency of training for maintenance-of-way employees, particularly track inspectors and supervisors, as part of an overall Metro-North training program.

## **5. Overarching Safety Concerns**

The FRA identified three overarching safety concerns that affect all facets of Metro-North, most importantly the safety of its rail operations:

- An overemphasis of on-time performance;
- An ineffective Safety Department and poor safety culture; and
- An ineffective training program.

### **5.1 Overemphasis of On-time Performance**

The overemphasis of on-time performance has had a detrimental effect on safety, adversely affecting the inspection and maintenance of track and negatively impacting train operations. Interviews and observations by FRA during the course of Deep Dive indicate that safety on Metro-North was routinely overshadowed by its emphasis of on-time performance. Employees across all crafts expressed concern with this emphasis, and further expressed the view that, while their individual safety is important, the need to maintain on-time performance is often perceived as the most important criteria.

For example:

- Signal department employees reported pressure from the Operations Control Center to rush when responding to signal failures. With the increased number of trains currently operating on Metro-North, the time allotted to complete routine, Federally-mandated signal testing has been significantly reduced.
- Track Department employees expressed the view that it is difficult for them to get the track time needed to make necessary track repairs.

- In Metro-North’s implementation of its Federally-mandated operational testing program, testing officers reported that they do not conduct stop signal or restricted speed tests on main track owing to the priority of on-time performance.

## **5.2 Ineffective Safety Department and Poor Safety Culture**

“Safety culture” can be described generally as the product of individual and group beliefs, norms, attitudes, roles, and social and technical practices are concerned with minimizing the exposure of employees, customers, and members of the public to conditions considered dangerous or injurious.<sup>2</sup> Currently, no single department or office, including the Safety Department, proactively advocates for safety, and there is no effort to look for, identify, or take ownership of safety issues across the operating departments. An effective Safety Department working in close communication and collaboration with both management and employees is critical to building and maintaining a good safety culture on any railroad. Metro-North’s current safety culture fails to create a positive and productive environment that encourages safe operations, and the Safety Department is ineffective as a proactive safety advocate.

Through interviews and direct on-property observations, every FRA team involved in Deep Dive noted obvious signs of a weak safety culture on Metro-North:

- District safety meetings are chaired by the operating managers for each craft, and there is a lack of labor participation. The Safety Department is disconnected from the daily operations of Metro-North and there is a lack of communication between the Safety Department and other safety-critical departments of Metro-North (e.g., Track and Transportation Departments).
- Safety Department personnel do not observe and correct deficiencies in the field.
- Numerous, easily detectable safety issues exist across multiple disciplines that should have been discovered by the Metro-North management, including the fact that Metro-North employees were not wearing personal protective equipment.
- Employees were observed using cell phones inappropriately.
- Safety briefings were poorly attended.

---

<sup>2</sup> See NTSB, *Derailment of Amtrak Train No. 2 on the CSXT Big Bayou Canot Bridge Near Mobile, Alabama, September 22, 1993*, Railroad-Marine Accident Report NTSB/RAR-94/01 (Washington, DC: NTSB, 1994).

### **5.3 Ineffective Training Department**

Deep Dive also revealed that Metro-North's training program is ineffective. The Training Department consists of 50 employees, including managers, administrative personnel, 32 trainers, and 6 special duty trainers. The special duty trainers are employees who are working as temporary trainers in lieu of their normal craft assignments. In addition, although Metro-North has the authority to hire nine new trainers and one assistant to the manager, Metro-North reports that it has been a challenge to find high quality candidates to fill these positions. The overall training of Metro-North employees is inconsistent and often fragmented. Further, the railroad lacks an efficient recordkeeping system of employee training. In response to the retirements of many experienced employees, Metro-North hired approximately 700 new employees in 2013, and they expect to hire approximately 800 new employees in 2014. An effective training program for new and existing employees with accurate documentation is critical for safe operations.

