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SAFETY BOARD MEMBERS

Joseph H. Boardman
Commissioner and
PTSB Chairman

Carmen F. Arcuri
Appointed 1994

Walter G. Rich
Appointed 1994

Thomas H. Clements
Appointed 1999

Deborah A. Green
Appointed 2002

John S. Delaney
Appointed 2002

Matthew D. Sansverie
MTA Inspector General
Ex-officio Member
In Memoriam

Carmen F. Arcuri
1927 - 2004
PTSB Board Member 1994 - 2004

Mr. Arcuri’s dedication, judgement, and generous sharing of his extensive experiences from over 50 years in public service, including more than 20 years in public transportation, greatly enriched the Board’s efforts to improve public transportation safety for the State of New York.
The Honorable George E. Pataki, Governor
Members of the Legislature
And Citizens of New York

Since 1984 the Public Transportation Safety Board (PTSB) has provided safety oversight for the nearly two and a half billion riders who annually use New York State’s bus and rail public transportation systems.

This Annual Report describes the roles and activities of the PTSB and provides an analysis of bus and rail public transportation accidents. The PTSB’s activities in 2003 included investigating 95 bus and rail accidents, conducting bus and rail property safety site reviews, providing accident investigation training to the bus industry, participating in rail safety emergency preparedness exercises, and supporting local safety programs across the state.

In accordance with Section 217 of the Transportation Law, I am pleased to submit the 2003 PTSB Annual Report.

Sincerely,

Joseph H. Boardman
PTSB Chairman
The Board’s Year In Review

Public Transportation Safety Board

The Public Transportation Safety Board (PTSB) has broad, legislatively mandated powers and duties that enable it to effectively improve public transportation safety for those transportation systems which receive funds under the State Transit Operating Assistance Program (STOA).

The PTSB is statutorily responsible for investigating and analyzing serious bus, subway and commuter rail accidents, and recommending actions to be taken to reduce the possibility of similar accidents from occurring. The Board’s powers and duties include:

- Establishing accident reporting, investigation and analysis procedures;
- Conducting comprehensive accident investigations involving public transportation systems, whether publicly or privately owned;
- Taking a proactive role in public safety, by reviewing, approving and monitoring system safety program plans submitted by each transportation system eligible for STOA;
- Conducting system safety program plan field audits to ensure that the transportation systems are in compliance with their approved system safety program plans;
- Analyzing critical safety issues and concerns; and,
- Recommending establishment of new safety legislation, rules and regulations, and transportation system procedures, based on findings from accident investigations, special studies and comprehensive audits.

Membership on the Safety Board is determined by Section 216 of the Transportation Law. The Board may consist of seven members and a Chairman. Members of the Board in 2003 were: Joseph H. Boardman, Commissioner New York State Department of Transportation (NYSDOT) and Chairman of the Safety Board; Carmen F. Arcuri, former General Manager, Utica Transit Authority; Thomas H. Clements, former member CDTA Board; John S. Delaney, Vice President LeRoy Dedicated Logistics; Deborah A. Green; Walter G. Rich, President, Delaware Otsego Corporation; and Matthew D. Sansverie, Inspector General, Metropolitan Transportation Authority (MTA). John F. Guinan, NYSDOT Assistant Commissioner, Office of Passenger and Freight Transportation, serves as the PTSB’s Executive Director and represents Chairman Boardman and serves as Acting Safety Board Chairman.

The Safety Board meets in public session, on the third Wednesday of every other month. During 2003, the Board formally met six times.

Staff

The Executive Director, John F. Guinan, has the responsibility for directing staff activities including: conducting accident investigations; reviewing system safety program plans; preparing commuter rail, subway and bus accident reports; monitoring transportation operators’ compliance with final Safety Board actions; maintaining Safety Board records; preparing special analytical and research studies; and performing other tasks that are deemed appropriate. The Safety Board’s primary staff resources are housed within the NYS Department of Transporta-
Highlights 2003

By: John S. Fabian and Stephen Trudell

BOARD MEETINGS AND RECOMMENDATIONS

In January, the Board held a meeting in New York City and approved 29 bus and rail accident investigation reports, and ten bus system safety program resolutions:

At the meeting, Tompkins Consolidated Area Transit (TCAT) briefed the Board on its efforts to change to a public benefit corporation. As a result of various accident investigations, the Board had recommended that TCAT become a public benefit corporation to more effectively handle safety related management and labor issues.

In March, the Board held a meeting in Albany and approved 17 bus and rail accident investigation reports, and ten bus system safety program resolutions.

At the meeting, Mr. Stephen Bland, Executive Director of the Capital District Transportation Authority (CDTA) provided the Board a presentation on CDTA organizational changes to address safety issues previously identified by the Board. The changes included developing consistency of practices in the operating divisions, improving performance through a service quality management, enhancing internal controls, and reinforcing management accountability.

In June, the Board held a meeting in New York City and approved 17 bus and rail accident investigation reports, and 14 bus system safety program plans.

At the meeting, staff presented the Board a video of a hostage-taking exercise conducted by Niagara Frontier Transportation Authority (NFTA) in conjunction with numerous emergency responders in the Buffalo area.

In July, the Board held a meeting in Albany and approved 13 bus and rail accident investigation reports, and two bus system safety program plans.

In September, the Board held a meeting in New York City and approved 15 bus and rail accident investigation reports, and two bus system safety program plans.

At the meeting, Detective Charles Wendel, of the MTA Police, provided the Board a summary of the impact of the August 15 blackout on MTA properties.

- 8,500 MTA Long Island Rail Road (MTA LIRR) commuters were evacuated from 35 trains that were stalled between stations;
- MTA Metro-North Railroad (MTA MNR) had 41 trains stalled between stations with 12-16,000 passengers evacuated and another 10,000 evacuated from Grand Central Station.
- MTA New York City Transit (MTA NYCT) had between 100,000 and 140,000 passengers evacuated from the subway system as 413 trains were affected by the blackout.

MTA Long Island Bus (MTA LIB) was unaffected by the blackout except for a fueling depot where there was inadequate backup power to refuel buses.

Mr. Wendel stated that several recommendations were made as a result of the accident including: that the busing program for emergency situations be enhanced; that shelters be provided for stranded passengers; that backup power generation be improved, that emergency coordination and response be improved, and that satellite-based phone communications be purchased.

In November, the Board held a meeting in New York City and approved 13 bus and rail accident investigation reports, and four bus system safety program plans.

Staff provided the Board a report on the Department’s review of the management oversight of Greyhound Lines’ maintenance program.

BUS AND RAIL TRANSIT SYSTEM SAFETY SITE REVIEWS

The periodic review of bus and rail transit systems’ safety programs is an essential element of the Board’s safety oversight program. The reviews consist of staff visiting selected transit properties’ offices, depots, terminals and/or shops to review operating procedures to ensure adherence to system safety...
program plans and to identify safety deficiencies. The reviews are a pro-active means for the Board to work cooperatively with the transit providers to enhance passenger safety, identify safety issues and develop actions to correct safety deficiencies.

**Rail Reviews**

The Board conducted a safety review of the MTA NYCT in conjunction with the MTA NYCT’s Office of System Safety Internal Safety Audit. The review allowed the Board to continued a proactive presence at the MTA NYCT and fulfill the safety review requirements of the Federal Transit Administration’s State Safety Oversight Program.

The Board conducted a safety review of the MTA LIRR’s system safety program plan. The Board made recommendations to the MTA LIRR’s Departments of Track, Signals and Corporate Quality Assurance relating to the utilization of computer databases to track repairs, maintenance scheduling, and quality assurance audits. The MTA LIRR responded positively to the recommendations.

**Bus Reviews**

The Board conducted reviews at TCAT, CDTA, and Rochester Genesee Regional Transportation Authority (RGRTA). The reviews resulted in recommendations to the properties to improve management accountability.

**SUPPORT OF STATE AND NATIONAL SAFETY INITIATIVES AND ORGANIZATIONS**

**Penn Station Emergency Response Committee:**

Board staff attended monthly meetings of the Emergency Response Committee’s Tunnel Life Task Force relating to tunnel safety at Penn Station. The committee is headed up by Amtrak and consists of safety personnel from MTA LIRR, New Jersey Transit, and NYC police and fire departments. Issues addressed included emergency response training, radio communication, power removal; command post construction, and security.

**Emergency Response Drills**

Board staff attended six emergency response drills at the rail properties during 2003. The purpose of the drills was to enable agencies to coordinate response and test communication capabilities for various emergency situations.

- The first was held at the New York & Atlantic Railway Company in Glendale, Queens. The drill scenario involved a derailment and fire on a train. Five injuries to passengers and crew were reported. A train to roadbed evacuation was conducted.

- The fourth was conducted by the MTA Police, Nassau County Office of Emergency Management, Nassau County Police, Nassau and Suffolk County Medical Examiner’s offices, and Bethpage Fire Department. The purpose of the drill was to provide participants with the opportunity to evaluate their response to a terrorist attack launched against a public transportation system. The exercise scenario involved a bomb on a MTA LIRR train which detonated while proceeding through Bethpage. The train derailed and struck an MTA CNG bus stopped at the Stewart Avenue crossing.

