

National Transportation Safety Board

ANNUAL REPORT

to Congress



2007 ANNUAL REPORT

NTSB/SPC-08/01



**NATIONAL
TRANSPORTATION
SAFETY BOARD**

Foreword

The National Transportation Safety Board (NTSB) is an independent agency charged with determining the probable cause of transportation accidents and promoting transportation safety. The NTSB investigates accidents, conducts safety studies, evaluates the effectiveness of other government agencies' programs for preventing transportation accidents, and reviews the appeals of enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and the U.S. Coast Guard, as well as the appeals of civil penalty actions taken by the FAA.

To help prevent accidents, the NTSB develops safety recommendations based on its investigations and studies. These are issued to Federal, State, and local government agencies and to industry and other organizations in a position to improve transportation safety. Recommendations are the focal point of the NTSB's efforts to improve the safety of the nation's transportation system.

The NTSB's origins can be found in the Air Commerce Act of 1926, in which the U.S. Congress charged the U.S. Department of Commerce with investigating the causes of aircraft accidents. Later, that responsibility was given to the Civil Aeronautics Board's Bureau of Aviation Safety.

In 1967, Congress consolidated all transportation agencies into a new U.S. Department of Transportation (DOT) and established the NTSB as an independent agency placed within the DOT for administrative purposes. In creating the NTSB, Congress envisioned that a single organization with a clearly defined mission could more effectively promote a higher level of safety in the transportation system than the individual modal agencies working separately. Since 1967, the NTSB has investigated accidents in the aviation, highway, marine, pipeline, and railroad modes, as well as accidents related to the transportation of hazardous materials.

In 1974, Congress reestablished the NTSB as a completely separate entity, outside the DOT, reasoning that "...No Federal agency can properly perform such (investigatory) functions unless it is totally separate and independent from any other...agency of the United States." Because the DOT has broad operational and regulatory responsibilities that affect the safety, adequacy, and efficiency of the transportation system, and transportation accidents may suggest deficiencies in that system, the NTSB's independence was deemed necessary for proper oversight. The NTSB, which has no authority to regulate, fund, or be directly involved in the operation of any mode of transportation, conducts investigations and makes recommendations from an objective viewpoint.

In 1996, Congress assigned the NTSB the additional responsibility of coordinating Federal assistance to the families of aviation accident victims. While originally legislated to provide assistance following major aviation accidents, the program has expanded to provide assistance in all modes of transportation on a case-by-case basis. In 2000, the agency embarked on a major initiative to increase employee technical skills and make its investigative expertise more widely available to the transportation community by establishing the NTSB Academy. The George Washington University Virginia campus was selected as the Academy's home. The NTSB took occupancy of its new facility in August 2003. On October 1, 2006, the name of the NTSB Academy was changed to the NTSB Training Center to better reflect the internal training aspects of the facility.

Since its inception, the NTSB has investigated more than 129,700 aviation accidents and thousands of surface transportation accidents. To date, the Board has issued over 12,800 safety recommendations pertaining to the various transportation modes to more than 2,200 recipients.

Since its inception, the NTSB has investigated more than 129,700 aviation accidents and thousands of surface transportation accidents. On call 24 hours a day, 365 days a year, NTSB investigators travel throughout the country and to every corner of the world to investigate significant accidents and develop factual records and safety recommendations with one aim—to ensure that such accidents never happen again.

To date, the NTSB has issued over 12,800 safety recommendations to more than 2,200 recipients. Because the NTSB has no authority to regulate the transportation industry, its effectiveness depends on its reputation for conducting thorough, accurate, and independent investigations and for producing timely, well-considered recommendations to enhance transportation safety.

In 2007, the NTSB continued to push for safety improvements as 71 recommendations were officially closed after being implemented. These include 18 aviation, 22 highway, 13 marine, 12 railroad, and 6 pipeline and hazardous materials safety advances recognized by the Board as being compliant with our recommendations in the past 12 months. They were officially closed with the classifications “exceeds recommended action,” “acceptable action,” or “acceptable alternate action.” The overall acceptance rate for safety recommendations was just over the NTSB’s average of 82 percent.

Another 218 recommendations were issued in 2007: 121 aviation, 43 highway, 31 railroad, 10 pipeline, 10 marine, and 3 intermodal.

2007 Annual Report

National Transportation Safety Board

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Most Wanted Safety Recommendations

In September and November 2007, the NTSB updated its Most Wanted List of Transportation Safety Improvements, adding *collision prevention through enhanced vehicle safety technology* to the list.

The NTSB is urging the National Highway Traffic Safety Administration to act more quickly in setting performance standards for collision warning systems and adaptive cruise control systems in new commercial and passenger vehicles.

In a 2-year period, the NTSB investigated 9 rear-end collisions in which 20 people died and 181 were injured. Common to all nine accidents was the rear-following vehicle driver's degraded perception of traffic conditions ahead before striking other vehicles. These accidents did not involve the use of drugs, alcohol, or vehicle mechanical defects. The investigation showed that sun glare, fog, smoke, fatigue, distractions, and work zones interfered with a driver's ability to detect slow-moving or stopped traffic ahead and resulted in rear-end collisions. According to the U.S. Department of Transportation (DOT), preliminary analyses have shown that 1,836,000 police-reported crashes, or about 48 percent of accidents, could be prevented by rear-end or run-off-the-road and lane change collision warning systems.

The NTSB also added human fatigue in railroad operations to the list, calling on the Federal Railroad Administration (FRA) for revised crewmember work schedules to reduce the likelihood of train crews operating equipment in a fatigued condition. In accident reports over the past decades, the Board has determined that train crewmember fatigue was a cause or contributing factor. Crewmembers' fatigue was often caused by their failure to obtain sufficient restorative rest prior to reporting for duty because of their ineffective use of off-duty time and by railroad train crew scheduling practices, which inverted the crewmembers' work/rest periods. In addition, nine other fatigue-related recommendations are on the list in the aviation, marine, and pipeline modes, which were added in previous years.

The list highlights safety-critical actions that the DOT modal administrations, the U.S. Coast Guard, and the States need to take to help prevent accidents and save lives. The list is organized by issue and, for Federal agencies, each area is color-coded according to the compliance and timeliness of actions taken: green – indicates an acceptable response, progressing in a timely manner; yellow – indicates an acceptable response, progressing slowly; and red – indicates an unacceptable response. (On the following pages, the Federal agency issues are color-coded as indicated in the brackets.)

2007 Most Wanted List

Actions Needed by Federal Agencies

AVIATION

The Federal Aviation Administration should act to:

Improve Runway Safety [Red]

- Give immediate warnings of probable collisions/incursions directly to flight crews in the cockpit.
- Require specific air traffic control clearance for each runway crossing.
- Require landing distance assessment with an adequate safety margin for every landing.

Reduce Dangers to Aircraft Flying in Icing Conditions [Red]

- Use current research on freezing rain and large water droplets to revise the way aircraft are designed and approved for flight in icing conditions.
- Conduct additional research with the National Aeronautics and Space Administration to identify realistic ice accumulation and incorporate new information into aircraft certification and pilot training requirements.

Eliminate Flammable Fuel/Air Vapors in Fuel Tanks on Transport Category Aircraft [Yellow]

- Implement design changes to eliminate the generation of flammable fuel/air vapors in all transport category aircraft.

Improve Audio and Data Recorders/Require Video Recorders [Red]

- Require cockpit voice recorders to retain at least 2 hours of audio.
- Require back-up power sources so cockpit voice recorders collect an extra 10 minutes of data when an aircraft's main power fails.
- Install video recorders in cockpits to give investigators more information to solve complex accidents.
- Install dual combination recorders.

Reduce Accidents and Incidents Caused by Human Fatigue [Red]

- Set working hour limits for flight crews and aviation mechanics, and air traffic controllers based on fatigue research, circadian rhythms, and sleep and rest requirements.
- Develop a fatigue awareness and countermeasures program for air traffic controllers.

Improve Crew Resource Management [Red]

- Require commuter and on-demand air taxi flight crews to receive crew resource management training.

RAILROAD

The Federal Railroad Administration should act to:

Implement Positive Train Control Systems [Yellow]

Prevent train collisions and overspeed accidents by requiring automatic control systems to override mistakes by human operators.

- Reduce Accidents and Incidents Caused by Human Fatigue [Green]
- Set limits on working hours and limbo time for train crewmembers based on fatigue research, circadian rhythms, and sleep and rest requirements.

PIPELINE

The Pipeline and Hazardous Materials Safety Administration should act to:

Reduce Accidents and Incidents Caused by Human Fatigue [Yellow]

- Set working hour limits for pipeline controllers based on fatigue research, circadian rhythms, and sleep and rest requirements.

HIGHWAY

The Federal Motor Carrier Safety Administration should act to:

Improve the Safety of Motor Carrier Operations [Yellow]

- Prevent motor carriers from operating if they put vehicles with mechanical problems on the road or unqualified drivers behind the wheel.

Prevent Medically Unqualified Drivers from Operating Commercial Vehicles [Red]

- Establish a comprehensive medical oversight program for interstate commercial drivers.
- Ensure that examiners are qualified and know what to look for.
- Track all medical certificate applications.
- Enhance oversight and enforcement of invalid certificates
- Provide mechanisms for reporting medical conditions.

The National Highway Traffic Safety Administration should act to:

Enhance Protection of Motorcoach Passengers [Yellow]

- Redesign motorcoach window emergency exits so passengers can easily open them.
- Issue standards for stronger bus roofs and require them in new motorcoaches.
- Devise new standards to protect motorcoach passengers from being thrown out of their seats or ejected when a bus sustains a front, side, or rear impact or rolls over.

Enhance Protection for School Bus Passengers [Yellow]

- Devise new standards to protect school bus passengers from being thrown out of their seats or ejected when a school bus sustains a front, side, or rear impact or rolls over.
- Prevent Collisions with Enhanced Vehicle Safety Technology [Yellow]
- Complete rulemaking on adaptive cruise control and collision warning system standards for all new passenger and commercial vehicles.

MARINE*The U.S. Coast Guard should act to:***Reduce Accidents and Incidents Caused by Human Fatigue [Red]**

- Set working hour limits for mariners based on fatigue research, circadian rhythms, and sleep and rest requirements.

Actions Needed by the States**HIGHWAY****Improve Child Occupant Protection**

- Enact State laws requiring booster seats for young children.

Enact Primary Seat Belt Enforcement Laws

- Increase the number of people who wear seat belts through stronger enforcement laws.

Promote Youth Highway Safety

- Enact graduated driver licensing legislation.
- Restrict the number of teen passengers traveling with young novice drivers.
- Prohibit use of wireless communications devices by young novice drivers.

Eliminate Hard-Core Drinking Driving

- Enact State legislation and take other actions that are proven to reduce crashes involving those who repeatedly drink large amounts of alcohol and drive including:
 - Frequent, statewide sobriety checkpoints
 - Legislation to create stricter sanctions for those arrested for the first time with a high blood alcohol concentration of 0.15 or higher.
 - Zero blood alcohol requirement for convicted driving while intoxicated (DWI) offenders when they get their license back.
 - Administrative rather than court-based license revocation for refusing to take or failing the sobriety test.
 - Vehicle sanctions for DWI offenders.

- Eliminate plea-bargaining DWI offenses and programs that divert offenders and purge the offense record.
- Retain DWI offense records for at least 10 years to identify and prosecute repeat offenders.
- Develop and operate special sanction court-based programs for hard core DWI offenders.

MARINE

Enhance Recreational Boating Safety

- Require mandatory education of boat operators.
- Require use of life jackets by children.
- Require safety instruction prior to personal watercraft rental.

The NTSB and Congress

The NTSB provided testimony to Congressional committees several times during calendar year 2007. Below is a summary of testimony provided by Members and staff. Complete copies of NTSB testimony are available on the agency's website at <<http://www.nts.gov/speeches>>.

Chairman Mark V. Rosenker testified before the U.S. House of Representatives, Committee on Transportation and Infrastructure, Subcommittee on Railroads, Pipelines, and Hazardous Materials, on February 13th, regarding Fatigue in the Rail Industry. The testimony included the history of fatigue-caused railroad accidents the NTSB investigated, the history of safety recommendations the Board made to address the problem of fatigue, and the Federal Railroad Administration's lack of legislative authority to address the root causes of fatigue.

Chairman Rosenker testified before the U.S. House of Representatives, Committee on Transportation and Infrastructure, Subcommittee on Highways and Transit, on March 20th, regarding several issues that were addressed in accident investigations concerning motorcoach safety. Those included motorcoach crashworthiness, motorcoach fires, motorcoach maintenance and oversight by the Federal Motor Carrier Safety Administration (FMCSA), and cell phone use by bus drivers.

Chairman Rosenker testified before the U.S. House of Representatives, Committee on Appropriations, Subcommittee on Transportation, HUD, and Related Agencies, on March 29th, regarding the Safety Board's appropriation needs for fiscal year 2008.

Chairman Rosenker testified before the U.S. Senate, Committee on Appropriations, Subcommittee on Transportation, HUD, and Related Agencies, on April 19th, regarding the Safety Board's appropriation needs for fiscal year 2008.

Chairman Rosenker testified before the U.S. Senate, Committee on Commerce, Science, and Transportation, Subcommittee on Surface Transportation and Merchant Marine Infrastructure, Safety, and Security, on May 1st, regarding Electronic On-Board Recorders for Hours-of-Service Compliance. The testimony touched on technology and how it could prevent fatigue-related accidents by improving commercial driver compliance with hours-of-service regulations.

Chairman Rosenker testified before the U.S. House of Representatives, Committee on Transportation and Infrastructure, Subcommittee on Railroads, Pipelines, and Hazardous Materials, on May 8th, regarding Rail Safety Legislation. The testimony discussed train crew fatigue, the lack of positive train control systems to prevent train collisions, overspeed derailments, and improper switch positions in non-signalized (dark) territory.

Chairman Rosenker testified before the U.S. House of Representatives, Committee on Transportation and Infrastructure, Subcommittee on Aviation, on June 6th, regarding the NTSB's Most Wanted List (MWL) of Transportation Safety Improvements. The testimony included the objective, summary, and status of each of the agency's six aviation recommendations that were on the MWL in 2007. The safety recommendations remained basically the same as 2006 with the addition of controller fatigue and additional runway safety recommendations.

Chairman Rosenker testified before the U.S. House of Representatives, Committee on Transportation and Infrastructure, on September 5th, regarding Structurally Deficient Bridges in

the United States. The testimony discussed the Nation's highway infrastructure and the safety of older bridges, the NTSB's bridge accident investigations, and the National Bridge Inspection Program.

Chairman Rosenker testified before the U.S. Senate, Committee on Environment and Public Works, Subcommittee on Transportation Safety, Infrastructure Security, and Water Quality, on October 25th, regarding the Effectiveness of Federal Drunk Driving Programs. The testimony included an overview of highway accidents the Board has investigated that are attributed to alcohol-related deaths and a discussion of our impaired driving recommendation currently on the NWL.

Vice Chairman Robert L. Sumwalt, III, testified before the U.S. House of Representatives, Committee on Transportation and Infrastructure, Subcommittee on Railroads, Pipelines, and Hazardous Materials, on January 30th, regarding railroad safety issues that are of concern to the NTSB including railroad fatigue, the transportation of hazardous materials in tank cars, and positive train control.

Vice Chairman Sumwalt testified before the U.S. Senate, Committee on Commerce, Science, and Transportation, Subcommittee on Surface Transportation and Merchant Marine Infrastructure, Safety, and Security, on May 22nd, regarding rail safety issues that are being considered in proposed rail safety legislation.

Member Deborah A. P. Hersman, testified before the U.S. House of Representatives, Committee on Transportation and Infrastructure, Subcommittee on Highways and Transit, on July 11th, regarding the FMCSA's Oversight of High Risk Carriers. The testimony focused on the compliance review process, medically unqualified drivers, and electronic data recorders for hours-of-service which could make the difference in getting unsafe motor carriers off the roads.

Member Hersman testified before the U.S. House of Representatives, Committee on Transportation and Infrastructure, Subcommittee on Coast Guard and Maritime Transportation, in San Francisco, California, on November 19th, regarding the San Francisco November 2007 Oil Spill Causes and Response. The testimony focused on the safety aspects of the container ship Cosco Busan allision with the Golden Gate Bridge that had been identified to date, as well as updates on the ongoing investigation.

Mr. Joseph Osterman, Managing Director, testified before the U.S. Senate, Committee on Health, Education, Labor, and Pensions, on October 2nd, regarding mine safety disasters. The testimony highlighted the NTSB's experience in providing assistance to victims and their families following a transportation disaster.

Mr. Robert Chipkevich, Director, Office of Railroads, Pipeline and Hazardous Materials Investigations, testified before the U.S. House of Representatives, Committee on Transportation and Infrastructure, Subcommittee on Railroads, Pipelines, and Hazardous Materials, in San Antonio, Texas, on March 16th, regarding Human Factors in Rail Accidents. In addition to human factors issues, the testimony also focused on actions that are needed to prevent additional accidents.

Dr. Mitchell A. Garber, Medical Officer, testified before the U.S. House of Representatives, Committee on Transportation and Infrastructure, Subcommittee on Aviation, on July 17th, regarding FAA's Oversight of Falsified Airman medical Certificate Applications. The testimony focused on aviation accident investigations in which impairment, incapacitation, or a medical condition were identified as causes or factors in the accident.

State and Local Government Outreach

Efforts in 2007 to increase implementation of the Safety Board's highway and marine safety recommendations to the States resulted in the following progress:

- Two States amended their booster seat laws to fully implement our recommendation.
- One State enacted primary seat belt enforcement, and one State, which already had primary enforcement, applied its seat belt law to all seating positions.
- One State enacted legislation restricting the number of teen passengers permitted to ride with a teen-age driver. This action fully implemented the NTSB's recommendation and three States enacted legislation that partially implemented the recommendation.
- One State amended its graduated licensing law to fully implement the NTSB's recommendation, and one State enacted legislation that partially implemented the recommendation.
- Two States enacted legislation that fully implemented the NTSB's recommendation on prohibiting young novice drivers from using cellular telephones while driving. One State enacted legislation that partially implemented the recommendation, and one State enacted legislation that prohibits hand-held use of cellular telephones.
- One State enacted legislation that implemented an element of the NTSB's hard-core drinking driver recommendation, and six States strengthened elements that they had already implemented.
- One State enacted legislation and two States amended their law to fully implement the NTSB's recommendation on personal flotation device use by children.
- One State enacted legislation that fully implemented the NTSB's recommendation on boating safety education.

Safety Alerts

Safety alerts were initiated in 2004 as a way to highlight transportation safety improvements that are identified by the Safety Board. The one- to two-page handouts are written in easily understandable English. They define the transportation hazard, give statistics on the problem, and provide ways to avoid or mitigate these problems based on NTSB's investigations.

In 2007, the NTSB issued a new highway safety alert, bringing the total to 12. The new highway alert urges the adoption of universal helmet laws for all motorcycle riders in all States. It cites fatality data showing that deaths from motorcycle crashes have more than doubled in the past 10 years – from 2,116 in 1997 to 4,810 in 2006—an alarming trend compared with the fatality decreases realized in passenger vehicles and light trucks. Another 88,000 people were injured in motorcycle crashes in 2006.

Eight other safety alerts were updated with new statistics and information. The NTSB's website received almost 99,000 "hits" for these alerts in 2007.

In 2007, NTSB Board Members and staff were involved in 35 conferences and 104 meetings, testified at 27 legislative hearings, and participated in 17 press events in 34 States, the District of Columbia, Canada and Spain -- all advocating our recommendations. Also, Board Members and Board staff made numerous telephone calls, and sent e-mails and letters of support for legislation.

Office of Aviation Safety

The Federal Aviation Act of 1958, as amended, and the Independent Safety Board Act of 1974 placed the responsibility for investigating and determining the probable cause for all civil aviation accidents within the NTSB. Subsequent legislation also authorized the agency to investigate accidents involving public-use aircraft, except those operated by the armed forces and intelligence agencies.

Within the NTSB, the Office of Aviation Safety has the responsibility for investigating aviation accidents and incidents (about 1,800 annually) and for proposing probable causes for the five-member Board's approval. In conjunction with other offices within the NTSB, the office also works to formulate recommendations to prevent the recurrence of similar accidents and incidents and to otherwise improve aviation safety. NTSB investigations routinely examine all factors surrounding an accident or series of accidents or serious incidents, thereby ensuring that regulatory agencies and the industry are given a thorough and objective analysis of actual, as well as potential, deficiencies in the transportation system. Solutions can then be proposed to correct deficiencies that may have caused an accident.

The Office of Aviation Safety also manages the NTSB's international aviation affairs program. Given the international nature of air transportation and the leading role of the United States in the development of aviation technologies, the NTSB's investigations of domestic accidents and participation in foreign investigations are essential to the enhancement of aviation safety worldwide. The agency's major aviation accident reports, safety recommendations, and accident statistics are disseminated worldwide and have a direct influence on safety policies domestically and abroad, helping to ensure the safe transportation by air of U.S. citizens and other travelers around the world.

The NTSB fulfills U.S. obligations to foreign accident investigations, established by treaty under the auspices of the International Civil Aviation Organization (ICAO), by sending accredited representatives and technical advisors from airframe and engine manufacturers to participate in investigations that involve U.S. interests. The Office of Aviation Safety also maintains liaison and coordination with other government agencies through the U.S. Interagency Group on International Aviation and ICAO.

The headquarters for the Office of Aviation Safety is in Washington, D.C., with 10 regional offices: located in Parsippany, New Jersey; Atlanta, Georgia; Miami, Florida; West Chicago, Illinois; Arlington, Texas; Denver, Colorado; Seattle, Washington; Gardena, California; Anchorage, Alaska; and Ashburn, Virginia. Seven divisions comprise the headquarters office and reflect the organization of the NTSB's investigative process: Major Investigations, Regional Operations and General Aviation, Operational Factors, Human Performance, Aviation Engineering, Survival Factors, and Report Writing and Editing.

For most of the nearly 1,800 commercial and general aviation accident/serious incidents investigated each year, a regional investigator, from one of the 10 NTSB regional offices, serves as the investigator-in-charge. However, when the Board is notified of a major aviation accident, it launches a go-team from headquarters; the go-team varies in size depending on the severity of the accident and the complexity of the issues involved. The go-team normally consists of an investigator-in-charge from the Major Investigations division and staff specialists in as many as 14 specialties. Additional specialty areas may be added as required by the investigation. Each staff

The Office of Aviation Safety has 83 investigators and 40 support staff, which consists of managers, technical writers and editors, aviation accident analysts, and administrative staff. In 2007, the office launched on two major domestic investigations and ten foreign accident investigations. The office completed 10 major reports and continued work on 5 other major reports.

expert leads a group of other specialists from Government agencies and industry as information is collected and analyzed. Board staff experts are designated as group chairmen to coordinate information for their part of the investigation, from on-scene activities through adoption of the final report.

Operational Factors specialists in three disciplines—air traffic control, operations, and weather—support major investigations. Aviation Engineering specialists provide technical skills in the areas of powerplants (engines), structures, systems, and maintenance. Human Performance specialists review the background and performance of those associated with an accident. Survival Factors specialists investigate circumstances that affect the survival of people involved in accidents, including causes of injuries and fatalities, and evacuation.

The participation of operators, manufacturers, labor representatives, and regulators augments the NTSB's resources and allows first-hand access to specialized information. For example, an aircraft manufacturer is the best source of information on the design of the specific aircraft being investigated. The Board also makes use of outside laboratories and research facilities whenever needed.

A public hearing may be convened, generally within a year of an accident, or depositions may be taken to collect additional information and review the investigation's progress. As an investigation is completed, a detailed narrative report is prepared. This report sets forth the facts of the accident, analyzes the investigative record and identifies the probable cause of the accident.

Safety recommendations resulting from major investigations are generally included in the final accident report, although recommendations can be issued at any time during the course of an investigation. Regional investigations will frequently identify safety issues that need to be corrected before they result in other accidents.

Completed Major Aviation Investigations

Pinnacle Airlines Crash in Jefferson City, Missouri

On October 14, 2004, a Pinnacle Airlines Canadair CL-600-2B19 regional jet crashed in a residential area in Jefferson City, Missouri. Impact forces and a postcrash fire destroyed the airplane. The two crewmembers were killed. The Board determined that the probable causes of this accident were (1) the pilots' unprofessional behavior, deviation from standard operating procedures, and poor airmanship, which resulted in an in-flight emergency from which they were unable to recover, in part because of the pilots' inadequate training; (2) the pilots' failure to prepare for an emergency landing in a timely manner, including communicating



with air traffic controllers immediately after the emergency about the loss of both engines and the availability of landing sites; and (3) the pilots' improper management of the double engine failure checklist, which allowed the engine cores to stop rotating and resulted in the core lock engine condition. Contributing to this accident were (1) the core lock engine condition, which prevented at least one engine from being restarted, and (2) the airplane flight manuals that did not communicate to pilots the importance of maintaining a minimum airspeed to keep the engine cores rotating. Eleven safety recommendations were issued to the FAA addressing flight crew training in the areas of high altitude climbs, stall recognition and recovery, and double engine failures; flight crew professionalism; and the quality of some parameters recorded by flight data recorders on regional jet airplanes. The Board adopted the report on January 10, 2007.

Crash of Cessna Citation 560 in Pueblo, Colorado

On February 16, 2005, a Cessna Citation 560, crashed while on approach to Pueblo Memorial Airport in Pueblo, Colorado. The two flight crewmembers and six passengers were killed. The airplane had been owned and operated by Circuit City Stores, Inc., of Richmond, Virginia, which was using the aircraft management services of Martinair. The Board determined that the probable cause of the accident was the flight crew's failure to effectively monitor and maintain airspeed and comply with procedures for deice boot activation on the approach, which caused an aerodynamic stall from which they did not recover. Contributing to the accident was FAA's failure to establish adequate certification requirements for flight into icing conditions, which led to the inadequate stall warning margin provided by the airplane's stall warning system. Six safety recommendations were issued to the FAA addressing inadequate pilot training on operations in icing conditions, inadequate deice boot system operational guidance, the need for automatic deice boot systems, inadequate certification requirements for flight into icing conditions, and inadequate stall warning margins in icing conditions. The Board adopted the report on January 23, 2007.

Bali Hai Helicopter Tours, Inc., Bell 206B Crash Near Kalaheo, Hawaii

On September 24, 2004, a Bell 206B helicopter, operated by Bali Hai Helicopter Tours, Inc., crashed near Kalaheo, Hawaii, on the island of Kauai. The pilot and four passengers were killed. The Board determined that the probable cause of the accident was the pilot's decision to continue flight under visual flight rules into an area of turbulent, reduced visibility weather conditions, which resulted in the pilot's spatial disorientation and loss of control of the helicopter. Contributing to this accident was the pilot's inexperience in assessing local weather conditions, inadequate FAA surveillance of Special Federal Aviation Regulation 71 operating restrictions, and the operator's pilot-scheduling practices that likely had an adverse impact on pilot decision-making and performance. Nine safety recommendations were addressed to the FAA regarding local weather-training programs for newly hired Hawaii air tour pilots; evaluation of operational practices for commercial air tour helicopter pilots; Honolulu Flight Standards District Office control of the annual safety meetings, as required under approved certificates of waiver or authorization; evaluation of the safety impact of the altitude restrictions in the State of Hawaii; national air tour safety standards; and the potential benefits of automatic dependent surveillance-broadcast technology for Hawaii air tour operators. The Board adopted the report on February 13, 2007.

Cirrus SR-20 Crash in New York, New York

On October 11, 2006, a Cirrus SR-20, crashed into an apartment building in New York City.

Both people on board the airplane were killed. The Board determined that the probable cause of the accident was the pilots' inadequate planning, judgment, and airmanship in the performance of a 180° turn maneuver inside of a limited turning space. A safety recommendation was issued to the FAA addressing the permanent prohibition of visual flight rules flight operations involving fixed-wing,



nonamphibious aircraft in the New York East River class B exclusion area unless those operations are authorized and being controlled by air traffic control. The Board adopted the report on May 1, 2007.

Chalks Ocean Airways Crash, Port of Miami, Florida

On December 19, 2005, a Grumman Mallard G73T, operated by Flying Boat, Inc., as Chalks Ocean Airways flight 101, had an in-flight separation of its right wing from the airframe and crashed.

All 20 occupants suffered fatal injuries. The Board determined that the probable cause of the accident was the in-flight failure and separation of the right wing during normal flight, which resulted from (1) the failure of the Chalk's Ocean Airways maintenance program to identify and properly repair fatigue cracks in the right wing and (2) the failure of the FAA to detect and correct deficiencies



in the company's maintenance program. Two safety recommendations were issued to the FAA addressing air carrier maintenance programs and practices and FAA oversight procedures for air carrier maintenance programs. The Board adopted the report on May 30, 2007.

Comair Bombardier CRJ-100 Crash in Lexington, Kentucky

On August 27, 2006, Comair flight 5191, a Bombardier CRJ-100 regional jet, crashed upon takeoff from Blue Grass Airport in Lexington, Kentucky. Of the 50 people onboard, 49 were fatally injured. The



Board determined that the probable cause of the accident was the flight crewmembers' failure to use available cues and aids to identify the airplane's location on the airport surface during taxi and their failure to cross-check and verify that the airplane was on the correct runway before takeoff. Contributing to the accident were the flight crew's nonpertinent conversation during

taxi, which resulted in a loss of positional awareness, and the FAA failure to require that all runway crossings be authorized only by specific air traffic control (ATC) clearances. Five safety recommendations were issued to the FAA addressing the need for improved flight deck procedures, the implementation of cockpit moving map or runway alerting systems, improved airport surface markings, and ATC taxi clearance procedures. The Board adopted the report on July 26, 2007.

Crash of U.S. Border Patrol Unmanned Aircraft, Nogales, Arizona

On April 25, 2006, a Predator B, an unmanned aircraft (UA) operated by the U.S. Customs and Border Protection crashed within 100 yards of a house in Nogales, Arizona. The Board



determined that the probable cause of the accident was the pilot's failure to use checklist procedures when switching operational control, which resulted in the total loss of engine power, and lack of a flight instructor as required to allow the pilot to fly the Predator B. Twenty-two safety recommendations were issued to the FAA and the U.S. Customs and Border Protection agency addressing the procedures

and oversight needed to ensure safe operation of unmanned aircraft in the National Airspace System (NAS). The Board adopted the report on October 16, 2007. In addition, the Board voted to hold a Public Forum to explore further the safety issues uncovered in this accident. The Public Forum was scheduled for April 2008.

Runway Overrun by Southwest Airlines in Chicago, Illinois

On December 8, 2005, Southwest Airlines flight 1248, a Boeing 737-700, overran the runway at Chicago Midway International Airport in Chicago, Illinois, and struck several automobiles, killing one occupant. The Board determined that the probable cause of the accident was the pilots' failure to use available reverse thrust in a timely manner to safely slow or stop the airplane after landing, which resulted in a runway overrun. This failure occurred because the pilots' first experience and lack of familiarity with the airplane's autobrake system distracted them from thrust reverser usage during the challenging landing.

Contributing to the accident were Southwest Airlines' 1) failure to provide its pilots with clear and consistent



guidance and training regarding company policies and procedures related to arrival landing distance calculations; 2) programming and design of its on-board performance computer, which did not present inherent assumptions in the program critical to pilot decision-making; 3) plan to implement new autobrake procedures without a familiarization period; and 4) failure to include a margin of safety in the arrival assessment to account for operational uncertainties. Also contributing to the accident was the pilots' failure to divert to another airport given reports that included poor braking action and a tailwind component greater than 5 knots. Contributing to the severity of the accident was the absence of an engineering materials arresting system, which was needed because of the limited runway safety area beyond the departure end of runway 31C. Eight safety recommendations were issued to the FAA addressing the clarity of assumptions used in on board performance computers, arrival landing distance assessments and safety margins, runway braking action reports, airplane-based friction measurements, and runway safety areas. The Board adopted the report on November 29, 2007.

United Parcel Service Cargo Fire in Philadelphia, Pennsylvania

On February 7, 2006, a United Parcel Service DC-8 made an emergency landing at its destination airport, Philadelphia International Airport, after the flight crew reported a cargo smoke indication. The three flight crewmembers sustained minor injuries, and the airplane and its cargo were destroyed by fire. The Board determined that the probable cause of



the accident was an in-flight cargo fire that initiated from an unknown source, which was most likely located within one of several cargo containers. Contributing to the loss of the aircraft were inadequate certification test requirements for smoke and fire detection systems and the lack of an on-board fire suppression system. Fourteen safety recommendations were issued to the FAA, the Pipeline and Hazardous Materials Safety Administration, and the Cargo Airline Association addressing smoke and fire detection and suppression systems on cargo airplanes, training for firefighting personnel, and the hazards of lithium battery shipments. The Board adopted the report on December 4, 2007.

Ongoing Major Aviation Investigations

Runway Overrun by Shuttle America in Cleveland, Ohio

On February 18, 2007, an Embraer ERJ-170 regional jet, operated by Shuttle America as Delta Connection flight 6448, was substantially damaged when it overran the end of runway 28 while landing at Cleveland Hopkins International Airport, Cleveland, Ohio, during a snowstorm. The aircraft received substantial damage, but the 74 people onboard were not injured.

Runway Overrun by Pinnacle Airlines in Traverse City, Michigan



On April 12, 2007, a Bombardier CRJ-200 regional jet, operated by Pinnacle Airlines as flight 4712, overran the runway while landing at Cherry Capital Airport, Traverse City, Michigan, during a snowstorm. The aircraft received substantial damage, but the 52 people onboard were not injured.

Crash of Cessna Citation Medical Transport Flight into Lake Michigan

On June 4, 2007, a Cessna 550 (Citation II), operating as a 14 *Code of Federal Regulations* (CFR) Part 135 medical transport flight, crashed into the waters of Lake Michigan shortly after takeoff from General Mitchell International Airport, Milwaukee, Wisconsin. All six people onboard were fatally injured.

In-flight Fire and Crash of Cessna 310R Operated by NASCAR in Sanford, Florida

On July 10, 2007, a Cessna 310R, operated by the National Association for Stock Car Auto Racing (NASCAR), crashed while attempting an emergency landing to Sanford Orlando International Airport, Sanford, Florida. Both people onboard and three people on the ground were fatally injured, and four people on the ground were seriously injured.

Midair Collision Between News Helicopters in Phoenix, Arizona

On July 27, 2007, news helicopters from Channel 3 and Channel 15 collided in mid air while maneuvering in Phoenix, Arizona. Each helicopter was an American Eurocopter AS 350 B2. A pilot and passenger were onboard each helicopter and all four were fatally injured.

Engine Fire Aboard American Airlines MD-82 in St. Louis, Missouri

On September 28, 2007, a McDonnell Douglas MD-82 operated by American Airlines executed an emergency landing at Lambert-St Louis International Airport in St. Louis, Missouri after experiencing an engine fire. The airplane received substantial damage but none of the 143 people on board were injured.