The Training Department is responsible for the overall general training of Metro-North employees, but it does not perform all training. Technical or on-the-job training is conducted by individual departments. For example, the Training Department trains maintenance workers on roadway worker protection and operating rules, but trains train and engine employees on safety, general management skills, communication, and other subjects. They do not train employees responsible for signal and train control, electric traction, customer service, or certain other employees. The training is fragmented across different departments.

Metro-North's training records system is burdensome, inefficient and a source of frustration for Department employees. In 2011, in an effort to streamline and consolidate MTA's recordkeeping systems, Metro-North's training records were incorporated into the Authority's Enterprise Learning Management (ELM) system. Although it appears that MTA intended this transition to the ELM system to streamline the recordkeeping processes and procedures of all MTA entities and to reduce the burden on individual entities and personnel, the system's ability to serve as an effective system of training records management is questionable.

### **5.4 Comprehensive Directed Actions**

- Metro-North must never compromise safety in the interests of the reliability of its train schedule or the efficiency in its railroad operations. Senior leadership must put safety front and center, and communicate and implement that priority throughout the organization. This action must be taken immediately.
- Within 60 days, Metro-North shall submit to FRA a plan to improve the Safety Department's mission and effectiveness. Metro-North shall evaluate the structure, organization, and responsibilities of the Safety Department to ensure that it communicates effectively with the entire organization, and to ensure that the Safety Department provides effective leadership and oversight on safety issues. To further improve safety, Metro-North shall require the staff of the Safety Department to participate in safety meetings at all levels of the organization and to provide appropriate in-person monitoring of field activities and personnel.

- Within 60 days, Metro-North shall submit to FRA a plan to improve the training program. Metro-North shall evaluate the structure, organization, and responsibilities of the Training Department to ensure it develops, implements, and leads an effective training program for all operating departments. Metro-North shall evaluate the existing recordkeeping system and take corrective action, as necessary, to ensure accurate records are created, maintained, and readily accessible to appropriate employees.

## **6. Next Steps**

By May 17, 2014, Metro-North shall submit a plan to FRA that addresses all the actions outlined in this report.

The FRA will meet monthly with Metro-North to review and evaluate their progress.

## **7. Conclusion**

Metro-North has placed a strong emphasis on on-time performance. This emphasis on on-time performance, combined with the increased volume of train activity, appears to have led managers and supervisors to allow inspections, maintenance, and employee training to lapse. This, in turn, led to a deficient safety culture, which manifested itself in increased risk and reduced safety on Metro-North.

During Operation Deep Dive, FRA teams met regularly with Metro-North leadership and staff, who were very receptive to learning about the Deep Dive teams' findings and recommendations. Where appropriate and practicable, they immediately corrected the safety concerns that had been identified. The FRA will continue its oversight by reviewing and evaluating the immediate improvements implemented during Deep Dive.

The FRA is encouraged by the many good employees who met with our Deep Dive teams, and who agreed to be interviewed for this report. Their dedication and desire to turn Metro-North into a safe, professional railroad serving the citizens of New York, New Jersey, and Connecticut will provide Metro-North's new leadership with a solid foundation upon which to begin immediate improvements and effect long-term cultural change.

## **8. FRA's Vision for the Next Generation of Safety**

The FRA's mission is to ensure the safe, reliable, and efficient movement of people and goods over the railways for a strong America, now and in the future. Our number one priority is safety, and we owe it to the American public to ensure that rail transportation—both passenger and freight—is as safe as possible. Safety, however, must never be compromised to achieve either reliability or efficiency.

Although the rail industry experienced significant reductions in all types of accidents since 2008, including 2 consecutive years of record-breaking safety performance in 2012 and 2013, we cannot rest. The FRA's vision for continuous safety improvement requires a comprehensive

strategy designed to minimize risk. This approach provides tools for railroads such as Metro-North to improve the safety of their operations.

The FRA's strategy is founded on three pillars:

- Continuing a rigorous regulatory and inspection program;
- Advancing proactive approaches to reduce risk; and
- Investing in rail infrastructure and robust research and development.

This vision is explained in detail in Appendix 4.