- The fifth was an interagency emergency disaster simulation conducted by the MTA MNR, Amtrak, and the City of Peekskill’s Office of Emergency Management. The exercise was held at the interlocking south of the Peekskill Station which simulated a raking type collision of a MTA MNR passenger train and an Amtrak passenger train.

- The sixth was conducted at the MTA LIRR. The drill simulated a collision of a MU passenger train into a bumper block on station track #6. The mock collision scenario resulted in a fire, with smoke conditions, and multiple injuries to passengers and crewmembers.
Site Safety Inspections

Board conducted bus site safety inspections at various Metropolitan and Upstate transportation authorities. The inspections included visits to rail properties’ construction sites, right-of-ways, and railroad bridges. The rail inspections were a proactive means for staff to address incidents such as debris collisions and reports of motor vehicles hitting railroad bridges. Staff visited bus properties and inspected preventive maintenance and pre/post trip records, monitored seat belt usage, and reviewed accident preventability ratings.

State Safety Oversight

Board staff attended the annual Federal Transit Administration’s State Safety Oversight workshop in Dallas, Texas. Primary dialog for the workshop focused on the safety certifications for new starts/line extensions and internal safety audits performed by the rail transit systems.

Blackout Support

During the August 14th blackout, staff provided “real time” information for the New York State Emergency Management Office (SEMO). With cell phones, radios, land lines and virtually all lines of communication shut down, the staff retrieved, consolidated and reported to SEMO Headquarters on a regular basis until communications were re-established.

NTSB Investigation of the Staten Island Ferry

Board staff participated on a team headed by the NTSB investigating the collision of the Staten Island Ferry. The accident occurred on October 15, 2003.

MTA NYCT Arbitrator’s Training

Board staff provided training to a group of arbitrators who have the responsibility of hearing MTA cases relative to preventability. The training was received positively by the Arbitrators and by attorneys representing the MTA NYCT unions, and have been useful in recent arbitration rulings. MTA NYCT’s recent union/labor contract established a policy that all arbitrators must have training in accident preventability as provided by the Board prior to hearing any MTA NYCT accident cases.

APTA Bus Safety

Board staff attended the American Public Transportation Associations (APTA) Annual Bus Safety Conference as a member of the Bus Safety Committee. The committee is responsible for reviewing current safety trends including system safety program plans and driver training programs.

Bus Operator Safe Driving Competitions

Board staff participated as judges at Bus Operator Safe Driving Competitions at MTA Long Island Bus, Westchester County, CDTA, and the Statewide New York Public Transit Association=s Competition held in Broome County, NY. As judges, the staff rated bus operators safety techniques including: defensive driving skills, steering control, and mirror usage.

Rural Transportation Assistance Conference

At the conference, the Board provided a presentation on the practices of accident investigation techniques and the processes used by the most successful companies. Areas covered in detail were accident response, driver training, retraining, and preventability rating.

AASHTO Standing Committee on Public Transportation Safety Board

The Board continued to play a role in the development of national guidelines regarding the development of system safety program plans for all states to adopt and manage. A MOU in agreement with and in support of the FTA policy was established to provide a framework for the states to oversee all bus companies use of the guidelines.

Bus Collision Injury Analysis Project

The NYSDOT supported the results of the NYSTARS/PTSB conference where data was collected on several bus and automobile collisions. A consultant team plans to analyze the crashes and provide a report reflecting the expectation of various levels of injuries based on the crash dynamics. The report will be useful to the bus industry as well as state agencies and insurance companies who are faced with difficulty of accurately determining the anticipated degree of injury experienced by passengers.
Bus/Pedestrian Right Side Accident Task Force

The Task Force is comprised of individuals from the bus industry, bus manufactures, and government safety oversight agencies. During 2003, the Task Force reviewed three years of past reportable Board fatal accidents, discussed black box and camera technology, created three subcommittees to perform detail analysis in the areas of human factors, bus design and product design.

Certificates of Relief

The Board continued working with the MTA NTCT, New York State Department of Motor Vehicles, and Office of Court Administration to remedy a concern with Certificates of Relief. Certificates of Relief are issued by the courts to individuals with commercial drivers licenses to drive buses in passenger service despite the fact that they cannot operate a personal vehicle because of an alcohol or drug-related conviction.

Cummins Engine Company Safety Alert

The Board issued a safety alert to bus properties regarding a safety notice prepared by the Cummins Engine Co. pertaining to a potential engine defect in two of its models. The defect, if it occurs, can cause the engine to accelerate without the control of the driver and lead to a crash.
Bus Case #7343: On January 2, 2003, a MTA NYCT bus was turning right from eastbound E. 116th Street onto Lexington Avenue in Manhattan on a green traffic signal when a bicyclist came off of the sidewalk, lost control of his bicycle and fell to the pavement in front of the bus. The right front wheel of the bus tracked over the bicycle and bicyclist before the bus driver brought the bus to a stop. The bicyclist was under the bus when EMS responded and was transported to a local hospital where he was pronounced dead. At the time of the accident it was dark and the weather was a wintery mix of freezing rain, sleet and snow. The staff’s investigation found that at the time of the accident the bicyclist was riding while under the influence of alcohol and that the bus driver had probably been using a cellular telephone. The staff found that the probable cause of the accident was the bicyclist who, while under the influence of alcohol, entered the intersection and collided with the bus. Contributing to the accident was the bus driver failed to observe the bicyclist, this most likely having occurred due to the distraction of cellular telephone usage. The bus driver was terminated as a result of this accident. At the highest level, the termination was upheld by an arbitrator’s ruling.
Bus Case #7210: At approximately 5:40am, on September 11, 2002, an Adirondack Transit (ADT) bus # 82019 was traveling north on Interstate 81 in Preble at a speed of approximately 68mph. At the same time, a tractor trailer started moving into the flow of traffic from the shoulder of the roadway at an approximate speed of 30-40mph. The tractor trailer did not have any lights on or illumination. The ADT operator failed to observe the slow moving tractor trailer and collided with the rear of the trailer. The ADT bus traveled approximately 180 feet before coming to a final rest and the tractor trailer traveled approximately 1500 feet from point of collision before coming to its final rest. As a result of the collision, all 17 bus passengers on board were injured and the bus operator sustained fatal injuries. The passengers were transported to local area hospitals where they were treated and released. The tractor trailer operator was not injured. The New York State Police, local ambulance and rescue units responded to the scene.

The post accident inspection of the tractor trailer was conducted by the NYS Police Commercial Vehicle Enforcement Unit. The inspection revealed that the electrical cord (pig tail) from the tractor to the trailer was not properly connected. This electrical cord when connected properly allows all lights to work as designed. This was considered a pre-accident, pre-existing condition. A passenger on the bus noticed that the rear lights of the trailer were not on or luminated. The witness also noticed the bus operator had headphones on and was listing to music at a high volume that could be heard from his seating location.

The Board determined that the probable cause of the accident was the bus driver’s inattention resulting from his preoccupation with the use of his headphones and loud music. Contributing to the cause of the accident was the tractor trailer merging into the travel lane at a low rate of speed without proper lights or illumination as required by law.
On September 26, 2002, ADT issued a memo to all bus operators reminding them to comply with company policy and New York State Vehicle & Traffic Law pertaining to the use of headphones.

**Bus Case #7055:** On June 6, 2002 an MTA New York City Transit bus was turning right from southbound Nostrand Avenue onto westbound Avenue Z in Brooklyn on a green traffic signal. The right front of the bus struck and knocked down an elderly female pedestrian who was crossing Avenue Z, in the designated crosswalk. The bus driver finished the turn, apparently unaware of the pedestrian, and continued west on Avenue Z with the pedestrian hung up under the bus, in the vicinity of the left front wheel for a distance of approximately two city blocks. At this point the body dislodged from the bus at a distance of approximately 900 feet from the point of initial contact. The pedestrian was transported to a local hospital where she was pronounced dead. At the time of the accident it was daylight, the weather was clear and the pavement was dry. The bus involved in the accident was quickly identified, although the bus driver claimed no knowledge of the accident. The Board’s investigation found that at the time of the accident the bus driver had been conversing with a passenger while he was making the right turn from Nostrand Avenue onto Avenue Z. The Board determined that the probable cause of the accident was the inattention of the bus driver who, while conversing with a passenger, failed to observe and yield a right-of-way to the pedestrian in the crosswalk. Contributing to the accident was the failure of the bus driver to utilize his defensive driving training while making a right turn. The bus driver was suspended, pending termination, as a result of this accident. Upon appeal, the bus driver was permanently demoted to a non safety sensitive position.