Regional Aviation Operations

Regional accident and serious incident investigations are handled much like major investigations; but, since they are typically smaller in scope, a single regional investigator usually conducts them as IIC. The investigator, working with representatives from other parties, ensures the investigation includes all the relevant facts, conditions, and circumstances needed to determine the cause of the accident and identify any safety issues. The factual reports of the accidents/serious incidents conducted by the regional investigators are published on the NTSB's website. A brief report, including the probable cause of the accident, is also available once the probable cause has been determined.

In 2007, the Office of Aviation Safety regional staff initiated 1,780 investigations and completed 1,999.

Completed Regional Aviation Investigations

In the Alaska Region

Vintage Surplus Jet Fighter Crash in Ketchikan, Alaska

On January 25, 2006, an Aero Vodochody L-39MS, which is a surplus military warbird built in the Czech Republic, hit the water several times damaging the engine and crashed during an instrument approach/circle to land at Ketchikan International Airport in Ketchikan, Alaska. The pilot, who was the sole occupant, was killed, and five people on the ground sustained minor injuries. The airplane, operated by Air USA, Inc. of Quincy, Illinois, was destroyed by the impact and subsequent fire. The Board determined that the probable causes were the pilot's failure to follow published instrument landing procedures and his descent below approach minimums during an instrument flight rules



(IFR) circle-to-land approach, which resulted in the airplane striking the ocean and a loss of engine power. Factors contributing to the accident were low clouds and snow.

Cessna 170B/Cessna 172 Midair Collision Over Chugiak, Alaska

On April 23, 2006, a wheel-equipped Cessna 170B and a wheel-equipped Cessna 172 airplane collided in midair, approximately 7 miles north-northwest of Chugiak, Alaska. The pilot and the three passengers aboard the Cessna 170B were killed; the pilot of the Cessna 172, who was



the sole occupant, also was killed. Both airplanes were destroyed during the midair collision, uncontrolled descent, and subsequent collision with tidal mud flats. The Board determined that the probable cause was the inadequate visual lookout by the pilots of both airplanes during cruise flight, which resulted in their failure to see-and-avoid each other, and the subsequent midair collision.

U.S. Geological Survey Eurocopter AS350 Crashes Near Nuiqsut, Alaska

On August 21, 2006, a Canadian-registered Eurocopter AS350 B2 helicopter, was destroyed when it struck terrain during an external load operation about 20 miles west of Nuiqsut, Alaska. The U.S. Geological Survey in Reston, Virginia was operating the helicopter under



contract from Prism Helicopters of Wasilla, Alaska. The pilot, who was the only occupant, was killed. The Board determined that the probable cause was the pilot's failure to maintain clearance from the sling load during cruise flight, which resulted in the load becoming entangled in the tail rotor, and an in-flight loss of control.

Piper PA-32 Crash During Scheduled Commuter Flight to King Salmon, Alaska

On December 14, 2006, a wheel-equipped Piper PA-32-301, was destroyed when it struck remote, snow-covered terrain about 15 miles northeast of Port Heiden, Alaska. The certificated commercial pilot and the one passenger sustained fatal injuries. Peninsula Airways, Inc., of

Anchorage, Alaska, operated the airplane. The Board determined that the probable cause was the pilot's failure to maintain control of the airplane during cruise flight, which resulted in an uncontrolled descent, and an in-flight collision with terrain. Contributing to the accident were the pilot's spatial disorientation and dark night conditions.

In the Central Mountain Region

Beech 35 Crash During Cruise Flight Near Telluride, Colorado

On September 15, 2006, a Beech 35-C33, piloted by a commercial pilot was destroyed during cruise flight when it struck mountainous terrain nine miles southwest of Telluride, Colorado. The commercial pilot and the three passengers were killed. The Board determined that the probable cause was the pilot's inadvertent flight into mountain wave turbulence resulting in the airplane's loss of control and subsequent impact into mountainous terrain. Factors contributing to the accident were the mountain wave turbulence and high winds.

Commuter Jet Uncontained Engine Failure

On January 25, 2007, a Bombardier CL-600-2B19, operated by Mesa Airlines, doing business as U.S Airways Express flight 2985, sustained minor damage when it experienced a fan disk

separation while climbing through approximately 24,000 feet, 8 miles west-southwest of Cripple Creek, Colorado. Day visual meteorological conditions prevailed at the time of the incident. The regularly scheduled domestic passenger flight was being operated under the provisions of 14 CFR Part 121 on an instrument flight rules flight plan. The captain, first officer, flight attendant, FAA inspector,



and 50 passengers were not injured. The flight departed Denver International Airport, Denver, Colorado, and was en route to Phoenix, Arizona. The Safety Board determined that the probable cause was a fatigue fracture, which resulted in the separation of the No.1 engine fan disk. Contributing factors in the accident were the operator's maintenance personnel lack of training to be able to detect arc-out damage on the fan disk, and the fan disk manufacturer's inadequate electro-chemical etch match marking process of the fan disk to forward fan shaft that allowed for the initiation of a fatigue point that was undetected at the time of original manufacture.

In the South Central Region

Mechanic Killed During Maintenance on B-737 Jet Engine in El Paso, Texas

On January 16, 2006, Continental Airlines flight 1515, a Boeing 737-524 airplane, was preparing for departure from El Paso International Airport, El Paso, Texas, when a mechanic was killed while performing a maintenance troubleshooting procedure for a suspected engine oil leak on the No. 2 engine. The 5 crewmembers and 114 passengers were not injured. The Board

determined that the probable causes were the mechanic's failure to maintain proper clearance from the engine intake during a jet engine run and the failure of contract maintenance personnel to follow written procedures and directives contained in the airline's general maintenance manual. Factors contributing to the accident were the insufficient training provided to the contract mechanics by the airline, and the failure of the airport to disseminate a policy prohibiting ground engine runs above idle power in the terminal area.

In-Flight Breakup of Twin-Engine Aero Commander 690A Near Antlers, Oklahoma

On October 15, 2006, an Aero Commander 690A twin-engine turboprop airplane was destroyed during an in-flight breakup near Antlers, Oklahoma. The pilot, co-pilot, and both passengers were killed. The Board determined that the probable cause was the pilot's failure to reduce airspeed while operating in an area of moderate turbulence, resulting in an in-flight break up. Contributing factors were the pilot's decision to exceed the maximum takeoff weight, and the prevailing turbulence.

In the North Central Region

Piper Seneca Collision With Building in Branson, Missouri

On March 20, 2006, a Piper PA34-200T Seneca II was destroyed by an in-flight collision with a building and terrain and a subsequent postimpact fire in Branson, Missouri. The pilot and three passengers were killed. The Board determined that the probable cause was the pilot's failure to maintain sufficient airspeed, which resulted in an inadvertent stall/spin while maneuvering to return to the departure airport for landing after declaring an emergency for unspecified reasons. Additional factors were the low cloud ceiling (instrument conditions), the low altitude at the time of the inadvertent stall, the residential power transmission wire and the storage building.

Former Test Pilot Killed in Cessna 210 Crash in Thunderstorms near Ludville, Georgia

On April 19, 2006, a Cessna 210A, owned and piloted by a commercial-rated pilot, crashed into remote mountainous terrain near Ludville, Georgia, after entering thunderstorms. The pilot,



the sole occupant, was fatally injured. Instrument meteorological conditions prevailed at the time of the accident. The personal flight was operating under the provisions of 14 CFR Part 91 while on an IFR flight plan. The accident flight departed Prattville, Alabama, and was en route to Manassas, Virginia. The pilot was formerly an aeronautical research pilot with the National Advisory

Committee for Aeronautics High-Speed Flight Station at Edwards Air Force Base, California. On November 20, 1953, he became the first human to fly faster than twice the speed of sound in the Douglas D-558-II Skyrocket. From 1955 to 1960, he was employed by North American Aviation

as the chief engineering test pilot during the development and testing of the X-15 rocketplane. The Board determined that the probable causes were the pilot's failure to obtain updated en route weather information, which resulted in his continued instrument flight into a widespread area of severe convective activity, and the air traffic controller's failure to provide adverse weather avoidance assistance, as required by FAA directives, both of which led to the airplane's encounter with a severe thunderstorm and subsequent loss of control.

In the Northeast Region

Impact of Columbia 400 Airplane with Trees Near Stafford, Virginia

On February 22, 2006, a Lancair Company LC41-550FG (Columbia 400) was destroyed when it struck trees and terrain at Stafford Regional Airport in Stafford, Virginia. The private pilot, a pilot-rated passenger, and two additional passengers were killed. The Board determined that the probable cause was the pilot's failure to execute the published missed approach. Factors included the night lighting conditions, low ceilings, and fog.

Beech C24R Airplane Crash in Residential Area Near Norfolk, Virginia

On July 11, 2006, a single-engine Beech C24R airplane collided with trees and terrain following a loss of control while the pilot attempted to return to land on runway 32 at Norfolk International Airport near Norfolk, Virginia. The private pilot, the passenger, and two dogs were killed; the airplane was substantially damaged. The Board determined that the probable cause was the pilot's failure to maintain airspeed, which resulted in an inadvertent stall/spin while maneuvering at a low altitude. Contributing was the pilot's diverted attention to an open door.

Cirrus SR-22 Crash During Attempted Landing Near Edgewater, Maryland

On July 11, 2006, a Cirrus SR-22, was destroyed when it struck a tree and terrain during a go-around maneuver after an attempted landing on runway 30 at Lee Airport in Edgewater, Maryland. The pilot sustained serious injuries. The Board determined that the probable cause was the pilot's failure to maintain sufficient airspeed, which resulted in a stall. A factor was the pilot's failure to properly set the flaps for the go-around.

Piper PA-46 Crashes After Pilot Told to Land in Odenton, Maryland

On October 19, 2006, a Piper PA-46-310P, was destroyed when it struck trees and terrain during an approach to landing at Tipton Airport in Odenton, Maryland. The pilot/owner and the passenger were killed.

The pilot had contacted the Potomac Terminal Radar Approach Control to get instrument flight rules clearance to Brookeridge Airpark. Subsequently, the controller informed the pilot that he was violating the Washington, D.C., Air Defense Identification Zone ADIZ) and that he needed to land at Tipton Airport immediately; the



pilot agreed. The Board determined that the probable cause was the pilot's failure to maintain adequate clearance from terrain during the approach. Contributing was the pilot's self-induced pressure to land the airplane after being informed by air traffic control that he was not operating in compliance with the ADIZ procedures.

Light Sport Airplane Crashes Near Basye, Virginia Mountain Resort

On November 11, 2006, a Czech Aircraft Works CH 601 XL RTF was substantially damaged when it struck trees following a loss of engine power while maneuvering near Sky Bryce Airport in Basye, Virginia. The pilot was killed. The Board determined that the probable cause was the pilot's inadequate preflight inspection, which resulted in a total loss of engine power due to fuel exhaustion.



The pilot was killed. The Board determined that the probable cause was the pilot's inadequate preflight inspection, which resulted in a total loss of engine power due to fuel exhaustion.

In the Southeast Region

Mitsubishi MU-2B Thunderstorm Encounter and Crash Near Argyle, Florida

On September 1, 2006, a Mitsubishi MU-2B-35 twin-engine turboprop airplane was destroyed when it struck the ground near Argyle, Florida. The pilot, who was the sole occupant, was killed.



The airplane was registered to Intercontinental Jet Incorporated of Tulsa, Oklahoma, and operated by Berg Steel Pipe Corporation of Panama City, Florida. According to preliminary air traffic control information, Tyndall Air Force Base's north approach cleared the pilot to descend at the pilot's request; the pilot acknowledged the transmission. No further communications were received from the pilot. The

Board determined that the probable cause was the pilot's inadvertent flight into thunderstorm activity that resulted in the loss of control, design limits of the airplane being exceeded, and

subsequent in-flight breakup. A contributing factor was the failure of air traffic control to use available radar information to warn the pilot he was about to encounter moderate, heavy, and extreme precipitation along his route of flight,

Cirrus SR-22 Airplane Crash into Trees on Approach to Statesville, North Carolina

On October 27, 2006, a Cirrus SR22, registered to a private owner, was substantially damaged when it struck trees and the ground while maneuvering near Statesville Regional Airport in Statesville, North Carolina. The pilot and one passenger sustained serious injuries; the two remaining passengers were killed. The plane had been en route to Lake Norman Airpark in Mooresville, North Carolina, and had been diverted to Statesville, North Carolina, due to the weather. The Board determined that the probable cause was the pilot's failure to maintain airspeed while maneuvering with a low ceiling in instrument flight conditions, resulting in an inadvertent stall and collision with trees and the ground. Factors in the accident were the pilot's failure to follow the published missed approach procedures and the airplane's checklist procedures for a balked approach.

In the Southwest Region

Business Jet Crash During Aborted Landing in Carlsbad, California

On January 24, 2006, a Cessna Citation 560, struck the localizer antenna platform during an apparent aborted landing on runway 24 at McClellan-Palomar Airport in Carlsbad, California.

The two pilots and two passengers were killed; the aircraft, owned by GOSHIP AIR, LLC, of Ketchum, Idaho, was destroyed by impact and postcrash fire. The Board determined that the probable cause was the captain's delayed decision to execute a balked landing (go-around) during the landing roll. Factors contributing to the accident include the captain's improper decision to land with a tailwind, his excessive



airspeed on final approach, and his failure to attain a proper touchdown point during landing.

Surplus Vintage Jet Fighter Crash While Maneuvering Near California City, California

On February 26, 2006, an Aero Vodochody L39 struck hilly terrain while performing a low-altitude course reversal maneuver about 6.4 nautical miles northwest of California City, California. Both pilots were killed, and impact and a postcrash fire destroyed the airplane. The experimental-category turbojet airplane was registered to Mach 1 Aviation of Universal City, California. The Board determined that the probable cause was the flight crew's failure to maintain terrain clearance during an intentionally performed course reversal turn at low altitude.

Twin-Engine Air Ambulance Crash in Kahului, Hawaii

On March 8, 2006, a Cessna 414A, operated by Hawaii Air Ambulance, Inc., crashed while maneuvering approximately 1 mile west of the airport in Kahului, Hawaii, on the island of Maui. The pilot and two medical flight attendants were killed. Witnesses said that they had observed the wings wobble and then watched the airplane drop straight down out of the sky and hit an automobile dealership. A postimpact fire destroyed the airplane and 10 automobiles. The Board determined that the probable cause was the failure of the pilot to execute the published emergency procedures pertaining to configuring the airplane for single engine flight, which would have allowed him to maintain minimum controllable airspeed (V_{mc}) and level flight. The pilot's failure to maintain V_{mc} led to a stall and subsequent V_{mc} roll at a low altitude. Contributing to the accident was the operator's inadequate pilot training in the single-engine flight regime and the loss of power from the left engine for undetermined reasons.

In the Northwest Region

Air Taxi Flight Crash Into Trees Near Mullan, Idaho

On June 8, 2006, a Cessna TU206G, registered to and operated by Majestic Alliance of Everett, Washington, crashed into trees and terrain near Mullan, Idaho. Both occupants (the pilot and one passenger) were fatally injured; the aircraft was substantially damaged. The Board determined that the probable causes were the pilot's visual flight rules (VFR) flight into instrument meteorological conditions (IMC) and his subsequent failure to maintain terrain clearance. The pilot's inadequate inflight planning/decision, mountain obscuration, trees and high terrain were factors.

Turboprop Airplane Crash During Instructional Flight in Big Timber, Montana

On June 24, 2006, a Pilatus PC-12/47, was destroyed when it crashed following a loss of aircraft control after it took off from Big Timber Airport in Big Timber, Montana. The certified flight instructor and student pilot were killed. The physical evidence at the accident site revealed that the airplane hit a fence approximately 10 inches above the ground. Subsequently, the airplane's right wing tip and engine struck terrain approximately 300 feet from the fence. A postimpact fire consumed the airplane. The Board determined that the probable cause was the flight instructor's failure to maintain an adequate airspeed while maneuvering, which led to an inadvertent stall.

Commercial Cargo Flight Crash Near Easton, Washington

On July 10, 2006, a Piper PA-31-350, operated by AirPac Airlines, struck a tree about .5 mile east of Easton State Airport in Easton, Washington. The commercial pilot, who was the sole occupant, was fatally injured, and the aircraft was destroyed by impact and postcrash fire. According to the controller at Seattle Air Route Traffic Control Center, at 8,000 feet above sea level, the pilot reported that he did not have enough power to maintain his assigned altitude and soon thereafter stated that he did not have enough power to make it over the Cascade Mountains. The aircraft then began to descend, and the pilot transmitted that he was going to go to Easton. When the aircraft was about .5 mile from the end of runway 27 at Easton, it struck a conifer tree about 20 feet from its top and fell to the ground. The Safety Board determined that the probable cause was the loss of power in both engines for undetermined reasons while in cruise flight, leading to an attempted forced landing. Factors include unfavorable winds at the site of the forced landing, and trees off the approach end of the grass runway the pilot was attempting to land on.

Prototype Very Light Jet Crash on Takeoff in Spanish Fork, Utah

On July 25, 2006, a Spectrum 33 experimental twin-engine jet airplane hit the ground following a loss of control during its initial climb after taking off from runway 30 at Spanish Fork-Springville Airport in Spanish Fork, Utah. The two pilots were fatally injured; impact forces destroyed the airplane, which was registered to and operated by Spectrum Aeronautical, LLC. Witnesses said that the airplane entered a right roll almost immediately after takeoff and the right wingtip struck the ground. The Board determined that the probable cause was the incorrect installation by company maintenance personnel of the aft upper torque tube bell crank resulting in roll control that was opposite to that commanded in the cockpit. Contributing factors were the lack of maintenance documentation detailing the installation of the bell crank, the installing mechanic's incorrect assumption that the bell crank could only be installed in one position, and the failure of maintenance personnel and the flight crew to check the position of the control stick relative to the ailerons after the maintenance and during the preflight checks.

Ongoing Regional Aviation Investigations

In the Southwest Region

Cessna 208B Crash near Naches, Washington

On October 7, 2007, a Cessna 208B single-engine turboprop airplane collided with mountainous terrain near Naches, Washington. The commercial pilot and nine passengers sustained fatal injuries; the airplane was destroyed. The flight departed Star, Idaho, en route to Shelton, Washington. Visual flight conditions generally prevailed along the route of flight except for IFR conditions in the Cascade Mountains and the western foothills. AIRMETs (Airmen's Meteorological Information) were issued for icing, low level turbulence, and mountain obscuration prior to the accident.

Air Tour Helicopter Crash in Princeville, Hawaii

On March 8, 2007, an Aerospatiale AS350BA helicopter operated by Heli-USA Airways, Inc., was substantially damaged when it collided with terrain following a loss of control while landing at the Princeville Airport, Princeville, Hawaii. Of the seven people on board, four were fatally injured and three received serious injuries. The local air tour flight was conducted under 14 CFR Part 135.

The pilot radioed that he was experiencing hydraulic problems and while landing, the helicopter impacted terrain. Examination of the wreckage revealed that a flight control system actuator had become detached in flight. As a result of the investigation, the FAA issued a Safety Alert Information Bulletin regarding the inspection and installation of the actuator.



Air Tour Helicopter Crash near Haena, Hawaii

On March 11, 2007, a McDonnell Douglas 369FF helicopter operated by Smoky Mountain



Helicopters and doing business as Inter-Island Helicopters, Inc., was destroyed by impact with trees and terrain in the town of Haena on the island of Kauai, Hawaii, during a Part 135 commercial air tour flight. Of the five people on board, one was killed and three received serious injuries. During cruise flight, the helicopter's tail rotor blades separated from the aircraft and the pilot

attempted an emergency landing. As a result of the investigative findings, the FAA issued Airworthiness Directives for inspections of the tail rotor.

In the Central Mountain Region

Air Ambulance Airplane Crash near Pagosa Springs, Colorado

On October 4, 2007, a Raytheon Aircraft Company C90A twin-turboprop airplane, operated by Eagle Air Med, was destroyed when it impacted terrain during descent near Pagosa Springs, Colorado. All three people onboard were fatally injured. The flight departed Chinle, Arizona, and was en route to Alamosa, Colorado, to pick up a patient.

Air Ambulance Airplane Crash near Ruidoso, New Mexico

On August 5, 2007, a Beech E90B twin-turboprop airplane operated by Southwest MedEvac was destroyed when it impacted terrain near Ruidoso, New Mexico. All five people on board were fatally injured. The flight had just taken off from Ruidoso after picking up a 15-month-old child and her mother. Witnesses observed the airplane make a left turn and disappear.

In the Alaska Region

Float-Equipped Airplane Crash During Sightseeing Flight in Ketchikan, Alaska

On August 16, 2007, a float-equipped de Havilland DHC-2 airplane operated by Seawind Aviation, Inc., crashed about 20 miles north of Ketchikan, Alaska. Of the nine people on board, five were fatally injured and four sustained serious injuries. The airplane was being operated as a VFR sightseeing flight for cruise ship passengers under 14 CFR Part 135, and was returning to the Ketchikan Harbor Seaplane Base when the accident occurred. Strong and gusty winds were reported in the area at the time of the accident.

Crash of Sightseeing Flight in Ketchikan, Alaska

On July 24, 2007, a float-equipped de Havilland DHC-2 airplane operated by Taquan Air Service was destroyed when it impacted mountainous tree-covered terrain, about 40 miles northeast of Ketchikan, Alaska. All five people onboard were fatally injured. The airplane was being operated under 14 CFR Part 135 as an air tour flight to the Misty Fjords National Monument. Other pilots in the area of the accident reported encountering weather conditions consisting of low clouds, rain, and fog.

In the North Central Region

Cessna 172N/Beech V35B Midair Collision near Blue Ash, Ohio

On May 11, 2007, a Cessna 172N high-wing airplane, operated by Flying Neutrons, Inc., and a Beech V35B low-wing airplane, operated by a private pilot, collided in flight near Blue Ash, Ohio. All three people on board the airplanes were fatally injured. The Cessna was operating under 14 CFR Part 91 on a local instructional flight, and the Beech was also operating under Part 91 on a local personal flight.

In the South Central Region

U.S. Customs and Border Protection Helicopter Crash near San Elizario, Texas

On May 22, 2007, a single-engine Eurocopter AS 350 B3 turbo-shaft helicopter, operated by U.S. Customs and Border Protection Air Operations, was destroyed when it experienced a loss of control and crashed near San Elizario, Texas. Of the two people on board, one was fatally injured and the other received serious injuries. Witnesses reported seeing the helicopter dip nose down and enter a spin before crashing. The routine border patrol flight was being conducted as a public use flight under 14 CFR Part 91.

Air Taxi Helicopter Crash into the Gulf of Mexico

On December 29, 2007, a single-engine Bell 206L1 helicopter, operated by Air Logistics LLC, crashed in the Gulf of Mexico following a loss of control during an approach to land. All four people on board survived the initial crash and exited the helicopter before it sank; however, one person eventually drowned. Of the remaining survivors, one was seriously injured, and two received minor injuries. A liferaft was not deployed before the helicopter sank. The last survivor was rescued 2.5 hours after the accident. The Part 135 on-demand air taxi flight was carrying passengers between offshore oil platforms at the time of the accident.

*In the Eastern Region**Sightseeing Helicopter Crash in Hudson River in New York City*

On July 7, 2007, the pilot of a Eurocopter EC130B4 helicopter operated by Liberty Helicopters, Inc., executed an autorotation into the Hudson River, New York, New York, after the occurrence of a main rotor failure. The seven people on board were not injured. The helicopter was approximately .5 mile from the heliport when a loud bang and severe vibration developed. The pilot then successfully performed the autorotation. The flight was being conducted under 14 CFR Part 91 as a sightseeing flight from West 30th Street Heliport, New York, New York.

**International Aviation Accident Investigations**

The NTSB participates in the investigation of accidents and serious incidents conducted by other nations because the United States is a signator (contracting state) to the ICAO Convention on International Civil Aviation. The following are examples of ongoing international investigations.

Sikorsky S-76 Helicopter Crash off the Coast of Tallinn, Estonia

On August 10, 2005, a Sikorsky S-76 helicopter crashed into the Baltic Sea off the coast of Tallinn, Estonia, killing the 2 crewmembers and 14 passengers, (including 2 U.S. citizens). The NTSB dispatched a team to assist the Aircraft Accident Investigation Department of Estonia in the investigation. The team included an NTSB accredited representative, Board specialists in operations and engineering, an investigator from the FAA, and the aircraft manufacturer. Investigative work continues in the United States and Estonia in the areas of vehicle simulation, hydraulic system modeling, and final report preparation.

West Caribbean Airways MD-82 Crash in Venezuela

On August 16, 2005, a McDonnell Douglas MD-82, operated by West Caribbean Airways, crashed near Machiques, Venezuela. The 8 crewmembers and 152 passengers were killed, and the airplane was destroyed. The airplane was being operated as a charter flight from Panama City, Panama, to Fort de France, Martinique. An NTSB accredited representative, three Board technical specialists, and representatives from the Boeing Company and Pratt & Whitney responded to the crash. Work continued in the United States in the areas of aircraft and engine performance.



Midair Collision With Gol Airlines Over Brazilian Amazon Jungle

On September 29, 2006, an Embraer Legacy 600 executive jet, owned and operated by Excelaire of Long Island, New York, collided midair with a Boeing 737-800, operated by Gol Airlines of Brazil, over the Amazon jungle. The Legacy airplane with 5 people on board landed safely at a nearby military airstrip; however, the Boeing 737 crashed in the jungle, and all 148 passengers and 6 crewmembers were killed. An NTSB accredited representative and advisors from the FAA and the Boeing Company led a team effort to assist in the Brazilian air safety investigation. Investigative work has progressed to the preparation of a final report.



Aviation Development Company Crash In Abuja, Nigeria

On October 29, 2006, a Boeing 737-200, operated by Aviation Development Company Airline, crashed at Nnamdi Azikwe International Airport in Abuja, Nigeria, shortly after takeoff. All 96 passengers and 8 crewmembers on board were killed. The airplane departed in weather conditions that included the possibility of wind shear and crashed within the airport property. The flight data recorder recovered from the crash contained a record of wind shear warnings and indicated that the crew actions resulted in an aerodynamic stall. An NTSB accredited representative and advisors from the FAA and the Boeing Company responded to the crash.

Adam Airlines Boeing 737 Crash in Makassar, Indonesia

On January 1, 2007, an Adam Airlines Boeing 737-400, disappeared from radar and crashed about 60 miles off the coast of Makassar, Indonesia. There were 102 people on board. The airplane had taken off from Juanda, Indonesia, and was en route to Manado, Indonesia. Initial search efforts identified the location of the main wreckage site. In August 2007, an underwater salvage team successfully recovered the flight recorders and they were read out in the NTSB labs. A U.S. team, including representatives from the NTSB, the FAA, Boeing and General Electric provided assistance to the NTSC of Indonesia, which is investigating the accident. A final report is in preparation.

Crash of Bombardier CL-600 in Moscow, Russia

On February 13, 2007, a Bombardier CL-600 was destroyed when it impacted the runway during a takeoff attempt at Vnukovo International Airport, Moscow, Russia. Of the three people on board, two were seriously injured and one incurred minor injuries. The flight was operating from Moscow to Berlin, Germany. The investigation is under the jurisdiction of the Interstate Aviation Committee. The NTSB is participating in the investigation with assistance from representatives of the FAA and General Electric (GE), the engine manufacturer.

Garuda Indonesia Airlines, Boeing 737-400 Landing Accident in Yogyakarta, Indonesia

On March 7, 2007, a Boeing 737-400, operated by Garuda Indonesia Airlines, overran the runway upon landing at Yogyakarta Airport, Indonesia. The airplane was destroyed by post crash fire. There were 21 fatalities and 50 serious injuries among the 133 people on board. The flight departed from Jakarta, Indonesia. The NTSB assisted in the NTSC of Indonesia's investigation, sending NTSB accredited representative with advisors from the FAA and Boeing to the accident site. The NTSC has published a final report.

Kenya Airways, Boeing 737-800 Crash in Douala, Cameroon

On May 5, 2007, a Kenya Airways Boeing 737-800 crashed upon takeoff from Douala Airport in Douala, Cameroon. The airplane was en route to Nairobi-Jomo Kenyatta International Airport, Nairobi, Kenya, and had originated in Abidjan, Ivory Coast, with a planned stop in Douala. All 114 occupants were killed and the airplane was destroyed. The Director General Civil Aviation of Cameroon is investigating the accident. A U.S. team, consisting of an NTSB accredited representative, and technical advisors from the NTSB, FAA, and Boeing traveled to the scene to assist in the investigation.

TAM Linhas Aéreas , Airbus A320 Runway Overrun in São Paulo, Brazil

On July 17, 2007, an Airbus A320, operated by TAM Linhas Aéreas, overran the runway while landing at São Paulo International Airport. After landing, the airplane departed the runway, crossed over a road, and impacted buildings. All 168 people on the airplane and 18 persons on the ground were killed. The airplane was on a scheduled flight from Porto Alegre, Brazil. This accident is being investigated by the Brazilian Aeronautical Accident Prevention and Investigation Center. The NTSB provided assistance with flight data and cockpit voice recorder readouts and is otherwise assisting the investigation as accredited representative with GE, the engine manufacturer, as an advisor.

China Air Lines Boeing 737-800 On-Board Fire After Landing in Okinawa, Japan

On August 20, 2007, a China Air Lines Boeing 737-800 caught fire after landing at Naha Airport (Okinawa), Japan. All 165 people on board successfully evacuated and the airplane was destroyed. The NTSB sent an accredited representative and an NTSB powerplant specialist to assist the Aircraft and Railroad Accident Investigation Committee (ARAIC) of Japan with its investigation. Technical advisors from Boeing, the FAA, and GE also assisted. The investigation resulted in an immediate fleetwide inspection and modifications to the affected models of the worldwide Boeing 737 fleet.

One-Two-Go Airlines Boeing MD-82 Crash in Phuket, Thailand

On September 16, 2007, a Boeing MD-82, operated by One-Two-Go Airlines crashed during an attempted landing and missed approach at Phuket International Airport, Phuket, Thailand. There were 88 fatalities among the 130 people on board. Heavy rain was reported at the time of the accident. An NTSB accredited representative and technical advisors from the FAA, Boeing, and Pratt&Whitney travelled to assist with the investigation.



Atlasjet Boeing MD-82 Crash on Approach, Isparta, Turkey

On November 30, 2007, a Boeing MD-83, operated by Atlasjet, struck nearby mountainous terrain during approach to Isparta Airport, Isparta, Turkey. All 57 people onboard were fatally injured. An NTSB accredited representative and an NTSB airworthiness specialist travelled to assist the Turkish Directorate General of Civil Aviation with its investigation. Technical advisors from Boeing and Honeywell also assisted in the investigation.



Public Hearings and Forums

Forum on Airport Runway Incursions

Eliminating runway incursions and collisions is a top priority of the NTSB and has been on the Most Wanted List of Transportation Safety Improvements since the list's inception in 1990. On March 27, 2007, the NTSB held a 1-day forum focusing on airport runway incursions and accidents, and potential safety solutions. The Runway Safety Forum coincided with the 30th anniversary of the world's worst aviation accident – the 1977 runway collision between two Boeing 747s, operated by Pan American World Airways and KLM, at Los Rodeos Airport, Tenerife, Canary Islands. The accident took the lives of 583 people on board both airplanes. Captain Robert Bragg, the Pan Am first officer that day, recounted his experiences at the forum.

The scope of the problem, how to avoid runway incursions, educational initiatives, and new technologies were highlighted in presentations made by representatives of the FAA, Department of Defense, Flight Safety Foundation, Air Line Pilots Association International, Aircraft Owners and Pilots Association, the Air Safety Foundation, the Air Transport Association, the Regional Airline Association, the National Air Traffic Controllers Association, and the Transportation Safety Board of Canada.

Forum on Unmanned Aerial Systems

As a result of the NTSB's investigation into the April 2006 Predator B unmanned aircraft crash near Nogales, Arizona, the Safety Board will hold a 2-day forum in April 2008 on the safety of unmanned aircraft systems (UAS). The forum will provide an opportunity for the Board and interested parties to discuss the growing use of UAS and integration of UAS in the National Airspace System (NAS). Issues addressed will include regulatory standards, system design, certification and airworthiness. The Board's October 2007 meeting on Predator B accident near Nogales, Arizona, resulted in 22 safety recommendations to the FAA and the Customs and Board Protection agency to address deficiencies associated with the use of unmanned aircraft systems in the NAS.

Office of Highway Safety

Highway transportation accidents have a significant impact on American society. The Federal Highway Administration (FHWA) reported that vehicle miles traveled increased in 2006 to 3.01 trillion, up from 2.99 trillion in 2005. According to the National Highway Traffic Safety Administration (NHTSA), a total of 42,642 people died in highway crashes in 2006, a 1.7 percent decrease from 2005 (43,443). In addition, the fatality rate per 100 million vehicle miles traveled in 2006 was 1.42, a drop from 2005 (1.47 percent). NHTSA estimates the economic cost of an average roadway fatality at \$977,000 and the cost associated with a critically injured crash survivor at \$1.1 million. Consequently, the economic impact of motor vehicle crashes on the Nation's roadways can be estimated at \$231 billion a year, or an average of \$820 for every person living in the United States.

The NTSB is charged with investigating highway accidents, determining their probable or root causes, and making recommendations to prevent them from happening again. Changes in highway or vehicle design, driver training, occupant protection, and regulatory oversight are frequently recommended. In 2007, the Board addressed such important safety issues as on-board data recording of commercial vehicle driver's hours of service, verification of medical certification annual renewal for school bus drivers, vehicle fire reporting, motorcoach emergency egress and fire resistance of design and materials, emergency transportation of persons with special needs, lack of national standards for design of tunnel finishes, and inadequate regulatory requirements for tunnel inspections.

In 2007, the Office of Highway Safety's 28 staff members initiated 27 investigations, completed 34 dockets, issued 4 reports, and continued work on 37 investigations.

Completed Highway Investigations

Motorcoach Fire on Interstate 45 During Hurricane Rita Evacuation Wilmer, Texas

On September 23, 2005, a 1998 Motor Coach Industries, Inc., 54-passenger motorcoach, operated by Global Limo, Inc., of Pharr, Texas, was traveling northbound on Interstate 45 (I-45) near Wilmer, Texas. The motorcoach, en route from Bellaire to Dallas as part of the evacuation in anticipation of Hurricane Rita, was carrying 44 assisted living facility residents and nursing staff. The trip had begun about 3:00 p.m. on September 22. Fifteen hours later, about 6:00 a.m. on the following day, a motorist noticed that the right-rear tire hub was glowing red and alerted the motorcoach driver, who proceeded to the right shoulder of I-45 near milepost 269.5. The driver and nursing staff exited the motorcoach and observed flames emanating



from the right-rear wheel well. As they initiated an evacuation of the motorcoach, with assistance from passersby, heavy smoke and fire engulfed the entire vehicle. Twenty-three passengers were fatally injured. Of the 21 passengers who escaped, 2 were seriously injured and 19 received minor injuries; the motorcoach driver also received minor injuries.