## Appendix 1. Recent Metro-North Accidents and FRA Actions in Response

1. In 2013, four high-profile accidents occurred on Metro-North:

- A. Bridgeport, CT. The first accident occurred on May 17, 2013, on Metro-North's New Haven Line in Bridgeport, Connecticut. An eastbound Metro-North train of eight cars traveling 74 mph derailed and came to rest fouling an adjacent track. Approximately 20 seconds later, a westbound Metro-North train on that adjacent track struck the derailed train. As a result of the accident, more than 50 people were injured and transported to hospitals, and over \$18 million in costs incurred.

Broken compromise joint bars were found at the scene, and although the cause of the accident is still under investigation by both the National Transportation Safety Board (NTSB) and FRA, the accident was one of two that were the subject of FRA's Safety Advisory 2013-05, regarding joint failures on continuous welded rail track (78 FR 47486 (Aug. 5, 2013)). Safety Advisory 2013-05 made several recommendations to railroads to pay special attention to the maintenance required by rail joints in continuous welded rail.

- B. West Haven, CT. The second accident occurred on May 28, 2013, in West Haven, Connecticut, when a Metro-North train traveling 70 mph struck and killed a Metro-North maintenance-of-way (MOW) employee who was part of a roadway work group conducting railroad maintenance on a construction project. According to NTSB's preliminary investigation, the roadway work group had established exclusive track occupancy working limits, in accordance with Title 49, Code of Federal Regulations (CFR) Section 214.321, on a controlled main track in order to conduct their work.

A Metro-North rail traffic controller (RTC) trainee who was training under the mentorship of a qualified RTC placed blocking devices on the computer console for the signal system to prevent trains from entering the roadway work group's exclusive track occupancy working limits. Later, the RTC trainee apparently removed the blocking devices without notifying the roadway work group.<sup>3</sup> A train traveling at 70 mph then entered the exclusive track occupancy working limits and killed the MOW employee.

- C. Near Spuyten Duyvil Station, NY. The third accident occurred on July 18, 2013, when a CSX Transportation freight train derailed while traveling over Metro-North's system.

---

<sup>3</sup> See NTSB Recommendation R-13-17 (June 17, 2013); available online at <http://www.nts.gov/doclib/2013/R-13-17.pdf>.

Ten of the train's cars derailed near the Spuyten Duyvil Station and blocked tracks on Metro-North's Hudson Line. No one was injured, although significant property damage occurred.

- D. Near Spuyten Duyvil Station, NY. The fourth accident occurred on December 1, 2013, when a Metro-North train of 7 cars traveling south from Poughkeepsie, New York, to Grand Central Terminal in New York City derailed as it approached the Spuyten Duyvil Station. The train traveled over a straightaway with a maximum authorized passenger train speed of 70 mph before reaching a sharp curve in the track where, by Metro-North's own rules, the maximum authorized speed was reduced to 30 mph.

A preliminary review of the information on the locomotive event recorders by NTSB indicated that the train was traveling approximately 82 mph as it entered the curve.<sup>4</sup> Thus, the train was exceeding the maximum authorized speed by 12 mph on the straightaway, and was traveling nearly three times the railroad's maximum authorized speed as it entered the curve. Four passengers were killed in the accident, over 70 people were injured and over \$8 million in costs incurred.

- 2. Actions taken by FRA. Although both NTSB and FRA continue to investigate these four accidents, in each instance FRA acted immediately to close any safety gaps and to help ensure the safe operation of Metro-North.
  - A. On May 17, 2013, after the Bridgeport accident, FRA increased its inspections and audits of Metro-North's practices and compliance with Federal regulations.
  - B. On December 3, 2013, after Metro-North experienced its fourth accident in 7 months, FRA again increased its oversight. As a first step, FRA's Administrator sent a letter to MTA expressing support for Governor Andrew Cuomo's directive that MTA hold a safety stand-down with all employees on its Metro-North and Long Island Rail Road (LIRR) properties. The FRA also directed Metro-North to implement C<sup>3</sup>RS to identify precursors to significant safety issues.
  - C. On December 6, 2013, FRA issued Emergency Order 29, requiring Metro-North to take specific, immediate actions to improve safety.