**Bus Case 7770:** At approximately 8:37 am, on October 18, 2003, a MTA Long Island Bus (MTA LIB) bus #392 was traveling westbound on Jackson Street in Hempstead as it entered an intersection at Washington Street on a green traffic signal. At the same time, a SUV (auto #1) was moving northbound on Washington Street, from the bus driver’s left to right and ran a red traffic signal as it entered the intersection. A female pedestrian carrying a child was crossing Washington Street from east to west on “walk” signal in the northern crosswalk. Subsequently, the front of the bus struck the right side of auto #1. Redirected by the impact, auto #1 struck the pedestrian and child throwing them in the direction of auto #2, and making contact with auto #2 prior to coming to a final rest. The female pedestrian and the child became airborne, and the female pedestrian struck the windshield of auto #2 coming to a final rest 90 feet from the point of impact (POI). The child came to a final rest 45 feet from the POI. The female pedestrian expired at the accident scene and the child and the driver of auto #1 were transported to local hospitals, treated and released. The bus and auto #2 sustained slight damage and auto #1 was damaged extensively. Nassau County Police responded to the accident and no summonses were issued.
The Board determined that the probable cause of the accident was that driver of auto #1 entered the intersection on a red traffic signal and did not yield the right of way to the bus. Contributing to the accident was the failure of the bus driver to observe and identify potential hazards, reduce the speed of the bus, and utilize his training in defensive driving techniques while traveling through the intersection.

The MTA LIB reviewed the recommendations and found it to be preventable. The bus driver was issued a suspension.

NYSDOT/PTSB OUTREACH PROGRAM: Update

BAITFISH: Bus Accident Investigation Training For Identifying Safety Hazards

The NYSDOT/PTSB staff outreach training effort known as “BAITFISH” has been presented across NYS in a modular format of three classes as described below:

CLASS ONE: Accident Management and Investigation:

Part One of this class prepares participants as to what to expect when a call comes over the radio from a bus operator who says “I’ve had an accident, what do I do??” The students learn how to prepare for an incident with proper in-house procedures. The class also addresses how to respond to the scene of an accident and gather the necessary “evidential facts”. A field exercise leaves participants with the practical knowledge of how to develop a useful scene diagram. Part Two (Bus Accident Investigation) builds upon the first part and students learn two sides of an investigation: the technical aspects requiring the use of proven accident investigation formulas to arrive at speed estimates; and the “incident management” process, which demands control of the accident scene to reduce injuries and unnecessary claims. Once again students are exposed to outside practical exercises to verify the formulas as well as gain personal experience in proper measuring techniques in determining grade, super-elevation, radius of curve, lengths of tire marks, and other typical accident scene dimensions. Skid tests and drag tests techniques are also discussed.
CLASS TWO:
The Determination of Accident Preventability

Over time the bus industry has changed in many ways, but the process used to determine the preventability of an accident has been around for many years. Students are lectured on the theories behind a solid preventability program, and later are challenged to put those theories to the test. There is heavy emphasis on the information gathering efforts necessary to prepare for the rating of an incident. Finally, when a “preventable” determination has been reached, the process must include accurate countermeasures to reduce the re-occurrence of similar incidents in the future.

CLASS THREE:
Hazard Assessment and Mitigation (Trend Analysis)

Class Three pertains to hazard assessment and mitigation. The class educates the student on developing a sound, reasonable and effective system safety program. The importance of a technical accident investigation program, trend analysis, sound hiring practices, use of observation rides, and a reasonable disciplinary program are discussed. Classmates are encouraged to share both proven techniques and “war stories” for the benefit of the learning curve of all participants.

BAITFISH Program Highlights

Every bus property under the jurisdiction of the PTSB shall have a two year window to be certified in the BAITFISH program (or equivalent) for compliance with upcoming regulation. If the latest rules are published in the amended NYSPTSB Rules and Regulations by 2004 (currently in final approval status), then full compliance will be expected by 2006.

Base program (anticipated):
- Certification will extend for a 4-year term
- Certification represents a person successfully completed all courses (including acceptable substitutions) every four years
- Testing out of Class 1 is allowed if an approved accident investigation course is successfully completed within the previous 48 months (proof of completion required)
- Completion of a comprehensive accident investigation course/class (TSI, IPTM, NATMI, etc) attended within 1 year (proof of grade required) will be accepted as substitution for Class 1 requirements
- Classes 2 and 3 must be taken by all PTSB jurisdictional properties unless equivalent outside course is approved as a substitute (currently none exist)

- List of acceptable courses for substitution/equivalency updated semiannually.

- Passing grades for testing purposes will be 70%.

- If certificated individual leaves a company’s employment, immediate notice shall be provided by the company and a “good faith” plan must be provided to obtain re-certification by the company in a reasonable timeframe.

- No consortiums will be allowed to meet requirements.

- Consideration will be given for exemption to companies operating 5 or less vehicles for Class 1 only, and who can substantiate a partnership with a neighboring certified company. Classes 2 and 3 must be attended by all systems.

- Courses will be offered throughout the year, and will be taught by selected NYS bus industry trainers throughout the State.
Train-the-trainer program

The NYSDOT/PTSB is grateful for those individuals who have voluntarily joined “Team BAIFISH” as class instructors and are providing a high level of experience and expertise from the transit community to the classroom. The support of those employers of the trainers is also a necessary piece to the success of the program.

TEAM BAIFISH Industry Trainers:

Joe Aversano
Ulster County Area Transit
Kingston

Diane Bergquist
Ulster County Area Transit
Kingston

Pete Cassells
Liberty Lines, Inc
Yonkers

Felicia Jones
MTA-New York City Transit

Dawn Campbell
MTA-New York City Transit

Dave Mix
Centro
Syracuse

Jim delaPena
MTA-New York City Transit

Tony Laino
Jitney Transportation Program
Brookhaven

Dick Stout
Chautauqua Area Rural Transit
Jamestown
Annual Accident Report

Accident Investigation Procedures

The Safety Board is responsible for commuter rail, subway, and transit bus accident investigations. All accidents which meet the accident criteria stated below, must be immediately reported by the transportation systems to the Board. Accidents meeting the PTSB criteria represent just a small portion, perhaps as low as one percent of all accidents and safety related incidents encountered by the properties annually. The purpose of the PTSB investigations is to assess the most serious accidents to ensure transit system have appropriate procedures and policies to avoid similar accidents from occurring in the future.

Notification of Bus Accidents

Every public transportation bus system subject to the Safety Board must give the Safety Board notice of the following occurrences:

- all accidents that result in a fatality;
- all accidents which result in five or more injuries that require medical attention; and
- all accidents caused by mechanical failure including: but not limited to, all fires that occur in revenue service that require passenger evacuation and/or response by the police or fire departments.

Notification of Rail Accidents

Each public transportation system operating a commuter rail, light rail or subway system must give the Safety Board notice of the following accidents:

- all collisions and derailments (except those minor incidents resulting from shifting cars and making up trains in yards);
- all accidents at grade crossings;
- all accidents that result in a fatality;
- all accidents which result in two or more injuries that require medical attention; and
- all emergency passenger evacuations.

Investigation Process

The accident investigation process begins with the system notifying the PTSB of an accident that meets the reporting criteria. This results in dispatching investigators to the accident scene for a comprehensive and detailed examination of the environmental and human factors. Analysis of the factors develops findings, conclusions, and recommendations which are issued to the affected transportation systems to reduce the probability of future accidents.

The recommendations specifically address actions to be implemented by the transit systems to correct safety deficiencies and to improve safety. The transit systems’ responses to the recommendations are reviewed and closely monitored by the PTSB to ensure that they are properly executed.
Bus Accident Analysis

Accident figures and rates in this annual report may vary from previous reports. The variances are due to the changes in the reportability of certain accidents types.

Bus accident investigation reports that have been processed by the Safety Board during formal meetings are analyzed to identify trends and special problems. In 2003, the Safety Board investigated 68 bus accidents which met the Board’s reporting criteria.

Table 1 depicts the number of accidents meeting the fatal, multiple injury, and mechanical failure reporting criteria accident types for 2003.

<table>
<thead>
<tr>
<th>Accident Type</th>
<th>Number of Accidents</th>
<th>Accident Type</th>
<th>Number of Accidents</th>
<th>Accident Type</th>
<th>Number of Accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian</td>
<td>5</td>
<td>Angled Collisions</td>
<td>11</td>
<td>Fire</td>
<td>22</td>
</tr>
<tr>
<td>Angled Collisions</td>
<td>2</td>
<td>Other Vehicle Hit Bus in Rear</td>
<td>6</td>
<td>Hit Other In Rear</td>
<td>2</td>
</tr>
<tr>
<td>Bicycle</td>
<td>2</td>
<td>Head On</td>
<td>4</td>
<td>Wheel Off</td>
<td>2</td>
</tr>
<tr>
<td>Other Vehicle Hit Bus in Rear</td>
<td>2</td>
<td>Hit Other in Rear</td>
<td>2</td>
<td>Passenger</td>
<td>2</td>
</tr>
<tr>
<td>Hit Other in Rear</td>
<td>1</td>
<td>Out-of-Control</td>
<td>2</td>
<td>Hit Stationary Object</td>
<td>1</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>1</td>
<td>Hit Stationary Object</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>13</strong></td>
<td><strong>26</strong></td>
<td><strong>29</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1
Figures 1 through 3 depict the average number of bus accidents, fatalities and injuries for the years 1997 through 2003. The data was calculated by using 5-year moving averages.