The Board determined that the probable cause of the accident was insufficient lubrication in the right-side tag axle wheel bearing assembly of the motorcoach, resulting in increased temperatures and subsequent failed wheel bearings, which led to ignition of the tire and the catastrophic fire. Global Limo, Inc., had failed to conduct proper vehicle maintenance, to do pretrip inspections, and to complete posttrip driver vehicle inspection reports, thereby allowing the insufficient wheel bearing lubrication to go undetected. Contributing to this accident was the Federal Motor Carrier Safety Administration's (FMCSA) ineffective compliance review system, which resulted in inadequate safety oversight of passenger motor carriers. Contributing to the rapid propagation and severity of the fire and subsequent loss of life was the lack of motorcoach fire-retardant construction materials adjacent to the wheel well. Also contributing to the severity of the accident was the limited ability of passengers with special needs to evacuate the motorcoach.

The following safety issues were identified in this investigation:

- vehicle fire reporting and inconsistent data within Federal accident databases;
- FMCSA's ineffective compliance review program;
- emergency egress from motorcoaches;
- fire resistance of motorcoach materials and designs;
- manufacturer maintenance information on wheel bearing components;
- transportation of partially pressurized aluminum cylinders; and
- emergency transportation of persons with special needs.

As a result of this accident investigation, the Safety Board made 14 safety recommendations to the FMCSA, NHTSA, the Pipeline and Hazardous Materials Safety Administration (PHMSA), the Fraternal Order of Police, the International Association of Chiefs of Police, the International Association of Fire Chiefs, the International Association of Fire Fighters, the National Association of State EMS Officials, the National Sheriffs' Association, the National Volunteer Fire Council, Motor Coach Industries, Inc., and other motorcoach manufacturers, the United Motorcoach Association, and the American Bus Association. The Board reiterated two safety recommendations to the U.S. Department of Transportation (DOT). This report was adopted by the Board on February 21, 2007.

Ceiling Collapse in Interstate 90 Connector Tunnel Boston, Massachusetts

On July 10, 2006, about 11:00 a.m., a 1991 Buick passenger car was traveling eastbound in the Interstate 90 (I-90) connector tunnel en route to Boston's Logan International Airport. As the car approached the end of the tunnel, a section of the suspended concrete ceiling became detached from the tunnel roof and fell. Concrete panels from the ceiling crushed the right side of the car as it came to rest against the north side of the tunnel. A total of 26 tons of concrete and associated suspension hardware fell onto the vehicle and the roadway. The driver's wife, occupying the right-front seat, was killed; the driver was able to escape with minor injuries.

The Board determined that the probable cause of the ceiling collapse in the D Street portal of the I-90 connector tunnel was the use of an epoxy anchor adhesive that was not capable of sustaining long-term loads. Over time, the epoxy deformed and fractured until several ceiling support anchors pulled free and allowed a portion of the ceiling to collapse. Use of an inappropriate epoxy formulation resulted from the



failure of contractors to identify potential creep in the anchor adhesive as a critical long-term failure mode and to account for possible anchor creep in the design, specifications, and approval process for the epoxy anchors. The use of an inappropriate epoxy formulation also resulted from a general lack of understanding and knowledge in the construction community about creep in adhesive anchoring systems. In addition, the Central Artery/Tunnel project was not provided with sufficiently complete, accurate, and detailed information about the suitability of the Fast Set epoxy for sustaining long-term tensile loads. Contributing to the accident were the failures of contractors to determine that the anchor displacement found in the tunnel in 1999 was a result of anchor creep due to use of the same Fast Set epoxy, which was known to have poor long-term load characteristics; to monitor anchor performance in light of uncertainty as to the cause of the 1999 failures; and to implement a timely tunnel inspection program that would likely have revealed the ongoing anchor creep in time to correct the deficiencies before an accident occurred.

During the investigation, the Board identified the following safety issues:

- insufficient understanding among designers and builders of the nature of adhesive anchoring systems;
- lack of standards for the testing of adhesive anchors in sustained tensile-load applications;
- inadequate regulatory requirements for tunnel inspections; and
- lack of national standards for design of tunnel finishes.

The Board made 19 safety recommendations to the FHWA, the American Association of State Highway and Transportation Officials; the departments of transportation of the 50 states and the District of Columbia; the International Code Council; ICC Evaluation Service, Inc., Powers Fasteners, Inc., Sika Corporation; the American Concrete Institute; the American Society of Civil Engineers; and the Associated General Contractors of America. The report was adopted by the Board on July 10, 2007.

Rear-End Collision on Interstate 94, Near Chelsea, Michigan

On July 16, 2004, about noon, a 1999 Sterling tractor towing a 1997 Great Dane semitrailer was part of a traffic queue moving slowly east on Interstate 94 (I-94), behind a 2004 Saturn station wagon. The queue had formed following an earlier accident in the eastbound lanes of a highway

maintenance zone. A 2000 Kenworth tractor towing a 2000 Hyundai semitrailer was traveling behind the queue on I-94, approaching the Fletcher Road overpass at a witness-estimated speed of 60 mph. The Kenworth driver failed to slow in time for the traffic queue ahead. A 115-foot preimpact skid mark indicated that the Kenworth driver applied the brakes and swerved to the right almost



immediately before his truck collided with the right rear of the Sterling semitrailer. The cab of the Kenworth was compressed about 6 feet to the rear, trapping and fatally injuring its driver. The impact propelled the Sterling tractor-semitrailer into the Saturn, resulting in minor injuries to the Sterling driver and to a passenger in the Saturn.

The Board determined that the probable cause of this

multivehicle accident was the failure of the Kenworth driver to stop upon encountering traffic congestion in a temporary traffic control zone, likely due to a reduced state of alertness associated with failure to obtain adequate rest. Contributing to the accident were the insufficient regard for, and oversight of, driver compliance with the Federal commercial motor vehicle hours-of-service regulations on the part of Equity Transportation Company, Inc., owner of the Kenworth tractor-semitrailer, which endangered the safety of its drivers and the traveling public; the failure of the FMCSA to require motor carriers to use tamperproof driver's logs; and the failure of the Michigan Department of Transportation to conduct a merge traffic capacity analysis as part of a bridge rehabilitation project.

The Board made three safety recommendations to the FMCSA and Equity Transportation Company, Inc. The Board adopted this highway accident brief on December 4, 2007.

Collision Between School Bus and Trash Truck, Arlington, Virginia

On the morning of April 18, 2005, a 52-passenger school bus was traveling westbound on Columbia Pike in Arlington County, transporting 15 elementary school children to the nearby



Hoffman-Boston Elementary School. On approaching the signaled intersection with Courthouse Road, the bus driver began moving the bus into the left turn lane and slowed it nearly to a stop. As the driver turned the bus, its left front encroached slightly into the left lane of the eastbound side of Columbia Pike. The driver later stated that distractions inside the bus might have affected her

driving at this time. She said that her attention was drawn to a student standing on a seat and to a clipboard that fell to the floor at her driving station.

At the same time, a 2003 Mack trash truck was traveling with the flow of traffic in the left eastbound lane of Columbia Pike, at a speed estimated by one witness as 30 mph. The truck reached the intersection with Courthouse Road, continued through it on a green signal, and—according to several witnesses—deviated slightly leftward from its lane toward the yellow centerline. The truck collided with the school bus; the impact involved the front-left corners of both vehicles and a sideswipe. The school bus was pushed backward, but it remained in the left turn lane following the accident. The trash truck continued eastbound about 200 feet, crossed the right eastbound lane, and jumped the right curb of Columbia Pike before coming to rest. One student died at the scene, and another died 3 days later in the hospital. The truck driver, the bus driver, and one student sustained serious injuries; four students received minor injuries; and eight were not injured. The bus driver, who had been wearing a seat belt, was ejected through the broken windshield. It took emergency responders 1 hour to extricate the truck driver from the truck cab because his legs were trapped in the wreckage.

The Board determined that the probable cause of this accident was the school bus driver's encroachment into the trash truck's lane and the truck driver's failure to maintain proper lane position, for undetermined reasons, causing the two vehicles to collide and sideswipe each other. The Board adopted this highway accident brief on December 21, 2007.

Ongoing Highway Investigations

Motorcoach Departure from Exit Ramp Overpass Onto Interstate 75 Atlanta, Georgia

The NTSB continues to investigate an accident that occurred when a motorcoach transporting 33 members of the Bluffton University baseball team was traveling through Atlanta in the early morning hours of March 2, 2007. The motorcoach departed Interstate 75 (I-75) onto a high-occupancy-vehicle (HOV) exit-only ramp, which came to an end at the stop sign-controlled "T" intersection with Northside Drive.

As the motorcoach entered the intersection at an estimated speed of 50 to 60 mph, it collided with a reinforced concrete bridge wall and chain-link security fence. The motorcoach overrode the bridge rail, rotated counter-clockwise, and fell 19 feet onto the southbound lanes of I-75.

The bus came to rest on its left side. The driver, his wife, and 5 passengers were killed; 28 other passengers



were injured. Two southbound passenger vehicles were damaged from falling debris; none of the passenger-vehicle occupants were injured. The safety issues being investigated include HOV signage of left-hand exits, occupant protection, and event data recorders.

Collapse of Interstate 35W Bridge, Minneapolis, Minnesota

The NTSB continues to work on this major investigation with a team of highway engineers and specialists in metallurgy, survival factors, and computer modeling. The Interstate 35W (I-35W)



bridge over the Mississippi River collapsed during the evening rush hour on August 1, 2007. Twelve motorists/passengers and one construction worker were fatally injured; their bodies were recovered from the Mississippi River over the course of several days. One hundred forty-five people were injured. About 110 personal and commercial vehicles were on the portion of the bridge that collapsed; and 17

vehicles were removed from the river, along with tons of wreckage. The NTSB is working with the FHWA in conducting a structural analysis of the bridge, which was undergoing rehabilitation at the time of the collapse. Investigators are reviewing the deck truss bridge design and verifying loads and stresses on steel gusset plates and beams, in addition to determining the location of 287 tons of construction equipment and raw materials on the bridge at the time. Finite element models of the bridge are being developed and analyzed, and more than 300 witnesses have been interviewed.

Rear-End Chain-Reaction Collision Near Sulphur Springs, Texas

The NTSB is completing the investigation of an accident that occurred on June 13, 2004, near Sulphur Springs, Texas. The collision involved a tractor-auto transporter and a sport utility vehicle (SUV), which was stopped in the right-hand traffic lane in a queue of vehicles on Interstate 30 (I-30). The queue had formed due to a single-vehicle crossover accident with multiple fatalities, which had occurred 1.5 hours earlier and had prompted the Texas Department of Public Safety to close all eastbound and westbound lanes of I-30, as well as detour traffic to parallel service roads. The force of the collision pushed the SUV forward, into and under the rear of the trailer of another truck, which was in turn pushed forward into the rear of a second SUV and then another truck. A fire erupted involving the first SUV and one of the trucks. All four occupants of the first SUV and the driver of the tractor-auto transporter were killed. The occupants of the other vehicles sustained minor injuries.

Median Crossover, Collision, and Fire in Sherman, Texas

The NTSB is completing the investigation of a September 20, 2004, collision on U.S. Highway 75 in Sherman, Texas. The accident involved a truck tractor-semitrailer traveling northbound that veered leftward from the right lane, crossed the grassy median, and entered the opposing lanes, where it collided with an SUV and a pickup truck. The truck and the SUV came to rest in the grass on the far side of the roadway, and the ensuing fire engulfed both vehicles. The pickup remained in the southbound travel lanes. The driver and four occupants of the SUV and the driver and four occupants of the pickup truck were killed. Two passengers in the pickup truck sustained serious injuries, and the truck driver sustained minor injuries.

Tanker Truck Overtake and Fire, Elkridge, Maryland

On January 13, 2004, a fully loaded gasoline tanker truck traveling southbound on Interstate 895, near Elkridge, Maryland, reached the overpass bridge at Interstate 95 (I-95), left the right side of the highway, mounted the right bridge rail, and plunged 30 feet onto the northbound traffic lanes and median of I-95. An explosion and large fire ensued, and four vehicles traveling northbound on I-95 drove into the fire. When the fire was extinguished, two tractor-semitrailers, a passenger car, and a pickup truck were found in their final rest positions at the accident scene. The tanker truck driver and three of the other drivers were killed. The fourth driver escaped uninjured from his burning vehicle. The NTSB is nearing completion of this investigation.

Commuter Train Highway/Rail Grade Crossing Accident Elmwood Park, Illinois

The NTSB is investigating a highway/rail grade crossing accident that occurred on November 23, 2005, the day before Thanksgiving, when a traffic queue formed within the 366-foot-wide signaled railroad grade crossing at West Grand Avenue in Elmwood Park, Illinois. A Metra commuter train, which had departed about 20 minutes earlier from Union Station in Chicago, was approaching the crossing on the westbound tracks at a speed of 70 mph. The train was comprised of a locomotive and six passenger cars and was on an express run to Antioch. The railroad grade crossing at West Grand Avenue contains three tracks and is situated so that the tracks cross the four-lane roadway diagonally, at an angle of about 29 degrees. The crossing is protected by a combination of gates and cantilever-mounted flashing warning lights; it also has signs warning motorists "Long Crossing Do Not Stop On Tracks." The engineer reported that as the train neared the crossing, he observed multiple vehicles on the tracks in front of him. He put the train into emergency braking but collided with six of the stopped vehicles, pushing them into secondary impacts with 12 other vehicles. One of the vehicles became engulfed in a postcrash fire. Three train passengers reported injuries, and seven vehicle occupants sustained injuries ranging from minor to serious.

Motorcoach Rollover Near Westport, New York

The NTSB is investigating a motorcoach rollover accident that occurred in the early evening on August 28, 2006, near the town of Westport, New York. A 2000 MCI 55-passenger motorcoach with 52 passengers was traveling northbound on Interstate 87, descending a 5 percent grade at an estimated 75 mph. As the motorcoach passed a tractor-semitrailer in the right lane, its left front tire failed, and the vehicle veered sharply to the left. The motorcoach went off the pavement, through a three-cable median barrier, and down a dirt and grass depressed center median. The motorcoach struck several large rocks in the median and rolled over, coming to rest on its roof. As a result, five people, including the driver, were killed, and 48 passengers were injured.

School Bus/Passenger Car Collision and Rollover, Huntsville, Alabama

The NTSB continues to investigate this November 20, 2006, accident, which occurred as a 2006 International 71-passenger school bus, transporting 40 high school-aged students, was traveling on the Interstate 565 (I-565) transition ramp near exit 19A in Huntsville, Alabama. A 1990 Toyota Celica was traveling next to the school bus in the right lane. The driver of the Toyota said that he lost control of the car and it swerved into the right front wheel of the school bus. The impact caused the school bus to move left and strike a 32-inch cement bridge rail. The bus driver, who was not wearing his seat belt, was thrown from the bus and came to rest on the roadway. The bus moved along the top of the rail for about 117 feet and then rolled over, falling about 30 feet to the dirt and grass beneath the bridge. The front of the bus landed on the ground, and the bus

bounced and came to rest upright. The Toyota also struck the bridge rail, but it was redirected and remained on the upper roadway. Four students were killed, and the other 36 sustained minor-to-serious injuries. The bus driver sustained serious injuries. The Toyota driver and his passenger were not injured.

Highway Accident Report on Fatigue Countermeasures

For report development purposes, the following investigations are being considered together because of similar safety issues.

Tractor-Semitrailer Rollover and Motorcoach Accidents Near Osseo, Wisconsin: The NTSB continues to investigate two separate accidents that occurred in the early morning hours of October 16, 2005, on Interstate 94 (I-94) near Osseo, Wisconsin. The first accident was a single-vehicle rollover involving a truck tractor-semitrailer. The combination unit was traveling at a driver-reported speed of 66 mph when it departed the right-hand travel lane and paved shoulder at an approximate 3-degree angle. The shoulder was grooved with rumble strips. Upon entering the sloped roadside and traveling approximately 535 feet, the driver steered to the left; the truck reentered the lane, overturned onto its right side, and slid to a stop, where it blocked both lanes and shoulders of westbound I-94.

A motorcoach carrying a high school marching band then collided with the wreckage of the tractor-semitrailer. The motorcoach was the lead bus in a convoy of four motorcoaches traveling from the University of Wisconsin near Whitewater to Chippewa Falls. The motorcoaches had completed 195 miles of the return trip. The accident bus was westbound in the right-hand lane, traveling at highway speed, when it came over a rise and collided with the wrecked tractor-semitrailer. There were no precrash skid marks. At the time of the accident, the weather was clear, there was no highway lighting, and the pavement was dry. The bus driver and four passengers were killed; 26 passengers sustained minor-to-serious injuries, and 10 passengers were not injured. The truck driver sustained minor injuries.

Tractor-Semitrailer–Passenger Car–School Bus Collision Near Lake Butler, Florida: The NTSB is investigating the January 25, 2006, accident between a truck tractor-semitrailer and a Pontiac Bonneville on State Road 121 in northern Florida. The Pontiac was stopped behind a Union County school bus when the truck slammed into it. The car burst into flames, and all seven occupants—children aged 15 years to 21 months—were fatally injured. The school bus was pushed 200 feet into a ditch and hit a tree. The driver of the combination vehicle and the 10 occupants of the school bus were also injured.

Motorcoach Rollover Near Turrell, Arkansas: The NTSB continues to investigate a single-vehicle rollover accident that occurred on October 9, 2004, on Interstate 55 near Turrell, Arkansas. The accident involved a 47-passenger motorcoach transporting 29 passengers to a casino in Tunica, Mississippi. Witnesses following the motorcoach estimated that it had been traveling about 70 mph. At exit 23A, the motorcoach veered right and entered a grassy area between the exit and entrance ramps. The bus began to rotate clockwise, striking an exit sign. As it overturned, slid, struck an earthen drainage ditch, and rolled over, the roof of the vehicle separated from the body on the left side, allowing passengers to be ejected. The motorcoach traveled 67 feet after striking the ditch and came to rest upside down, with the roof lying on the ground, still hinged on the right side. The bus had no passenger seat belts, and the driver was not wearing his seat belt. Fourteen passengers and the driver were killed; 16 others were injured.

Special Investigation Report on Sudden Acceleration

A highway special investigation report on sudden acceleration in heavy vehicles will address these two school bus accidents:

School Bus Accident in Liberty, Missouri: The NTSB continues to investigate a May 9, 2005, school bus accident in Liberty, Missouri. A 2000 Thomas 83-passenger school bus, with 53 elementary school-aged children on board, was traveling southbound on State Highway 291 approaching the intersection with State Highway 152. The 45-mph speed limit dropped to 40 mph on the descending grade to the intersection. The bus driver reported losing braking ability, beginning to swerve between lanes, and trying to avoid a collision with other southbound vehicles. The bus eventually left the roadway, ran onto the right shoulder, and struck a light pole. The bus continued south through a right-turn-only lane, crossed the westbound lanes on Highway 152, and entered the eastbound lanes, striking a 2003 Lincoln on the driver's side and pushing it into a 2001 GMC pickup truck. The three vehicles moved together in a southerly direction into a drainage ditch on the southwest corner of the intersection. The collision resulted in fatal injuries to the drivers of the Lincoln and the GMC. Forty-eight children and the bus driver sustained injuries ranging from minor to serious.

School Bus Collision in Falls Township, Pennsylvania: On January 12, 2007, a full-size transit-style school bus was traveling from the east building of the Pennsbury High School campus to the west building. An unknown number of students occupied the bus. According to witnesses, the bus swerved up onto the sidewalk and struck a group of students, injuring 14. The bus continued at moderate speed until it slammed into a brick abutment, injuring three more students. Preliminary reports from the local police indicate that the bus driver had not suffered a medical episode and that he had been yelling at the passengers to brace themselves because he could not control the bus. The injuries ranged from minor to serious, and the bus driver did not appear to have been injured. The bus was owned, operated, and maintained by the Pennsbury school district.

Office of Marine Safety

Under regulations prescribed jointly by the NTSB and the U.S. Coast Guard, the Board investigates major marine accidents (except accidents involving only public vessels) on the navigable waters or territorial sea of the United States or involving a vessel of the United States. A major marine accident involves the loss of six or more lives; the loss of a self-propelled vessel of over 100 gross tons; property damage over \$500,000; or a serious threat to life, property, or the environment from hazardous materials. The NTSB also investigates certain accidents involving public and nonpublic vessels; accidents that involve significant issues related to Coast Guard marine safety functions; accidents that are catastrophic; and accidents indicating recurring safety issues in areas where the states have primary jurisdiction, such as accidents involving recreational or commercial boats that operate solely in state waters.

Given the international nature of the marine transportation system and the number of foreign-registered cruise and cargo ships operating from U.S. ports, the NTSB's investigation of accidents involving both domestic and foreign-registered vessels is essential to the enhancement of marine safety worldwide. In the past, the NTSB has investigated marine accidents involving U.S.-registered ships as far away as the Persian Gulf and the South China Sea. In 2007, no overseas major marine accidents involving U.S.-registered ships were investigated by the NTSB. In its international role, the NTSB may participate in marine accident investigations involving foreign-registered vessels operating from U.S. ports. That role fulfills U.S. obligations with regard to foreign accident investigations established under the auspices of the International Maritime Organization (IMO).

Investigators and engineers from the NTSB participate on the U.S. delegations to several IMO committees. As international standards are developed, the staff informs IMO of important safety-related issues arising from NTSB investigations and applies Board expertise to assist the U.S. delegations. IMO participation enhances Safety Board performance in marine investigations by increasing exposure to international marine developments and by building good working relationships with technical experts at the Coast Guard, with the U.S. maritime industry and associations, and with foreign governments involved in marine safety and marine accident investigation.

A staff of professional investigators at the NTSB's Washington, D.C., headquarters investigates marine accidents. The staff includes Coast Guard-licensed master mariners, Coast Guard-licensed marine engineers, naval architects, and human performance and survival factors specialists. Marine accident reports contain a detailed accident analysis, probable cause, and safety recommendations that seek to prevent similar accidents or that address major deficiencies in the marine transportation system. The Office of Marine Safety and the Office of Research and Engineering also undertake special studies of specific marine safety issues that generally yield recommendations to Federal and state agencies and to the maritime industry.

In 2007, the Office of Marine Safety had 13 positions for investigators, and five of them were vacant. In 2007, one new investigator was hired. The average time to find and hire a qualified marine investigator is more than one year. However, the other four positions are expected to be filled in early 2008.

In 2007, the 12 members of the Office of Marine Safety investigated six new accidents, completed four reports, and continued work on one accident investigation.

Completed Marine Investigations

Engineroom Fire Aboard Commuter Ferry Massachusetts in Boston Harbor

On June 12, 2006, the commuter ferry *Massachusetts*, a U.S. small passenger vessel carrying 65 passengers and 4 crewmembers, was en route from Rowe's Wharf in Boston Harbor to Hingham, Massachusetts, when a fire broke out in the engineroom. The vessel did not have, and was not required to have, an engineroom fire detection system. Before a fireboat from the Boston Fire Department's marine unit arrived, all the passengers safely transferred to another commuter vessel in the vicinity. The fireboat extinguished the fire.

Damage, estimated at \$800,000, was confined mostly to the engineroom. The accident resulted in no serious injuries or fatalities. Safety issues examined during the investigation included fixed fire detection and suppression systems in



the enginerooms of small passenger vessels. The Board determined the probable cause of the fire on board the *Massachusetts* was the ignition of diesel fuel by contact with a hot engine surface, which occurred because a fuel line attached to a fuel injector was not properly connected during engine maintenance by a contract mechanic. Contributing to the extent of the damage was the absence of a fixed fire detection and suppression system, which precluded the crew from receiving timely notification of the fire and which allowed the blaze to spread throughout the engineroom. The Board adopted the report on March 21, 2007. As a result of its investigation, the Board made the one safety recommendation to the U.S. Coast Guard to require all small passenger vessels certificated to carry more than 49 passengers, regardless of date of build or hull material, be fitted with an approved fire detection system and a fixed fire suppression system in their enginerooms.

Grounding of Container Ship New Delhi Express in Kill Van Kull Waterway, New York Harbor

On April 15, 2006, the Hong Kong-registered container ship *New Delhi Express*, while westbound in dense fog in the Kill Van Kull waterway of New York Harbor, struck a submerged ledge near a buoy and grounded. The ship carried a master, 21 crewmembers, three passengers, and two pilots. Damages to the *New Delhi Express* were estimated at \$1.5 million. Two of the



three tugs assisting the vessel were also damaged. No one was injured. Pilot error, bridge resource management, and buoy deployment were investigated as safety issues in the accident.

The Board determined the probable cause of the grounding of the *New Delhi Express* was the error of the docking pilot in not using all available resources to determine the vessel's position as he navigated the Kill Van Kull waterway. Contributing to the cause of the grounding was the failure of both pilots to practice good bridge resource management. The Board adopted the report on May 30, 2007. A recommendation was made to the U.S. Coast Guard to use the circumstances of the accident related to the improper buoy redeployment as a "lesson learned" and disseminate the information to appropriate personnel, emphasizing the need to verify all buoy positioning data during routine position checks and during buoy redeployments. A recommendation was also made to the State Commissions Whose Harbor Pilots Work With Docking Pilots requiring harbor and docking pilots to take part in recurrent joint training exercises that emphasize the concepts and procedures of bridge resource management.

Fire Aboard Construction Barge Athena 106 in West Cote Blanche Bay, Louisiana

On October 12, 2006, the uninspected towing vessel *Miss Megan* was pushing two barges in the West Cote Blanche Bay oil field in Louisiana. The construction barge *Athena 106* was secured along the port side of deck barge *IBR 234*, and the *Miss Megan* was secured to the stern of *IBR*



234, pushing both barges. The *Miss Megan* was crewed by a licensed master and one deckhand. The construction barge carried six workers. While the *Athena 106* was under way, the barge's aft spud (a 5-ton steel shaft used as a mooring device) released from its fully raised position, dropped into the water, and struck and severed a submerged high-pressure natural gas pipeline. The resulting gas release ignited and engulfed

the towing vessel and both barges. The *Miss Megan* master and four barge workers were killed. One barge worker and one towboat deckhand survived, and one barge worker was officially listed as missing. Safety issues identified in the investigation were the failure to use safety devices and the limited oversight of vessels not subject to inspection by the U.S. Coast Guard.

The Board determined the probable cause of the accident was Athena Construction's failure to require its crews to pin the spuds securely in place on its barges, which allowed the sudden, unintentional release of the *Athena 106's* aft spud, rupturing a buried pipeline and causing natural gas to surface and ignite. Contributing to the accident was the failure of Central Boat Rentals to require, and of the *Miss Megan* master to ensure, that the barge spuds were securely pinned before getting under way. The Board adopted the report on June 14, 2007. As a result of this investigation, five recommendations were made to the Occupational Safety and Health Administration, the U.S. Coast Guard, and to Athena Construction and Central Boat Rentals regarding oversight roles on vessels; securing the gear on barges, including spud pins, before the

barges are moved; and establishing safety management systems appropriate for the characteristics, methods of operation, and nature of service of towing vessels.

Boiler Rupture Aboard Cruise Ship Norway in Miami, Florida

On May 25, 2003, a boiler ruptured on the Norwegian Cruise Line passenger ship *Norway*, sending hot water and steam into the engine room, passageways, and cabins. The accident occurred while the vessel was moored in Miami, Florida, with 2,135 passengers and 911 crewmembers on board. The rupture caused extensive damage to the boiler, the boiler room, and accommodation spaces three decks above the boiler. Eight crewmembers were killed and 19 others were injured. No passengers were injured. Issues of concern in the investigation were the



adequacy of the maintenance, repair, and inspection of the boilers and the adequacy of surveys by the vessel's classification society. Because high-pressure steam boilers are no longer used in cruise ships calling in the United States, the lessons to be learned from this accident had little application.

The Board determined that the probable cause of the boiler rupture on the *Norway* was the deficient boiler operation, maintenance, and inspection practices of Norwegian Cruise Line, which allowed material deterioration and fatigue cracking to weaken the boiler. Inadequate boiler surveys by Bureau Veritas contributed to the cause of the accident. The Board adopted the report on October 29, 2007.

Ongoing Marine Investigations

Heeling of Cruise Ship M/V Crown Princess Off Port Canaveral, Florida

On July 18, 2006, the Bermuda-registered cruise ship *Crown Princess*, a new vessel that had been in service for only a month, departed Port Canaveral, Florida, for Brooklyn, New York, its last port of call on a 10-day round-trip voyage to the Caribbean. Slightly more than an hour after departing, the vessel was on a heading to intersect



its first plotted track to New York when its automatic steering system began a turn to port. In an effort to counter the effects of a perceived high rate of turn, the second officer, the senior watch officer on the bridge, took manual control of the steering. The second officer's manual steering commands ultimately caused the vessel to heel to starboard at a maximum angle of about 24°, resulting in 14 serious and 284 minor injuries to passengers and crewmembers. Safety issues being investigated in the accident are (1) actions of the captain, staff captain, and second officer; (2) training in the use of integrated navigation systems; (3) reporting of heeling incidents and accidents; and (4) emergency response following severe incidents.

Allision of Tankship M/V Kition with Interstate 10 Bridge Pier Baton Rouge, Louisiana

On February 10, 2007, the Bahamas-registered tankship M/V *Kition* moved away from its berth at the Apex Oil terminal on the right descending (west) bank of the Mississippi River just upriver of the Interstate 10 highway bridge. A Louisiana state pilot was navigating. While the



pilot was attempting to turn the vessel from the dock before proceeding downriver, the bow of the nearly 800-foot-long vessel hit the bridge pier, causing an estimated \$8 million in damage. The *Kition* sustained hull damage estimated at \$726,500. No one was injured. The safety issues being investigated are the pilot's actions, pilotage oversight, and postaccident alcohol testing.

Grounding of Cruise Ship Empress of the North Near Juneau, Alaska

On May 14, 2007, the 360-foot passenger vessel *Empress of the North*, operated by Majestic America Line, ran aground on Rocky Island, a charted rock at the intersection of Lynn Canal and Icy Strait about 20 miles southwest of Juneau. The vessel was carrying 206 passengers and



75 crewmembers. A newly licensed third mate was on his first navigation watch. The U.S. Coast Guard and several good Samaritan vessels assisted in evacuating the passengers and nonessential crewmembers and safely transporting them back to Juneau. No injuries or pollution resulted, but the vessel sustained significant damage to its starboard underside and propulsion system.

Safety issues being investigated include the master's decision to put an inexperienced third mate on watch without supervision or guidance, company policies and procedures regarding watchstanding oversight, the new third mate's training and experience, regulatory compliance, and lifesaving devices.

Allision of Tankship Axel Spirit with Ambrose Lighthouse Tower New York Harbor

On November 3, 2007, the 819-foot Bahamas-registered tankship *Axel Spirit*, carrying 441,000 barrels of crude oil, allided with Ambrose Light Tower at the entrance to New York Harbor. All three legs and the central column of Ambrose Light Tower were damaged, causing the tower to lean. Preliminary reports by the U.S. Coast Guard indicate that the tower was damaged beyond repair and that construction of a new tower will cost \$10 million. Safety issues being considered are failure of the tankship to maintain a safe distance from an aid to navigation; bridge resource management; failure to give proper notification of the accident to the Coast Guard, the boarding pilot, and the vessel's operating company; failure to assess damage after the accident; and compliance with the vessel's safety management system.



Allision of Container Ship Cosco Busan with San Francisco-Oakland Bay Bridge

On November 7, 2007, in dense fog, the 901-foot container ship M/V *Cosco Busan*, registered in Hong Kong, allided with the fendering system at the base of one of the supporting towers of the San Francisco-Oakland Bay Bridge. The ship was outbound from the Port of Oakland carrying a load of 2,529 containers, destined for Busan, Korea. A San Francisco Bay bar pilot was navigating in conditions of reduced visibility. As the vessel approached the bridge, the chief mate on the bow warned that the tower was very close, and the pilot ordered hard starboard rudder. The vessel then struck the corner of the fendering system at the base of the D tower. The



accident was initially reported to have caused only a small oil spill, but revised estimates were that the *Cosco Busan* released about 55,000 gallons of bunker oil into the bay. Safety issues being investigated include bridge resource management, drug and alcohol testing, San Francisco Bay pilot performance and oversight, response plan with respect to the allision, vessel traffic service performance with respect to the *Cosco Busan*, San Francisco-Oakland Bay Bridge safety from marine accidents, IMO initiatives to protect bunker tanks on vessels.

U.S. Submarine Collides with Japanese Supertanker

On January 7, 2007, while operating submerged near the Strait of Hormuz, the USS *Newport News* passed under the tanker *Mogamigawa* and was sucked into the ship's propellers. The tanker, which was carrying 280,000 tons of crude oil, was unaware of the presence of the submarine. The submarine surfaced and communicated with the tanker. There were no injuries or pollution, and both vessels were able to proceed to repair yards under their own power. The damage was approximately \$60 million to the submarine and \$2 million to the tanker.

The NTSB was required by 49 U.S.C §1131(b) to investigate this accident. After consulting with the Japanese Marine Accident Investigation Authority and the U.S. Coast Guard, the NTSB decided to conduct a joint investigation with Japan under the International Code for the Investigation of Marine Casualties and Incidents, IMO Resolution A.849(20). However, before launching an investigation team the Board was notified that the owners would not permit NTSB investigators to inspect the *Mogamigawa*. The NTSB then decided, rather than conduct an independent investigation, it would support the Japanese investigation by working with the U.S. Navy to obtain information for its report. Much of the information requested was classified by the Navy and therefore unavailable. The Navy reported that the submarine's sonar supervisor reported the sonar contact of the *Mogamigawa* to the Officer of the Deck 4 minutes before the collision, after the situation was already *in extremis*. The Navy investigated the accident and has changed its operating procedures to avoid such a situation in the future.

Office of Railroad, Pipeline and Hazardous Materials Investigations

Railroad Safety

Railroads are one of the Nation's safest forms of transportation, but the potential for tragedy exists in railroad operations, as it does in every other mode of transportation. Millions of passengers travel each year on Amtrak and commuter rail systems, often over tracks owned by freight railroads. In addition, rail transit systems transport millions of commuters to and from major metropolitan areas each day.

Freight railroads own and maintain their own infrastructure, including 140,490 miles of track and the associated bridges, buildings, repair shops, and switching facilities. Each year, 40 percent of the Nation's freight moves by rail, more than by any other mode. Railroads move about 36.5 million carloads each year, including over 1.7 million carloads of hazardous materials. The amount of railroad freight, particularly intermodal, is continuing to rise.

In 1967, Congress assigned the primary responsibility for railroad accident investigation to the NTSB. The Board analyzes selected rail accidents in depth, determining the probable causes and issuing safety recommendations to prevent the occurrence of similar accidents. Because of its small staff and limited resources, the Railroad Division does not investigate every rail accident reported to the Federal Railroad Administration (FRA). To use its resources most efficiently, the Board has established accident investigation criteria that help highlight accidents that involve significant safety issues.