---

<sup>4</sup> See NTSB Preliminary Report (Dec. 1, 2013), available online at [http://www.nts.gov/doclib/reports/2014/Metro-North\\_Bronx%202013\\_PreliminaryReport.pdf](http://www.nts.gov/doclib/reports/2014/Metro-North_Bronx%202013_PreliminaryReport.pdf).

D. On December 10, 2013, FRA issued Safety Advisory 2013-08 to stress to railroads and their employees the importance of compliance with Federal regulations and railroad operating rules regarding maximum authorized train speed limits [See 78 FR 75442 (Dec. 11, 2013) and 78 FR 76191 (Dec. 16, 2013).]

## Appendix 2. Letter to MTA



U.S. Department  
of Transportation

**Federal Railroad  
Administration**

Administrator

1200 New Jersey Avenue, SE  
Washington, DC 20590

December 3, 2013

Mr. Thomas F. Prendergast  
Chairman and Chief Executive Officer  
Metropolitan Transportation Authority  
347 Madison Avenue  
New York, NY 10017

Dear Mr. Prendergast:

Please accept our condolences on the Metro-North train accident that occurred at Spuyten Duyvil, Bronx, New York, on December 1, 2013. These tragic accidents serve to remind us of the heavy responsibility we all bear for the safety of those who use our Nation's railroads.

As you are aware, the U.S. Department of Transportation (USDOT) and Federal Railroad Administration (FRA) continue to have serious concerns about the recent series of accidents that have occurred on Metro-North and which resulted in 5 deaths and approximately 129 injuries to Metro-North employees and customers:

- May 17, 2013, Bridgeport, Connecticut, passenger train derailment and train-to-train raking collision;
- May 28, 2013, West Haven, Connecticut, roadway worker employee fatality;
- July 18, 2013, Spuyten Duyvil, Bronx, New York, CSX derailment; and
- December 1, 2013, Spuyten Duyvil, Bronx, New York, derailment.

The specific causes of each of these recent accidents may vary, but regardless of the reasons, 4 serious accidents in less than 7 months is simply unacceptable. Not only have some of these incidents had tragic and catastrophic consequences, they have also eroded the public's confidence in the safety of the railroad transportation system, and they detract from employees' focus and morale as they continue to perform safety-critical duties.

As you know, the FRA team has worked closely with your leadership and safety officials, particularly over recent months, to address serious concerns regarding the safety of Metro-North riders. And while we appreciate Metro-North's and the Metropolitan Transportation Authority's (MTA) ongoing engagement with us regarding safety oversight and improvements, more needs to be done. Immediate corrective action is imperative.

In our meetings and conversations with your team since May, and again yesterday on your call with Deputy Secretary Porcari, we have urged MTA, and specifically Metro-North, to take a closer look at all issues that could affect the safety of Metro-North's passengers and employees. The MTA needs to demonstrate to them a serious, good faith commitment to the safe operation of the system, and inform them of the steps that MTA will take to enhance safety in both the short- and long-term.

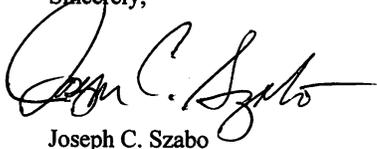
As you know, the USDOT and FRA strongly support Governor Cuomo's directive that MTA hold a safety stand-down with all employees on its Metro-North and Long Island Rail Road properties. We believe every opportunity should be taken to remind rail and transit employees that safety is always their top priority, whether it is through mandatory re-training or in conversations with their immediate supervisors. A safety stand-down serves as a visible first step to restoring public and employee confidence in the MTA transportation system.