**Figure 1**

**Bus Accidents Investigated**

![Bar chart showing the number of bus accidents investigated from 1997 to 2003.](image)

**Figure 2**

**Bus Fatalities**

![Bar chart showing the number of bus fatalities from 1997 to 2003.](image)

**Figure 3**

**Bus Injuries**

![Bar chart showing the number of bus injuries from 1997 to 2003.](image)
Table 2 is the distribution of bus accidents investigated by accident type for the years 1997 through 2003. Calculations based on 5-year moving averages.

<table>
<thead>
<tr>
<th>Accident Type</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
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<tbody>
<tr>
<td>Collisions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angled Collisions</td>
<td>20.60</td>
<td>21.80</td>
<td>23.40</td>
<td>22.20</td>
<td>24.00</td>
<td>24.60</td>
<td>21.20</td>
</tr>
<tr>
<td>Hit Other in Rear</td>
<td>7.40</td>
<td>7.60</td>
<td>7.90</td>
<td>7.30</td>
<td>7.40</td>
<td>9.40</td>
<td>9.00</td>
</tr>
<tr>
<td>Other Vehicle Hit Bus in Rear</td>
<td>8.80</td>
<td>8.20</td>
<td>8.40</td>
<td>8.60</td>
<td>8.40</td>
<td>8.40</td>
<td>8.80</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>7.00</td>
<td>5.80</td>
<td>5.20</td>
<td>4.60</td>
<td>4.40</td>
<td>4.40</td>
<td>4.60</td>
</tr>
<tr>
<td>Head On</td>
<td>3.80</td>
<td>4.00</td>
<td>4.60</td>
<td>4.40</td>
<td>3.80</td>
<td>4.20</td>
<td>3.80</td>
</tr>
<tr>
<td>Sideswipe</td>
<td>4.00</td>
<td>3.80</td>
<td>3.20</td>
<td>3.40</td>
<td>3.00</td>
<td>3.00</td>
<td>2.40</td>
</tr>
<tr>
<td>Hit Stationary Object</td>
<td>3.20</td>
<td>3.00</td>
<td>2.60</td>
<td>2.80</td>
<td>3.40</td>
<td>3.40</td>
<td>2.40</td>
</tr>
<tr>
<td>Bicycle</td>
<td>1.20</td>
<td>1.00</td>
<td>1.00</td>
<td>1.40</td>
<td>1.40</td>
<td>1.40</td>
<td>1.80</td>
</tr>
<tr>
<td>Enter/Leave Bus Stop</td>
<td>1.00</td>
<td>1.20</td>
<td>1.40</td>
<td>1.40</td>
<td>1.00</td>
<td>1.00</td>
<td>0.80</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.20</td>
</tr>
<tr>
<td><strong>Collision Subtotal</strong></td>
<td>57</td>
<td>56.4</td>
<td>57.6</td>
<td>56.6</td>
<td>56.8</td>
<td>58</td>
<td>58</td>
</tr>
</tbody>
</table>

**Notes:**
- Calculations based on 5-year moving averages.
Rail Accident Analysis

Rail accident investigation reports that have been processed by the Safety Board during formal meetings are analyzed to identify trends and special problems. In 2003, the Safety Board investigated 27 rail accidents which met the Board’s criteria.

Table 3 depicts the number of accidents meeting the collision, derailment, evacuation, highway grade crossing, multiple injury, and passenger fatality accident types.

<table>
<thead>
<tr>
<th>Accident Type</th>
<th>Number of Accidents</th>
<th>Accident Type</th>
<th>Number of Accidents</th>
<th>Accident Type</th>
<th>Number of Accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improper Operation of Equipment</td>
<td>2</td>
<td>Track Component Deficiency</td>
<td>2</td>
<td>Loss of Power</td>
<td>1</td>
</tr>
<tr>
<td>Hit Material on Track</td>
<td>1</td>
<td>Equipment Maintenance Deficiency</td>
<td>1</td>
<td>Suicide</td>
<td>1</td>
</tr>
<tr>
<td>Mechanical Failure Other Vehicle</td>
<td>1</td>
<td>Hit Material on Track</td>
<td>1</td>
<td>Track Maintenance Deficiency</td>
<td>1</td>
</tr>
<tr>
<td>Unsafe Actions</td>
<td>1</td>
<td>Improper Operation of Equipment</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improper Procedures Used</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>5</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accident Type</th>
<th>Number of Accidents</th>
<th>Accident Type</th>
<th>Number of Accidents</th>
<th>Accident Type</th>
<th>Number of Accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsafe Actions</td>
<td>4</td>
<td>Fire/Smoke</td>
<td>1</td>
<td>Passenger Fell From Train</td>
<td>1</td>
</tr>
<tr>
<td>Ignored Warning Devices</td>
<td>3</td>
<td></td>
<td></td>
<td>Unsafe Actions</td>
<td>1</td>
</tr>
<tr>
<td>Hit Material on Track</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suicide</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>9</strong></td>
<td><strong>1</strong></td>
<td></td>
<td><strong>2</strong></td>
<td></td>
</tr>
</tbody>
</table>
Figures 4 through 6 depict the average number of rail accidents, fatalities and injuries for the years 1997 through 2003. The data was calculated by using 5-year moving averages. Rail accidents and fatalities have been decreasing since 1997, and injuries increased in 2003.

Figure 4

Rail Accidents Investigated

Figure 5

Rail Fatalities

Figure 6

Rail Injuries
Table 4 is the distribution of rail accidents investigated by accident type for the years 1997 through 2003. Calculations are based on 5-year moving averages.

### Table 4

#### RAIL ACCIDENTS RATES BY TYPE
5-Year Moving Average Rates

<table>
<thead>
<tr>
<th>Accident Type</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsafe Actions</td>
<td>8.80</td>
<td>8.60</td>
<td>8.40</td>
<td>8.80</td>
<td>8.20</td>
<td>7.40</td>
<td>6.80</td>
</tr>
<tr>
<td>Ignored Warning Devices</td>
<td>6.00</td>
<td>6.20</td>
<td>6.20</td>
<td>5.60</td>
<td>4.60</td>
<td>4.20</td>
<td>3.60</td>
</tr>
<tr>
<td>Improper Operation of Equipment</td>
<td>7.20</td>
<td>5.80</td>
<td>5.60</td>
<td>4.00</td>
<td>2.80</td>
<td>3.80</td>
<td>3.60</td>
</tr>
<tr>
<td>Hit Material on Track</td>
<td>7.20</td>
<td>5.00</td>
<td>3.60</td>
<td>3.60</td>
<td>3.00</td>
<td>3.20</td>
<td>3.20</td>
</tr>
<tr>
<td>Track Component Deficiency</td>
<td>3.80</td>
<td>4.20</td>
<td>3.40</td>
<td>4.60</td>
<td>4.60</td>
<td>2.40</td>
<td>2.20</td>
</tr>
<tr>
<td>Equipment Component Deficiency</td>
<td>1.40</td>
<td>1.00</td>
<td>0.60</td>
<td>0.60</td>
<td>1.60</td>
<td>1.40</td>
<td>1.40</td>
</tr>
<tr>
<td>Passenger Fell From Train</td>
<td>1.60</td>
<td>2.00</td>
<td>1.40</td>
<td>2.00</td>
<td>1.60</td>
<td>1.60</td>
<td>1.20</td>
</tr>
<tr>
<td>Fire/Smoke</td>
<td>2.00</td>
<td>2.40</td>
<td>2.80</td>
<td>2.20</td>
<td>1.40</td>
<td>1.40</td>
<td>1.20</td>
</tr>
<tr>
<td>Improper Procedures Used</td>
<td>1.80</td>
<td>1.60</td>
<td>1.40</td>
<td>1.20</td>
<td>1.40</td>
<td>1.20</td>
<td>1.20</td>
</tr>
<tr>
<td>Suicide</td>
<td>0.00</td>
<td>0.00</td>
<td>0.60</td>
<td>0.60</td>
<td>0.60</td>
<td>0.80</td>
<td>1.20</td>
</tr>
<tr>
<td>Track Maintenance Deficiency</td>
<td>2.00</td>
<td>2.20</td>
<td>1.60</td>
<td>1.20</td>
<td>0.60</td>
<td>1.20</td>
<td>1.00</td>
</tr>
<tr>
<td>Loss of Power</td>
<td>0.80</td>
<td>0.60</td>
<td>1.20</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Equipment Maintenance Deficiency</td>
<td>0.00</td>
<td>0.20</td>
<td>0.40</td>
<td>0.60</td>
<td>0.80</td>
<td>0.80</td>
<td>0.80</td>
</tr>
<tr>
<td>Mechanical Failure of Other Vehicle</td>
<td>0.60</td>
<td>0.60</td>
<td>0.60</td>
<td>0.80</td>
<td>0.40</td>
<td>0.40</td>
<td>0.40</td>
</tr>
<tr>
<td>Non-Passenger Fatality</td>
<td>1.40</td>
<td>1.60</td>
<td>1.80</td>
<td>1.40</td>
<td>0.60</td>
<td>0.60</td>
<td>0.40</td>
</tr>
<tr>
<td>Other</td>
<td>0.00</td>
<td>0.00</td>
<td>0.20</td>
<td>0.20</td>
<td>0.20</td>
<td>0.20</td>
<td>0.40</td>
</tr>
<tr>
<td>Passenger Drag-Related Injury/Fatality</td>
<td>0.40</td>
<td>0.40</td>
<td>0.40</td>
<td>0.40</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Table 5 depicts the average number of rail accidents investigated by system for the years 1997 through 2003. Calculations are based on 5-year moving averages.