The NTSB also conducts studies of significant railroad safety issues, which are often based on a set of accident investigations. In other cases, the studies may be based on analyses of regulations, railroad safety programs and procedures, audit reviews of management and operations practices, or other research. In addition, the NTSB investigates selected accidents involving specific life-saving issues.

In 2007, the Office of Railroad, Pipeline and Hazardous Materials Investigations had 35 staff members. The Office launched on 14 accidents, completed 10 accident reports, and continued work on 19 open investigations.

Completed Significant Railroad Investigations

Collision of Two CN Freight Trains in Anding, Mississippi

On July 10, 2005, two CN freight trains collided head on in Anding, Mississippi. The trains were being operated under a centralized traffic control signal system on a single track. Signal



data indicated that the northbound train had continued past a stop (red) signal at North Anding and collided with the southbound train about .25 mile beyond the signal. The collision derailed 6 locomotives and 17 cars. About 15,000 gallons of diesel fuel were released from the locomotives and resulted in a fire that burned for about 15 hours. Two crewmembers were on each train; all four were killed.

As a precaution, about 100 residents were evacuated; they did not report any injuries. Property damages exceeded \$9.5 million; clearing and environmental cleanup costs totaled about \$616,800. The Board determined that the probable cause was the failure of the crew of the northbound train to comply with wayside signals requiring it to stop at North Anding. The crew's attention to the signals was most likely reduced by fatigue; however, due to the lack of a locomotive cab voice recorder or the availability of other supporting evidence, other factors cannot be ruled out. Contributing to the accident was the absence of a positive train control system that would have stopped the train before it exceeded its authorized limits. Also contributing to the accident was the lack of an alerter on the lead locomotive that may have prompted the crew to be more attentive to the operation of the train. The Board adopted the report on March 20, 2007.

Union Pacific Railroad Train Strikes Railroad Employee near Laramie, Wyoming

On October 5, 2005, a Union Pacific Railroad (UP) train struck and killed a maintenance-of-way employee who was working on an adjacent track. He had been walking on the track with his back to the approaching train and was preparing to move a tamper machine. The train had been cleared through the work limits at 40 mph. Throughout the day, the UP employee in charge notified several designated safety coordinators of approaching trains. In turn, the coordinators notified the workers for whom they were responsible. However, earlier in the year, the tamper operators had agreed with their safety coordinator that they did not need to be notified directly about approaching trains. They believed that (1) their equipment did not normally enter an area that could be struck by a train passing on an adjacent track and (2) they could monitor the radio in the cab of the tampers and would be aware of approaching trains when the coordinator notified other members of the work crew. However, on the day of the accident, the tamper operator who was struck by the train was not inside the cab to listen to the radio when the crews were notified of the approaching train. The Board determined that the probable cause of the accident was the agreement among the employees that they did not need to be notified of approaching trains as required by rule and regulation. Contributing to the accident was the employee's failure to stay a safe distance from a track cleared for passing trains. The Board adopted the report on April 23, 2007.

Derailment of CSX Transportation Freight Train near Glencoe, Kentucky

On January 5, 2005, a CSX Transportation (CSX) freight train derailed its lead locomotive and six of its cars at CSX's Eagle Tunnel No. 3 near Glencoe, Kentucky. The train had been operating about 7 mph on a single main track when it struck debris left from the earlier collapse of a section of the tunnel. The engineer had placed the train into emergency braking about 6 seconds before the impact. The engineer and the conductor sustained minor injuries. The property damage was about \$185,000. The Board determined that the probable cause was the collapse of Eagle Tunnel



No. 3 due to CSX's failure to repair the previously identified deteriorating section of the tunnel. The Board adopted the report on May 7, 2007.

Derailment of Chicago Transit Authority Train in Chicago, Illinois

On July 11, 2006, the last car of a Chicago Transit Authority (CTA) train derailed in the subway between the Clark/Lake and Grand/Milwaukee stations in downtown Chicago, Illinois. About 1,000 passengers were on the eight-car rapid transit train. Following the derailment, the train came to a stop, and electrical arcing between the last car and the 600-volt direct-current third rail generated smoke. Electrical power was removed from the third rail, and most passengers walked to an emergency exit stairway about 350 feet in front of the train that led to the street level. Some passengers had to be assisted in their evacuation by emergency responders. According to the Chicago Fire Department, 152 people were treated and transported from the scene. No one was killed. Total damage exceeded \$1 million. The Board determined that the probable cause was the CTA's ineffective management and oversight of its track inspection and maintenance program and its system safety program, which resulted in unsafe track conditions. Contributing to the accident were the Regional Transportation Authority's failure to require that action be taken by the CTA to correct unsafe track conditions and the Federal Transit Administration's ineffective oversight of the Regional Transportation Authority. Contributing to the seriousness of the accident was smoke in the tunnel and the delay in removing the smoke. The Board adopted the report on September 11, 2007.

Collision of Two Norfolk Southern Freight Trains near Lincoln, Alabama

On January 18, 2006, eastbound Norfolk Southern Railway (NS) freight train 226, while traveling about 50 mph near Lincoln, Alabama, diverted from the main track onto a siding track, where it struck the rear of eastbound NS train 22R, which was stopped in the siding. The collision derailed the three locomotives and the first seven cars of train 226 and the rear three cars of train 22R. The three crewmembers of train 226 were injured. Property damage was estimated to be about \$5.2 million. The Board determined that the probable cause was the failure by the crew of train 226 to recognize an extra lighted aspect (caused by reflected sunlight) as an imperfectly displayed signal and to treat it as a most restrictive indication.

Contributing to the accident was the NS's inadequate illustrations and text in the rulebook and inadequate training to prepare crews to recognize a signal displaying an extra lighted aspect as an imperfectly displayed signal. Also contributing to the accident was the lack of a positive train control system that would have intervened when the crew did not respond appropriately to the signal. The Board adopted the report on October 26, 2007.

Derailment of Washington Metropolitan Area Transit Authority Train in Washington, D.C.

On January 7, 2007, a Washington Metropolitan Area Transit Authority (WMATA) Metrorail train derailed one car as the train traversed a crossover from track 2 to track 1 in an underground tunnel on the Metrorail Green Line near the Mount Vernon Square 7th Street-Convention Center (Mount Vernon Square) station.



The six-car train was traveling about 18 mph as it approached the station. The fifth car from the head end of the train derailed. About 80 passengers were on board at the time of the accident, and 23 passengers were transported to local hospitals for treatment and released. Emergency response personnel from Washington, D.C., provided the on-scene treatment and transportation of the injured passengers. The Board determined that the probable cause was a wheel climb on the derailed car that was initiated by a rough wheel surface created when the wheel was trued with a milling machine, the lack of quality control measures to ensure that wheel surfaces were smoothed after truing, the lack of a guard rail on the No. 8 turnout, and WMATA's failure to have an effective process

to implement safety improvements identified following similar accidents and related research projects. The Board adopted the report on October 16, 2007.

Collision of Runaway CN Railway Locomotives and Northern Illinois Regional Commuter Railroad (Metra) Train in Chicago, Illinois

On March 7, 2007, the crew of a CN Railway (CN) train left two locomotives with only their air brakes applied on a grade at the CN interchange point at Lumber Street in Chicago, Illinois. The two uncontrolled and unmanned locomotives rolled to the north. They traveled from CN's track onto Amtrak's track, where they collided with the lead locomotive of a standing Metra train. The event recorder data indicated that at the time of the collision, the speed of the runaway locomotives was 14 mph. They had traveled about 1,800 feet. About 55 passengers were aboard the eighth Metra passenger car at the time of the collision. The other seven passenger cars were empty. Seven passengers and the Metra engineer and assistant conductor were transported to area hospitals with minor injuries, where they were treated and released. The total property damage was estimated to be \$75,766. The Board determined that the probable cause was the failure of the CN engineer and conductor to secure the CN locomotives before leaving them unattended. The Board adopted the report on December 20, 2007.

Ongoing Rail Investigations

Washington Metropolitan Area Transit Authority Train Strikes Automatic Train Control Employee in Washington, D.C.

On May 14, 2006, a southbound WMATA Metrorail Red Line subway train struck and killed a Metrorail employee as the train was about to enter the Dupont Circle station in Washington, D.C. The employee was an automatic train control system mechanic who had been working with two other mechanics at the interlocking just north of the Dupont Circle station. All three mechanics had moved between the two main tracks north of the interlocking in order to stay clear of a northbound train that was leaving the station. As the southbound accident train was arriving, the other two mechanics remained in the clear between the two trains as they passed and were not injured.

Collision of Two Southeastern Pennsylvania Transportation Authority Trains in Abington, Pennsylvania

On July 1, 2006, in Abington, Pennsylvania, two Southeastern Pennsylvania Transportation Authority (SEPTA) passenger trains collided head on. The southbound train was traveling about 11 mph when it struck the standing northbound train. As a result of the collision, the control cab car and two passenger cars on the southbound train and the control cab car on the northbound train were derailed. Thirty-eight passengers were injured and treated on scene. Of those, 29 were transported to local hospitals, and 8 were admitted. All six crewmembers from both trains were also taken to local hospitals, and three of them were admitted. Total property damage was about \$179,700.

Passenger Fall Between Train and Platform on Long Island Railroad in Queens, New York

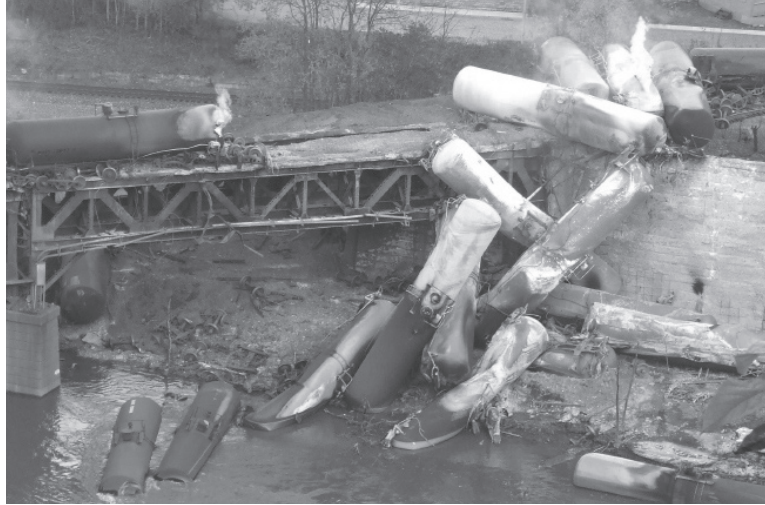
On August 5, 2006, a Long Island Rail Road passenger train stopped at the Woodside Station in Queens, New York, to discharge passengers. After the doors were closed, passengers told the conductor that a passenger was attempting to disembark at the station. The conductor re-opened the train's doors to let her disembark. As she disembarked, she fell between the train platform and the train's door and onto the ground beneath the platform. She crossed under the platform to get to the other side and was struck and killed by a train that was passing through the station.

Union Pacific Railroad Brakeman Struck by Train During Remote-Control Switching Operations in Pajaro, California

On October 13, 2006, a Union Pacific (UP) Railroad brakeman was fatally injured during switching operations at the UP Railroad's Watsonville Junction yard in Pajaro, California. The brakeman was assigned to a two-person crew (one conductor and one brakeman), which was the only crew working in the yard. At the time of the accident, the crew was conducting a remote-control switch movement of 11 cars northward using a UP locomotive pushing from the south end. The brakeman was in the yard ensuring that couplings were made, setting hand brakes as needed, and connecting air hoses. Using an operating control unit, the conductor pushed the locomotive against the cars to initiate their movement, lifted an uncoupling lever to let three cars roll into yard track 4 from a switching lead, and then stopped the locomotive and remaining cars when the uncoupled cars reached the desired speed. While the locomotive was stopped, its emergency brakes were activated through a command from the brakeman's operating control unit. Two of the three uncoupled cars then struck the brakeman.

Derailment of Norfolk Southern Train in New Brighton, Pennsylvania

On October 20, 2006, a Norfolk Southern Railway Company train en route from Chicago, Illinois, to Sewaren, New Jersey, derailed 23 tank cars that were loaded with ethanol while



crossing the Beaver River railroad bridge in New Brighton, Pennsylvania. The derailment resulted in several of the cars falling into the Beaver River and spilling an estimated 485,278 gallons of ethanol that fueled a fire that burned for 2 days. Emergency response personnel evacuated the area. Several pieces of broken rail were shipped to the NTSB's Materials Laboratory for examination and testing.

Derailment of a Rail Grinder on Union Pacific Railroad in Baxter, California

On November 9, 2006, a Harsco Track Technologies (Harsco) rail grinder, consisting of 2 locomotives and 11 specialized rail cars, derailed on UP Railroad track as it descended a significant grade near Baxter, California. Ten of the rail cars derailed. At the time of the accident, eight Harsco employees, one subcontractor, and one UP conductor-pilot were aboard. Two Harsco employees were killed. A fire began after the derailment. Property damages are estimated to be \$14.7 million.

Track Inspectors Struck by Washington Metropolitan Area Transit Authority Train in Alexandria, Virginia

On November 30, 2006, a northbound WMATA Metrorail Yellow Line subway train struck and fatally injured two Metrorail employees who were performing a routine walking inspection along an outdoor section of main track near the Eisenhower Avenue station in Alexandria, Virginia. The accident occurred as the northbound train was traveling along track normally used for southbound traffic.

Collision of Massachusetts Bay Commuter Railroad Train and Maintenance-of-Way Vehicle near Woburn, Massachusetts

On January 9, 2007, a southbound Massachusetts Bay Transportation Authority passenger train operated by the Massachusetts Bay Commuter Railroad struck a track maintenance vehicle that was on the track near Woburn, Massachusetts. The train consisted of six passenger cars, including a lead control car, and a locomotive pushing from the rear. Of the six employees working on or near the track maintenance vehicle, two were killed, and two were seriously injured. Emergency responders treated and released 10 passengers at the accident scene. Total estimated property damage was \$560,841.

CSX Train Derailment of Hazardous Materials/Fire in Shepherdsville, Kentucky

On January 16, 2007, a CSX freight train derailed 25 tank cars, 12 of which contained hazardous materials, near Shepherdsville, Kentucky. Emergency responders evacuated everyone within a 1-mile radius; a school evacuated approximately 400 students. Approximately 25 residents were treated and released at local hospitals; no railroad employee was injured.



CSX Train Derailment of Hazardous Materials/Fire in Oneida, New York

On March 12, 2007, a CSX freight train en route to Albany, New York, from Chicago, Illinois, derailed 28 of its cars, including 22 tank cars transporting hazardous materials, near Oneida, New York. Of the 22 derailed hazardous materials cars, 6 were breached; these included 4 tank cars transporting liquefied petroleum gas (a flammable gas), 1 tank car transporting toluene (a flammable liquid), and 1 tank car transporting ferric chloride (a corrosive liquid). As a result of the derailment, an explosion and fire occurred. An evacuation of everyone within a mile was ordered, and two elementary schools were closed. No one was killed or injured; however, four firefighters were taken to a hospital for observation because they had stepped into ferric chloride. Estimated damages were \$1.6 million.

Burlington Northern Santa Fe Railway Switchman Struck by Train During Remote-Control Switching Operations in Sacramento, California

On August 30, 2007, a westbound Burlington Northern Santa Fe Railway (BNSF) yard movement was involved in a side collision with a standing cut of freight cars inside BNSF's Mormon Yard in Sacramento, California. A 50-year-old remote control operator, who was riding on the northwest leading corner controlling the yard movement, sustained fatal injuries when the covered hopper on which he was riding collided with the southwest corner of a tank car on an adjacent track during a crossover movement.

CSX Train Derailment of Hazardous Materials/Fire/Evacuation in Painesville, Ohio

On October 10, 2007, an eastbound CSX Transportation freight train traveling about 50 mph through Painesville, Ohio, derailed its 31st through 62nd cars. The train crew had not made any train operation changes in more than 1.5 miles before the train's air brakes applied in an undesired emergency application. The crew looked back and saw a ball of fire coming up from the middle of the train. Some of the derailed cars contained hazardous materials: seven tank cars of ethanol, one tank car of liquefied petroleum gas, and one car of phthalic anhydride. Among the derailed cars were covered hopper loads of corn, wheat, feed, plastic, and lumber. The ethanol loads and many of the other cars were burning. Twenty-six of the cars were destroyed. The fire and smoke caused by the derailment caused about 14,000 area residents

to be evacuated from their homes and the closure of a highway near the location. Emergency responders to the accident scene consisted of four law enforcement agencies and 35 fire departments. Damages exceeded \$1.5 million.

Collision of Two Union Pacific Railroad Trains near Bertram, California



On November 10, 2007, an eastbound UP freight train, consisting of 6 locomotives and 60 cars carrying cement, ran into the rear of a stopped eastbound UP intermodal container train with five locomotives and 111 cars near Bertram, California. Two crewmembers on the striking train were killed. Derailment costs were estimated at more than \$2 million.

Collision of Amtrak Train with Norfolk Southern Train near Chicago, Illinois

On November 30, 2007, near Chicago, Illinois, an Amtrak train struck the rear end of a



Norfolk Southern freight train. The locomotive of the three-car Amtrak train came to rest on top of the freight train's last car. The passenger cars did not derail. At the scene, 182 passengers and 5 crewmembers were triaged. Of those, 71 were transported to hospitals and 2 passengers and 1 crewmember were admitted. The estimated damage was \$1.3 million.

Pipeline Safety

The NTSB is responsible for investigating pipeline accidents that cause a fatality, substantial property damage, or significant environmental impact. The agency may also investigate accidents that highlight safety issues of national importance or involve a selected accident-prevention issue.

In 2006, the Pipeline and Hazardous Materials Safety Administration (PHMSA) reported that the United States had approximately 2.43 million miles of natural gas pipeline. PHMSA also reported that transmission and gathering pipeline operators operated 321,156 miles of pipeline, while 1,310 distribution pipeline operators had about 1,172,374 miles of mainline and 770,612 miles of service line. In addition, 405 hazardous-liquid pipeline operators managed approximately 166,133 miles of hazardous-liquid pipelines.

In 2007, gas distribution operators reported 146 incidents, which, in total, caused 35 injuries, 8 fatalities, and property damages of more than \$23.7 million. Gas transmission operators reported 131 significant incidents, that caused 7 injuries, 2 fatalities, and property damages of about \$54 million. Hazardous liquid operators reported 112 accidents that caused 10 injuries, 4 fatalities, and \$44 million of property damage. About 3.7 million gallons were spilled, resulting in a net loss of 2.85 million gallons.

Completed Significant Pipeline Investigations

Anhydrous Ammonia Pipeline Release in Kingman, Kansas

On October 27, 2004, an 8-inch-diameter pipeline owned by Magellan Midstream Partners, L.P., and operated by Enterprise Products Operating, L.P., ruptured near Kingman, Kansas, and released approximately 4,858 barrels (204,000 gallons) of anhydrous ammonia, a poisonous liquefied gas. No deaths or injuries resulted from the release; however, the anhydrous ammonia migrated into a creek and killed more than 25,000 fish, including some from threatened and endangered species. The cost of the accident was \$680,715, including \$459,415 for environmental remediation.



The Board determined that the probable cause was a pipe gouge created by heavy equipment damage to the pipeline during construction in 1973 or subsequent excavation activity at an unknown time that initiated metal fatigue cracking and led to the eventual rupture of the pipeline. The Board adopted the report on June 14, 2007.

Gas Line Explosion and Fire in Bergenfield, New Jersey

On December 13, 2005, an apartment building exploded in Bergenfield, New Jersey, after natural gas migrated into the building from a damaged pipeline. The break occurred at an



underground threaded tee connection downstream from where excavators were removing an oil tank that was buried under an asphalt parking lot adjacent to the building. Three residents of the building were killed. Four residents and a tank removal worker were injured and transported to hospitals. The building, which was a complete loss, was assessed at \$863,300.

The Board determined that the probable cause was the failure of the American Tank Service Company to adequately protect the natural gas service line from shifting soil during excavation, which resulted in damage to the service line and the release and migration of natural gas into the apartment building. The Board adopted the report on May 1, 2007.

Pipeline Support of Completed Investigations in Other Modes

Pipeline Explosion and Fire Caused by Construction Barge Athena 106 in West Cote Blanche Bay, Louisiana

On October 12, 2006, the uninspected towing vessel *Miss Megan* was pushing two barges, the construction barge *Athena 106* and the deck barge *IBR 234*, in the West Cote Blanche Bay oil field in Louisiana. The *Miss Megan* was crewed by a licensed master and one deckhand. The construction barge carried six workers. While the *Athena 106* was under way, the barge's aft spud (a 5-ton steel shaft used as a mooring device) released from its fully raised position, dropped into the water, and struck and severed a submerged high-pressure natural gas pipeline. The resulting gas release ignited and engulfed the towing vessel and both barges. The *Miss Megan* master and four barge workers were killed. One barge worker and one towboat deckhand survived, and one barge worker was officially listed as missing. Two investigators from the pipeline staff participated in the investigation and evaluated the operation and condition of the pipeline. No pipeline safety issues were identified. The Board adopted the report on June 14, 2007.

Ongoing Pipeline Investigations

Propane Pipeline Rupture/Fire in Carmichael, Mississippi

On November 1, 2007, a 12-inch propane pipeline failed near Carmichael, Mississippi, resulting in the release, ignition, and explosion of propane gas. The ensuing fire involved five homes, killed two people, and injured four others. A 1-mile area around the burning pipeline was evacuated.



Hazardous Materials Safety

Chemicals affect every sector of the economy and make an essential contribution to the Nation's standard of living because they are vital to the productions of the following products, to name just a few: synthetic fabrics, lifesaving medicines, packaging materials, adhesives and paints, automobile parts, composite materials for aircraft, and fertilizers. In 2007, the American Chemistry Council reported an increase of more than 10 percent in chemical production volume between 2002 and 2006. A 1998 study by the Research and Special Programs Administration—the predecessor of PHMSA—estimated that more than 800,000 shipments of hazardous materials enter the Nation's transportation system each day. The *Commodity Flow Survey*, published jointly by the U.S. Departments of Commerce and Transportation, reported that more than 1.5 billion tons of hazardous materials were shipped by truck, rail, water, and air in the United States during 2002. Flammable liquids, gases, and corrosive materials account for more than 95 percent of these hazardous material shipments.

The impact of hazardous materials transportation is reflected in the data from hazardous materials incident reports submitted to PHMSA. In 2007, the transportation modes reported 18,415 incidents involving the release of hazardous materials. The incidents resulted in 9 fatalities, 203 injuries, and \$84.8 million in damages. The number of reported incidents, fatalities, and injuries fluctuates from year to year. During the 10-year period between 1998 and 2007, the transportation modes annually averaged 16,825 hazardous material incidents, involving a total of 14 deaths and 281 injuries. Reported damages have also fluctuated but displayed a significant upward trend during the 10-year period from 1998 to 2007. The \$84.8 million in reported damages for 2007 is 84 percent more than the \$46.3 million in damages reported for 1998.

Ongoing Hazardous Materials Investigations

Fire Involving Acetylene-filled Cylinders in Dallas, Texas

On July 25, 2007, acetylene gas ignited, resulting in a fire that caused the failure of hundreds of acetylene-filled cylinders at the Southwest Industrial Gases facility in Dallas, Texas. The cylinders,



which were on a trailer, contained about 100,000 cubic feet of the highly flammable and reactive acetylene gas. The trailer and its cylinders were destroyed in the fire. Three similar trailers and a building were also heavily damaged. Two facility employees were hospitalized with second- and third-degree burns. No one was killed.

Fire Involving Acetylene-filled Cylinders on Highway Trailers in The Woodlands, Texas

On August 7, 2007, a fire occurred involving acetylene cylinders on two highway trailers at the Hughes Christensen facility in the Houston suburb The Woodlands, Texas. There were no injuries or fatalities, but about 800 facility employees were evacuated.

Crash of Truck Carrying Acetylene-filled Cylinders/Fire in New Orleans, Louisiana

On October 20, 2007, in New Orleans, Louisiana, a tractor-semitrailer transporting about 250 cylinders of flammable acetylene gas overturned on Interstate 10 releasing the acetylene gas. As a result of the accident, the acetylene that was released from the cylinders ignited. Several cylinders struck five nearby vehicles. No one was killed, but the truck driver sustained minor injuries. No evacuations were required; however, the highway was closed for about 10 hours following the accident.

Hazardous Materials Support of Completed Investigations in Other Modes

In 2007, the NTSB's Hazardous Materials Staff helped complete one railroad accident investigation, one aviation accident investigation, and one highway accident investigation:

Collision of Two CN Freight Trains in Anding, Mississippi.

On July 10, 2005, two CN freight trains collided head on in Anding, Mississippi. The collision derailed six locomotives, which released about 15,000 gallons of diesel fuel and resulted in a fire that burned for about 15 hours. A total of seven tank cars containing hazardous materials

residue derailed: five contained propylene residue, one contained isopropylamine residue, and one contained carbamate pesticide residue. The only release of hazardous materials resulting from the derailment involved the propylene tank cars, which vented due to pressure buildup from the extreme heat of the diesel fuel fire. Hazardous materials investigators evaluated the positioning of tank cars in the trains and the timeliness with which hazardous materials information was provided to emergency responders. The investigation revealed that CN delayed in providing emergency responders with an accurate train consist indicating which hazardous materials were potentially involved in the fire. Additionally, deficiencies in local emergency planning and preparedness were identified. The Board issued recommendations addressing these issues to the FRA and the PHMSA. The Board adopted the report on March 20, 2007.

Motorcoach Fire on Interstate 45 During Hurricane Rita Evacuation near Wilmer, Texas

On September 23, 2005, a 1998 Motor Coach Industries, Inc., 54-passenger motorcoach, operated by Global Limo, Inc., of Pharr, Texas, was traveling northbound on Interstate 45 near Wilmer, Texas. The

motorcoach, en route from Bellaire to Dallas as part of the evacuation in anticipation of Hurricane Rita, was carrying 44 assisted living facility residents and nursing staff. The trip had begun about 3:00 p.m. on September 22. Fifteen hours later, about 6:00 a.m. on the following day, a motorist noticed that the right-rear tire hub was glowing red and alerted the motorcoach driver, who



proceeded to the right shoulder of the highway near milepost 269.5. The driver and nursing staff exited the motorcoach and observed flames emanating from the right-rear wheel well. As they initiated an evacuation of the motorcoach, with assistance from passersby, heavy smoke and fire engulfed the entire vehicle. Twenty-three passengers were fatally injured. Of the 21 passengers who escaped, 2 were seriously injured and 19 received minor injuries; the motorcoach driver also received minor injuries.

At the time of the fire, two passengers on the motorcoach were being administered oxygen from compressed gas cylinders, and 18 cylinders were on the bus. The investigation determined that partially filled aluminum cylinders exposed to heat are likely to fail before the internal pressure is high enough to rupture the burst disk. The smoke and heat from the fire prevented rescuers from safely proceeding further into the motorcoach within minutes of their arrival on scene; the aluminum cylinders soon failed, releasing oxygen to the fire. Safety Recommendations were issued to the PHMSA and the foremost emergency response associations to address the safety problems associated with partially filled aluminum cylinders involved in an accident-related fire. The Board adopted the report on February 21, 2007.

United Parcel Service Cargo Plane Fire, Philadelphia, Pennsylvania, and Public Awareness of Lithium Battery Hazards

On February 7, 2006, a McDonnell Douglas DC-8-71F, N748UP, operated by United Parcel Service Company (UPS) as flight 1307, made an emergency landing at its destination airport,



Philadelphia International Airport, after the flight crew reported a cargo smoke indication. The three flight crewmembers evacuated and sustained only minor injuries; however, the airplane and most of the cargo on board were destroyed by fire after landing. NTSB investigators searched the debris in each of the affected cargo containers in an attempt to identify the source of the fire.

Numerous items, including many electronic devices, some of which contained lithium batteries, were removed from the containers and sent to the NTSB's Materials Laboratory for further investigation. Although the investigation concluded that the exact origin and cause of the in-flight fire could not be determined, hazardous materials investigators examined the risks of transporting chargeable and non-rechargeable lithium batteries on aircraft. The investigation also identified a delay in UPS providing hazardous materials information to emergency responders in a timely manner. The Board issued recommendations addressing these issues to the FAA and the PHSMA. The Board adopted the report on December 4, 2007.

During the NTSB's public meeting on the UPS report on December 4, the Board members expressed concern about the level of public awareness, including passenger flight crews, of the risks of lithium batteries. The Board subsequently issued two additional recommendations to the FAA and the PHSMA on January 7, 2008, regarding programs to increase public awareness about the dangers associated with transporting lithium batteries by air and establishment of a means to measure the effectiveness of efforts undertaken.

Hazardous Materials Support of Ongoing Investigations in Other Modes

Allision of Container Ship Cosco Busan with San Francisco-Oakland Bay Bridge in San Francisco, California

On November 7, 2007, in dense fog, the Hong Kong-registered container ship *Cosco Busan* allided with the fendering system at the base of the delta tower of the San Francisco-Oakland Bay Bridge resulting in a 212-foot horizontal breach in the vessel's hull. Oil spilled from two damaged portside fuel tanks,

releasing approximately 55,000 gallons of bunker oil into the San Francisco Bay. The oil spill affected and threatened many environmentally sensitive sites and endangered species located in several jurisdictions in the San Francisco Bay area, including San Francisco, Marin, Contra Costa, Alameda, and San Mateo Counties. Hazardous

materials investigators are evaluating the effectiveness of actions to quantify the volume of oil spilled and the deployment of appropriate and necessary oil spill recovery assets. Additionally, hazardous materials investigators are examining the oil spill notification procedures, and contingency planning.



Derailment of Norfolk Southern Train in New Brighton, Pennsylvania

On October 20, 2006, a Norfolk Southern Railway Company (Norfolk Southern) train en route from Chicago, Illinois, to Sewaren, New Jersey, derailed while crossing the Beaver River railroad bridge in New Brighton, Pennsylvania.

The train consisted of a three-unit locomotive pulling 3 empty freight cars followed by 83 tank cars loaded with denatured ethanol, a flammable liquid. Twenty-three of the tank cars derailed near the east end of the bridge resulting in several of the cars falling into the Beaver River and spilling an estimated 485,278 gallons of ethanol that fueled a fire that burned



for 2 days. Although no injuries or fatalities resulted from the accident, homes and businesses adjacent to the accident site were evacuated. Norfolk Southern estimated the total damages

to be approximately \$5.8 million. The NTSB hazardous materials investigators are evaluating requirements for the separation of the train crew from the hazardous materials cars in a train.

Derailment of CSX Train with Hazardous Materials and Subsequent Fire near Shepherdsville, Kentucky

On January 16, 2007, a CSX freight train derailed 25 tank cars, 12 of which contained hazardous materials, near Shepherdsville, Kentucky. Of these 12 tank cars, 1 contained only a residue of chlorine, but the other 11 cars were fully loaded, including 4 cars containing butadiene (a



flammable gas) and 1 containing methyl ethyl ketone (a flammable liquid). As a result of the derailment, three of the derailed tank cars were breached and released significant quantities of butadiene, methyl ethyl ketone, and hydraulic fluid, a nonregulated material. Emergency responders evacuated everyone within a 1-mile radius; a school evacuated approximately 400 students.

Approximately 25 residents were treated and released at local hospitals; no railroad employees were injured. NTSB hazardous materials investigators are evaluating the effect that the release and ignition of hazardous materials had on the public, as well as the overall response effort.

CSX Train Derailment of Hazardous Materials/ Fire in Oneida, New York

On March 12, 2007, a CSX freight train en route to Albany, New York, from Chicago, Illinois, derailed 28 of its cars, including 22 tank cars transporting hazardous materials, near Oneida, New York. Of the 22 derailed hazardous materials cars, 6 were breached ; these included 4 tank cars transporting liquefied petroleum gas (a flammable gas), 1 tank car transporting toluene (a flammable liquid), and 1 tank car transporting ferric chloride (a corrosive liquid). As a result of the derailment, an explosion and fire occurred. A 1-mile evacuation was ordered, and two elementary schools were closed. No one was killed or injured; however, four firefighters were taken to a hospital for observation because they had stepped into ferric chloride. Estimated damages were \$1.6 million. The NTSB hazardous materials investigators are evaluating the effect that the release and ignition of hazardous materials had on the public.

Office of Research and Engineering

As accident investigations become more complex, NTSB investigators from all transportation modes increasingly seek technical and analytical support from the Office of Research and Engineering (RE) in a wide range of disciplines, including statistical analyses of accident data, recorder data, radar data, vehicle performance, accident reconstruction, visibility calculations, vehicle motion simulations, animations, medical and toxicology analyses, materials failure examinations, structural failure analyses, and fire and explosion analyses.

In 2007, RE pursued a number of efforts to expand the NTSB's technological capabilities by developing close working relationships with outside transportation agencies, both in the United States and abroad. For example, in the area of railroad safety, RE staff worked with the FRA and engineers from the University of Illinois at Chicago (UIC), the Volpe Center, and ENSCO regarding potential NTSB applications for the UIC's railroad simulation program.

In the area of aviation safety, RE staff members are collaborating with the FAA on the use of text mining to facilitate the research of the vast amount of textual material associated with an accident investigation. Staff members in RE's Safety Studies Division are also working closely with the Bureau d'Enquêtes et d'Analyses, the NTSB's investigative counterpart in France and with researchers from the European Aviation Safety Agency to refine data analysis and safety study procedures.

As for highway safety, RE staff members have worked extensively with the FHWA Turner-Fairbank Highway Research Center for investigations of the Interstate 90 (I-90) tunnel ceiling collapse in Boston, Massachusetts, and the Interstate 35W (I-35W) bridge collapse in Minneapolis, Minnesota.

In marine safety, RE recorder staff members are collaboratively developing software tools for voyage data recorder analysis with the United Kingdom's Marine Accident Investigation Branch. These efforts and other significant technical support activities for the office are further discussed below.

Significant Work Accomplishments

Safety Studies/Reports

Safety Studies and Statistical Analysis staff include transportation research and aviation data analysts who provide statistical support to other NTSB offices and respond to requests for statistical data from the public. In 2007, staff continued to research a major safety study of general aviation (GA) airbag effectiveness and developed six safety recommendations regarding motorcycle safety. The division also developed two annual aviation statistical reviews, one for air carriers and another for general aviation. In addition, one new safety study, *Glass Cockpit Displays in General Aviation Aircraft*, was initiated in 2007. The study will address issues related to the changes from round-dial instruments to digital displays, which can present more information in a limited amount of space, potentially placing greater demands on pilot attention. The proposed study seeks to characterize this and other related issues and is expected to be completed in 2008.

In 2007, the Office of Research and Engineering's 41 staff members developed 10 recommendations; researched 2 major safety studies, developed 2 annual aviation accident data reviews; responded to over 400 data requests and 88 requests for statistical analysis; produced 57 vehicle performance factual reports, white papers, and animations; completed 66 readouts, transcripts, and studies in support of aviation, rail, marine, and highway investigations; and completed 158 Materials Laboratory cases, including work supporting 2 high-profile investigations: the Interstate 90 tunnel ceiling collapse in Boston, Massachusetts, and the Interstate 35W bridge collapse in Minneapolis, Minnesota. In addition, staff supported more than 250 accident investigations in all modes.