As you know, and as we discussed yesterday, USDOT does not believe that a safety stand-down alone is sufficient. There are other actions that MTA and Metro-North can and should take to ensure the safety of their passengers and employees. While we plan to be in touch with you and your team continuously in the coming weeks, one additional action that we believe you can take immediately is the implementation of a confidential close call reporting system (C3RS) that Metro-North and Long Island Rail Road can use to identify precursors to significant safety issues. A C3RS is in place on other rail lines across the country, including Class I and commuter railroads, and has proven effective in identifying safety issues and lowering injury and accident exposure.

By this letter, USDOT and FRA formally direct MTA to update us on the progress of the safety stand-down, and immediately implement a C3RS program. We have significant concerns about the current situation at Metro-North, and are actively considering other ways that FRA can use its Federal oversight authority to provide additional safety enhancement of MTA operations. We will continue to engage with you as we work collaboratively towards a common goal of ensuring the highest degree of safety within the MTA system.

I look forward to your response by Friday, December 6, 2013.

Sincerely,



Joseph C. Szabo

cc: Howard R. Permut, President, Metro-North Railroad  
Helena E. Williams, President, Long Island Rail Road

## **Appendix 3. Operation Deep Dive Methodology**

### ***Track Safety Standards; 49 CFR Part 213***

The FRA performed a full review of Metro-North's Engineering Department to assess its overall operations, as well as its daily safety, training, and maintenance practices. The FRA inspectors investigated Metro-North's compliance with its own safety rules and maintenance standards, as well as FRA regulations. The team conducted walking inspections, hi-rail and head-end train ride track inspections, and interviews with Metro-North track supervisors, foremen, and train crews. Inspectors from FRA also reviewed track inspection records and assessed overall training of Metro-North track employees. In addition, FRA used its Automated Track Inspection Program (ATIP) car to conduct a 2-week test on the Metro-North to assess the effectiveness of the railroad's track maintenance and inspection process.

### ***Railroad Operating Rules; 49 CFR Part 217***

The FRA conducted an in-depth assessment of Metro-North's compliance with the applicable Federal regulations that govern operational tests and inspections for railroad employees, and the regulations that govern instruction to employees regarding the railroad's operating rules. During the assessment, FRA conducted interviews with Metro-North management and labor organizations, conducted field and records inspections, and informally spoke with many railroad employees. Specifically, FRA observed Metro-North managers performing operational tests, and conducted 6 FRA/Metro-North testing sessions with both Metro-North operations officers and road foremen of engines. The FRA interviewed or spoke with 13 transportation managers, including conducting interviews with the Metro-North Director of Rules and other rules managers. The FRA also conducted head-end train rides with locomotive engineers, and watched road foreman of engines conducting operational tests and observing Metro-North's locomotive engineers.

### ***Railroad Workplace Safety (Roadway Worker Protection); 49 CFR Part 214***

Between December 16, 2013, and January 24, 2014, FRA assessed Metro-North's compliance with FRA's roadway worker protection regulations and applicable Metro-North operating and safety rules that govern maintenance-of-way activities. During this assessment, FRA conducted 18 interviews with Metro-North maintenance-of-way employees and managers, and made numerous unannounced field observations at various locations during different shifts to determine rules compliance, knowledge, and practices.

### ***Train Control Systems; 49 CFR Parts 234 and 236***

The FRA performed a full assessment of the signal department and the signal operations taking place on Metro-North. During this assessment, FRA interviewed signal employees and trainmen, and the director of the operation center. The FRA team inspected the signal training center, the signal shop, and the signal operations center. The team performed wayside signal inspections and reviewed the following Metro-North documents and programs: signal standards, signal training, signal testing records, hours-of-service records for signal employees, and efficiency testing as it relates to the signal employees.

***Qualification and Certification of Locomotive Engineers and Conductors; 49 CFR Parts 240 and 242***

The FRA reviewed Metro-North's certification programs with the managers who oversee the implementation and training. The FRA rode trains and observed supervisors conducting operational efficiency tests. The FRA interviewed both employees in the training program and certified locomotive engineers and conductors. Finally, FRA reviewed a sample of records to determine the quality of Metro-North's recordkeeping and reviewed the types of tests performed.