### Table 5

#### RAIL ACCIDENTS BY SYSTEM
5-Year Moving Average Rates

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MTA Long Island Rail Road</td>
<td>20.20</td>
<td>18.80</td>
<td>18.20</td>
<td>16.60</td>
<td>14.40</td>
<td>12.80</td>
<td>12.60</td>
</tr>
<tr>
<td>MTA Metro-North Commuter Railroad</td>
<td>6.20</td>
<td>6.60</td>
<td>5.20</td>
<td>5.20</td>
<td>4.00</td>
<td>3.80</td>
<td>3.00</td>
</tr>
<tr>
<td>MTA New York City Transit Authority</td>
<td>14.20</td>
<td>11.80</td>
<td>11.20</td>
<td>11.00</td>
<td>10.20</td>
<td>9.40</td>
<td>8.60</td>
</tr>
<tr>
<td>MTA Staten Island Railway</td>
<td>1.00</td>
<td>1.00</td>
<td>1.20</td>
<td>1.20</td>
<td>0.80</td>
<td>1.40</td>
<td>1.40</td>
</tr>
<tr>
<td>New Jersey Transit</td>
<td>1.40</td>
<td>1.80</td>
<td>1.60</td>
<td>1.80</td>
<td>1.40</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Niagara Frontier Transportation Authority</td>
<td>2.00</td>
<td>2.40</td>
<td>2.80</td>
<td>3.00</td>
<td>2.60</td>
<td>3.20</td>
<td>3.00</td>
</tr>
</tbody>
</table>
Probable Causes of Bus and Rail Accidents

The primary probable cause of an accident is the action or factor that directly facilitates the initial event of an accident. For example, if a maintenance department failed to properly repair the steering housing unit of a bus and the unit failed and the bus had a collision, the maintenance department’s actions would constitute the initial event.

The primary probable cause of an accident is either associated with the transit systems or factors not directly related to the transit systems (termed “other”). Approximately 99 percent of accident cases approved or adopted by the Board identified the primary probable cause. If the Board identified both the transit system and factors external to a transit system (other) as the primary probable cause, the probable cause was categorized as transit system. Definitions of bus and rail transit system and other causes can be found on pages 35 and 38.

As shown in Table 6, from 1997 through 2003, 46 percent of bus accidents investigated by the PTSB were caused by actions that were attributed to the transit systems.

Table 6

<table>
<thead>
<tr>
<th>BUS PROBABLE ACCIDENT CAUSES</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>Totals</th>
<th>%Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANSIT SYSTEM:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driver</td>
<td>22</td>
<td>17</td>
<td>18</td>
<td>14</td>
<td>15</td>
<td>24</td>
<td>13</td>
<td>123</td>
<td>22.20%</td>
</tr>
<tr>
<td>Equipment/Maintenance</td>
<td>9</td>
<td>15</td>
<td>12</td>
<td>12</td>
<td>19</td>
<td>18</td>
<td>28</td>
<td>113</td>
<td>20.40%</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>16</td>
<td>2.89%</td>
</tr>
<tr>
<td>Sub Totals</td>
<td>31</td>
<td>33</td>
<td>31</td>
<td>31</td>
<td>39</td>
<td>46</td>
<td>41</td>
<td>252</td>
<td>45.49%</td>
</tr>
</tbody>
</table>

|                            |      |      |      |      |      |      |      |        |        |
| Other Vehicle               | 36   | 48   | 43   | 42   | 33   | 41   | 22   | 265    | 47.83% |
| Passenger                   | 3    | 3    | 9    | 1    | 8    | 0    | 0    | 24     | 4.33%  |
| Pedestrian, Bicyclist       | 0    | 1    | 0    | 2    | 1    | 1    | 5    | 10     | 1.81%  |
| Miscellaneous               | 0    | 1    | 0    | 0    | 2    | 0    | 3    | 2      | 0.54%  |
| Sub Totals                  | 39   | 53   | 52   | 45   | 42   | 44   | 27   | 302    | 54.51% |

| TOTALS                      | 70   | 86   | 83   | 76   | 81   | 90   | 68   | 554    | 100%   |
Table 7 is a breakdown of bus driver causes. During the seven-year period, 70.73 percent of bus driver causes were attributed to failure to drive defensively.

Table 7

<table>
<thead>
<tr>
<th>Cause Type</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>Totals</th>
<th>% Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to Drive Defensively</td>
<td>12</td>
<td>13</td>
<td>15</td>
<td>11</td>
<td>11</td>
<td>16</td>
<td>9</td>
<td>87</td>
<td>70.73%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>10</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>21</td>
<td>17.07%</td>
</tr>
<tr>
<td>Improper Use of Equipment</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>5.68%</td>
</tr>
<tr>
<td>Inattentiveness</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>4.88%</td>
</tr>
<tr>
<td>Use of Drugs/Alcohol</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0.81%</td>
</tr>
<tr>
<td>Failure to Perform Pre-Trip Inspection</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td>Fatigue</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.81%</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>3.25%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>22</td>
<td>17</td>
<td>18</td>
<td>14</td>
<td>15</td>
<td>24</td>
<td>13</td>
<td>123</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Table 8 is a breakdown of equipment and maintenance causes. As depicted, 38.94 percent of equipment causes over the seven-year period were associated with electrical systems.

Table 8

<table>
<thead>
<tr>
<th>Cause Type</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>Totals</th>
<th>% Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical Systems</strong></td>
<td>3</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>16</td>
<td>44</td>
<td>38.94%</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>5</td>
<td>35</td>
<td>30.97%</td>
</tr>
<tr>
<td><strong>Wheels</strong></td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>9</td>
<td>7.96%</td>
</tr>
<tr>
<td><strong>Steering</strong></td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>8</td>
<td>7.08%</td>
</tr>
<tr>
<td><strong>Brakes</strong></td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>3.54%</td>
</tr>
<tr>
<td><strong>Rear Door Interlocking Systems</strong></td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>2.65%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>9</td>
<td>15</td>
<td>12</td>
<td>12</td>
<td>19</td>
<td>18</td>
<td>28</td>
<td>113</td>
<td>100%</td>
</tr>
</tbody>
</table>
Table 9 depicts the number of rail accidents caused by the transit systems or others. Over the seven-year period, 44.74 percent of rail accidents were caused by factors directly related to the transit systems.

Table 9

<table>
<thead>
<tr>
<th>RAIL PROBABLE ACCIDENT CAUSES</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>Totals</th>
<th>% Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TRANSIT SYSTEMS:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Track/Signals</td>
<td>13</td>
<td>7</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>44</td>
<td>19.30%</td>
</tr>
<tr>
<td>Crew</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>26</td>
<td>11.40%</td>
</tr>
<tr>
<td>Car Equipment</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>17</td>
<td>7.46%</td>
</tr>
<tr>
<td>Operations</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>15</td>
<td>6.58%</td>
</tr>
<tr>
<td><strong>Sub-Totals</strong></td>
<td>24</td>
<td>13</td>
<td>7</td>
<td>11</td>
<td>16</td>
<td>18</td>
<td>13</td>
<td>102</td>
<td>44.74%</td>
</tr>
<tr>
<td>Other Vehicle</td>
<td>12</td>
<td>13</td>
<td>7</td>
<td>10</td>
<td>8</td>
<td>13</td>
<td>8</td>
<td>71</td>
<td>31.14%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>4</td>
<td>3</td>
<td>10</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>25</td>
<td>10.96%</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>17</td>
<td>7.46%</td>
</tr>
<tr>
<td>Passenger</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>13</td>
<td>5.70%</td>
</tr>
<tr>
<td><strong>Sub-Totals</strong></td>
<td>19</td>
<td>24</td>
<td>18</td>
<td>22</td>
<td>13</td>
<td>16</td>
<td>14</td>
<td>126</td>
<td>55.26%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>43</td>
<td>37</td>
<td>25</td>
<td>33</td>
<td>29</td>
<td>34</td>
<td>27</td>
<td>228</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Table 10 is a breakdown of rail car equipment causes. Over the seven-year period, 52.94 percent of the causes were attributed to truck deficiencies.