General Aviation Airbag Effectiveness. A plan for evaluating the effectiveness of GA airbags was approved by the Board in June 2006. Airbags are now becoming standard equipment on newly manufactured GA aircraft. In January 2008, approximately 4,369 GA aircraft were equipped with airbags. The effectiveness of those airbags has been evaluated in simulations and in sled tests. The purpose of the study is to examine accidents involving airbag-equipped GA aircraft to better understand the effects of airbag deployment in actual accidents. As with automobile airbags, the NTSB's examination of this new technology will enable it to evaluate any unintended consequences that may result from the introduction of airbags with the goal of identifying those situations in which airbags are particularly effective at reducing injury. Staff has, to date, investigated the following eight accidents for inclusion in the study:

- August 5, 2006, Cirrus SR-22 accident in Boyceville, Wisconsin
- August 28, 2006, Cirrus SR-22 accident in Indianapolis, Indiana
- August 27, 2006, Aviat Husky accident in Owyhee Reservoir, Oregon
- September 15, 2006, Cirrus SR-20 accident in Rock Springs, Wyoming
- September 30, 2006, Cessna 172S accident in Cambridge, Maryland
- October 21, 2006, Cessna 172S accident in Ormond Beach, Florida
- February 27, 2007, Cessna 182T accident in Athens, Texas
- April 29, 2007, Cirrus SR-22 accident in Luna, New Mexico

As a result of the Athens, Texas, investigation, staff identified a potential failure mode of the Cessna airbag design that would leave a pilot unprotected by the airbag system and worked



The left forward seat airbag of a Cirrus SR22 involved in an accident in which airbags deployed. Investigators examined the airbag to gauge the force with which the occupant struck it. Data from this examination will support the NTSB's study on the effectiveness of airbags in general aviation aircraft.

with the aircraft and airbag manufacturers to change airbag labeling and manual information to prevent this failure mode. Data collection for the study is not expected to be completed until late 2009 because of the low frequency of accidents that meet the criteria for data collection.

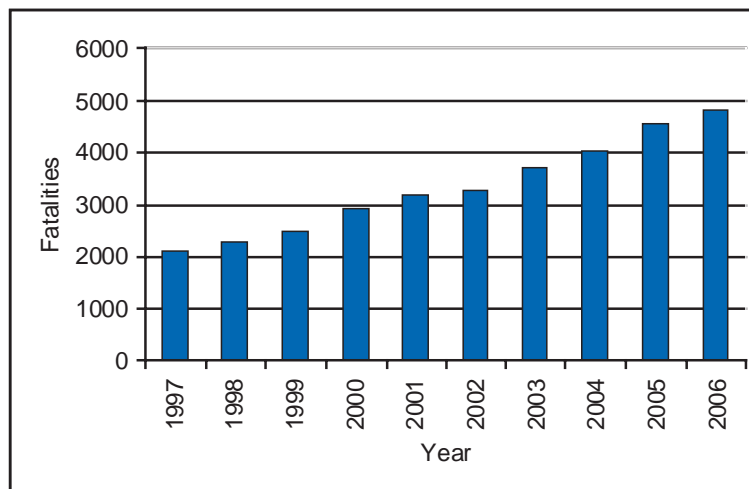
Motorcycle Safety Recommendations.

Since 1997, the number of motorcycle fatalities has increased 127 percent, an increase that far exceeds that of any other form of transportation. In addition,

the number of motorcycle fatalities in any recent year has been more than double the number of deaths that same year from accidents in aviation, rail, marine, and pipeline combined. In 2006, 4,810 motorcyclists died in crashes, and motorcycle fatalities accounted for more than 10 percent of all motor vehicle crash fatalities. The following figure clearly shows the rising numbers.

To address this problem, staff in RE's Safety Studies Division, in cooperation with the Office of Highway Safety, developed seven safety recommendations addressing the important issue of universal helmet use.

These recommendations also addressed the need for improved FHWA accident and activity data, as well as the need to reprioritize safety recommendations developed by the National Highway Traffic Safety Administration and the Motorcycle Safety Foundation as part of the National Agenda for Motorcycle Safety.



Motorcycle fatalities between 1997 and 2006.

Annual Reviews of Aviation Accident

Data for Air Carriers and General Aviation. During 2007, staff developed the annual reviews of aviation accident data for calendar year 2004. In addition to the summary of accident data, the GA annual review included statistical data and a focused discussion of significant regulatory changes related to the sport pilot certificate and light sport aircraft that went into effect during 2004. These changes established a new category of recreational aviation by instituting new certification, operation, and maintenance regulations for applicable aircraft, introducing airworthiness standards for these aircraft based on industry consensus rather than certification, and initiating a driver's-license-only medical requirement for sport pilots.

Accident Data and Public Records. RE data specialists continue to respond to requests for aviation accident information and completed over 400 data analysis requests in 2007. Some requests concerned the accident frequency of a particular aircraft model or air carrier, while others addressed particular types of accident events. The addition of historical accident data from 1962 to 1983 to the NTSB website, combined with complete download and text search capabilities, now allows many researchers to complete their own analyses, especially for simple, straightforward analyses. More complex requests for aviation accident data, however, continue to be handled by the office's data specialists who also publish monthly and annual U.S. civil aviation statistical information on the NTSB's website.

Materials Laboratory

Materials Laboratory staff include metallurgists, materials and mechanical engineers, and fire and explosion specialists. Staff members examine, analyze, and test parts and wreckage from well

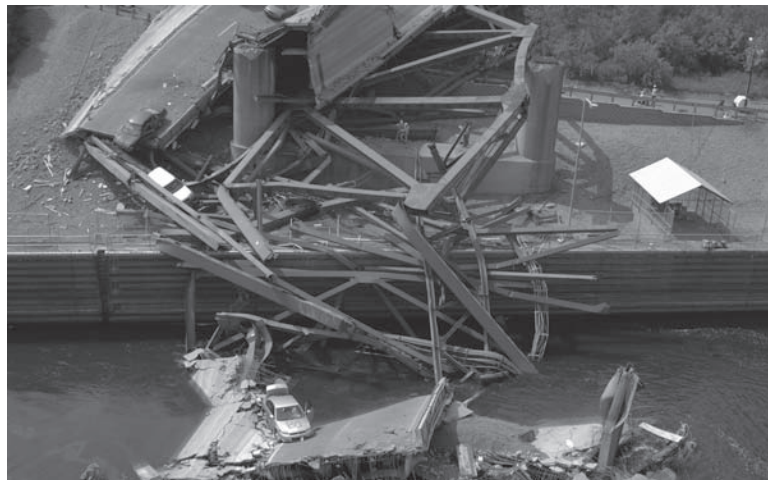


Research and Engineering fire and explosion investigators examined cargo items from the UPS in-flight fire to determine the cause of the fire.

over 100 accidents in a typical year, involving all transportation modes. In addition to fractographic evaluations and other traditional failure analysis testing, the Laboratory generates finite element models of structure, as needed, to evaluate stress and deformation patterns. In 2007, the Materials Laboratory completed 158 cases, including the examination of multiple aspects of the I-90 tunnel collapse in Boston. The

Materials Laboratory staff is also heavily involved in the structural examination and modeling of the Minneapolis I-35W bridge collapse. Efforts in support of both investigations are discussed below:

- The I-90 tunnel collapse investigation included many hours of on-site examination, as well as extensive testing at the FHWA Turner-Fairbank Highway Research Center. The investigation also required staff to coordinate extensively with representatives of the Massachusetts and U.S. Attorney General Offices. The Board unanimously adopted the report at its July 10, 2007, meeting, exactly 1 year after the accident.
- The ongoing investigation of the I-35W bridge collapse in Minneapolis, Minnesota, has required staff to monitor the removal and recovery of structural components to



View of the Minneapolis-St. Paul I-35W bridge shortly after its collapse, showing the wreckage at the south end of the span across the Mississippi River.

ensure the preservation of critical evidence, to identify failure mechanisms, and to search for pre-existing damage. Critical structural components have been reconstructed in a layout area near the accident site. Analysis of the structure will include a sequencing study to compare the original location of components with observations regarding fracture locations and directions, deformation patterns, damage marks, and final resting positions. The lab is also working with the

FHWA and other parties to the investigation to use finite element models to help identify the cause of the collapse and will supervise mechanical testing of samples

from important structural members, which will be carried out primarily at the Turner-Fairbank Research Center.

In addition to these sizable efforts, staff continued to keep pace with other investigations, including the following:

- As part of the investigation of the failure of the first stage fan disk on a Canadair CL-600 engine, RE staff provided a summary of the failure by the evening of the day that the recovered piece of the disk was received in the laboratory and generated comprehensive factual and analysis reports 6 weeks later.
- As part of the investigation of the CSX train derailment in Shepherdsville, Kentucky, a materials engineer who launched to the accident scene was able to quickly determine that a fractured wheel--previously thought to be the cause of the derailment--was not causal and eventually identified other components as potentially causal. These components were examined in the Materials Laboratory, where staff generated comprehensive factual and analysis reports within 6 weeks of receiving the components.
- As part of the investigation of the CSX train derailment in Oneida, New York, the materials engineer who launched to the scene identified as the initiating point of derailment.
- As part of the investigation of a series of helicopter accidents in Hawaii, including the crash of a Eurocopter AS 350 BA and a McDonnell Douglas 369FF, staff conducted initial examinations of affected components when they arrived in the lab. Staff summarized and transmitted the information to the investigator-in-charge and others and conducted group examinations with party representatives almost immediately after receiving the components from these two accidents.
- Fire and explosion investigators supported the UPS DC-8 in-flight cargo fire investigation, the CTA subway derailment, and the *M/S Massachusetts* engine room fire.

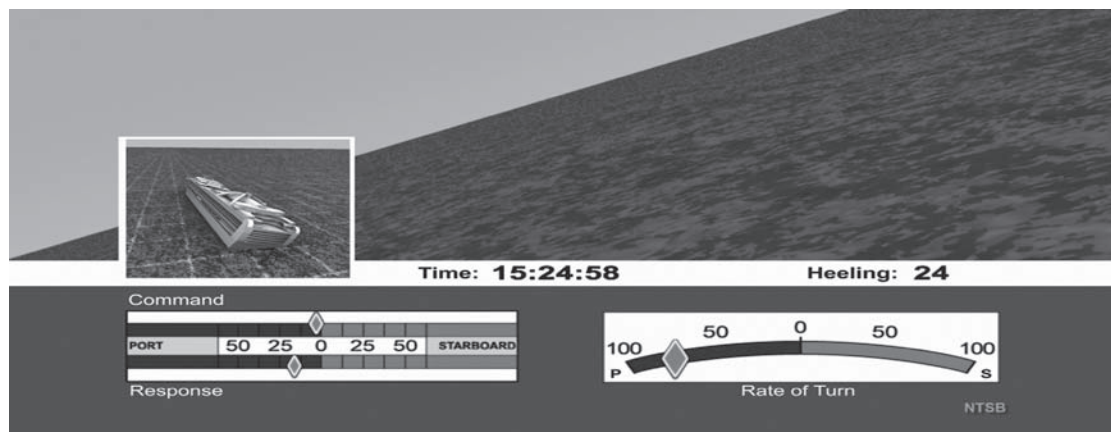
Vehicle Performance Laboratory

The Vehicle Performance Laboratory uses computational and engineering graphics technology to provide an accurate time-motion history of the sequence of events leading to an accident and to determine vehicle and occupant motion and the underlying causes of that motion. The division also develops computer simulations of vehicle and occupant motion and video animations of accident scenarios, as well as participates in and directs research into fluid and thermal sciences and other special projects as required. In 2007, staff produced 57 factual reports, several white papers and animations, a response to a proposed rulemaking concerning a means to ensure timely activation of the airframe ice protection system on newly certified transport-category airplanes, and a response to a proposed airworthiness directive for Cessna 208 and 208B aircraft. The Vehicle Performance Laboratory also identified the need for new technology to maintain and enhance capabilities in vehicle simulation, vehicle modeling, mathematical analysis, animations, and geographic information systems. Examples of specific investigative support in 2007 include the following:

- For the investigation of the Adam Airlines 737 accident in Indonesia, staff's radar and trajectory analysis enabled investigators to locate the main wreckage site off the coast of Indonesia.
- For the investigation of the Mesa Airlines-operated US Airways Express flight 2985

accident, staff's radar, flight data recorder (FDR), and trajectory analysis enabled investigators to locate engine parts that shed from the aircraft when the No. 1 engine fan disk separated.

- For the Comair flight 5191 investigation, staff launched to the accident site as part of the go team, developed the on-scene factual report, and completed the performance study within 5 months of the accident.
- For the Southwest flight 1248 investigation, staff developed a new calculation procedure for determining runway-braking coefficients from flight data recorder information and produced the aircraft performance factual report on schedule.
- For the investigation of the Circuit City Cessna Citation 560 accident, staff prepared an analysis of radar data using enhanced ground proximity warning system and cockpit voice recorder data to show that the icing accident involved the flight crew's failure to maintain airspeed and activate the deicing boots, which are the subjects of several previous icing recommendations issued by the NTSB.
- For the investigation of the Cirrus SR-20 crash in New York City, staff completed the performance portion of the radar study within 6 weeks. For the investigation of the Sikorsky S-76 helicopter accident in Tallinn, Estonia, staff completed a large-scale simulation effort using Sikorsky's helicopter simulator and used the simulation to examine the aerodynamic effects of component failure.
- For the marine investigation of the *Crown Princess* cruise ship heeling accident, staff produced reports examining pilot-induced-oscillation aspects of the accident and produced an animation of the heeling using voyage data recorder data.
- Staff produced five animations in 2007 to aid in explaining marine, rail, and aviation accidents at public Board Meetings.
- Staff provided technical support, including detailed vehicle and occupant simulations, to 26 regional GA investigations and 4 regional highway and railroad vehicle accident investigations.



Still from the 3-D animation of the heeling accident involving the cruise ship M/V *Crown Princess* depicting the maximum heel angle of 24°.

Vehicle Recorder Laboratory

The Vehicle Recorder Laboratory received approximately 100 devices and completed numerous readouts, transcripts, and studies in support of aviation, rail, marine, and highway investigations in 2007. The laboratory also reviewed and developed a response to a notice of proposed rulemaking regarding filtered data. The laboratory experienced a striking increase in workload due to (1) the expanded use of advanced technology such as global positioning system units (more than 100 received in 2007) and avionics displays, which can record data on aircraft not otherwise equipped with flight recorders; (2) a proliferation of video recordings and still images from sources such as installed cameras, handheld cameras, and security cameras; and (3) an unprecedented level of requested support for international aviation investigations (47 foreign recorders received). To keep pace with these increasing demands, the laboratory has undertaken, in addition to its regular investigative responsibilities, significant efforts to incorporate new technology and improved capabilities for the readout of vehicle recorders, including the following:

- Continued development of the Next-Generation FDR Analysis Software, which ensures that the NTSB is no longer dependent on a foreign sole-source legacy system for the bulk of FDR analysis, and added the capability to read tape-based FDRs.
- Development of data recovery capability for new-generation, solid-state recorders (used in all transportation modes) when damage to these recorders renders normal readout tools inadequate.
- Development of hardware and software tools for recovering and analyzing data from on-board voyage data recorders, the population of which is expected to increase due to recent international marine regulations requiring their use on large oceangoing vessels.
- Development of specialized computer tools for analyzing images from on-board video cameras and recorders, witness videos, fixed traffic/security camera video devices, and still photographs, which cannot be efficiently and reliably analyzed using conventional tools, such as paper maps, dividers, and protractors.

Examples of Vehicle Recorder Laboratory accomplishments in 2007 include the following:

- For the Comair flight 5191 investigation, vehicle recorder staff led the effort to read out and analyze FDR and CVR data and completed the factual reports in less than 3 months.
- For the investigation of the *Empress of the North* cruise ship grounding in Alaska on May 14, 2007, vehicle recorder staff led a voyage data recorder group.
- For the investigation of I-35W bridge collapse in Minneapolis, vehicle recorder staff are providing extensive video and photo analysis of the bridge both before and during the collapse.

Medical Factors

Staff provided medical consultation to accident investigators in all modes on more than 90 accidents in 2007. Medical issues addressed in 2007 accident investigations included, among others, substance dependence, depression, dementia, obstructive sleep apnea, and the use of psychoactive prescription and over-the-counter medications. In addition, staff provided consultation to modal survival factors investigators on two marine accidents (the *Crown Princess*

heeling accident off the coast of Port Canaveral, Florida, which injured more than 200 passengers and crew, and the pipeline explosion and barge fire in Louisiana, which resulted in multiple fatalities), medical expertise in the evaluation of injuries related to the study of GA Airbag effectiveness, and a review of the current status of research on child safety restraint systems

Staff coordinated with on-scene investigators, local hospitals, and the FAA Civil Aerospace Medical Institute toxicology laboratory to ensure preservation and acquisition of clinical specimens for toxicology testing from injured operators in fatal bus accidents in Huntsville, Alabama, and Atlanta, Georgia; a multiple fatal air tour accident in Ketchikan, Alaska; and a Chicago, Illinois, Amtrak accident. Additionally, staff assisted marine investigators in the identification of relevant medical information in the barge accident in San Francisco Bay.

In 2007, RE medical staff developed three formal recommendations to the FAA to improve its effectiveness in the evaluation of pilots with symptoms or diagnoses of substance dependence.

In 2007, RE medical staff assisted other organizations and agencies with medical expertise and guidance on issues of nationwide importance, highlighted by the following:

- Performed a complete review of the last decade of aviation accident data regarding medical causes in aviation accidents and summarized those data in direct testimony to a congressional committee on falsification of information by pilots on FAA medical certificates.
- Continued participation in a Railroad Safety Advisory Committee (RSAC) working group on medical standards. The group formed in response to recommendations arising from the NTSB's investigation of a fatal rail accident in Clarkston, Michigan, involving two crewmembers with obstructive sleep apnea.

Finally, medical staff regularly addresses internal occupational health issues as part of the NTSB's Occupational Health and Safety Committee and, in 2007, assisted in the development of draft comprehensive formal protocols for the safe handling of composite materials during accident investigation, draft formal protocols for management of fatigue in investigators during travel, and a safety bulletin on Lyme disease for all staff.

Office of Administrative Law Judges

Since 1967, the NTSB has served as the “court of appeal” for certificate holders such as airmen, mechanics, or mariners whenever the Federal Aviation Administration (FAA) or the U.S. Coast Guard takes a certificate action.

The NTSB administrative law judges hear, consider, and issue initial decisions on appeals filed with the Board. Included are appeals from orders issued by the FAA’s Administrator that amend, modify, suspend or revoke, in whole or in part, certificates of airmen, air agencies, and air carriers for alleged violations of the *Federal Aviation Regulations* or for lack of qualification; appeals about FAA actions denying applications for the issuance or renewal of airman certificates; and appeals of certain FAA civil penalty orders issued by the FAA against pilots, flight engineers, mechanics, or repairmen where the amount in dispute is less than \$50,000. The judges also adjudicate claims for fees and expenses stemming from certificate and civil penalty actions under the Equal Access to Justice Act (EAJA).

The NTSB currently has four administrative law judges. Two are based in Washington, D.C., and hold hearings primarily in the eastern half of the United States. The other two are based in Arlington, Texas, and Denver, Colorado, and hear cases primarily in the western half of the country.

Either the certificate holder or the FAA may appeal the judges’ decisions to the Safety Board. The Board’s review on appeal of its administrative law judges’ decisions is based on the record of the proceeding, which includes hearing testimony (transcript), exhibits, and the judge’s decision, as well as appeal briefs submitted by the parties.

A certificate holder can appeal the NTSB decisions to the U.S. Court of Appeals. The FAA also has the right to appeal the Board’s decisions to the U.S. Court of Appeals when it (the FAA) determines that the Board’s decision “will have a significant adverse impact” on the FAA’s aviation safety duties and powers. Airmen and mechanics have the right to appeal all adverse Board decisions to the Court of Appeals.

Upon review of the NTSB decision, the Court of Appeals has the power to affirm, modify, or set aside the decision in whole or in part—or, if need is found, to order further proceedings by the Board. The decision of the Court of Appeals is subject to review by the U.S. Supreme Court on writ of certiorari.

In April 2000, the U.S. Congress enacted Section 716 of the Aviation Investment and Reform Act for the 21st Century (Public Law 106-181). This Act expanded the NTSB jurisdiction to include review of FAA designations of safety enforcement actions as emergencies, which require an order to be effective immediately, upon petition by the affected certificate holder. The Board has delegated its review authority to its administrative law judges. There is no administrative review of the administrative law judges’ decisions in these cases.

Marine certificate actions are heard first by the Coast Guard’s administrative law judges, and may be appealed to the Commandant of the Coast Guard. The ruling of the Commandant may then be appealed to the NTSB. The Board then follows the same appellate process as it does in considering the initial decisions of its law judges in aviation cases. In 2007, the Board received one marine appeal and issued no rulings on marine cases.

In 2007, 353 aviation certificate appeals were filed with the NTSB Office of Administrative Law Judges in 2007; 113 of these cases were from emergency orders. The NTSB judges held 73 hearings and closed 376 cases in 2007.

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During 2007, 86 of the judges' decisions were appealed to the NTSB. The Board decided 92 appeals, remanding three cases to the judges for further proceedings. Thirty of the Board's decisions were appealed to the U.S. Courts of Appeals, which rendered four decisions in 2007. The Court affirmed the Board in two cases and two cases were dismissed for procedural reasons.

Six EAJA applications were filed with the Safety Board's administrative law judges in 2007, and the judges decided three EAJA cases. In 2007, none of the judges' EAJA decisions were appealed to the full Board which issued rulings in five EAJA cases.

NTSB Training Center

Background

The NTSB operates and manages its own training center in Ashburn, Virginia. The Training Center provides training opportunities for all NTSB employees and others from the transportation community through a variety of course offerings. The core curriculum continues to be key investigative courses that focus on competencies important to safety investigations.

The curriculum also offers NTSB employees access to additional courses focused on career development, improving management skills, and critical thinking. Investigators from within NTSB and from other organizations in the transportation community use the Training Center as a means to improve their accident investigation techniques. The curriculum promotes independent, objective, and technically advanced accident investigations that enhance the safety of all modes of transportation.



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The Mission of the NTSB Training Center is to promote safe transportation by:

- Ensuring and improving the quality of accident investigations through critical thought, instruction, and research;
- Communicating lessons learned, fostering the exchange of new ideas and new experiences, and advocating operational excellence;
- Providing a modern platform for accident reconstruction and evaluation; and
- Utilizing its high-quality training resources to facilitate family assistance and first responder programs, sister agency instruction, party to investigation understanding of NTSB processes and procedures and other compatible federal activities.

The Training Center's mission supports the overall NTSB mission by working to achieve agency strategic objectives related to training. These objectives are to (1) maintain a competent and effective investigative workforce, (2) manage Training Center profitability, and to (3) align and improve the NTSB management team.

During 2007, the NTSB took several steps to improve and expand the existing programs at the Training Center while ensuring that the agency's critical investigative responsibilities were not negatively affected. These improvements support the NTSB's accident investigation mission and help promote transportation safety. In addition, the NTSB continued to aggressively recover costs associated with the Training Center by imposing and collecting fees for the Training

In 2007, the NTSB Training Center delivered a total of 32 courses, including 9 Workforce Development Courses that were offered solely to NTSB employees. A total of 977 training participants completed course work at the Training Center during 2007.

Center's services. The collection of tuition and fees for facility use during 2007 continued to make it possible for the Training Center to recoup expenses incurred in the delivery of programs, allow for program modifications and improvements in the future, and offset portions of the building maintenance and equipment replacement costs that are anticipated within the next decade.

A business plan has been adopted to address methods by which the Training Center can support the NTSB's mission more efficiently by providing a broader array of accident investigation and transportation safety training courses to its staff, foreign governments, and partners and by which the facility can generate more revenue through greater use. With this in mind, there is a delineation between the training function of the Training Center as an organizational unit of the NTSB and the facility itself. This strategy allows the NTSB to continue to focus on enhancing its course offerings at the Training Center, while maximizing revenues by subletting space with minimal effect on the training function. This revised business plan concentrates the Training Center's ability to sustain and develop innovative and state-of-the-art courses and programs.

Training highlights from 2007 include the following:

- Hired a Training Officer who is responsible for helping to identify employee training needs, develop new courses, and evaluate training courses.
- Reduced the NTSB Training Center staff to three full time positions while expanding the curriculum.
- Developed and revised a business plan that identifies the need for the NTSB to more aggressively find sublessors of the facilities and to isolate the costs associated with the NTSB training function.
- Developed the new workforce development curriculum, electronic learning, and Small Agency Council course offerings to improve the effectiveness of NTSB staff in performing the agency's mission.
- Completed detailed instructions for NTSB staff and supervisors to formulate individual development plans (IDP). These plans are required to be in place by April 2008 in order to create a comprehensive plan to improve agency performance and encourage professional development to further the NTSB mission.
- Conducted technical training programs and instruction for NTSB investigative staff and transportation safety and security partners to improve the efficiency and effectiveness of NTSB accident investigations. These courses communicate lessons learned, share accident investigation techniques, and foster the exchange of new ideas and experience among organizations that participate in NTSB investigations.
- Increased utilization of classroom space and increased revenues by over \$160,000.
- Reduced training costs by transitioning to electronic delivery of course materials.
- Provided a facility for laboratory and analysis activities (for example, the structure from the Minneapolis Interstate 35W bridge collapse).
- Continued to improve the quality of Safety Board accident investigations through technical training and instruction.
- Provided a forum for instruction, outreach, and advocacy on issues relevant to the transportation safety community.
- Used its high-quality training resources to facilitate Transportation Disaster Response programs, collaborative instruction with partner agencies, and other compatible activities.

Training and Educational Needs of NTSB Employees

During 2007, the NTSB's newly hired Training Officer began to enhance the training curriculum by expanding the training program for NTSB employees. This improved program is being designed to complement the new IDPs which all NTSB employees will be required to complete by April 2008. After launching the new curriculum, a total of nine Workforce Development Program courses were held during 2007 for NTSB employees. For 2008, the NTSB Training Center plans to expand the Workforce Development Curriculum to include more than 40 courses and seminars. The following list includes some of the areas of training being developed and/or enhanced for NTSB employees:



- Accident Investigation courses
- Project Management
- Retirement Planning
- Small Agency Council course offerings
- Executive Leadership Partnerships
 - IMS management development
 - SES Forum Speaker Series
 - Career, Balance and Diversity Forums
- Go Learn electronic learning
- Individual Development Plans and associated training

Training Offered to the Transportation Community

The Training Center attracts members of the U.S. and worldwide transportation community from a variety of governmental agencies and transportation entities. Past participants have come to rely on the training received at the Training Center and either return for additional training or encourage colleagues to attend courses offered in accident investigation, training in transportation disaster response, media response, human factors, photography, conducting presentations and report writing.



Participants

Participants in NTSB Training Center programs include previous, as well as potential, parties to NTSB investigations, such as equipment manufacturers and unions; disaster relief agencies, including the American Red Cross; and representatives from local, State, and Federal law enforcement agencies.

Transportation safety is a global endeavor, and many of the participants in NTSB Training Center programs are the NTSB's foreign counterparts: transportation accident investigation agencies from around the world, including those from developing countries. The number of foreign investigators attending Training Center programs has increased each year.

A total of 69 foreign accident transportation entities sent a total of 137 investigators and other transportation professionals to Training Center programs in 2007. Many of these foreign entities heavily rely on the Training Center to train their personnel each year. During 2007, students from 37 foreign countries were represented in NTSB Training Center courses, symposia, and partnerships. This included 11 countries that were not represented in 2006: Argentina, Haiti, India, Italy, New Zealand, Qatar, Romania, Saudi Arabia, Sri Lanka, Turkey, and Turks and Caicos Islands.

Partnerships

Furthering its commitment to meeting the training needs of those in other areas of the government and the transportation and emergency response communities, the NTSB Training Center continues to build upon the alliances and partnerships with private organizations and Federal agencies, such as its relationship with the National Aeronautics and Space Administration's (NASA's) investigative arm—the Engineering and Safety Center (NESC)—which was established shortly after the Columbia space shuttle accident. The Training Center presented an updated version of the course, “Managing and Directing Safety Investigations,” to NESC staff in August 2007. Additionally, the Training Center is working with the NESC at Hampton Roads to act as a continuing venue to conduct training seminars with the participation of NTSB staff.

Continuing Relationships

The following is a list of the organizations that participated in alliances or partnerships with the NTSB Training Center during 2007:

- American Red Cross
- Federal Aviation Administration — International Joint Training — Aviation Accident Investigation under development
- Armed Forces Institute of Pathology
- National Aeronautics and Space Administration (NASA)
- George Washington University
- U.S. Coast Guard and State Representatives — Sole State Waters Training and Seminar
- National Association of State Boating Laws Administrators (NASBLA)

Training Programs

In 2007, a total of 977 individuals attended 32 NTSB Training Center programs. Several programs were offered more than once during the year.



Title	Total Students
AVIATION	
Accident Investigation Orientation (offered twice)	94
Survival Factors in Aviation Accidents	25
Aircraft Accident Investigation (offered twice)	117
HIGHWAY	
Motorcoach, Bus and 15-Passenger Vans	24
INTERMODAL	
Photodocumentation Series (three courses below)	
-- Technical Photography (offered twice)	26
-- Advanced Accident Site Photography (offered twice)	28
-- Digital Image Processing (offered twice)	23
Biomechanics of High-Impact Injuries	79
Human Factors Series (three courses shown below)	
-- Investigating Human Fatigue Factors	51
-- Cognitive Interviewing Series	
-- Basic Cognitive Interviewing for Accident Investigators	59
-- Advanced Cognitive Interviewing for Accident Investigators	59
PUBLIC AFFAIRS	
Managing Communications During an Aircraft Disaster	41
TRANSPORTATION DISASTER RESPONSE	
Family Assistance (offered twice)	81

Title	Total Students
Advanced Skills in Disaster Family Assistance	56
Airport Preparedness Program	16
Mass Fatality Incidents for Medicolegal Professionals	46
PARTNERSHIPS	
Managing & Directing Safety Investigations –NASA	26
WORKFORCE DEVELOPMENT CURRICULUM FOR NTSB EMPLOYEES	
Accident/Incident Report Writing for NTSB Employees (offered twice)	18
Planning for Retirement Seminar	47
Conducting Effective Technical Presentations (offered twice)	16
Media Training for NTSB Investigators (offered twice)	13
Conducting Effective Meetings for NTSB Employees	5
Team Training	27
TOTALS	977

Continuing Education Units

The NTSB Training Center is authorized by the International Association for Continuing Education and Training (IACET) to award Continuing Education Units (CEUs) for many of its courses. The IACET, whose members include 650 businesses, government agencies, higher education institutions, nonprofit corporations, and individuals, authorizes select organizations to issue CEUs only when they can demonstrate a consistent adherence to strict educational training guidelines and protocols.

Many organizations and agencies use these credits for staff development, and individuals use them to maintain professional certifications. The NTSB Training Center continues to issue a certificate to each participant who successfully completes a course, and the Training Center releases official transcripts affixed with the IACET and the NTSB seals, as an indication of the course's quality and value.

Facility Use

The Ashburn facility is a 72,000 square-foot building leased from George Washington University. The building is divided into three primary components. The first floor consists of 21,000 square feet of office space and meeting rooms. The second floor contains 21,000 square feet of classroom space, student support areas, and meeting rooms. Finally, the warehouse includes 30,000 square feet of industrial enclosed storage and staging space and is currently used to store the reconstruction of the TWA flight 800 wreckage, and parts and components from other NTSB accident investigations, such as the I-35W bridge collapse in Minneapolis, Minnesota. Consequently, the warehouse is actively used for training and wreckage examination.



The NTSB Training Center facility provides the Safety Board space to continue operations during emergencies in accordance with its Continuity of Operations Plan (COOP). Space has been made available, for a fee, through interagency agreements with other Federal agencies to ensure continued operations for their essential functions as well. Rents from subleases offset costs of the facility. The NTSB maintains lease agreements with the Federal Energy Regulatory Commission and the U.S. Court of Veterans Appeals for COOP space availability and use. Additionally, in August 2007, the NTSB entered into an agreement with the Federal Air Marshalls Service to sublease a majority of the first floor, and recently has been exploring an additional sublease agreement with the Department of Homeland Security (DHS).

The NTSB also rents available classrooms on the second floor when not in use by the agency. The NTSB continues to seek out Federal agencies that have recurring training space needs but are using appropriated funds to rent space from outside commercial entities.

During 2007, portions of the operating costs were recovered through user agreements established with a variety of governmental or transportation-related organizations. The following organizations hosted events in 2007 in the facility:

- American Bus Association
- American Institute of Aviation and Astronautics
- American Red Cross
- Armed Forces Institute of Pathology
- Captive Resources
- Committee for Dulles
- DHS

- FedVar
- International Association of Chiefs of Police
- Lufthansa
- NASA
- NASBLA
- National Oceanic and Atmospheric Administration
- Society of Automotive Engineers International
- United Motorcoach Association
- U.S. Coast Guard

Revenue

The marketing strategy of the Training Center business plan is to maintain a steady revenue stream by offering long-term leases to other Federal agencies and appropriate training institutions that are also consistent with ongoing NTSB needs and utilization of the same area. During fiscal year 2007, the NTSB Training Center earned \$817,555 in revenue from course tuition and fees, facility rentals, and interagency COOP agreements. Receipts were used to fund the direct costs of providing the programs. In addition, funds were used for maintenance of Training Center equipment, telecommunications upgrades, and supplies, and to finance a reserve for equipment replacement.

Office of Safety Recommendations and Advocacy

In 2007, the NTSB issued 218 recommendations, including 121 aviation, 43 highway, 31 railroad, 10 marine, 10 pipeline and 3 intermodal recommendations. During the year, 73 recommendations were closed with an acceptable status, all having a positive impact on transportation safety. Three of the closed aviation recommendations received the NTSB highest classification of “Closed – Exceeds Recommended Action.”

A 2001 crash of a charter jet carrying Oklahoma State University basketball players that killed eight people prompted the NTSB to ask the National Collegiate Athletic Association (NCAA), the National Association of Intercollegiate Athletics, and American Council on Education to develop a model policy for colleges to use when chartering air service. The group produced a best practices publication, *Safety in Student Transportation: A Resource Guide for Colleges and Universities*, that went beyond the NTSB intent and included safety guidelines for other modes of transportation in addition to air travel. More than 6,000 copies of the guide were distributed, and the guide is on the NCAA’s Website.