***Rolling Stock; 49 CFR Parts 223, 229, 231, 238, and 239***

The FRA performed a full assessment of the mechanical shops and yards on the Metro-North. The FRA visited and inspected the mechanical shops and yards at Harmon, Stamford, New Haven, North White Plains, Brewster, High Bridge, and Danbury, as well as the facilities at Grand Central Terminal. At each of these locations, the FRA rolling stock team inspected equipment, reviewed maintenance and repair records, and interviewed railroad managers, supervisors, and representatives of the mechanical employees. The team also reviewed training records and procedures and observed employees as they performed various duties. The visits were conducted during both daytime operations and nighttime operations.

***Blue Signal Display; 49 CFR Part 218, Subpart B***

The FRA conducted assessments of compliance with blue signal protection at various Metro-North mechanical shops. An FRA team conducted detailed blue signal protection-specific assessments between January 13, 2014, and January 17, 2014, and observed compliance throughout the safety assessment. The FRA conducted reviews of relevant Metro-North written policies and procedures, and also conducted a records inspection. The FRA also interviewed Metro-North employees in both New York and Connecticut.

***Operations Control Center***

The Operations Control Center is the dispatching center for the railroad. The FRA interviewed managers, supervisors, and employees who work for or interact with the Operations Control Center. The FRA also reviewed records and observed the operation.

***Maintenance-of-Way Employee Fatigue/Fatigue Risk Management Programs***

To assess Metro-North's maintenance-of-way employees' risk for fatigue, FRA asked Metro-North for background information on their work schedules and scheduling practices. The FRA inspectors then used this information to conduct interviews with maintenance-of-way employees, union leaders, and Metro-North management. The FRA inspectors analyzed the information received from both Metro-North and the interview process.

## **Appendix 4. FRA’s Vision for the Next Generation of Rail Safety**

Continuous safety improvement requires a comprehensive strategy designed to mitigate risk. FRA’s strategy is founded on three pillars:

- Continuing a rigorous regulatory and inspection program based on strategic use of data;
- Advancing proactive approaches for early identification and reduction of risk; and
- Investing in rail infrastructure and robust research and development.

### **Pillar I. Continuing a Rigorous Regulatory and Inspection Program**

FRA’s approach to rail safety has led to unprecedented safety improvements. We will continue this framework for safety oversight and enforcement and work to improve upon it. The Staffing Allocation Plan and National Inspection Plan will continue to be key tools for workforce planning and inspection activities.

The FRA’s regulatory program improves safety by developing and enforcing rules based on facts, incident and accident causation analysis, comparison of alternative mitigation measures, and cost-beneficial solutions. The FRA rulemaking considers current and future industry capabilities, compliance burden and cost.

State rail inspectors are a force multiplier for FRA’s compliance and enforcement efforts. The State Rail Safety Participation Program consists of States’ deploying safety inspectors in the five rail safety inspection disciplines. State programs complement FRA’s compliance inspections. The FRA provides training to State inspectors and encourages more State participation in this important program.

#### **Focus Areas**

Rail safety has improved overall. However, accidents caused by human error and track defects account for more than two-thirds of all train accidents, and trespassing and highway-rail grade crossing incidents account for approximately 95 percent of all rail-related fatalities. The FRA will allocate resources and work with our partners, such as Operation Lifesaver, to make improvements in these challenging areas.

#### *Human Factors*

- The FRA issued a final rule to advance nationwide implementation of positive train control (PTC) systems (which prevent overspeed derailments, train-to-train collisions, and other types of accidents often caused by human error).
- The FRA issued a final rule requiring a railroad to have a formal program for certifying train conductors. This will raise the bar of professionalism and ensure that only those individuals who meet minimum Federal safety standards serve as conductors.
- The FRA issued a final rule on the hours of service of passenger train employees.

- The FRA led an industry-wide initiative to combat the dangers of electronic device distraction in the railroad workplace and issued a final rule prohibiting distracted operation of trains.