Table 10

<table>
<thead>
<tr>
<th>RAIL CAR EQUIPMENT PROBABLE ACCIDENT CAUSES BY COMPONENT</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>Totals</th>
<th>% Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trucks</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>9</td>
<td>52.94%</td>
</tr>
<tr>
<td>Propulsion Unit</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>5.88%</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>7</td>
<td>41.18%</td>
</tr>
<tr>
<td>Car Body</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>17</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
Table 11 is a breakdown of crew (motorman, conductor, others) causes. Over the seven-year period, 80.77 percent of the causes were associated with the train crews’ failure to follow operating procedures.

Table 11

<table>
<thead>
<tr>
<th>Cause Type</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>Totals</th>
<th>% Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Failure - Operating Procedures</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>21</td>
<td>80.77%</td>
</tr>
<tr>
<td>Human Failure - Inattentiveness</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>7.69%</td>
</tr>
<tr>
<td>Human Failure - Operating Rules</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>7.69%</td>
</tr>
<tr>
<td>Human Failure - Other</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>3.85%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>26</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Table 12 is a breakdown of operation causes. Over the seven-year period, 86.67 percent of the causes were related to improper procedures.

Table 12

<table>
<thead>
<tr>
<th>Cause Type</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>Total</th>
<th>% Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improper Procedures</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>13</td>
<td>86.67%</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>13.33%</td>
</tr>
<tr>
<td>Crowd Control</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>15</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Table 13 is a breakdown of track and signal causes. Over the seven-year period, 77.27 percent of the causes were related to track component deficiencies or failures.

Table 13

<table>
<thead>
<tr>
<th>Cause Type</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>Totals</th>
<th>% Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track Component Deficiency</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>19</td>
<td>43.18%</td>
</tr>
<tr>
<td>Track Component Failure</td>
<td>0</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>15</td>
<td>34.09%</td>
</tr>
<tr>
<td>Signal Component Failure</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>9.09%</td>
</tr>
<tr>
<td>Signal Component Deficiency</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>6.82%</td>
</tr>
<tr>
<td>Track or Signal Other</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>6</td>
<td>6.82%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>13</td>
<td>7</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>44</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
Accident Rate Analysis

As depicted in Figure 7, the number of bus and rail accidents has been declining since 1997.
Tables 14 through 17 depict bus and rail accident rates for the years 1997 through 2003. The rates are 5-year moving moving averages based on the ratio of the number of criteria accidents reported to 100 Million Revenue Vehicle Miles, 100 Million Passengers and 100 Million Train Miles. A very large property has 1,000 or more buses, large property 200-999, medium property 25-199 and small property 1-24 buses. A list of properties under the jurisdiction of PTSB can be found on page 28.

Table 14

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Very Large 1,000+ buses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Large Property Average Accident Rate</td>
<td>54.00</td>
<td>52.20</td>
<td>50.20</td>
<td>47.20</td>
<td>51.00</td>
<td>53.00</td>
<td>48.80</td>
</tr>
<tr>
<td>Very Large Rate Per 100 Million Passengers</td>
<td>11.70</td>
<td>10.59</td>
<td>9.39</td>
<td>8.05</td>
<td>7.82</td>
<td>7.66</td>
<td>6.83</td>
</tr>
<tr>
<td>Very Large Rate Per 100 Million RV Miles</td>
<td>59.88</td>
<td>58.04</td>
<td>55.61</td>
<td>51.68</td>
<td>55.67</td>
<td>57.57</td>
<td>52.33</td>
</tr>
<tr>
<td><strong>Large 200-999 Buses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large Property Average Accident Rate</td>
<td>21.20</td>
<td>21.00</td>
<td>20.60</td>
<td>19.80</td>
<td>18.00</td>
<td>18.20</td>
<td>17.60</td>
</tr>
<tr>
<td>Large Rate Per 100 Million Passengers</td>
<td>14.67</td>
<td>14.84</td>
<td>14.76</td>
<td>14.33</td>
<td>12.82</td>
<td>12.50</td>
<td>11.91</td>
</tr>
<tr>
<td>Large Rate Per 100 Million RV Miles</td>
<td>35.76</td>
<td>35.00</td>
<td>33.79</td>
<td>31.71</td>
<td>27.85</td>
<td>27.64</td>
<td>26.05</td>
</tr>
<tr>
<td><strong>Medium 25-199 Buses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium Property Average Accident Rate</td>
<td>8.60</td>
<td>8.40</td>
<td>10.00</td>
<td>10.00</td>
<td>9.40</td>
<td>11.20</td>
<td>11.60</td>
</tr>
<tr>
<td>Medium Rate Per 100 Million Passengers</td>
<td>17.46</td>
<td>17.21</td>
<td>20.55</td>
<td>20.76</td>
<td>19.17</td>
<td>21.09</td>
<td>21.11</td>
</tr>
<tr>
<td>Medium Rate Per 100 Million RV Miles</td>
<td>23.57</td>
<td>22.29</td>
<td>29.65</td>
<td>25.60</td>
<td>23.36</td>
<td>26.25</td>
<td>26.26</td>
</tr>
<tr>
<td><strong>Small 1-24 Buses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small Property Average Accident Rate</td>
<td>1.80</td>
<td>1.00</td>
<td>.80</td>
<td>1.20</td>
<td>1.40</td>
<td>1.40</td>
<td>1.80</td>
</tr>
<tr>
<td>Small Rate Per 100 Million Passengers</td>
<td>14.49</td>
<td>8.55</td>
<td>6.82</td>
<td>10.98</td>
<td>13.55</td>
<td>15.05</td>
<td>19.46</td>
</tr>
<tr>
<td>Small Rate Per 100 Million RV Miles</td>
<td>9.08</td>
<td>5.37</td>
<td>4.25</td>
<td>6.09</td>
<td>6.53</td>
<td>6.34</td>
<td>7.98</td>
</tr>
</tbody>
</table>
### Table 15

**RAIL ACCIDENT RATES**

5-Year Moving Average

<table>
<thead>
<tr>
<th>System Name</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Jersey Transit</td>
<td>219.78</td>
<td>142.76</td>
<td>71.38</td>
<td>71.38</td>
<td>0.00</td>
<td>77.52</td>
<td>147.06</td>
</tr>
<tr>
<td>MTA New York City Transit</td>
<td>3.19</td>
<td>3.17</td>
<td>3.65</td>
<td>3.30</td>
<td>2.74</td>
<td>1.76</td>
<td>1.80</td>
</tr>
<tr>
<td>MTA Staten Island Railway</td>
<td>0.00</td>
<td>46.95</td>
<td>46.55</td>
<td>43.55</td>
<td>46.58</td>
<td>139.73</td>
<td>46.73</td>
</tr>
<tr>
<td>Niagara Frontier Transportation Authority</td>
<td>110.74</td>
<td>340.52</td>
<td>233.37</td>
<td>454.55</td>
<td>350.06</td>
<td>465.12</td>
<td>264.55</td>
</tr>
</tbody>
</table>

**Per 100 Million Passengers**

<table>
<thead>
<tr>
<th>System Name</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Jersey Transit</td>
<td>230.24</td>
<td>146.52</td>
<td>73.26</td>
<td>73.26</td>
<td>0.00</td>
<td>25.32</td>
<td>50.63</td>
</tr>
<tr>
<td>MTA New York City Transit</td>
<td>.97</td>
<td>.83</td>
<td>.85</td>
<td>.80</td>
<td>.64</td>
<td>.42</td>
<td>.43</td>
</tr>
<tr>
<td>MTA Staten Island Railway</td>
<td>0.00</td>
<td>27.79</td>
<td>25.34</td>
<td>24.32</td>
<td>25.28</td>
<td>83.50</td>
<td>29.43</td>
</tr>
<tr>
<td>Niagara Frontier Transportation Authority</td>
<td>23.75</td>
<td>77.48</td>
<td>55.10</td>
<td>99.06</td>
<td>82.64</td>
<td>110.19</td>
<td>55.02</td>
</tr>
</tbody>
</table>

### Table 16

**RAIL ACCIDENT RATES**

5-Year Moving Average

<table>
<thead>
<tr>
<th>System Name</th>
<th>Number of Grade Crossings Public &amp; Private</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTA Long Island Rail Road</td>
<td>360</td>
<td>37.99</td>
<td>24.15</td>
<td>13.87</td>
<td>21.06</td>
<td>26.00</td>
<td>24.22</td>
<td>22.61</td>
</tr>
<tr>
<td>MTA Metro-North Railroad</td>
<td>94</td>
<td>21.46</td>
<td>20.71</td>
<td>2.58</td>
<td>10.10</td>
<td>2.58</td>
<td>15.51</td>
<td>7.89</td>
</tr>
</tbody>
</table>

**Per 100 Million Passengers**

<table>
<thead>
<tr>
<th>System Name</th>
<th>Number of Grade Crossings Public &amp; Private</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTA Long Island Rail Road</td>
<td>360</td>
<td>29.04</td>
<td>18.09</td>
<td>9.35</td>
<td>14.06</td>
<td>17.53</td>
<td>16.67</td>
<td>16.07</td>
</tr>
<tr>
<td>MTA Metro-North Railroad</td>
<td>94</td>
<td>15.77</td>
<td>15.14</td>
<td>1.97</td>
<td>7.77</td>
<td>1.97</td>
<td>11.80</td>
<td>5.97</td>
</tr>
</tbody>
</table>