Two recommendations to the Federal Aviation Administration (FAA) were classified “Closed - Exceeds Recommended Action.” They resulted from a non-fatal incident when a Beechjet 400A lost power in both engines off the coast of Florida in 2004. The plane landed safely. The FAA expeditiously issued an airworthiness directive for several aircraft models revising flight manuals to modify the operating limitations, abnormal procedures, and normal procedures for flight in icing conditions and advises flightcrews that the buildup of ice on internal areas of the engine could result in a dual-engine flameout and provides guidance on what action they must take to avoid this hazard. FAA also issued additional advisories to owners and operators of aircraft powered by JT15D engines of the dual flameout problems created by ice forming on the engine’s internal components.

Recommendations closed acceptable or acceptable alternate in 2007 led to many safety improvements. Here are some examples:

Aviation: Better FAA oversight and review of carriers that transfer operating certificates to another geographical location; Gulf of Mexico aircraft operators encouraged to use commercial flight-tracking systems; excessive wear inspections on horizontal stabilizer jackscrew assemblies in DC-9, MD-80/90 and 717 aircraft; evaluation of critical flight control systems on DC-8 aircraft; better FAA oversight of operators of on-demand carriers; autopilot design improvements to prevent upsets when manual inputs are made to flight controls; improved inspection of Eurocopter hydraulic pump flat drive belts.

Highway: Revised oversize/overweight vehicle highway movement guidelines; more emphasis on the risks of driver distraction added to driver education courses; development of guidelines tailored to U.S. Border Patrol checkpoints on high speed roadways; information to church groups and other organizations that own or use motorcoaches on how to comply with Federal safety regulations; revised study guides for auto mechanics to include a warning that manually adjusting automatic slack adjusters is dangerous and should not be done during installation or during an emergency to move the vehicle to a repair station; development of guidelines on toll plaza design including information on tolling practices and electronic collection strategies to eliminate queuing at toll plazas; support by auto manufacturers of child restraint fitting stations; better inspection and oversight by Florida of cargo tanks used to store flammable liquids.

Marine: New oversight procedures for tour boat operators in national parks to include enough life jackets on board, and establishment and periodic reviews of preventative maintenance and safety programs; marine manufacturer encouragement to its customers to use personal flotation devices; revised fuel line replacement guidelines for certain marine engines; revised guidance from the U.S. Coast Guard to small passenger vessel operators on vessel stability and appropriate passenger loads; major strengthening of post-accident alcohol and drug testing rules for foreign carriers in U.S. waters and U.S. carriers in international waters; review of U.S. Coast Guard communication infrastructure for emergency calls; upgrade the reliability of internal communications on passenger ships during emergencies; requirement for fire detection and suppression systems on new small passenger vessels and inspections of the systems.

Railroad: Increased frequency and improved methods to inspect joint bars in continuous welded rail; heightened emphasis by Federal Railroad Administration inspectors to review and enforce a railroad's continuous welded rail program; improved audits by the Canadian National Railway Company to its employees to follow written track maintenance and inspection procedures, including rail anchoring requirements and maintaining preferred rail laying temperatures; review by the Federal Transit Administration of the Washington, D.C. transit authority's organization structure; information by BNSF Railway to its employees illustrating how informal communications can lead to misunderstandings and errors; improved crash protection designs for occupants of locomotive cabs; and guidelines for track inspectors that address problems and characteristics unique to concrete crossties.

Pipeline: Redesigned replacement pipelines with internal corrosion mitigation features including monitoring at locations with high corrosion potential; revised best practices guidance for transporting pipe by ship; development of written procedures for safe evacuation near pipelines and recurrent training for employees of two firms; and improved display graphics for dispatchers to control pipeline systems.

Office of Transportation Disaster Assistance

In 1996, Congress passed the Aviation Disaster Family Assistance Act, which gave the NTSB the responsibility of assisting the victims of aviation disasters, including their families. The NTSB primary responsibility in this area involves coordination between Federal agencies, commercial airlines, State and local authorities, and the families of accident victims. In 1997, Congress enacted the Foreign Air Carrier Support Act to require that foreign air carriers operating flights to and from the United States meet the same standards of victim assistance as their U.S. counterparts.

When the Office of Transportation Disaster Assistance (TDA) responds to an accident, a team of specialists is launched with expertise in victim services, emergency operations, and victim recovery and identification. The office is responsible for major aviation accidents; however, the team has assisted in accidents in all transportation modes, including support to regional investigators for general aviation accidents.

Upon arrival at an accident site, the team's primary tasks include coordinating resources provided by local, State, and Federal agencies; establishing a Joint Family Support Operations Center; and ensuring that the airline establishes a Family Assistance Center, usually located at a hotel where the families are lodged. In addition, the team maintains contact with family members following the on-scene phase of the accident to provide investigation updates and notification of public hearings and/or NTSB meetings and to respond to various other questions and concerns raised by family members.

Accident Launches

Crash of Sightseeing Flight in Ketchikan, Alaska

On August 16, 2007, a float-equipped de Havilland DHC-2 airplane, operated by Seawind Aviation, Inc., collided with tree-covered terrain, about 20 miles north of Ketchikan, Alaska. Impact forces and a post-impact fire destroyed the airplane. Of the nine people on board the sightseeing flight, the pilot and three passengers sustained serious injuries, and five passengers sustained fatal injuries. TDA, in coordination with the operator, the local community, and other responders, established contact with family members and provided updates on the accident investigation. In addition, TDA worked with the local coroner to ensure resources were available to recover and to positively identify the victims.

In-Flight fire and Crash of Cessna 310R in Sanford, Florida

On July 10, 2007 a Cessna 310R, was destroyed during a collision with trees and structures in a residential area while attempting an emergency landing to Sanford Orlando International Airport, Sanford, Florida. The two pilots on board and three people on the ground were fatally injured, and four people on the ground were seriously injured. A post-crash fire consumed the airplane and two single-family homes. TDA helped the investigative team assist the families of the victims of this accident, including the families of the ground fatalities. Additionally, the specialists worked with the American Red Cross and local law enforcement to ensure all neighbors in and around the crash site were kept informed of the NTSB's on scene activities.

Motorcoach Departure from Exit Ramp Overpass onto Interstate 75 in Atlanta, Georgia

On March 2, 2007, TDA helped the NTSB investigative team assist the families of the victims of a motorcoach accident involving the Bluffton University, Bluffton, Ohio, baseball team. The motorcoach missed a turn at the end of an elevated exit ramp, flipped over a concrete wall, and crashed into the southbound lanes of I-75 in downtown Atlanta. This accident took the lives of seven occupants of the bus, including the driver. TDA and the university worked with family members, the local medical examiner, and members of the community to provide information, technical expertise and support to all involved.

Collapse of Interstate 35W Bridge in Minneapolis, Minnesota

On August 1, 2007, TDA helped the investigative team at the scene of the I-35 W bridge collapse that killed 12 motorists and 1 construction worker. Specialists offered their technical expertise to local responders managing the family assistance operations. Additional support and coordination was given to local law enforcement in an attempt to identify and verify all family members involved. TDA specialists also coordinated specialized support from the Federal Bureau of Investigation (FBI) to support NTSB investigative operations. Specialists are continuing to provide investigative updates to survivors and family members.

Propane Pipeline Rupture/Fire in Carmichael, Mississippi

On November 1, 2007, a 12-inch propane pipeline failed near Carmichael, Mississippi, resulting in the release, ignition, and explosion of propane gas. The ensuing fire involved five homes and resulted in two fatalities and four injuries. TDA was dispatched with the NTSB investigative team and worked closely with the Clark County Sheriff and the American Red Cross to ensure information about the NTSB investigation was shared with all of the victims at a make-shift family assistance center. Additional information from witnesses was provided to the investigative team based on TDA's interaction with the affected families.

NTSB Training Center Courses

In 2007, TDA provided comprehensive courses for professionals who help families of major transportation accident victims. The hands-on instruction provided participants with an operational expertise that will enable them to respond more effectively to transportation disasters. These courses bring together leading experts in the field and cover a wide range of topics including initial accident notification, grief and trauma, mass fatality management, multi-cultural memorial services, and effective family briefings. (See the Training Center section of this report for additional information on TDA training.)

In 2007, TDA offered the following five courses, including one new advanced course, at the Training Center:

Family Assistance During Transportation Disasters (TDA 301 – offered twice).

Topics included Federal and commercial carrier partnerships, accident notification and NTSB family assistance response, on-scene accident operations, family assistance operations, family briefings, traumatic grief and mourning, and forensic recovery and identification operations.

Advanced Skills in Disaster Family Assistance (TDA405).

Topics included key techniques for effective family assistance leadership in disaster situations, practical strategies for disaster crisis management, managing family assistance operations, integrating lessons learned from recent disasters into the next generation of family assistance operations and an exercise for participants to establish and operate a Family Assistance Center.

Mass Fatality Incidents for Medicolegal Professionals (TDA403).

Topics included history and evolution of mass fatality incident response, roles of federal agencies involved in transportation mass fatality response events, victim recovery and working with the FBI Evidence Response Team, theory and practice of victim identification (including the use of DNA technology), family assistance center operations and family briefings, management of personal effects, collection of antemortem data (for example, medical, dental, and DNA), changes in procedures in criminal events, survival factors issues for the forensic responder, post-response issues (such as site visits, memorials, family interactions, and site mitigation), media relations in mass fatality events, and practical exercises in recovery and morgue operations.

Transportation Disaster Response—Airports (TDA 404).

Topics included understanding the unique response requirements for the two primary types of aviation disasters and how victims are affected by them, dealing with issues unique to accidents and incidents involving airlines with limited airport staff, determining who should be considered a “family member,” assisting with the immediate needs of family members in the first 12 hours after an accident, planning a friends and relatives reception center and protecting family members’ privacy, transitioning family members from the friends and family reception center to the airline-established family assistance center, understanding the FBI’s role in criminal transportation accident investigations and family support services, and communicating effectively with local and State responders, the NTSB, the FAA, the FBI, airlines, and airport tenants.

Emergency Responders (TDA 402).

Topics included integrating Incident Command System and investigative processes during a transportation disaster, responding to transportation events involving terrorism and/or hazardous materials, maximizing resources in site security and support staffing, responding to media inquiries and managing press at the scene, communicating with the local community and families of the victims, providing assistance to family members, forensic aspects of recovery and identification, and long-term issues facing the affected community following a major disaster.

TDA Partnerships with Other Agencies

The NTSB and TDA have memorandums of understanding with the American Red Cross, U.S. Department of Homeland Security (DHS), U.S. Department of Defense, U.S. Department of State, and U.S. Department of Justice. Together, these agencies collaborate to support both the investigative and family assistance efforts at major accidents.

The NTSB also became a partner in a newly established Fatality Management and Family Assistance Working Group, which comprises staff from six Federal agencies to provide a similar standard of care for fatality management and family assistance in mass disasters. The group will also serve as Federal subject matter experts in these areas, with the goal of improving policy and practice.

The NTSB worked with the DHS Disaster Mortuary Operational Response Team to finalize standard operating procedures for a response in support of the Board. TDA hosted a 3-day meeting of 15 team members at the NTSB Training Center to examine existing protocols, make modifications, and draft new procedures.

The NTSB also held two air carrier meetings in 2007 that brought together family assistance personnel from major air carriers to examine responses and address concerns. The first meeting was held in Minneapolis on February 6, 2007, and the second was held in Washington, D.C., on September 25, 2007.

In 2007, the TDA also presented information to numerous groups, including Air Force Family Support Center Directors-Disaster Response Training, the American Academy of Forensic Sciences annual conference, the American Red Cross, the Association of Death Educators and Counselors, the Department of Justice/Office for Victims of Crime annual conference, the FBI Airport Liaison annual conference, the FBI National Academy-Crisis Management Course, the FBI Office for Victim Assistance, the National Association of Medical Examiners annual conference, the National Association of Social Workers, the National Center for Forensic Sciences, the National Disaster Medical System annual conference, the National Sheriff's Association, and the Pennsylvania Emergency Management Agency.

In addition, TDA held seminars and meetings focusing on family assistance and first responders responsibilities and how to manage transportation disasters for Continental, United, Southwest airlines, JetBlue Airways, and Net Jets/Executive Jet Management; airports in Boston, the Washington, D.C. area, and Tulsa, Oklahoma; FBI National Academy classes, New York-New Jersey Port Authority police officer classes, and the New York City Chief Medical Examiner's office.

Member Profiles



MARK V. ROSENKER
Chairman

Mark V. Rosenker of Virginia was sworn in as the 11th Chairman of the National Transportation Safety Board on August 11, 2006. He had been serving as Acting Chairman since March 2005. His two-year term as Chairman runs until August 2008. In January 2006, after confirmation by the Senate, he began his second term as a Member, which will expire on December 31, 2010.

Chairman Rosenker became a Member of the NTSB in March 2003 and was designated by President Bush as Vice Chairman that April.

Beginning January 20, 2001 until the announcement of his nomination to the Board, Mr. Rosenker served as Deputy Assistant to the President and Director of the White House Military Office. In this capacity, he had responsibility for policies, personnel and plans that involve Department of Defense assets in direct support of the President.

Prior to his White House appointment, Mr. Rosenker was Managing Director of the Washington, DC office for the United Network for Organ Sharing (UNOS), overseeing the development, implementation and management of a national public information program dealing with all facets of organ transplantation in the U.S. Before joining UNOS, Mr. Rosenker served 23 years as Vice President, Public Affairs for the Electronic Industries Alliance.

Mr. Rosenker's interest and experience in transportation safety dates back more than three decades to his time at a major national public affairs organization. His clients there included the American Safety Belt Council, the Motorcycle Safety Foundation, and the Safety Helmet Council of America. He later served as Director of Communications for the American Moped/Motorized Bicycle Association.

Mr. Rosenker's professional experience also includes service in the federal government at the Department of Interior, the Federal Trade Commission and the Commodity Futures Trading Commission. In 1990, he was appointed by President Bush a member of the American Battle Monuments Commission (ABMC). After serving four years, Mr. Rosenker received the Commission's highest honor, the ABMC Meritorious Service Medal.

A retired Major General in the Air Force Reserve, General Rosenker entered the Air Force in 1969 through the University of Maryland ROTC program. He is a graduate of the Air Command and Staff College and the Air War College.

During his 37½-year Air Force career, General Rosenker received a number of awards and decorations, including the Air Force Distinguished Service Medal with One Oak Leaf Cluster and the Legion of Merit.

For his leadership role in recreational boating issues, the National Safe Boating Council presented Mr. Rosenker their highest honor, the Confluence Award. This is traditionally given only to

Members of Congress, and Mr. Rosenker is one of the few representatives of the Executive Branch to be so honored.

Mr. Rosenker was the Board Member on scene for the Safety Board's investigations into the April 2004 derailment of Amtrak's City of New Orleans near Flora, Mississippi; the November 2004 crash of a charter jet aircraft in Houston, Texas (the plane was on its way to pick up former President George H.W. Bush for a flight to Latin America); the September 2005 derailment of a Metra commuter train in Chicago; the October 2005 capsizing of the passenger vessel *Ethan Allen* in Lake George, New York, which claimed 20 lives; the November 2005 grade crossing collision involving a Metra commuter train in Chicago; the December 2005 crash of a seaplane in Miami, Florida that killed all 20 persons aboard; the November 2006 accident in Alexandria, Virginia in which two track inspectors were killed when struck by a transit train; the January 2007 derailment of a CSX freight train in Shepherdsville, Kentucky that resulted in a hazardous materials spill and fire; and the August 2007 collapse of the Interstate 35W bridge in Minneapolis, Minnesota, which resulted in 13 fatalities and injured 145 people. He also was part of the NTSB's Go Team for the June 2003 capsizing of the charter fishing vessel *Taki-Too* near Garibaldi, Oregon, which took the lives of 11 of the 19 people aboard.

Member Profiles



ROBERT L. SUMWALT
Vice Chairman

Robert L. Sumwalt was sworn in as the 37th Member of the National Transportation Safety Board on August 21, 2006. His term of office will run until December 31, 2011. President Bush has also designated him as Vice Chairman of the Board for a two-year term.

Prior to coming to the Board, Mr. Sumwalt was Manager of Aviation for the SCANA Corporation, a Fortune 500 energy-based company.

Mr. Sumwalt was a pilot for 24 years with Piedmont Airlines and then US Airways, logging over 14,000 flight hours and earning type ratings in five aircraft before retiring from the airline in 2005. He has extensive experience as an airline captain, airline check airman, instructor pilot and air safety representative.

Mr. Sumwalt worked on special assignment to the US Airways Flight Safety Department from 1997 to 2004, where he was involved in the development of numerous airline safety programs, including an enhanced crew awareness program and a windshear training program. From 2002 to 2004, he served on the US Airways Flight Operations Quality Assurance (FOQA) Monitoring Team.

Mr. Sumwalt served as a member of the Air Line Pilots Association's (ALPA) Accident Investigation Board from 2002 to 2004, and also worked with ALPA's Aviation Weather Committee on improving the quality of weather products available to pilots. He has chaired ALPA's Human Factors and Training Group and was a co-founder of that organization's Critical Incident Response Program, which provides guidance to airline personnel involved in traumatic events such as accidents.

A trained accident investigator, Mr. Sumwalt participated in several NTSB investigations including the crash of USAir flight 427 in 1994 near Aliquippa, Pennsylvania, and the crash of USAir flight 861 near Birmingham, Alabama, in 1998. He also participated in the Transportation Safety Board of Canada's investigation of the accident involving Swissair flight 111 off the coast of Nova Scotia in 1998.

From 1991 to 1999, Mr. Sumwalt conducted aviation safety research as a consultant to NASA's Aviation Safety Reporting System, studying various issues including flight crew performance and air carrier de-icing and anti-icing problems.

Mr. Sumwalt has co-authored a book on aircraft accidents and he has written extensively on aviation safety matters, having published over 85 articles and papers in aviation trade publications. He also has broad experience in writing aircraft operations manuals and airline and corporate aviation policy and procedure guidelines. He has been a regular contributor to Professional Pilot magazine.

In 2003, Mr. Sumwalt joined the faculty of the University of Southern California's Aviation Safety and Security Program, where he was the primary human factors instructor.

In recognition of his contributions to the aviation industry, Mr. Sumwalt received the Flight Safety Foundation's Laura Taber Barbour Award in 2003 and ALPA's Air Safety Award in 2004.

Since joining the Board, the Vice Chairman has served as the Member on-scene for the November 30, 2007, collision between an Amtrak passenger train and a standing Norfolk Southern freight train in Chicago, Illinois. He was also on-scene Member for the November 1, 2007, liquid propane pipeline rupture and explosion in Carmichael, Mississippi. Additionally, he launched with the Go Team to Sanford, Florida, to the scene of an accident that occurred on July 10, 2007, in which a twin-engine Cessna 310R airplane impacted homes in a residential area. He was also the on-scene Member for the October 20, 2006 derailment of a Norfolk Southern train in New Brighton, Pennsylvania. Vice Chairman Sumwalt also accompanied the NTSB Go-Team to Lexington, Kentucky, for the on-site investigation of the August 27, 2006 crash of Comair flight 5191.

Mr. Sumwalt is a graduate of the University of South Carolina.

Member Profiles



DEBORAH A. P. HERSMAN
Member

Deborah A. P. Hersman was sworn in as the 35th Member of the National Transportation Safety Board on June 21, 2004.

Since her appointment to the Board, Member Hersman has been the member on scene at more than 10 major transportation accidents:

- November 2007 - allision of a container ship with the San Francisco Bay Bridge resulting in the release of approximately 55,000 gallons of fuel;
- August 2007 - crash of a chartered floatplane in Ketchikan, Alaska;
- November 2006 - school bus crash in Huntsville, Alabama;
- October 2006 - crash of a private aircraft into an apartment building in New York City;
- August 2006 - crash of a commercial aircraft in Lexington, Kentucky;
- July 2005 - head-on collision of two freight trains at Anding, Mississippi;
- April 2005 - collision of a school bus with a trash truck in Arlington, Virginia;
- February 2005 - crash of a charter aircraft into an airport warehouse at Teterboro, New Jersey;
- January 2005 - freight train collision and hazardous material release in Graniteville, South Carolina;
- November 2004 - collision of two Washington Metro trains at the Woodley Park Station in Washington, D.C; and
- October 2004 - crash of an aircraft in Jefferson City, Missouri

Member Hersman has chaired a number of public events hosted by the NTSB. In September 2006, she chaired a two-day public forum on motorcycle safety. In July, 2006, she chaired a two-day public hearing investigating the February, 2006 fire on board UPS Airlines flight 1307. She also chaired a three-day public hearing in June, 2005, on the Jefferson City crash.

Member Hersman holds a commercial drivers license with passenger, school bus, and air brake endorsements. She successfully completed a motorcycle basic rider course and holds a motorcycle endorsement. She also is a certified Child Passenger Safety Technician.

Before joining the NTSB, Member Hersman was a Senior Professional Staff Member of the U.S. Senate Committee on Commerce, Science and Transportation from 1999 to 2004 where she was responsible for the legislative agenda and policy initiatives affecting surface transportation issues, including economic and safety regulation of railroads, trucks, buses, pipelines, and hazardous materials transportation. Prior to that appointment, she served as Staff Director and Senior Legislative Aide to Congressman Bob Wise of West Virginia from 1992 to 1999.

Member Hersman earned Bachelor of Arts degrees in Political Science and International Studies from Virginia Tech in Blacksburg, Virginia, in 1992, and a Master of Science degree in Conflict Analysis and Resolution from George Mason University in Fairfax, Virginia, in 1999. She is married and is the mother of three sons.

Member Hersman's term expires December 31, 2008.

Member Profiles



KATHRYN O'LEARY HIGGINS
Member

Kathryn O'Leary Higgins was sworn in as the 36th Member of the National Transportation Safety Board on January 3, 2006.

Member Higgins served as the Board Member on scene for the NTSB investigations into the May 2006 crash in Washington, D.C., of a MedSTAR helicopter transporting a patient to the Washington Hospital Center; the July 2006 derailment of the last car of an 8-car Chicago Transit Authority rapid-transit train that created an electrical arcing event requiring evacuation of 1,000 passengers during rush hour in downtown Chicago; the January 2007 derailment of a Metro transit car carrying more than 100 passengers; and the March 2007 accident involving a motor coach that went off a highway overpass and fell onto I-75 early in the morning in Atlanta, Georgia, killing the bus driver, his wife, and five baseball players, and injuring 29 others, from a small college in Ohio. Member Higgins also served as the

Chairman of a public hearing on the September 2005 bus fire accident near Wilmer, Texas, that occurred during the emergency evacuation for Hurricane Rita in which 23 of the 44 passengers were killed.

Ms. Higgins brings 36 years of experience in the public and private sectors to her appointment. She was most recently employed as President and CEO of TATC Consulting and was Vice President for Public Policy at the National Trust for Historic Preservation from May 1999 to January 2004.

Member Higgins served as Deputy Secretary of the U.S. Department of Labor (July 1997-May 1999), Acting Chair of the National Endowment for the Arts, and Vice Chair of the Presidential Commission on U.S. Coast Guard Roles and Missions.

Ms. Higgins served in the White House (February 1995 – July 1997) as Assistant to the President and Secretary to the Cabinet. In that capacity she worked closely with the NTSB, the DOT the FAA, and the Coast Guard on a number of matters, including the 1996 ValuJet flight 592 and TWA flight 800 accidents, formulation and implementation of hazardous materials regulations, increasing inspector staffing, FAA reauthorization, and creation of the NTSB Office of Family Assistance. She was awarded distinguished service medals by the FAA and Coast Guard for her work.

Ms. Higgins served as Chief of Staff to the Secretary of Labor (January 1993-February 1995), Chief of Staff to Congressman Sander Levin (January 1986 – January 1993), and Senior Legislative Associate and Minority Staff Director with the U.S. Senate Labor and Human Resources Committee (January 1981 –January 1986).

Member Higgins was with the White House Domestic Policy Council, serving as Assistant Director for Employment Policy (May 1978 –January 1981). She began her career in 1969 as a Manpower Specialist with the Employment and Training Administration, U.S. Department of Labor.

Ms. Higgins came to Washington from Yankton, South Dakota and earned a Bachelor of Science degree from the University of Nebraska. She was married to the late William J. Higgins and is the mother of two sons, Liam and Kevan.

Ms. Higgins' term expires December 31, 2009.

Member Profiles



STEVEN R. CHEALANDER
Member

Steven R. Chealander was sworn in as the 38th Member of the National Transportation Safety Board on January 3, 2007.

Mr. Chealander brings a wealth of both civilian and military aviation experience to the NTSB. Prior to joining the Board, he was with American Airlines, serving since 1991 as a pilot and Captain qualified on the DC-10, B-737, MD-80, and F-100 aircraft, and as a Chief Pilot in Los Angeles. At American, he also was a flight safety manager, performing safety and compliance audits and participating in investigations, and was most recently the Manager of Flight Operations Efficiency.

From 1964 to 1991, Mr. Chealander served in the U.S. Air Force (USAF), with tours of duty in Vietnam and Spain. An F-4 pilot and instructor pilot, and then a USAF Aggressor Pilot, Mr. Chealander was selected in 1981 to be a member of the USAF Air Demonstration Squadron, the Thunderbirds. He flew with the team until 1985, when he was assigned as a staff officer at Tactical Air Command Headquarters at Langley AFB, VA.

In 1986, Mr. Chealander was selected as Military Aide to President Ronald Reagan. In this capacity, he performed a variety of ceremonial and emergency preparedness duties, including custody of the President's emergency briefcase, known as "the football."

Subsequently, Mr. Chealander commanded an F-5 tactical fighter squadron at Williams AFB, Arizona (1988-89), an F-16 squadron at Luke AFB, Arizona (1989-91), and then was appointed Assistant Deputy Commander for Operations for the F-16 tactical fighter wing at Luke AFB. He retired from the Air Force in 1991 with the rank of Lt. Colonel.

Mr. Chealander received a B.S. degree in Business Administration from the University of Southern California and did graduate studies at the University of Utah. He is married and the father of two daughters.

Mr. Chealander's term as an NTSB Member expired on December 31, 2007. He has been re-nominated by President Bush and is awaiting Senate Confirmation.

Appendix A

Accidents Required To Be Investigated Under Section 1131 But Not Investigated

ACCIDENTS REQUIRED TO BE INVESTIGATED UNDER SECTION 1131 BUT NOT INVESTIGATED

Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES		REASON NOT INVESTIGATED
AVIATION			<i>None to report</i>		
HIGHWAY			<i>None to report</i>		
MARINE	7-Jan-07	Strait of Hormuz	Submarine collision with ship		Lack of access to vessels
PIPELINE			<i>None to report</i>		
RAILROAD			Accidents involving Freight Trains		
RR--Freight	7-Jan-07	W. Mansfield, OH	CSX Derailment approx. \$1.1M	Rail split head, no injuries Unsecured run-away cars from yard, no injuries	Limited Board resources
RR--Freight	15-Jan-07	Dupo, IL	CSX run-away/collision approx. \$2.6M	80 per. evacuated	Limited Board resources
RR--Freight	17-Jan-07	Gore, OK	UP Derailment approx. \$1.33M	Coal train/ Broken rail	Limited Board resources
RR--Freight	18-Jan-07	Clarks, NE	UP Derailment approx. \$1.65M	Broken wheel, no injuries	Limited Board resources
RR--Freight	18-Jan-07	Clarks, NE	UP Derailment \$1.65M	Broken wheel, no injuries	Limited Board resources
RR--Freight	25-Jan-07	Gibbon, NE	UP Derailment approx. \$2.52M	Coal Train, broken wheel	Limited Board resources
RR--Freight	11-Feb-07	Weston, WY	BNSF Derailment approx \$1.78M	Broken car axle, no injuries	Limited Board resources
RR--Freight	13-Feb-07	Imperial, CA	UP Derailment, approx \$2M	Broken rail, no injuries	Limited Board resources
RR--Freight	17-Feb-07	Willacy, TX	UP Derailment, approx \$2.1M	Broken rail, no injuries	Limited Board resources
RR--Freight	24-Feb-07	Custer, NE	BNSF Derailment approx \$1.86M	Emergency Brake Application, no injuries	Limited Board resources
RR--Freight	24-Feb-07	Cross, AR	UP Derailment, approx. \$1.2M	Broken Wheel, no injuries	Limited Board resources
RR--Freight	4-Mar-07	Henderson, TX	UP Derailment, approx. \$1.2M	Defective Springs on Wheel, no injuries	Limited Board resources
RR--Freight	9-Mar-07	Dawes, NE	BNSF Derailment, approx \$1.65M	Car off rail, no injuries	Limited Board resources
RR--Freight	3-Apr-07	Imperial, CA	UP Derailment, approx. \$1M	Unknown cause, no injuries	Limited Board resources
RR--Freight	4-Apr-07	Kanawha, WV	CSX Derailment, approx \$1.1M	Rock slide derailed locomotives, no injuries	Limited Board resources
RR--Freight	7-Apr-07	Howell, MO	BNSF Derailment, approx \$2.9M	Defective track, no injuries	Limited Board resources
RR--Freight	8-Apr-07	Morrill, NE	BNSF Derailment, approx \$1.75M	Broken rail, no injuries	Limited Board resources
RR--Freight	14-Apr-07	Scotts Bluff, NE	BNSF Derailment, approx \$1.4M	Emergency brake application, no injuries	Limited Board resources
RR--Freight	24-Apr-07	Grant, NE	BNSF Derailment, approx \$2.9M	Defective track, no injuries	Limited Board resources
RR--Freight	25-Apr-07	Converse, WY	BNSF Derailment, approx 1.2M	Emergency brake application, no injuries	Limited Board resources
RR--Freight	2-May-07	Demopolis, AL	M & B approx. \$5M	NASA train, Bridge collapsed under train moving slowly.	Limited Board resources
RR--Freight	4-May-07	Barry, MO	A & M Derailment, approx \$1.25M	Gapped switch points, no injuries	Limited Board resources
RR--Freight	6-May-07	Geary, KS	UP Derailment, approx \$1M	Bridge washed out, 2 train crew injuries	Limited Board resources
RR--Freight	11-May-07	Buffalo, NE	UP Derailment, approx \$1.2M	Defective rail spikes, no injuries	Limited Board resources
RR--Freight	12-May-07	Montgomery, IA	BNSF Derailment, approx \$3.3M	Track out of alignment, 1 train crew injury	Limited Board resources
RR--Freight	16-May-07	Pierce, WA	UP-BNSF "raking" collision, \$1.1M	Operating rules non-compliance, no injuries	Limited Board resources
RR--Freight	31-May-07	Dona Ana, NM	BNSF Derailment, approx \$1.2M	Emergency brake application, no injuries	Limited Board resources
RR--Freight	2-Jun-07	Benton, AR	KCS Derailment, approx \$1.2M	Broken rail, no injuries	Limited Board resources
RR--Freight	4-Jun-07	St Louis, MN	BNSF Derailment, approx \$4M	Broken rail, no injuries	Limited Board resources
RR--Freight	6-Jun-07	Cass, ND	BNSF Derailment, approx \$1.9M	Car coupler failure, no injuries	Limited Board resources
RR--Freight	20-Jun-07	Becker, MN	BNSF Derailment, approx \$1.5M	Defective rail spikes, no injuries	Limited Board resources
RR--Freight	22-Jun-07	Harper, KS	BNSF Derailment, approx \$1.2M	Defective track, no injuries	Limited Board resources
RR--Freight	29-Jun-07	Hughes, OK	BNSF Derailment, approx \$1.5M	Track surface washed out, no injuries	Limited Board resources

ACCIDENTS REQUIRED TO BE INVESTIGATED UNDER SECTION 1131 BUT NOT INVESTIGATED

Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES		REASON NOT INVESTIGATED
RR--Freight	30-Jun-07	Plumas, CA	UP Derailment, approx \$1.4M	Rolling boulder struck car in train, no injuries	Limited Board resources
RR--Freight	7-Jul-07	Knox, IL	UP Derailment on BNSF track,\$2.4M	Track misaligned, no injuries	Limited Board resources
RR--Freight	9-Jul-07	Grant, NE	BNSF Derailment, approx \$2.4M	Broken car wheel, no injuries	Limited Board resources
RR--Freight	12-Jul-07	Stark, ND	BNSF Derailment, approx \$8M	Broken track plate, no injuries	Limited Board resources
RR--Freight	13-Aug-07	Coffey, KS	BNSF Derailment, approx \$1.15M	Broken switch point, no injuries	Limited Board resources
RR--Freight	3-Sep-07	Newcastle, WY	BNSF Derailment approx. \$1.10M	Sunkink - 2 locos derailed	Limited Board resources
RR--Freight	3-Sep-07	Sergeant Bluff, IA	UP Derailment approx. \$1.15M	Track failure -crosslevel bad - 16 derailed	Limited Board resources
RR--Freight	6-Sep-07	Monona, IA	DM&E Derailment approx. \$1.21M	Wide gauge - 6 locos/33 cars derailed	Limited Board resources
RR--Freight	7-Sep-07	Rincon, NM	BNSF Derailment approx. \$ 1.09M	Roller bearing failure - 59 cars derailed	Limited Board resources
RR--Freight	7-Sep-07	Drexel, MO	KCS Derailment approx. \$1.01M	Non CWR broken rail - 10 cars derailed	Limited Board resources
RR--Freight	8-Sep-07	Bloomington, CA	UP Derailment approx. \$2.17M	Train handling/brkn knuckle/rolled into siding/derailing 7 in siding	Limited Board resources
RR--Freight	25-Sep-07	Monona, IA	DM&E Derailment approx. \$1.40M	Mechanical failure/solid side bearings - 27 cars derailed	Limited Board resources
RR--Freight	25-Sep-07	Helper, UT	UTAH Derailment approx. \$1.20M	UTAH/UP collison due to UP track failure - 23 cars derailed	Limited Board resources
RR--Freight	20-Oct-07	Imboden, AR	BNSF Derailment approx. \$1.22M	Brkn. rail derailed loco of 1 train into 2nd /siding - 7 cars derail.	Limited Board resources
RR--Freight	20-Oct-07	Grand Ridge, FL	CSX Derailment approx. \$1.10M	Broken rail - 5 locos/27 cars derailed	Limited Board resources
RR--Freight	2-Nov-07	Nashville, TN	CSX Derailment approx. \$1.60M	Track failure train collison with 2nd train in siding - 36 derailed	Limited Board resources
RR--Freight	7-Nov-07	Rockdale, TX	UP MOW coll.w/stndng cars appr. \$1.7M	Failure to comply with range of vision rule - 2 MOW injured	Limited Board resources
RR--Freight	11-Nov-07	Prosperity, SC	CSX Derailment approx. \$2.44M	Broken rail - 38 cars derailed	Limited Board resources
RR--Freight	21-Nov-07	Herlong, CA	UP Derailment approx. \$1.69M	Broken rail - 34 cars derailed	Limited Board resources
RR--Freight	9-Dec-07	Grand Island, NE	BNSF Derailment approx. \$2.53M	Broken axle - 35 cars derailed	Limited Board resources
RR--Freight	10-Dec-07	Schuyler, NE	UP Derailment approx. \$1.30M	Broken joint bar - 23 cars derailed	Limited Board resources
RR--Freight	11-Dec-07	Littleton, CO	UP Derailment approx. \$1.98M	Coal train derailment	Limited Board resources
RR--Freight	13-Dec-07	Abilene, VA	NS Train Collision approx. \$1.42M	Failure to comply with red signal	Limited Board resources
RR--Pass.			Accidents involving Passenger Trains		Limited Board resources
RR--Pass.	2-Jan-07	Tulare, CA	Amtrak struck abandoned automobile.	One employee injury	Limited Board resources
RR--Pass.	10-Jan-07	De Kalb, IN	Amtrak highway-rail crossing accident	No injuries	Limited Board resources
RR--Pass.	11-Jan-07	Chester, PA	SEPTA sustained damage to train	Broken cotter key on pantagraph unit. No injuries.	Limited Board resources
RR--Pass.	11-Jan-07	New York, NY	PATH train accident at low speed.	One minor passenger injury and two minor crew injuries.	Limited Board resources
RR--Pass.	17-Jan-07	New Castle, DE	Amtrak Derailed upright.	Broken wheel. No injuries	Limited Board resources
RR--Pass.	20-Jan-07	New York, NY	MNCW car derailed.	Defective derail. No injuries.	Limited Board resources
RR--Pass.	22-Jan-07	Ventura, CA	Amtrak highway-rail crossing accident	Highway user inattentiveness	Limited Board resources
RR--Pass.	29-Jan-07	Sen Bernardino, CA	Amtrak struck abandoned automobile.	No injuries	Limited Board resources
RR--Pass.	2-Feb-07	San Luis Obispo, CA	Amtrak locomotive derailed upright	Failure to stop short of derail. No injuries.	Limited Board resources