#### *Track Safety*

- The FRA issued a final rule to improve rail inspections. This rule requires the use of performance-based rail inspection methods that focus on maintaining low rail failure rates per mile of track
- The FRA issued a final rule on Vehicle/Track Interaction Safety Standards.
- The FRA developed new technology for avoiding track buckles (sun kinks) and to predict rail temperature variations.

#### *Grade Crossing Safety and Trespass Prevention*

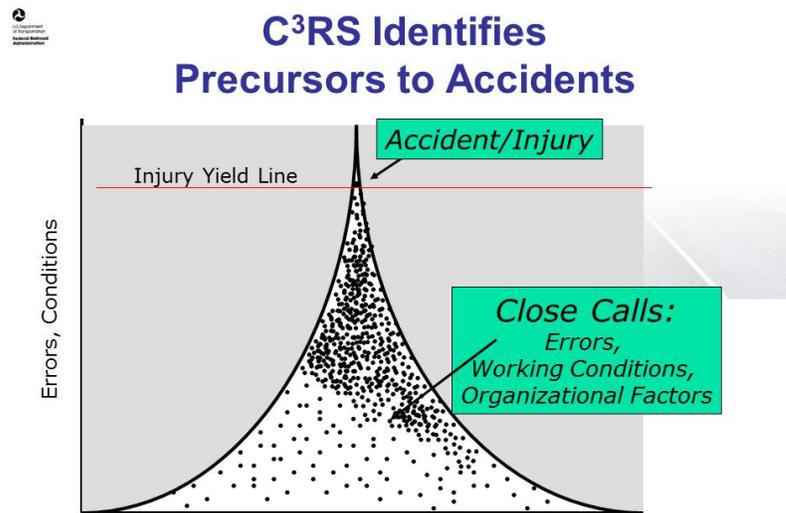
- The FRA issued standards requiring railroads to establish and maintain toll-free “1-800” emergency notification systems through which the public can telephone the proper railroad about a stalled vehicle or other safety problem at a specifically identified grade crossing.
- The FRA issued regulations requiring 10 States to issue State-specific action plans to improve safety at highway-rail grade crossings.
- The FRA developed model State laws regarding highway users’ sight distance at passively signed crossings and highway motorists’ violations of grade crossing warning devices.
- The FRA will issue a proposed rule specifying the types of information that railroads must report to the Department’s National Crossing Inventory.
- FRA has released a smartphone application with grade crossing information.

### **Pillar II. Advancing Proactive Approaches to Reduce Risk**

Continuous safety improvement requires a multi-faceted approach. The next level of safety will come from advancing pro-active safety-based programs that analyze risks, identify hazards, and put in place customized plans to eliminate those risks. These include:

- Risk Reduction Programs (RRP) and System Safety Programs (SSP) that help identify accident precursors so that preventive corrective action can be taken. We will issue a final rule before the end of 2014 to require passenger railroads to develop and implement SSPs. A notice of proposed rulemaking that would require freight railroads to establish RRP is currently under development. Both are designed to require railroads to develop and implement systematic risk-based approaches to ensuring continuous safety improvement.
- Confidential Close Call Reporting System (C<sup>3</sup>RS) is a voluntary and non-punitive program for railroads and their employees to report close calls. One C<sup>3</sup>RS pilot site resulted in a nearly 70 percent reduction in certain accidents. C<sup>3</sup>RS helps develop a positive and proactive safety culture, using detailed data far beyond what is obtained during accident investigations. The amount of information provided from proactive

programs like C<sup>3</sup>RS in comparison to traditional data from accidents and injuries collected after the fact is illustrated below:



Programs like Confidential Close Calls Reporting allow us to gather data *before* an accident occurs and to develop risk mitigation strategies well in advance.