**Per 100 Million Train Miles**

<table>
<thead>
<tr>
<th>System Name</th>
<th>Number of Grade Crossings Public &amp; Private</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTA Long Island Rail Road</td>
<td>360</td>
<td>271.71</td>
<td>171.72</td>
<td>98.12</td>
<td>147.19</td>
<td>183.98</td>
<td>171.78</td>
<td>159.51</td>
</tr>
<tr>
<td>MTA Metro-North Railroad</td>
<td>94</td>
<td>181.82</td>
<td>181.81</td>
<td>25.85</td>
<td>103.90</td>
<td>25.97</td>
<td>155.84</td>
<td>77.92</td>
</tr>
</tbody>
</table>
### Table 17

**RAIL ACCIDENT RATES EXCLUDING GRADE CROSSING ACCIDENTS**

**5-Year Moving Average**

<table>
<thead>
<tr>
<th>System Name</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTA Long Island Rail Road</td>
<td>29.36</td>
<td>13.80</td>
<td>3.93</td>
<td>8.77</td>
<td>13.87</td>
<td>10.38</td>
<td>10.43</td>
</tr>
<tr>
<td>MTA Metro-North Railroad</td>
<td>12.26</td>
<td>11.84</td>
<td>2.96</td>
<td>7.58</td>
<td>0</td>
<td>10.34</td>
<td>2.63</td>
</tr>
</tbody>
</table>

**Per 100 Million Passengers**

<table>
<thead>
<tr>
<th>System Name</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTA Long Island Rail Road</td>
<td>22.44</td>
<td>10.34</td>
<td>2.95</td>
<td>5.86</td>
<td>9.35</td>
<td>7.15</td>
<td>7.41</td>
</tr>
<tr>
<td>MTA Metro-North Railroad</td>
<td>9.01</td>
<td>8.65</td>
<td>2.16</td>
<td>5.83</td>
<td>0</td>
<td>7.87</td>
<td>1.99</td>
</tr>
</tbody>
</table>

**Per 100 Million Train Miles**

<table>
<thead>
<tr>
<th>System Name</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTA Long Island Rail Road</td>
<td>209.95</td>
<td>98.12</td>
<td>25.02</td>
<td>61.33</td>
<td>98.12</td>
<td>73.62</td>
<td>73.62</td>
</tr>
<tr>
<td>MTA Metro-North Railroad</td>
<td>103.90</td>
<td>103.90</td>
<td>25.97</td>
<td>77.92</td>
<td>0</td>
<td>103.90</td>
<td>25.97</td>
</tr>
</tbody>
</table>
Systems Under PTSB Jurisdiction

**Bus**

*Small 1 - 24 buses*

- Academy Bus
- Alternative Transportation Services
- Allegany County Transit
- Amsterdam Transit System
- Arrow Bus Line, Inc.
- Buffalo Motor Coach
- C.A.R.T.S. Chautauqua
- Catskill Transit
- Chenango County Public Transit
- Clarkstown Mini-Trans
- Clinton County Transit
- Corning-Erwin Area Transit System
- Cortland County Transit Inc.
- Educational Bus - E.B.T. (Bornsheuer Bus Co Inc)
- Essex County Public Trans. System
- Franklin County Association
- Gadabout
- Glen Cove Bus Division
- Groversville Transit System
- Goshen-Chester Dial-A-Bus
- Greater Glens Falls Transit
- Green County Transit
- Hampton Jitney, Inc.
- Highlands Dial-A-Bus
- Hornell Area Transit
- Hudson Minibus, City Of
- Huntington Area Rapid Transit
- Inter-County Motor Coach
- International Bus Service, Inc.
- Kaser Bus Service
- Kingston Citibus
- Kiryas Joel, Village Of
- Lafonty Bus Lines (Thousand Is.)
- Lester Lines Inc
- Long Beach Bus Division
- Mechanicville, City Of
- Middletown Transit Corp
- Monroe Bus Corporation
- Monroe Dial-A-Bus, Town Of
- Montgomery-Crawford D-A-B
- Netzach Transportation, Inc.
- New Windsor-Cornwall D-A-B
- Newburgh Dial-A-Bus, Town Of
- Newburgh-Beacon Bus Corp
- Oneonta Public Transit
- Ontario Transit Lines
- Otsego Transit, Inc.
- Pat Zanchelli, Inc.
- Patchaque, Village Of
- Placid Xpress
- Poughkeepsie Transit System, City of
- Port Chester-Rye Transit
- Port Jervis Dial-A-Bus
- PTLA Enterprises, Inc.
- Putnam County Transit
- Rockland County (T.R.I.P.S.)
- Schoharie County
- Spring Valley, Village Of
- Steuben County Transit
- Sullivan County Transportation
- Sunrise Coach Lines, Inc.
- Thousand Island Bus Lines (Laforty)
- Tioga County Transit
- Ulster County Rural Transit
- VIP Transportation
- Wallkill Dial-A-Bus, Town Of
- Warwick Dial-A-Bus, Town Of
- Watertown, City Bus System

*Medium 25 – 199 buses*

- Adirondack Transit Lines, Inc.
- Birnie Bus Service
- Brown Coach, Inc.
- CBS Lines, Inc.
- Chemung County Transit System
- Command Bus Company, Inc.
- Dutchess County Mass Transit
- Fullington Trailways
- Hudson Transit Lines, Inc.
- Jamaica Buses, Inc.
- Leisure Lines - Hudson Transit, Inc.
- Liberty Lines Express, Inc.
- Liberty Lines Transit, Inc.
- Monsey-New Square Bus Trails
- New York Bus Service, Inc.
- Oswego County Opportunities
- Rockland Transit Coaches Inc
- Suburban ParaTransit Service
- Suffolk Bus Corporation
- T-Cat
- Upstate Transit
- Utica Transit Authority
- Yankee Trails

*Large 200 – 999 buses*

- Atlantic ParaTransit, Inc
- Broome County Transit
- Capitol Trailways
- Capital District Transportation Auth.
- Centro
- Coach USA of Western New York
- Green Bus Lines, Inc.
- Laidlaw Transit, Inc.
- MTA Long Island Bus
- Niagara Frontier Transportation Auth.
- Queens Surface Corporation
- Rochester-Genesee Regional Trans Auth.
- Triboro Coach Corporation

*Very Large 1,000+ buses*

- Greyhound Lines, Inc.
- MTA New York City Transit
- New Jersey Transit Bus Operations Inc

**Rail**

- MTA Long Island Rail Road
- MTA Metro-North Railroad
- MTA New York City Transit Auth.
- MTA Staten Island Railway
- New Jersey Transit
- Niagara Frontier Transportation Auth.
**Bus Probable Cause Definitions**

**Bus Driver**

- **Failure to Drive Defensively-Other:** failure of a bus driver to operate a bus safely and to make a vehicle or pedestrian legal preference to proceed.

- **Failure to Drive Defensively-Following too Closely:** failure of a bus driver to keep a safe following distance behind other vehicles.

- **Failure to Drive Defensively-Improper Use of Mirrors:** failure of a bus driver to properly adjust and utilize bus mirrors.

- **Failure to Drive Defensively-Speeding:** failure of a bus driver to operate a bus at a speed that is reasonable and prudent or at a speed which is not in excess of the posted speed limit.

- **Failure to Perform Pretrip Inspection:** failure of a bus driver to inspect the safety condition of a bus before using the bus in passenger service.

- **Improper Use of Equipment:** failure of a bus driver to properly utilize bus equipment, such as rear door interlocks and wheelchair lifts.

- **Use of Drugs/Alcohol:** use of illegal drugs or use of alcoholic beverages while operating a bus or the improper use of prescription drugs that have an adverse affect on driver's ability to operate a bus.

**Bus Equipment**

- **Brakes:** the failure or deficiency of a bus component(s) that mechanically slows or stops a bus (includes air system, drums, disc, and brake pedal).

- **Electrical System:** the failure or deficiency of a bus component(s) that is associated with electrical systems or units, except for those electrical components relating to the rear door interlocks.

- **Rear Door Interlocking System:** the failure or deficiency of a bus component(s) that comprises the system that will apply the brakes of a bus when the rear door of a bus is opened.

- **Wheelchair Lifts:** the failure or deficiency of the bus system that lifts or raises wheelchair passengers from curb level to bus floor level.

Other (tires, suspension,...): the failure or deficiency of any bus component(s) except for those components associated with brakes, electrical systems, rear door interlocking, steering, wheels, and wheelchair lifts.

**Bus Other Causes**

- **Other Vehicle:** the improper action(s) of a vehicle other than the bus.

- **Passenger:** the improper action(s) of a person who travels on a bus or is attempting to board or exit a bus.

- **Miscellaneous:** refers to events such as weather or Acts of God.
**Rail Probable Cause Definitions**

**Car Equipment**

Body: Failure of a component of a rail car, except for those relating to the propulsion units or trucks. Body components would include lighting, doors, frame, and draft gear.