ACCIDENTS REQUIRED TO BE INVESTIGATED UNDER SECTION 1131 BUT NOT INVESTIGATED

Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES		REASON NOT INVESTIGATED
RR--Pass.	2-Feb-07	Lehi, UT	Amtrak highway-rail crossing accident	No injuries.	Limited Board resources
RR--Pass.	4-Feb-07	Chester, PA	SEPTA sustained damage to train	Catenary defect. No injuries.	Limited Board resources
RR--Pass.	6-Feb-07	Westchester, NY	MNCW struck automobile on track.	Automobile driver error. No injuries.	Limited Board resources
RR--Pass.	10-Feb-07	Dillon, SC	Amtrak highway-rail crossing accident	Highway user cited for going around down gates.	Limited Board resources
RR--Pass.	10-Feb-07	Fairfield, CT	Amtrak sustained damage to train.	Pantagraph unit came loose. No injuries.	Limited Board resources
RR--Pass.	12-Feb-07	Clackamas, OR	Amtrak highway-rail crossing accident	Highway user inattentiveness	Limited Board resources
RR--Pass.	13-Feb-07	Harford, MD	Amtrak sustained damage to train.	Pantagraph unit came loose. No injuries.	Limited Board resources
RR--Pass.	14-Feb-07	Orange, NY	MNCW struck obstruction on track.	"Bobcat" plow hit. No injuries.	Limited Board resources
RR--Pass.	15-Feb-07	Hudson, NJ	NJT sustained damage to train.	Pantagraph unit defective. No injuries.	Limited Board resources
RR--Pass.	16-Feb-07	Ventura, CA	Amtrak highway-rail crossing accident	Highway user inattentiveness. No injuries.	Limited Board resources
RR--Pass.	19-Feb-07	Solano, CA	Amtrak highway-rail crossing accident	Highway user inattentiveness. Automobile driver killed.	Limited Board resources
RR--Pass.	20-Feb-07	Douglas, NE	Amtrak Derailed upright.	Poor track conditions. No injuries.	Limited Board resources
RR--Pass.	21-Feb-07	Westchester, NY	MNCW sustained damage to train.	Catenary defect. No injuries.	Limited Board resources
RR--Pass.	21-Feb-07	Bergen, NJ	NJT derailment.	Defective switch point. Two minor injuries.	Limited Board resources
RR--Pass.	23-Feb-07	Solano, CA	Amtrak highway-rail crossing accident	Highway user inattentiveness. Driver killed.	Limited Board resources
RR--Pass.	26-Feb-07	Fairfield, CT	MNCW sustained damage to train.	Pantagraph unit defective. No injuries.	Limited Board resources
RR--Pass.	1-Mar-07	Essex, NJ	Amtrak sustained damage to train.	Pantagraph unit defective. No injuries.	Limited Board resources
RR--Pass.	6-Mar-07	Westchester, NY	MNCW sustained damage to train.	Pantagraph unit defective. No injuries.	Limited Board resources
RR--Pass.	8-Mar-07	Philadelphia, PA	Amtrak sustained damage to train.	Pantagraph unit defective. No injuries.	Limited Board resources
RR--Pass.	14-Mar-07	San Bernardino, CA	SCRA highway-rail crossing accident	Highway user inattentiveness. Driver killed.	Limited Board resources
RR--Pass.	16-Mar-07	New Haven, CT	MNCW sustained minor damage to train.	Improperly lined switch & radio communication. No injuries.	Limited Board resources
RR--Pass.	16-Mar-07	New York, NY	MNCW sustained minor damage to train.	Defective traction motor. No injuries.	Limited Board resources
RR--Pass.	18-Mar-07	Norfolk, MA	Amtrak sustained damage to train.	Pantagraph unit defective. No injuries.	Limited Board resources
RR--Pass.	22-Mar-07	Washington, DC	VRE locomotive damaged due to fire.	Electrical problem on locomotive. No injuries.	Limited Board resources
RR--Pass.	25-Mar-07	Hudson, NJ	PATH train accident at low speed.	Failure to comply with restricted speed rule. 3 minor injuries.	Limited Board resources
RR--Pass.	26-Mar-07	Westchester, NY	MNCW reported fire under passenger car.	Burning leaves lodged under car. No injuries.	Limited Board resources
RR--Pass.	28-Mar-07	Hudson, NJ	PATH train accident at low speed.	Failure to comply with restricted speed rule. No injuries.	Limited Board resources
RR--Pass.	30-Mar-07	Yazoo, MS	Amtrak highway-rail crossing accident	Highway user inattentiveness.	Limited Board resources
RR--Pass.	12-Apr-07	Greene, AL	Amtrak train struck tree in tracks.	No injuries.	Limited Board resources
RR--Pass.	12-Apr-07	Orange, CA	SCRA highway-rail crossing accident	Highway user inattentiveness. No injuries.	Limited Board resources
RR--Pass.	17-Apr-07	Norfolk, MA	Amtrak sustained damage to train.	Pantagraph unit defective. No injuries.	Limited Board resources
RR--Pass.	20-Apr-07	Polk, FL	Amtrak derailed locomotive at low speed	Wide track gage. No injuries.	Limited Board resources
RR--Pass.	23-Apr-07	Quitman, MS	Amtrak highway-rail crossing accident	Highway user inattentiveness. 1 injury.	Limited Board resources
RR--Pass.	25-Apr-07	Weld, CO	Amtrak derailed in yard at low speed	Defective center plate. No injuries.	Limited Board resources
RR--Pass.	25-Apr-07	Fairfield, CT	MNCW sustained damage to train.	Pantagraph unit defective. No injuries.	Limited Board resources

ACCIDENTS REQUIRED TO BE INVESTIGATED UNDER SECTION 1131 BUT NOT INVESTIGATED

Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES		REASON NOT INVESTIGATED
RR--Pass.	2-May-07	San Bernardino, CA	Amtrak Derailed upright.	Wide track gage on siding. 3 minor injuries.	Limited Board resources
RR--Pass.	4-May-07	San Diego, CA	SDNX struck automobile the drove on track	Driver attempted to drive down RR right-of-way. Driver injured.	Limited Board resources
RR--Pass.	6-May-07	Essex, NJ	PATH empty passenger train on fire.	Electrical problem on cab car. 1 employee injury.	Limited Board resources
RR--Pass.	8-May-07	Stanislaus, CA	Amtrak highway-rail crossing accident	Highway user inattentiveness. 6 occupants of SUV killed.	Limited Board resources
RR--Pass.	13-May-07	Lorain, OH	Amtrak highway-rail crossing accident	Closed for repairs. Driver got stuck and was hit. No injuries	Limited Board resources
RR--Pass.	16-May-07	Westchester, NY	MNCW sustained damage to train.	Defective Pantagraph. No injuries.	Limited Board resources
RR--Pass.	19-May-07	Cook, IL	NIRCR struck on-track equipment.	Signal dept. equipment fouling track. No injuries.	Limited Board resources
RR--Pass.	20-May-07	Philadelphia, PA	Amtrak derailed upright at low speed.	Broken switch point. No injuries.	Limited Board resources
RR--Pass.	21-May-07	Denver, CO	Amtrak struck bumping post at 2 mph	Operating rules non-compliance. 1 minor injury.	Limited Board resources
RR--Pass.	22-May-07	Somerset, NJ	NJT sustained damage to train.	Defective cantenary. No injuries.	Limited Board resources
RR--Pass.	23-May-07	Westchester, NY	MNCW sustained damage to train.	Pantagraph unit defective. No injuries.	Limited Board resources
RR--Pass.	25-May-07	Bucks, PA	NJT sustained damage to train.	Pantagraph unit defective. No injuries.	Limited Board resources
RR--Pass.	31-May-07	Morris, NJ	NJT struck debris on track, damaging locomotive	No injuries.	Limited Board resources
RR--Pass.	3-Jun-07	Bergen, NJ	NJT struck debris on track, damaging locomotive	Vandals placed big rock in track. No injuries.	Limited Board resources
RR--Pass.	4-Jun-07	Lancaster, PA	Amtrak struck a tree on the track	No cars derailed and no injuries.	Limited Board resources
RR--Pass.	4-Jun-07	Fresno, CA	Amtrak struck abandoned automobile.	No injuries.	Limited Board resources
RR--Pass.	6-Jun-07	Merced, CA	Amtrak highway-rail crossing accident	Automobile driver error. No injuries.	Limited Board resources
RR--Pass.	10-Jun-07	Montgomery, PA	SEPTA struck abandoned automobile	No injuries.	Limited Board resources
RR--Pass.	10-Jun-07	Dallas, TX	TREX derailed at 3 mph.	Improperly lined switch. No injuries.	Limited Board resources
RR--Pass.	11-Jun-07	Lee, IA	Amtrak derailed two locomotives.	Broken switch point. No passenger injuries.	Limited Board resources
RR--Pass.	12-Jun-07	New Haven, CT	MNCW sustained damage to train.	One crew injury.	Limited Board resources
RR--Pass.	13-Jun-07	Polk, FL	Amtrak highway-rail crossing accident	Pantagraph unit defective. No injuries.	Limited Board resources
RR--Pass.	13-Jun-07	Fairfield, CT	MNCW sustained damage to locomotive.	Highway user inattentiveness. Driver killed.	Limited Board resources
RR--Pass.	17-Jun-07	New York, NY	MNCW derailed car upright at low speed.	Electrical failure. No injuries.	Limited Board resources
RR--Pass.	19-Jun-07	Fairfield, CT	MNCW sustained damage to train.	Train crew error. No injuries.	Limited Board resources
RR--Pass.	20-Jun-07	Bronx, NY	MNCW struck a tree on the track.	Pantagraph unit defective. No injuries.	Limited Board resources
RR--Pass.	21-Jun-07	New Haven, CT	MNCW derailed.	No injuries.	Limited Board resources
RR--Pass.	24-Jun-07	Fairfield, CT	MNCW had smoke coming from train.	Switch in wrong position. 3 injured.	Limited Board resources
RR--Pass.	27-Jun-07	New Haven, CT	MNCW sustained damage to train.	Defective traction motor. No injuries.	Limited Board resources
RR--Pass.	28-Jun-07	Santa Clara, CA	PCMZ highway-rail crossing accident.	Pantagraph unit defective. No injuries.	Limited Board resources
RR--Pass.	2-Jul-07	Bexar, TX	Amtrak Derailment	Highway user inattentiveness. No injuries.	Limited Board resources
RR--Pass.	2-Jul-07	Polk, FL	Amtrak Highway/Rail Grade Crossing	Switch point worn, no injuries.	Limited Board resources
				Tractor-trailer bottomed out at crossing, 2 injuries	Limited Board resources

ACCIDENTS REQUIRED TO BE INVESTIGATED UNDER SECTION 1131 BUT NOT INVESTIGATED

<i>Mode</i>	<i>ACCIDENT DATE</i>	<i>ACCIDENT LOCATION</i>	<i>ACCIDENT CIRCUMSTANCES</i>		<i>REASON NOT INVESTIGATED</i>
<i>RR--Pass.</i>	2-Jul-07	Hudson, NJ	NJT Collision with Fouling Equipment	Crew failed to ensure route was clear, no injuries	Limited Board resources
<i>RR--Pass.</i>	3-Jul-07	Philadelphia, PA	Amtrak, Derailment	Warp on rail, no injuries	Limited Board resources
<i>RR--Pass.</i>	5-Jul-07	New Castle, DE	Amtrak, Obstruction Impact	Damage to rear pantograph on power car, no injuries	Limited Board resources
<i>RR--Pass.</i>	5-Jul-07	Lake, IN	NICTD, Derailment	Carmen failed to stop before bumping post, no injuries	Limited Board resources
<i>RR--Pass.</i>	6-Jul-07	Philadelphia, PA	SEPTA, Equipment damage	Bent pantograph damage, no injuries	Limited Board resources
<i>RR--Pass.</i>	6-Jul-07	Cherokee, TX	TX State RR, Impact	Switchman threw switch under passing train, no injuries	Limited Board resources
<i>RR--Pass.</i>	7-Jul-07	Hill, MT	Amtrak, Failed to stop for signal	Train ran through trailing switch, no injuries	Limited Board resources
<i>RR--Pass.</i>	8-Jul-07	New York, NY	NJT Derailment	Engineer failed to stop and hit bumping block, no injuries	Limited Board resources
<i>RR--Pass.</i>	11-Jul-07	Mercer, NJ	Amtrak, Equipment damage	Damage to pantograph on power car, no injuries	Limited Board resources
<i>RR--Pass.</i>	12-Jul-07	Hudson, NJ	NJT, Equipment damage	Damage to pantograph on power car, no injuries	Limited Board resources
<i>RR--Pass.</i>	13-Jul-07	Somerset, NJ	NJT, Derailment	Engineer reversed train over switch, no injuries	Limited Board resources
<i>RR--Pass.</i>	14-Jul-07	Mercer, NJ	Amtrak, Equipment damage	Pantograph damaged by tree, no injuries	Limited Board resources
<i>RR--Pass.</i>	14-Jul-07	Bristol, MA	Amtrak, Obstruction Impact	Two vehicles abandoned on track, no injuries	Limited Board resources
<i>RR--Pass.</i>	15-Jul-07	Bristol, MA	Amtrak, Equipment damage	Pantograph damaged due to mechanical failure, no injuries	Limited Board resources
<i>RR--Pass.</i>	15-Jul-07	Tulare, CA	Amtrak, Obstruction Impact	Train struck debris, no injuries	Limited Board resources
<i>RR--Pass.</i>	16-Jul-07	Polk, FL	Amtrak, Highway/Rail Grade Crossing	Vehicle drove around lowered gates, 4 deaths 2 injuries	Limited Board resources
<i>RR--Pass.</i>	17-Jul-07	Hillsborough, FL	Amtrak, Highway/Rail Grade Crossing	Truck failed to stop at crossing, no injuries	Limited Board resources
<i>RR--Pass.</i>	19-Jul-07	Kern, CA	Amtrak, Highway/Rail Grade Crossing	Water tanker failed to stop at crossing, 5 injuries	Limited Board resources
<i>RR--Pass.</i>	22-Jul-07	Cecil, MD	Amtrak, Obstruction Impact	Bird strike caused pantograph damage, no injuries	Limited Board resources
<i>RR--Pass.</i>	23-Jul-07	Bronx, NY	Metro North, Obstruction Impact	Train struck tree knocking down third rail, no injuries	Limited Board resources
<i>RR--Pass.</i>	25-Jul-07	Norfolk, MA	MBTA, Highway/Rail Grade Crossing	Box Van fouled track & could not move out of way of train, no injuries	Limited Board resources
<i>RR--Pass.</i>	27-Jul-07	Somerset, NJ	NJT, Obstruction Impact	Train struck tree branches damaging transformer, no injuries	Limited Board resources
<i>RR--Pass.</i>	27-Jul-07	Philadelphia, PA	SEPTA, Equipment damage	Pantograph stuck in catenary, no injuries	Limited Board resources
<i>RR--Pass.</i>	29-Jul-07	Cook, IL	Amtrak, Derailment	Locomotive and car derailed due to switch out of adjustment, no injuries	Limited Board resources
<i>RR--Pass.</i>	31-Jul-07	Westchester, NY	Metro North, Obstruction Impact	Train struck fallen tree, no injuries	Limited Board resources
<i>RR--Pass.</i>	5-Aug-07	New York, NY	NJT, Obstruction Impact	Pantograph struck & damaged catenary, no injuries	Limited Board resources

ACCIDENTS REQUIRED TO BE INVESTIGATED UNDER SECTION 1131 BUT NOT INVESTIGATED

Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES		REASON NOT INVESTIGATED
RR--Pass.	6-Aug-07	Cook, IL	Metra, Derailment	Two cars derailed, no injuries	Limited Board resources
RR--Pass.	13-Aug-07	Middlesex, NJ	Amtrak, Equipment damage	Pantograph damage, no injuries	Limited Board resources
RR--Pass.	13-Aug-07	Essex, NJ	NJT, Equipment damage	Blown insulator, no injuries	Limited Board resources
RR--Pass.	17-Aug-07	Solano, CA	Amtrak, Highway/Rail Grade Crossing	Truck struck by train, no injuries	Limited Board resources
RR--Pass.	22-Aug-07	Harris, TX	Amtrak, Highway/Rail Grade Crossing	Auto drove around gates, 3 deaths Driver stopped then proceeded past warning	Limited Board resources
RR--Pass.	24-Aug-07	Valencia, NM	NM Rail Runner, Highway/Rail Grade Crossing	lights, 2 deaths	Limited Board resources
RR--Pass.	25-Aug-07	St. Joseph, IN	NICTD, Highway/Rail Grade Crossing	Auto drove up on closed crossing, no injuries	Limited Board resources
RR--Pass.	27-Aug-07	Palm Beach, FL	Amtrak, Highway/Rail Grade Crossing	Bobcat forklift turned west over crossing and was struck, 1 death	Limited Board resources
RR--Pass.	29-Aug-07	New York, NY	Amtrak, Collision	Engineer failed to operate at restricting, no injuries	Limited Board resources
RR--Pass.	29-Aug-07	Montgomery, PA	SEPTA, Derailment	Mechanical fastner broke and caused derailment, 1 injury	Limited Board resources
RR--Pass.	3-Sep-07	Washington, RI	Amtrak, Equipment damage	Pantograph damaged, no injuries	Limited Board resources
RR--Pass.	4-Sep-07	Philadelphia, PA	SEPTA, Equipment damage	Pantograph damaged with no catenary power, no injuries	Limited Board resources
RR--Pass.	7-Sep-07	Fairfield, CT	Metro North, Equipment damage	Pantograph damaged, no injuries	Limited Board resources
RR--Pass.	11-Sep-07	New York, NY	Metro North, Equipment damage	Grounded traction motor with smoke conditions, no injuries	Limited Board resources
RR--Pass.	13-Sep-07	Bristol, MA	Amtrak, Equipment damage	Bolt caused pantograph damage, no injuries	Limited Board resources
RR--Pass.	14-Sep-07	Kern, CA	Amtrak, Highway/Rail Grade Crossing	Auto struck while making U-turn on crossing, no injuries	Limited Board resources
RR--Pass.	14-Sep-07	Philadelphia, PA	SEPTA, Derailment	Locomotive derailed, no injuries	Limited Board resources
RR--Pass.	17-Sep-07	Bergen, NJ	NJT, Highway/Rail Grade Crossing	Vehicle drove around lowered gates, 2 deaths	Limited Board resources
RR--Pass.	18-Sep-07	Prince George, MD	Amtrak, Equipment damage	Pantograph damaged, no injuries	Limited Board resources
RR--Pass.	18-Sep-07	Fairfield, CT	Metro North, Equipment damage	Pantograph damaged, no injuries	Limited Board resources
RR--Pass.	20-Sep-07	Los Angeles, CA	SCARRA, Highway/Rail Grade Crossing	Rear of trailer did not clear, no injuries	Limited Board resources
RR--Pass.	20-Sep-07	Montgomery, PA	SEPTA, Equipment damage	Pantograph damaged, no injuries	Limited Board resources
RR--Pass.	22-Sep-07	Fairfield, CT	Metro North, Equipment damage	Pantograph damaged, no injuries	Limited Board resources
RR--Pass.	26-Sep-07	Washington, DC	Amtrak, Equipment damage	Pantograph damaged, 2 injuries	Limited Board resources
RR--Pass.	1-Oct-07	Contra Costa, CA	Amtak, Obstruction Impact	Train struck object and derailed locomotive, no injuries	Limited Board resources
RR--Pass.	2-Oct-07	Bronx, NY	Amtrak, Equipment damage	Pantograph damaged, no injuries	Limited Board resources
RR--Pass.	2-Oct-07	Westchester, NY	Metro North, Equipment damage	Pantograph damaged, no injuries	Limited Board resources
RR--Pass.	2-Oct-07	Fairfield, CT	Metro North, Equipment damage	Pantograph damaged, no injuries	Limited Board resources
RR--Pass.	2-Oct-07	New York, NY	Metro North, Obstruction Impact	Unknown debris caused smoke condition, no injuries	Limited Board resources
RR--Pass.	2-Oct-07	Cook, IL	Metra, Derailment	Wide gage derailment, 2 injuries	Limited Board resources
RR--Pass.	2-Oct-07	Cook, IL	Metra, Derailment	Wide gage derailment, no injuries	Limited Board resources
RR--Pass.	2-Oct-07	Union, NJ	NJT, Equipment damage	Pantograph damaged, no injuries	Limited Board resources

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Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES	REASON NOT INVESTIGATED
RR--Pass.	3-Oct-07	Chatham, GA	Amtrak, Highway/Rail Grade Crossing	Tractor-trailer stopped with trailer fouling crossing, 2 injuries Limited Board resources
RR--Pass.	4-Oct-07	Montgomery, PA	SEPTA, Highway/Rail Grade Crossing	Tractor-trailer maneuvered around lowered gates, 7 injuries Limited Board resources
RR--Pass.	5-Oct-07	Westchester, NY	Metro North, Equipment damage	Pantograph damaged, no injuries Limited Board resources
RR--Pass.	9-Oct-07	Bergen, NJ	NJT, Highway/Rail Grade Crossing	Vehicle drove around gates, no injuries Limited Board resources
RR--Pass.	9-Oct-07	Philadelphia, PA	SEPTA, Equipment damage	Pantographs damaged, no injuries Limited Board resources
RR--Pass.	12-Oct-07	Tarrant, TX	Trinity Rwy Express, Highway/Rail Crossing	Vehicle drove around gates, 1 injury Limited Board resources
RR--Pass.	13-Oct-07	La Porte, IN	NICTD, Collision	Engineer failed to operate at restricting, 4 injuries Limited Board resources
RR--Pass.	16-Oct-07	Greenville, SC	Amtrak, Obstruction Impact	Vehicle fouling track was struck, 1 injury Limited Board resources
RR--Pass.	21-Oct-07	Middlesex, CT	Amtrak, Equipment damage	Pantograph damaged, no injuries Limited Board resources
RR--Pass.	23-Oct-07	Ventura, CA	Amtrak, Obstruction Impact	Tractor-trailer parked fouling tracks, no injuries Limited Board resources
RR--Pass.	24-Oct-07	Montgomery, PA	SEPTA, Highway/Rail Grade Crossing	Vehicle fouling track, no injuries Limited Board resources
RR--Pass.	24-Oct-07	Clackamas, OR	Amtrak, Derailment	Three locomotives derailed due to wide gage, no injuries Limited Board resources
RR--Pass.	27-Oct-07	Santa Fe, NM	Santa Fe Southern Rwy, Highway/Rail Crossing	Train shoving, truck turned in front of train, 2 injuries Limited Board resources
RR--Pass.	30-Oct-07	Hudson, NJ	NJT, Derailment	Wide gage derailment, no injuries Limited Board resources
RR--Pass.	31-Oct-07	Mecklenburg, NC	Amtrak, Highway/Rail Grade Crossing	Train struck by vehicle at rear of locomotive, 2 deaths Limited Board resources
RR--Pass.	2-Nov-07	Solano, CA	Amtrak, Obstruction Impact	Train struck vehicle high centered on tracks, no injuries Limited Board resources
RR--Pass.	3-Nov-07	Lackawanna, PA	Steamtown National Historic Site, Derailment	Coach car derailed, no injuries Limited Board resources
RR--Pass.	3-Nov-07	Monterey, CA	Amtrak, Highway/Rail Grade Crossing	Tractor-trailer failed to stop at crossing, no injuries Limited Board resources
RR--Pass.	4-Nov-07	Fairfield, CT	Amtrak, Equipment damage	Pantograph damaged, no injuries Limited Board resources
RR--Pass.	7-Nov-07	Montgomery, MD	Marc, Highway/Rail Grade Crossing	Tractor-trailer bottomed out at crossing, no injuries Limited Board resources
RR--Pass.	8-Nov-07	Suffolk, MA	MBTA, Collision	Coach car rolled into train, no injuries Limited Board resources
RR--Pass.	12-Nov-07	St Martin, LA	Amtrak, Highway/Rail Grade Crossing	Train grazed rear of hay trailer, no injuries Limited Board resources
RR--Pass.	13-Nov-07	Dutchess, NY	Metro North, Fire	Leaking fuel caused fire, no injuries Limited Board resources
RR--Pass.	14-Nov-07	Philadelphia, PA	SEPTA, Derailment	Train rolled away, no injuries Limited Board resources
RR--Pass.	17-Nov-07	Merced, CA	Amtrak, Highway/Rail Grade Crossing	Vehicle drove around gates, no injuries Limited Board resources
RR--Pass.	18-Nov-07	Hudson, NJ	PATH, Derailment	2 cars derailed, no injuries Limited Board resources
RR--Pass.	24-Nov-07	Westchester, NY	Metro North, Equipment damage	Pantograph damaged, no injuries Limited Board resources
RR--Pass.	2-Dec-07	Philadelphia, PA	SEPTA, Equipment damage	Pantograph damaged, no injuries Limited Board resources
RR--Pass.	3-Dec-07	Delaware, PA	SEPTA, Equipment damage	Pantograph damaged, no injuries Limited Board resources
RR--Pass.	4-Dec-07	Montgomery, PA	SEPTA, Obstruction Impact	Boom truck fouling track, 3 injuries Limited Board resources
RR--Pass.	6-Dec-07	Essex, NJ	Amtrak, Equipment damage	Pantograph damaged, no injuries Limited Board resources
RR--Pass.	6-Dec-07	Bureau, IL	Amtrak, Highway/Rail Grade Crossing	Train struck truck, 1 death Limited Board resources

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Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES	REASON NOT INVESTIGATED	
RR--Pass.	9-Dec-07	Baltimore, MD	Amtrak, Equipment damage	Pantograph damaged, no injuries	Limited Board resources
RR--Pass.	11-Dec-07	Guilford, NC	Amtrak, Highway/Rail Grade Crossing	Train struck tractor-trailer, no injuries	Limited Board resources
RR--Pass.	11-Dec-07	Arapahoe, CO	Regional Transportation District, Derailment	Two cars derailed, no injuries	Limited Board resources
RR--Pass.	13-Dec-07	New Haven, CT	Metro North, Equipment damage	Pantograph damaged, no injuries	Limited Board resources
RR--Pass.	13-Dec-07	Fairfield, CT	Metro North, Equipment damage	Pantograph damaged, no injuries	Limited Board resources
RR--Pass.	14-Dec-07	Salt Lake, UT	Utah Transit Authority, Derailment	Two cars derailed, no injuries	Limited Board resources
RR--Pass.	15-Dec-07	Montgomery, PA	SEPTA, Highway/Rail Grade Crossing	Vehicle failed to stop at crossing, 1 death & 2 injuries	Limited Board resources
RR--Pass.	16-Dec-07	Sarpy, NE	Amtrak, Derailment	Lead unit derailed due to ice and snow, no injuries	Limited Board resources
RR--Pass.	18-Dec-07	Camden, NJ	NJT, Highway/Rail Grade Crossing	Vehicle drove around gates, 1 death	Limited Board resources
RR--Pass.	20-Dec-07	Sacramento, CA	Amtrak, Highway/Rail Grade Crossing	Vehicle stopped on crossing due to traffic, 2 injuries	Limited Board resources
RR--Pass.	24-Dec-07	San Diego, CA	Amtrak, Highway/Rail Grade Crossing	Vehicle drove around gates, no injuries	Limited Board resources
RR--Pass.	28-Dec-07	Bristol, MA	Amtrak, Equipment damage	Circuit breaker opened, train stopped, no injuries	Limited Board resources
RR--Transit			Accidents involving Transit Trains		Limited Board resources
RR--Transit	11-Jan-07	New York, NY	Victim was alone at the north end of the platform when she was struck by train and killed.	New York City Transit Authority (NYCT)	Limited Board resources
RR--Transit	11-Jan-07	Chicago, IL	Train began moving when the operator discovered a body in the trackage.	Chicago Transit Authority (CTA)	Limited Board resources
RR--Transit	15-Jan-07	New York, NY	Person standing between passenger cars was struck by train as it began moving and was killed.	New York City Transit Authority (NYCT)	Limited Board resources
RR--Transit	19-Jan-07	New York, NY	Person struck by train and killed.	New York City Transit Authority (NYCT)	Limited Board resources
RR--Transit	21-Jan-07	Alexandria, VA	Front of train struck bumping post, derailing front set of wheels, one injury.	Washington Metropolitan Area Transit Authority (WMATA)	Limited Board resources
RR--Transit	31-Jan-07	Chicago, IL	Train struck leg of man, injuring him, after he stumbled and fell on the platform.	Chicago Transit Authority (CTA)	Limited Board resources
RR--Transit	5-Feb-07	Cleveland, OH	Train derailed upright after moving through a switch at low speed. No injuries.	Greater Cleveland Transportation Authority (GRTA)	Limited Board resources
RR--Transit	8-Feb-07	Chicago, IL	Person fell off station platform onto tracks and was struck by train, killing him.	Chicago Transit Authority (CTA)	Limited Board resources
RR--Transit	13-Feb-07	Cicero, IL	Highway-Rail Grade Crossing Accident. Passengers detained. No injuries.	Chicago Transit Authority (CTA)	Limited Board resources
RR--Transit	13-Feb-07	Cicero, IL	Train's front wheels derailed at low speed because of ice in switch points. No injuries.	Chicago Transit Authority (CTA)	Limited Board resources
RR--Transit	21-Feb-07	Philadelphia, PA	Train struck and killed passenger.	Southeastern Pennsylvania Transportation Agency (SEPTA)	Limited Board resources
RR--Transit	28-Feb-07	New York, NY	Train derailed at slow speed while proceeding at low speed through a switch. No injuries.	New York City Transit Authority (NYCT)	Limited Board resources
RR--Transit	28-Feb-07	Cleveland, OH	Passengers evacuated from train because of fire. No injuries.	Greater Cleveland Transportation Authority (GRTA)	Limited Board resources

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Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES	REASON NOT INVESTIGATED
RR--Transit	7-Mar-07	New York, NY	Passenger was killed after having a seizure, falling onto tracks, and being struck by a train.	New York City Transit Authority (NYCT) Limited Board resources
RR--Transit	4-Apr-07	New York, NY	Passenger at platform struck and killed by train entering the station.	New York City Transit Authority (NYCT) Limited Board resources
RR--Transit	8-Apr-07	Suitland, MD	Person injured after tripping and falling onto tracks in front of train.	Washington Metropolitan Area Transit Authority (WMATA) Limited Board resources
RR--Transit	8-Apr-07	Washington, DC	Train propulsion package on fire. Train doors opened at station and passengers left train. No injuries.	Washington Metropolitan Area Transit Authority (WMATA) Limited Board resources
RR--Transit	21-Apr-07	New York, NY	Person struck by train and killed.	New York City Transit Authority (NYCT) Limited Board resources
RR--Transit	24-Apr-07	New York, NY	Employee was struck by train and killed while setting up flags on track.	New York City Transit Authority (NYCT) Limited Board resources
RR--Transit	29-Apr-07	Brooklyn, NY	Employee was relocating a 4-wheel track dolly. Struck by train and killed.	New York City Transit Authority (NYCT) Limited Board resources
RR--Transit	30-Apr-07	New York, NY	Train was entering station and struck a person, killing them.	New York City Transit Authority (NYCT) Limited Board resources
RR--Transit	1-May-07	Boston, MA	Passengers unloaded thru the 1st train car onto a station platform due to flames and smoke. No injuries.	Massachusetts Bay Transportation Authority (MBTA) Limited Board resources
RR--Transit	1-May-07	Cleveland, OH	Train derailed while proceeding through a switch. No injuries.	Greater Cleveland Transportation Authority (GRTA) Limited Board resources
RR--Transit	5-May-07	New York, NY	Passenger fell from station platform and was struck by train and killed.	New York City Transit Authority (NYCT) Limited Board resources
RR--Transit	5-May-07	New York, NY	Train operator observed a dead person laying beside the tracks.	New York City Transit Authority (NYCT) Limited Board resources
RR--Transit	6-May-07	Newark, NJ	Electrical fire in heating unit of car resulted in passenger evacuation. No injuries.	Port Authority of New York & New Jersey (PATH) Limited Board resources
RR--Transit	15-May-07	Atlanta, GA	Passngr injured, and Marta officer injured during rescue, after passngr fell to tracks (seizure)	Metropolitan Atlanta Rapid Transit Authority (MARTA) Limited Board resources
RR--Transit	25-May-07	Charlestown, MA	Train was evacuated due to smoke from train.	Massachusetts Bay Transportation Authority (MBTA) Limited Board resources
RR--Transit	26-May-07	Radnor, PA	Passengers safely off loaded to platform.	Greater Cleveland Transportation Authority (GRTA) Limited Board resources
RR--Transit	26-May-07	Radnor, PA	A trespasser was electrocuted by contact with third rail power.	Greater Cleveland Transportation Authority (GRTA) Limited Board resources
RR--Transit	27-May-07	New York, NY	Conductors cab door with defective lock swung open causing two passengers to fall and sustain injuries	New York City Transit Authority (NYCT) Limited Board resources
RR--Transit	1-Jun-07	Boston, MA	Arcing between the collector and the truck frame - passengers evacuated to station platform.	Massachusetts Bay Transportation Authority (MBTA) Limited Board resources
RR--Transit	3-Jun-07	Chicago, IL	An out of service SB train was approx. 20' east of the Rockwell Station platform when it struck & killed a bicyclist.	Chicago Transit Authority (CTA) Limited Board resources
RR--Transit	8-Jun-07	Braintree, MA	Person was struck and injured by the rear truck of the lead car (6 car consist)	Massachusetts Bay Transportation Authority (MBTA) Limited Board resources
RR--Transit	13-Jun-07	New York, NY	A person trying to cross the track was struck and killed by a train.	New York City Transit Authority (NYCT) Limited Board resources
RR--Transit	16-Jul-07	New York, NY	A person was struck and killed by a train in a tunnel.	New York City Transit Authority (NYCT) Limited Board resources