### **Pillar III. Investing in Rail Infrastructure and Robust Research and Development**

Parts of two important rail laws expired at the end of FY 2013: RSIA and the Passenger Rail Investment and Improvement Act of 2008 (PRIIA). The President's FY 2014 budget for FRA laid out a comprehensive, multi-year reauthorization blueprint for moving forward. The fundamental goal of this proposal is to develop a coordinated approach for improving the Nation's rail system—an integrated strategy that addresses safety as well as passenger and freight service improvements. This new approach reflects the complex reality of how rail works in the United States, including the fact that most track is privately-owned and carries a mix of passenger and freight trains. Improvements in safety result not only through regulations and inspections, but also through capital investments and research and development. For example, chokepoints often hinder the efficient movement of intercity passenger, commuter, and freight trains, while the elimination of grade crossings with strategic placement of overpasses and underpasses enhance rail, vehicular, and pedestrian safety.

The FRA's reauthorization proposal's key priorities include the following:

- **Modernizing our rail infrastructure.** Past generations of Americans invested heavily in building the rail infrastructure we rely on today. Most segments of the Northeast Corridor were built more than a century ago. Maintaining and modernizing these assets will lower long-term costs and result in a safer and more efficient and reliable rail system.

- **Meeting the growing market demand.** With America’s population expected to grow by 100 million by 2050, the national transportation system must be prepared to handle substantial increases in the movement of people and goods. Given the existing capacity constraints on other modes, rail will play an increasingly important role in balancing America’s transportation system by accommodating this growth, resulting in public benefits such as reduced reliance on foreign oil, reduced air pollution, increased safety, and more travel options. The budget incorporates market-based investments in building or improving passenger rail corridors, eliminating rail chokepoints, adding freight capacity, and conducting comprehensive planning.
- **Successfully implementing PTC.** It is unlikely that many railroads will reach the mandated deadline of December 2015. Commuter rail operations are cash-strapped and unable to obtain certain necessities for implementation, such as communications spectrum. The FRA’s budget proposes grants for those commuter railroads and research and development for new technologies to improve rail safety. The FRA’s August 2012 Report to Congress “Positive Train Control: Implementation Status, Issues, and Impacts” summarized the major technical and programmatic challenges and obstacles associated with PTC implementation that FRA had identified so far.<sup>5</sup>
- **Promoting innovation.** The FRA envisions a robust, world-class domestic rail industry. We want U.S. companies to develop patents for state-of-the-art rail technology, to supply rail operators throughout the world, and to employ the best engineers and railway workers. The United States should be exporting intellectual capital and rail products, not importing them.
- **Mitigating rail’s impacts on communities.** We can improve the quality of life for all Americans by eliminating grade crossings, sealing corridors, reducing noise, and making improvements in safety that enhance both rail service and economic growth.
- **Research and Development.** Implementing new technology will be a key driver for future safety improvement. Important ongoing research includes the following:
  - Track inspection technologies to detect defects before they become failures in service.

---

<sup>5</sup> <http://www.fra.dot.gov/Elib/Details/L03718>

- Computer modeling capabilities to improve understanding of vehicle-track interaction, wheel and rail profiles, and contact conditions.
- Autonomous recording methods to provide more frequent and cost-effective measurements of track condition.
- Research to develop new methods for monitoring difficult-to-detect safety issues such as longitudinal rail force, ballast lateral restraint, and ballast condition.
- Research to understand and mitigate the key risk factors for corridors shared by passenger and freight operations. Research on new technologies for improving grade crossing safety.
- The National Cooperative Rail Research Program, which will improve the technical skills of a workforce capable of designing and operating the next generation of safe railroads.

## **Conclusion**

The FRA is committed to continuous safety improvement. FRA's strategy focuses on 3 pillars:

- Continuing a rigorous regulatory and inspection program,
- Advancing proactive approaches to reduce risk, and,
- Investing in rail infrastructure and robust research and development.

This strategy builds upon FRA's data-driven approach that has been a key reason for the remarkable safety improvements over the last decade. Proactive approaches to identify and mitigate risk before accidents occur will drive the next generation of safety.

The FRA's mission is to ensure the safe, reliable, and efficient movement of people and goods for a strong America, now and in the future. Safety is our number one priority and we owe it to the American public to ensure continuous safety improvement.