Propulsion unit: Failure of the power unit of a car.

Trucks: Failure of the wheel and braking unit of a car.

**Crew**

Human Failure – Operating Rules: a train crews' failure to adhere to established or posted rules, such as the train operator failing to stop a train short of a restricted signal.

Human Failure – Operating Procedures: a train crews’ failure to adhere to established procedures, such as crews’ failure to properly observe or react to a flagperson’s instructions.

Human Failure–Inattentiveness: a train crews’ failure to be as alert as expected, such as failure to notice the position of a switch.

**Operations**

Crowd Control: Failure of management to have established safety procedures to effectively handle or control large numbers of passengers at one site or location.

**Rail Other Causes:**

Miscellaneous: the improper action of a vandal or trespasser or other factors.

Other Vehicle: the improper action of a vehicle (includes bicycles) that causes an accident, in most instances “other vehicle” refers to motor vehicles crossing highway grade crossings.

Passenger: the improper action of a person who travels by rail or who is attempting to board or exit a rail car.

Pedestrian: the improper action of a person who travels by foot.

Signal Component Deficiency:

the inadequacy of a signal component to function to its intended specifications, for example, a cable being worn or a sticky relay.

Signal Component Failure: the complete failure of a signal component, such as a short circuit.

Track Component Deficiency: the inadequacy of a track component to function to its intended specifications, for example, a rail being worn.

Track Component Failure: the complete failure of a track component, such as a broken rail.
Bus Accident Type Definitions

Angled Collisions
Definition: Collisions between two vehicles approaching on separate roadways or other paths that intersect.

Bicycle
Definition: Accidents involving a bicyclist and a transit bus.

Door Interlock
Definition: Accidents resulting in the movement of a transit bus while a passenger door is open or an accident caused by the failure of the door interlock system.

Enter/Leave Bus Stop
Definition: Accidents involving a transit bus entering or leaving a passenger loading-discharging zone.

Fire
Definition: Any fire that occurs on a transit bus while it is in revenue service.

Head On
Definition: Collision accidents between a transit bus and a vehicle traveling in the opposite direction on the same roadway (including contra-flow lanes). If the accident occurs at an intersection and the vehicles approach each other from 180 degrees in the opposite direction, it is termed Head On.

Hit Other In Rear
Definition: Accidents where a transit bus collides with the rear of another moving or standing vehicle (including another transit bus).

Hit Stationary Object
Definition: Accidents where a transit bus collides with any fixed object.

Miscellaneous
Definition: Accidents which did not meet the characteristics of another accident type.

Motorcycle
Definition: Accidents involving a motorcycle and a transit bus.

Other Vehicle Hit Bus in Rear
Definition: Accidents where a moving or standing transit bus is impacted in the rear by another vehicle (excluding a transit bus).

Out of Control
Definition: Accidents where a transit bus driver fails to control the operation of a bus while it is in motion.

Passenger
Definition: Accidents involving the injury or fatality of passengers within the interior of a transit bus.

Pedestrian Intersection
Definition: Accidents involving the injury or fatality of a pedestrian as a result of the pedestrian coming into contact with the exterior of a transit bus in an intersection.

Pedestrian Mid-block
Definition: Accidents involving the injury or fatality of a pedestrian as a result of the pedestrian coming into contact with the exterior of a transit bus at a mid-block location.

Roll Away Unattended
Definition: Accidents where an unattended transit bus rolls or travels from a stopped position.

Sideswipe
Definition: Accidents where vehicle side contact is made between a transit bus and another vehicle.

Wheel Off
Definition: Accidents where a bus wheel separates from the bus as a result of a mechanical failure.
**Rail Accident Type Definitions**

**Equipment Component Deficiency**
Definition: Accidents caused as a result of component failures, such as brake riggings dropping, wheels shattering, and wheels overheating.

**Equipment Maintenance Deficiency**
Definition: Accidents caused by improperly maintained equipment, such as allowing for worn wheels to be in service.

**Fire/Smoke**
Definition: Accidents caused by fire and/or smoke.

**Ignored Warning Device(s)**
Definition: Accidents caused by the public’s failure to obey and comply with warning devices, such as grade crossing gates and flashing grade crossing warning lights.

**Improper Operation of Equipment**
Definition: Accidents caused as a result of human error in the operation of a train.

**Improper Procedures Used**
Definition: Accidents caused by human error in following established procedures.

**Loss of Power**
Definition: Accidents caused by a loss of or the inability of a train to take traction power, which in most circumstances results in an evacuation of passengers.

**Material on Track**
Definition: Accidents caused as a result of striking materials or objects on or near the tracks.

**Mechanical Failure of Other Vehicle**
Definition: Accidents caused by another vehicle experiencing mechanical problems, such as an automobile stalling on a grade crossing.

**Non-Passenger Fatality**
Definition: Accidents caused by a non-passenger, includes trespassers.

**Passenger Drag Related Injury or Fatality**
Definition: Accidents caused by a passenger and/or the passenger’s possessions being caught or trapped in a closed door or doorway of a train.

**Passenger Fell from Train**
Definition: Accidents caused by passengers falling from trains, such as falling between cars or from vestibule areas.

**Suicide**
Definition: Self-induced death caused by a non passenger.

**Track Component Deficiency**
Definition: Accidents caused by a track component failure, such as broken rails, deteriorated crossties and missing track bolts or spikes.

**Track Maintenance Deficiency**
Definition: Accidents caused by improperly maintained track components such as switches, rail crossties and ballast.

**Undetermined**
Definition: Accidents for which no cause can be determined.

**Unsafe Practice(s)**
Definition: Accidents that are caused by unsafe practices or actions by the public, such as standing too close to the tracks or jogging on right-of-ways.

**Other**
Definition: Cause does not meet one of the types list, would include contractor error.
SAFETY BOARD STAFF

John F. Guinan, Executive Director
Dennison P. Cottrell, Director, Passenger and Freight Safety Division (PFSD)
Yvie Dondes, PTSB General Counsel
Patricia Tompkins, Secretary

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O.J. Guzman, Investigator
Theresa Bender, Secretary

New York Metro Office
Vacant, Supervising Investigator
John Compitello, Investigator
Robert Maraldo, Investigator
John Ulrich, Investigator

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Michael Gluskin, Investigator
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New York Metro Office
Harry Gerham, Investigator
Mikhail Planker, Investigator
Regina Stolz, Secretary
Contributing Staff

Bus Safety Annual Highlights, Photographs, Accident Data and Analysis: John Fabian of the PFSD Motor Carrier Safety Bureau.

Rail Safety Annual Highlights, Photographs, Accident Data and Analysis: Jerry Shook and Stephen Trudell of the PFSD Rail Safety Bureau

Report Production: Gail Fetsko, Safety Program Evaluation Bureau
PTSB Safety Awards

The Public Transportation Safety Board Awards were initiated in 1996 to recognize public transit systems and individuals in New York State who have demonstrated excellence in safety.

The PTSB award categories are:

**Excellence in Transit Safety** -- Recognizes unique customer safety efforts and initiatives.

**Transit System Safety Program** -- Recognizes proactive system safety program efforts.

**Leadership in Transit Safety** -- Recognizes an individual’s leadership in transit customer safety.

The awards are open to all bus and rail systems that receive State Transit Operating Assistance or to individuals involved in public transit safety in New York State. The awards are sponsored in conjunction with the Bus Association of New York and the New York State Public Transit Association.

Award selections are approved by the Public Transportation Safety Board based on recommendations from the PTSB Awards Selection Committee. The committee is responsible for reviewing and evaluating all award applications. The committee consists of representatives from the industry and the New York State Department of Transportation. Current industry committee members represent the MTA New York City Transit, Queens Surface, and Ulster County Rural Transportation.

The Public Transportation Safety Board commends the 2003 award recipients for their efforts to improve safety for the riding public, and in implementing safety initiatives to make New York State a leader in public transportation safety.
Public Transportation  
Safety Board  
2003 Safety Award  
Recipients

**Excellence in Transit Safety Award**  
Awarded to the MTA New York City Transit in recognition of developing a nationally recognized Fatigue and Stress Awareness Program.

**Excellence in Transit Safety Award**  
Awarded to Central New York Regional Transportation Authority, in recognition of developing and implementing a computerized accident data management system.

**Leadership in Transit Safety Award**  
Awarded to Frank Kobliski, Chief Operating Officer of Central New York Regional Transportation Authority in recognition of implementing actions and programs to improve safety.

**Leadership in Transit Safety Award**  
Awarded to Terry Reinke, Operator Safety Training Coordinator of the Niagara Frontier Transportation Authority in recognition of implementing actions and programs to improve safety and security.
Notification of Unsafe Conditions

If you would like additional information about the PTSB or wish to report an unsafe public transportation condition involving buses, subways, commuter railroads or light rail systems, please write to:

John F. Guinan, Executive Director
Public Transportation Safety Board
1220 Washington Avenue
Albany, New York 12232-0867

Or you can phone the PTSB directly:

Upstate New York (518) 457-6512
New York City Metropolitan Area (718) 482-4570