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Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES	REASON NOT INVESTIGATED
RR--Transit	20-Jul-07	Chicago, IL	A SB 4 car train at Berwyn L Station struck and injured a passenger who fell from the platform to track level.	Chicago Transit Authority (CTA) Limited Board resources
RR--Transit	22-Jul-07	New York, NY	A cust. was struck as a train entered 46th Street/Bliss on HE 7 line. Removed from track alive and died later	New York City Transit Authority (NYCT) Port Authority of New York & New Jersey (PATH) Limited Board resources
RR--Transit	25-Jul-07	Kearny, NJ	UTV#1 caught fire, 3 employees escaped with minor injuries.	Massachusetts Bay Transportation Authority (MBTA) Limited Board resources
RR--Transit	27-Jul-07	Boston, MA	Smoke and visible flame underneath the train resulting in evacuation of passengers at the station	Massachusetts Bay Transportation Authority (MBTA) Limited Board resources
RR--Transit	28-Jul-07	New York, NY	Customer struck by train, removed alive to Kings County Hospital and later expired at 2220 hours.	New York City Transit Authority (NYCT) Limited Board resources
RR--Transit	28-Jul-07	Cleveland, OH	An EB train headed to W.117th struck & injured a trespasser that ignored operators horn.	Greater Cleveland Transportation Authority (GRTA) Limited Board resources
RR--Transit	31-Jul-07	Chicago, IL	An EB 4 car Brown line train struck & killed a pedestrian 740 feet E. of the Kedzie station platform @ Albany Ave.	Chicago Transit Authority (CTA) Limited Board resources
RR--Transit	18-Aug-07	Chicago, IL	A SB 8 car train struck & injured customer on platform leaning into the path of a train at the Jefferson Park Station.	Chicago Transit Authority (CTA) Limited Board resources
RR--Transit	20-Aug-07	Chicago, IL	A NB red line train entering the Howard Stat. struck & injured a CTA employee who leaned over into path of the train.	Chicago Transit Authority (CTA) Limited Board resources
RR--Transit	22-Aug-07	Skokie, IL	A SB 2 car train derailed the second truck of the head car at the Dempster Skokie station moving thru a switch.	Chicago Transit Authority (CTA) Limited Board resources
RR--Transit	23-Aug-07	New York, NY	A s/b #4 train, as it pulled into station, struck & killed a male who was found on the platform uncons. & bleeding	New York City Transit Authority (NYCT) Limited Board resources
RR--Transit	23-Aug-07	Chicago, IL	2 CTA employees picking up debris were injured after contact with the 3rd rail at the Sherican Red Line Rail Station	Chicago Transit Authority (CTA) Limited Board resources
RR--Transit	26-Aug-07	Chicago, IL	A NB 4 car train (non revenue) derailed at the 14th street interlocking.	Chicago Transit Authority (CTA) Limited Board resources
RR--Transit	28-Aug-07	Boston, MA	Customers were safely off-loaded from the train and onto the station platform after train was vandalized. No injuries.	Massachusetts Bay Transportation Authority (MBTA) Limited Board resources
RR--Transit	31-Aug-07	New York, NY	A trespasser walking on the tracks in the s/b tunnel s. of Fordham Rd Station was struck and killed.	New York City Transit Authority (NYCT) Limited Board resources
RR--Transit	31-Aug-07	New York, NY	Train wheel derailed caused by wheel climb. No injuries.	New York City Transit Authority (NYCT) Limited Board resources
RR--Transit	6-Oct-07	Chicago, IL	Passenger pulled door release and opened car door, fell onto track and was killed.	Chicago Transit Authority (CTA) Limited Board resources
RR--Transit	10-Oct-07	Chicago, IL	Train struck a roadway worker, injuring him.	Chicago Transit Authority (CTA) Limited Board resources

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Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES		REASON NOT INVESTIGATED
RR--Transit	19-Oct-07	Chicago, IL	Train struck a person laying beside the track, injuring the person.	Chicago Transit Authority (CTA)	Limited Board resources
RR--Transit	26-Oct-07	New York, NY	Trespasser was struck by train and killed.	New York City Transit Authority (NYCT)	Limited Board resources
RR--Transit	26-Oct-07	Chicago, IL	Passenger train struck and injured a passenger standing on the platform.	Chicago Transit Authority (CTA)	Limited Board resources
RR--Transit	14-Nov-07	Cleveland, OH	Three youths on tracks for an unknown reason - one youth injured after he was struck by train.	Greater Cleveland Transportation Authority (GRTA)	Limited Board resources
RR-Employees			Employee Fatalities		
RR-Employees	17-Jan-07	Valley Stream, NY	Employee Fatality	NRC 823912 - did not show fatality at time report was filed	Limited Board resources
RR-Employees	12-Mar-07	Pike, OH	NS Employee fatality	Fouled mainline, struck by train	Limited Board resources
RR-Employees	3-May-07	Suffolk, MA	Amtrak Employee fatality	Conductor suffered a fatal heart attack	Limited Board resources
RR-Employees	8-Jul-07	Mohave, AZ	BNSF Employee fatality	Slipped, fell or stumbled beneath moving train	Limited Board resources
RR-Employees	27-Jul-07	Fulton, KY	CN Employee fatality	Run over while switching cars	Limited Board resources
RR-Employees	2-Aug-07	Crook, WY	BNSF Employee fatality	Crane fouled main line/ struck by train	Limited Board resources
RR-Employees	25-Aug-07	Lake, IN	IHB Employee fatality	Caught between cars while switching in yard	Limited Board resources
RR-Employees	18-Oct-07	McCurtan, OK	DQE RR Employee fatality	Xing acc. w/ log truck. Loco eng. died of head injuries on 2/24/08	Limited Board resources
RR-Employees	19-Oct-07	Scioto, OH	NS Employee fatality	Heart attack while on duty	Limited Board resources
RR-Employees	23-Oct-07	Contra Costa, CA	UP Employee fatality	Victim fouled track on a bridge - struck by on track equipment	Limited Board resources
RR-Employees	27-Oct-07	Greenup, KY	CSX Employee fatality	Collision between locomotives	Limited Board resources
RR-Employees	28-Dec-07	Kendall, IL	BNSF Employee fatality	Brakeman coupled between cars	Limited Board resources
RR-Tresspassers			Accidents involving Tresspassers		
RR-Tresspassers	1-Jan-07	Lafayette, AR	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	2-Jan-07	Harris, TX	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	4-Jan-07	Leon, FL	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	5-Jan-07	Essex, MA	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	5-Jan-07	Queens, NY	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	6-Jan-07	Pierce, WA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	6-Jan-07	San Mateo, CA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	9-Jan-07	Dona Ana, NM	Climbing on train cars, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	10-Jan-07	Lassen, CA	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	12-Jan-07	Orange, FL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	12-Jan-07	Laurens, SC	Climbing on train cars, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	14-Jan-07	Bristol, MA	Climbing on train cars, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	15-Jan-07	Spartanburg, SC	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	15-Jan-07	Summit, OH	Running on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	19-Jan-07	Miami, KS	Driving on trackage, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	19-Jan-07	Marion, FL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Tresspassers	19-Jan-07	Cuyahoga, OH	Fell while walking on tracks and died.	Trespasser-related	Limited Board resources

ACCIDENTS REQUIRED TO BE INVESTIGATED UNDER SECTION 1131 BUT NOT INVESTIGATED

Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES		REASON NOT INVESTIGATED
RR-Trespassers	19-Jan-07	Mclennan, TX	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	20-Jan-07	New Haven, CT	Running on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	21-Jan-07	Alameda, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	21-Jan-07	Union, NJ	Jumped in front of train.	Trespasser-related	Limited Board resources
RR-Trespassers	23-Jan-07	Fresno, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	24-Jan-07	Lawrence, OH	Walking on tracks, struck by train; two fatalities.	Trespasser-related	Limited Board resources
RR-Trespassers	24-Jan-07	San Francisco, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	25-Jan-07	Freestone, TX	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	27-Jan-07	Merced, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	28-Jan-07	Leon, FL	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	28-Jan-07	Banks, GA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	30-Jan-07	Broward, FL	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	30-Jan-07	Winston, AL	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	31-Jan-07	Erie, PA	ATV on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	31-Jan-07	Nacogdoches, TX	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	1-Feb-07	Wise, TX	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	2-Feb-07	Snohomish, WA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	2-Feb-07	Union, NJ	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	2-Feb-07	Scioto, OH	Climbing on train cars, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	4-Feb-07	Lane, OR	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	4-Feb-07	Monroe, NY	Snowmobile struck concrete RR milepost.	Trespasser-related	Limited Board resources
RR-Trespassers	5-Feb-07	Richland, SC	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	6-Feb-07	Dauphin, PA	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	7-Feb-07	Santa Barbara, CA	Climbing on train cars, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	9-Feb-07	Midland, TX	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	10-Feb-07	Umatilla, OR	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	11-Feb-07	Shelby, AL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	13-Feb-07	Santa Clara, CA	Running on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	13-Feb-07	Cowlitz, WA	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	17-Feb-07	Riverside, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	19-Feb-07	Albany, NY	Assaulted while laying on track. No train.	Trespasser-related	Limited Board resources
RR-Trespassers	21-Feb-07	Washington, RI	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	21-Feb-07	Porter, IN	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	21-Feb-07	Solano, CA	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	23-Feb-07	Lauderdale, TN	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	23-Feb-07	Clark, NV	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	28-Feb-07	Bell, TX	Body found laying beside track. No train.	Trespasser-related	Limited Board resources
RR-Trespassers	1-Mar-07	Palm Beach, FL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	3-Mar-07	Santa Barbara, CA	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources

ACCIDENTS REQUIRED TO BE INVESTIGATED UNDER SECTION 1131 BUT NOT INVESTIGATED

<i>Mode</i>	<i>ACCIDENT DATE</i>	<i>ACCIDENT LOCATION</i>	<i>ACCIDENT CIRCUMSTANCES</i>	<i>REASON NOT INVESTIGATED</i>
<i>RR-Trespassers</i>	7-Mar-07	Orange, FL	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	9-Mar-07	Gaston, NC	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	10-Mar-07	Clark, WA	Sitting in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	10-Mar-07	Johnston, NC	Standing in tracks, struck by train; two fatalities.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	10-Mar-07	Liberty, TX	Standing in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	10-Mar-07	Cochise, AZ	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	11-Mar-07	Whitfield, GA	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	13-Mar-07	Nowata, OK	Riding on car, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	14-Mar-07	San Joaquin, CA	Motor cycle, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	15-Mar-07	San Diego, CA	Standing in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	15-Mar-07	Rockland, NY	Walking on tracks, struck by train; two fatalities.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	18-Mar-07	Lackawanna, PA	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	18-Mar-07	Fulton, GA	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	18-Mar-07	Lackawanna, PA	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	19-Mar-07	Pottawattamie, IA	Riding on car, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	19-Mar-07	White, AR	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	20-Mar-07	Peirce, WA	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	21-Mar-07	Orange, CA	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	21-Mar-07	Prince George's, MD	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	22-Mar-07	Cabell, WV	Sitting in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	23-Mar-07	Fauquier, VA	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	23-Mar-07	Leon, FL	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	23-Mar-07	Ashtabula, OH	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	24-Mar-07	Johnston, NC	Sitting in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	25-Mar-07	De Kalb, IL	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	26-Mar-07	Cumberland, NC	Riding on car, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	26-Mar-07	Whitfield, GA	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	27-Mar-07	Los Angeles, Ca	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	27-Mar-07	Allegheny, PA	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	27-Mar-07	Berks, PA	Standing on tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	28-Mar-07	Knox, TN	Sitting in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	29-Mar-07	Wayne, MI	Body found in rail car in rail yard.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	31-Mar-07	Solano, CA	Standing on tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	1-Apr-07	Harrison, TX	Object struck while riding on side of train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	1-Apr-07	Natchitoches, LA	Fell off train while riding on side of car.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	4-Apr-07	Oconee, SC	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	5-Apr-07	Orange, CA	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	7-Apr-07	New Castle, DE	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
<i>RR-Trespassers</i>	8-Apr-07	Contra Costa, CA	Riding on car, struck by train.	Trespasser-related Limited Board resources

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RR-Trespassers	9-Apr-07	Baltimore, MD	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	11-Apr-07	Alamance, NC	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	12-Apr-07	Lancaster, PA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	12-Apr-07	San Patricio, TX	Fell from equipment, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	14-Apr-07	Cook, IL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	14-Apr-07	Mckinley, NM	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	14-Apr-07	Butler, OH	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	14-Apr-07	Guilford, NC	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	15-Apr-07	Palm Beach, FL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	15-Apr-07	Allen, IN	Standing in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	17-Apr-07	Dade, FL	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	18-Apr-07	Prince William, VA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	18-Apr-07	Pima, AZ	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	19-Apr-07	Thurston, WA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	19-Apr-07	Cumberland, NC	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	20-Apr-07	Alameda, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	20-Apr-07	Denton, TX	Standing on track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	22-Apr-07	Fayette, PA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	22-Apr-07	Lake, IL	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	23-Apr-07	Fairfield, CT	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	24-Apr-07	Mercer, NJ	Jumped in front of train.	Trespasser-related	Limited Board resources
RR-Trespassers	24-Apr-07	Jefferson, KY	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	24-Apr-07	Jefferson, TX	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	26-Apr-07	Dallas, TX	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	28-Apr-07	Indian River, FL	Standing on track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	28-Apr-07	Montgomery, PA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	28-Apr-07	Harris, TX	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	29-Apr-07	Fairfield, CT	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	30-Apr-07	Guilford, NC	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	30-Apr-07	Jefferson, IL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	30-Apr-07	St Joseph, IN	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	1-May-07	Fort Bend, TX	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	2-May-07	Simpson, KY	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	3-May-07	San Joaquin, CA	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	3-May-07	Genesee, MI	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	4-May-07	Grayson, TX	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	6-May-07	Harris, TX	Standing in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	7-May-07	Yuba, CA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	11-May-07	Ventura, CA	Running on tracks, struck by train.	Trespasser-related	Limited Board resources

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RR-Trespassers	11-May-07	Green, AR	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	13-May-07	Big Horn, WY	Between on track equipmnet struck.	Trespasser-related	Limited Board resources
RR-Trespassers	13-May-07	Clay, MN	Walking in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	13-May-07	Perry, PA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	14-May-07	Indian River, FL	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	15-May-07	Santa Barbara, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	15-May-07	Orange, CA	Running on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	16-May-07	Harris, TX	Between on track equipmnet struck.	Trespasser-related	Limited Board resources
RR-Trespassers	17-May-07	Vernon, WI	Running on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	17-May-07	Arapahoe, CO	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	17-May-07	San Bernardino, Ca	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	18-May-07	Caswell, NC	Vehicle struck, side of train	Trespasser-related	Limited Board resources
RR-Trespassers	19-May-07	Montgomery, IA	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	20-May-07	St Louis, MO	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	20-May-07	St Tammany, LA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	22-May-07	Clark, WA	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	22-May-07	Oklahoma, OK	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	23-May-07	Moore, TX	Running on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	23-May-07	Harris, TX	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	24-May-07	Uinta, WY	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	26-May-07	Cook, IL	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	26-May-07	Caddo, LA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	27-May-07	Scott, IA	Mounting equipment, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	27-May-07	Tama, IA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	28-May-07	Monroe, WV	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	28-May-07	Titus, Tx	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	29-May-07	Suffolk, NY	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	30-May-07	Marathon, WI	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	2-Jun-07	Mobile, AL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	3-Jun-07	San Bernardino, Ca	Jumped in front of train.	Trespasser-related	Limited Board resources
RR-Trespassers	3-Jun-07	Webster, KY	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	5-Jun-07	Lexington, SC	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	5-Jun-07	Palm Beach, FL	Mounting equipment, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	8-Jun-07	St Joseph, IN	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	10-Jun-07	Tift, GA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	11-Jun-07	Kanawha, WV	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	11-Jun-07	Essex, NJ	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	11-Jun-07	Guadalupe, TX	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	12-Jun-07	Queens, NY	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources

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RR-Trespassers	13-Jun-07	Jefferson, KY	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	14-Jun-07	New Haven, CT	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	15-Jun-07	Lewis, WA	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	15-Jun-07	Merced, CA	Sitting in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	15-Jun-07	Douglas, GA	Running on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	16-Jun-07	Bergen, NJ	Sitting in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	17-Jun-07	Cook, IL	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	18-Jun-07	Prince George's, MD	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	18-Jun-07	Suffolk, MA	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	18-Jun-07	Multnomah, OR	Running on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	18-Jun-07	Colorado, TX	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	19-Jun-07	Middlesex, NJ	Running on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	20-Jun-07	Wyandotte, KS	Burned on non rail equipment	Trespasser-related Limited Board resources
RR-Trespassers	20-Jun-07	Niagara, NY	Walking in track, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	20-Jun-07	Passaic, NJ	Sitting in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	22-Jun-07	Hillsborough, FL	Sitting in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	22-Jun-07	Nassau, NY	Fell off train while riding on side of car.	Trespasser-related Limited Board resources
RR-Trespassers	23-Jun-07	Allen, IN	Fell off train while riding on side of car.	Trespasser-related Limited Board resources
RR-Trespassers	24-Jun-07	Tarrant, TX	Sitting in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	24-Jun-07	Clayton, GA	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	25-Jun-07	Erie, OH	Walking in track, struck by train; two fatalities.	Trespasser-related Limited Board resources
RR-Trespassers	26-Jun-07	Dutchess, NY	Sitting in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	26-Jun-07	Dade, FL	Standing on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	26-Jun-07	Shelby, TN	Standing on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	27-Jun-07	Contra Costa, CA	Walking in track, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	27-Jun-07	Macomb, MI	Walking in track, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	28-Jun-07	Cook, IL	Sitting in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	29-Jun-07	Greene, MO	Vehicle struck, side of train	Trespasser-related Limited Board resources
RR-Trespassers	29-Jun-07	Philadelphia, PA	Sitting in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	29-Jun-07	Montgomery, MD	Standing on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	30-Jun-07	Palm Beach, FL	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	30-Jun-07	San Diego, CA	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	1-Jul-07	Grant, MN	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	1-Jul-07	Wayne, Oh	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	2-Jul-07	Clackamas, OR	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	3-Jul-07	De Kalb, GA	Walking in track, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	4-Jul-07	Tarrant, TX	Walking in track, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	5-Jul-07	Rusk, WI	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	5-Jul-07	Wayne, WV	Laying in tracks, struck by train.	Trespasser-related Limited Board resources

ACCIDENTS REQUIRED TO BE INVESTIGATED UNDER SECTION 1131 BUT NOT INVESTIGATED

Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES		REASON NOT INVESTIGATED
RR-Trespassers	5-Jul-07	San Mateo, CA	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	5-Jul-07	Santa Clara, CA	Fell off train while riding on side of car.	Trespasser-related	Limited Board resources
RR-Trespassers	6-Jul-07	Wood, OH	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	7-Jul-07	Berrien, MI	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	7-Jul-07	Los Angeles, CA	Mounting equipment, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	7-Jul-07	Bexar, TX	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	8-Jul-07	Harford, MD	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	8-Jul-07	Meriwether, GA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	8-Jul-07	Ventura, CA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	10-Jul-07	Adams, CO	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	10-Jul-07	Montgomery, OH	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	11-Jul-07	Deschutes, OR	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	11-Jul-07	Orange, CA	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	13-Jul-07	Ventura, CA	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	14-Jul-07	Santa Barbara, CA	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	14-Jul-07	Washington, TN	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	14-Jul-07	Fresno, CA	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	15-Jul-07	Wood, OH	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	15-Jul-07	Broward, FL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	15-Jul-07	Huntington, IN	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	15-Jul-07	Uinta, WY	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	16-Jul-07	Victoria, TX	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	17-Jul-07	Solano, CA	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	17-Jul-07	Monroe, NY	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	21-Jul-07	Contra Costa, CA	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	22-Jul-07	Fresno, CA	Between on track equipment struck.	Trespasser-related	Limited Board resources
RR-Trespassers	22-Jul-07	Sacramento, CA	Running on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	23-Jul-07	Natchitoches, LA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	24-Jul-07	Cecil, MD	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	25-Jul-07	Kendall, IL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	26-Jul-08	Harris, TX	Mounting equipment, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	27-Jul-07	New Castle, DE	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	27-Jul-07	Dallas, TX	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	28-Jul-07	Placer, CA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	29-Jul-07	Rowan, NC	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	30-Jul-07	Mckinley, NM	Walking in track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	30-Jul-07	Camden, NJ	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	30-Jul-07	Los Angeles, CA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	31-Jul-07	Providence, RI	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources

ACCIDENTS REQUIRED TO BE INVESTIGATED UNDER SECTION 1131 BUT NOT INVESTIGATED

Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES		REASON NOT INVESTIGATED
RR-Trespassers	1-Aug-07	Knox, IL	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	1-Aug-07	Mahoning, OH	Riding rec vehicle on service road	Trespasser-related	Limited Board resources
RR-Trespassers	2-Aug-07	Maricopa, AZ	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	3-Aug-07	Kings, NY	Electrocuted in tunnel while walking	Trespasser-related	Limited Board resources
RR-Trespassers	4-Aug-07	Cabarrus, NC	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	4-Aug-07	Clark, OH	Laying down on track, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	6-Aug-07	San Mateo, CA	Laying down on track, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	7-Aug-07	Union, IL	Laying down on track, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	8-Aug-07	New Haven, CT	Jumped onto passenger train	Trespasser-related	Limited Board resources
RR-Trespassers	8-Aug-07	La Salle, TX	Jumped from bridge struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	9-Aug-07	Robeson, NC	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	10-Aug-07	Chautauqua, NY	Climbing on power line - electrocuted	Trespasser-related	Limited Board resources
RR-Trespassers	10-Aug-07	Fairfield, CT	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	13-Aug-07	Orange, CA	Laying beside track, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	13-Aug-07	Lawrence, KS	Sitting between tracks, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	13-Aug-07	Sandoval, NM	Laying down on track, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	15-Aug-07	Osceola, FL	Sitting between tracks, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	16-Aug-07	Wabasha, MN	Standing between tracks, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	16-Aug-07	DeKalb, IL	Sitting between tracks, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	16-Aug-07	Cook, IL	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	17-Aug-07	Erie, PA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	18-Aug-07	Riverside, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	18-Aug-07	Essex, MA	Walking/standing, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	18-Aug-07	Cook, IL	Crossing over, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	18-Aug-07	Faulkner, AR	Laying down on track, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	19-Aug-07	Volusia, FL	Running on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	19-Aug-07	Oconee, GA	Laying down on track, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	19-Aug-07	Cuyahoga, OH	Running on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	19-Aug-07	Peoria, IL	Laying down on track, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	20-Aug-07	Cuyahoga, OH	Laying down on track, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	20-Aug-07	Middlesex, MA	Struck by moving train	Trespasser-related	Limited Board resources
RR-Trespassers	20-Aug-07	Cook, IL	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	22-Aug-07	Washington, VA	Standing between tracks, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	24-Aug-07	Alexandria, Va	Jumping from train	Trespasser-related	Limited Board resources
RR-Trespassers	24-Aug-07	Placer, CA	Laying down on track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	27-Aug-07	Placer, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	27-Aug-07	Berkeley, SC	Laying down on track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	27-Aug-07	Fort Bend, TX	Laying down in frt car, sudden mvmt.	Trespasser-related	Limited Board resources
RR-Trespassers	27-Aug-07	Norfolk, MA	Shot self, then struck by train.	Trespasser-related	Limited Board resources

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RR-Trespassers	29-Aug-07	Duval, TX	Standing between tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	29-Aug-07	Durham, NC	Laying down on track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	31-Aug-07	Chatham, NC	Laying down on track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	31-Aug-07	Fayette, KY	Crawling under train, struck and killed.	Trespasser-related	Limited Board resources
RR-Trespassers	31-Aug-07	Franklin, IL	Standing between tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	1-Sep-07	Yolo, CA	Standing on track hit by passenger train.	Trespasser-related	Limited Board resources
RR-Trespassers	1-Sep-07	Ulster, NY	Laying on track, hit by train.	Trespasser-related	Limited Board resources
RR-Trespassers	1-Sep-07	Dallas, AL	Laying on track, hit by train.	Trespasser-related	Limited Board resources
RR-Trespassers	1-Sep-07	Pinal, AZ	Laying on track, hit by train.	Trespasser-related	Limited Board resources
RR-Trespassers	2-Sep-07	Allegheny, PA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	3-Sep-07	Riverside, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	3-Sep-07	Kern, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	5-Sep-07	Adams, IL	Laying down, sudden movement	Trespasser-related	Limited Board resources
RR-Trespassers	5-Sep-07	Rutherford, TN	Climbing through train.	Trespasser-related	Limited Board resources
RR-Trespassers	5-Sep-07	Shelby, TN	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	8-Sep-07	Mckinley, NM	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	8-Sep-07	Lake, IL	Running on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	9-Sep-07	Oakland, MI	Electrocuted on top of car	Trespasser-related	Limited Board resources
RR-Trespassers	9-Sep-07	San Joaquin, CA	Laying on track, hit by train	Trespasser-related	Limited Board resources
RR-Trespassers	9-Sep-07	La Salle, TX	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	11-Sep-07	Lee, NC	Laying on track, hit by train	Trespasser-related	Limited Board resources
RR-Trespassers	11-Sep-07	Henry, IL	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	12-Sep-07	Bexar, TX	Laying on track, hit by train.	Trespasser-related	Limited Board resources
RR-Trespassers	13-Sep-07	Bucks, PA	Standing on track hit by passenger train.	Trespasser-related	Limited Board resources
RR-Trespassers	14-Sep-07	Fresno, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	14-Sep-07	Berks, PA	Laying on track, hit by train	Trespasser-related	Limited Board resources
RR-Trespassers	14-Sep-07	Travis, TX	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	14-Sep-07	Pinal, AZ	Fell while riding on train.	Trespasser-related	Limited Board resources
RR-Trespassers	15-Sep-07	Monroe, MI	Sitting between tracks, struck by train	Trespasser-related	Limited Board resources
RR-Trespassers	15-Sep-07	Berks, PA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	16-Sep-07	Colorado, TX	Slipped while riding train	Trespasser-related	Limited Board resources
RR-Trespassers	17-Sep-07	Monmouth, NJ	Jumped in front of train.	Trespasser-related	Limited Board resources
RR-Trespassers	17-Sep-07	Elkhart, IN	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	18-Sep-07	Lyon, KS	Pushed from trestle	Trespasser-related	Limited Board resources
RR-Trespassers	19-Sep-07	Maricopa, AZ	Laying on track, hit by train.	Trespasser-related	Limited Board resources
RR-Trespassers	21-Sep-07	St Tammany, LA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	21-Sep-07	Sacramento, CA	Walking struck by object not train.	Trespasser-related	Limited Board resources
RR-Trespassers	22-Sep-07	Pike, MO	Walking on bridge.	Trespasser-related	Limited Board resources
RR-Trespassers	22-Sep-07	Palm Beach, FL	Laying on track, hit by train.	Trespasser-related	Limited Board resources

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Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES	REASON NOT INVESTIGATED
RR-Trespassers	22-Sep-07	Lauderdale, MS	Laying between track.	Trespasser-related Limited Board resources
RR-Trespassers	22-Sep-07	Webb, TX	Crawling under train, struck and killed.	Trespasser-related Limited Board resources
RR-Trespassers	22-Sep-07	Pima, AZ	Laying on track, hit by train.	Trespasser-related Limited Board resources
RR-Trespassers	23-Sep-07	Jefferson, WV	Sitting on track hit by train.	Trespasser-related Limited Board resources
RR-Trespassers	24-Sep-07	Washington, PA	Ridnig on freight car fell and struck.	Trespasser-related Limited Board resources
RR-Trespassers	25-Sep-07	King, WA	Jumped from bridge struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	25-Sep-07	Santa Clara, CA	Slipped getting off train and killed.	Trespasser-related Limited Board resources
RR-Trespassers	26-Sep-07	Alameda, CA	Walking, struck by passenger train.	Trespasser-related Limited Board resources
RR-Trespassers	27-Sep-07	Polk, FL	Standing on track, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	29-Sep-07	Mohave, AZ	Laying on track, hit by train.	Trespasser-related Limited Board resources
RR-Trespassers	30-Sep-07	Poinsett, AR	Laying on track, hit by train.	Trespasser-related Limited Board resources
RR-Trespassers	30-Sep-07	Fond Du Lac, WI	Laying on track, hit by train.	Trespasser-related Limited Board resources
RR-Trespassers	30-Sep-07	Montgomery, TX	Laying on track, hit by train.	Trespasser-related Limited Board resources
RR-Trespassers	30-Sep-07	Maricopa, AZ	Laying on track, hit by train.	Trespasser-related Limited Board resources
RR-Trespassers	1-Oct-07	Mclean, IL	Trespasser struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	1-Oct-07	Westmoreland, PA	Trespasser struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	3-Oct-07	St Joseph, IN	Trespasser struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	3-Oct-07	Harris, TX	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	4-Oct-07	Newport News, VA	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	4-Oct-07	Morris, NJ	Engineer on adjacent track observed decapitated body on north side of track.	Trespasser-related Limited Board resources
RR-Trespassers	4-Oct-07	Kay, OK	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	5-Oct-07	Solano, CA	Running on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	6-Oct-07	Sherburne, MN	Riding on car, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	6-Oct-07	Marion, IN	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	7-Oct-07	Montgomery, MD	Standing on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	7-Oct-07	Jackson, MS	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	7-Oct-07	Union, NJ	Jumped from bushes, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	7-Oct-07	Fresno, CA	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	9-Oct-07	Butler, PA	Crawling in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	9-Oct-07	Seminole, FL	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	9-Oct-07	Pima, AZ	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	12-Oct-07	Monroe, IL	Standing on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	13-Oct-07	Solano, CA	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	13-Oct-07	Clay, MN	Walking on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	13-Oct-07	Dallas, TX	Laying in tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	14-Oct-07	San Bernardino, Ca	Standing on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	14-Oct-07	Bronx, NY	Climbing on train cars, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	14-Oct-07	Sangamon, IL	Standing on tracks, struck by train.	Trespasser-related Limited Board resources
RR-Trespassers	14-Oct-07	Bexar, TX	Jumping from train, struck by train.	Trespasser-related Limited Board resources

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RR-Trespassers	16-Oct-07	La Salle, TX	Walking besides track, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	17-Oct-07	Somerset, NJ	Jumped from bushes, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	17-Oct-07	La Porte, IN	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	17-Oct-07	Erie, NY	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	18-Oct-07	Palm Beach, FL	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	18-Oct-07	Middlesex, MA	Trespasser struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	20-Oct-07	Rockland, NY	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	20-Oct-07	San Luis Obispo, CA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	20-Oct-07	Alameda, CA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	21-Oct-07	Gwinnett, GA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	22-Oct-07	Bernalillo, NM	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	23-Oct-07	Marion, IN	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	23-Oct-07	Somerset, NJ	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	23-Oct-07	San Patricio, TX	Running on bridge/trestle, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	25-Oct-07	Santa Barbara, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	25-Oct-07	Denton, TX	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	26-Oct-07	Alameda, CA	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	26-Oct-07	Riverside, CA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	26-Oct-07	Carroll, IL	Jumping from train, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	26-Oct-07	Lake, IN	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	26-Oct-07	Brevard, FL	All Terrain vehicle on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	27-Oct-07	Bartow, GA	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	28-Oct-07	Cameron, TX	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	29-Oct-07	Alameda, CA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	31-Oct-07	Garvin, OK	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	1-Nov-07	Shelby, TN	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	1-Nov-07	Riverside, CA	Standing on tracks, struck by train; two fatalities.	Trespasser-related	Limited Board resources
RR-Trespassers	3-Nov-07	Fulton, GA	Driving on trackage, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	4-Nov-07	Harris, TX	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	4-Nov-07	Merced, CA	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	5-Nov-07	Merced, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	5-Nov-07	Allegheny, PA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	5-Nov-07	Jones, MS	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	5-Nov-07	San Bernardino, Ca	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	7-Nov-07	Tangipahoa, LA	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	7-Nov-07	Essex, MA	Jumped in front of train.	Trespasser-related	Limited Board resources
RR-Trespassers	8-Nov-07	Harrison, MS	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	8-Nov-07	Nassau, NY	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	8-Nov-07	Garfield, UT	Getting off train, struck by train.	Trespasser-related	Limited Board resources

ACCIDENTS REQUIRED TO BE INVESTIGATED UNDER SECTION 1131 BUT NOT INVESTIGATED

Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES		REASON NOT INVESTIGATED
RR-Trespassers	9-Nov-07	San Diego, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	9-Nov-07	Cabell, WV	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	9-Nov-07	Westchester, NY	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	10-Nov-07	Hampden, MA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	11-Nov-07	Merced, CA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	11-Nov-07	Middlesex, NJ	Jumped from platform, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	12-Nov-07	Williamson, TX	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	12-Nov-07	Humboldt, NV	Climbing on train cars, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	13-Nov-07	Spokane, WA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	13-Nov-07	Jackson, MS	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	14-Nov-07	Lake, IL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	14-Nov-07	Clark, NV	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	15-Nov-07	Alameda, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	15-Nov-07	Lincoln, NM	Climbing on train cars, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	16-Nov-07	Big Horn, MT	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	16-Nov-07	Tarrant, TX	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	19-Nov-07	Palm Beach, FL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	20-Nov-07	Middlesex, NJ	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	21-Nov-07	Butler, OH	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	23-Nov-07	Contra Costa, CA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	23-Nov-07	Tooele, UT	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	24-Nov-07	Jasper, MO	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	24-Nov-07	Fairfield, CT	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	25-Nov-07	Buncombe, NC	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	26-Nov-07	Crittenden, AR	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	26-Nov-07	Los Angeles, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	27-Nov-07	Broward, FL	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	28-Nov-07	Rowan, NC	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	29-Nov-07	Philadelphia, PA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	30-Nov-07	Warren, NJ	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	2-Dec-07	Cuyahoga, OH	Climbing on train cars, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	4-Dec-07	Palm Beach, FL	Riding on car, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	4-Dec-07	Madison, AL	Unknown	Trespasser-related	Limited Board resources
RR-Trespassers	5-Dec-07	Alameda, CA	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	5-Dec-07	Butler, KS	Driving on trackage, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	5-Dec-07	Cook, IL	Crossing tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	6-Dec-07	La Porte, IN	Stepped in front of train, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	7-Dec-07	Livingston, LA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
RR-Trespassers	7-Dec-07	New Haven, CT	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources

ACCIDENTS REQUIRED TO BE INVESTIGATED UNDER SECTION 1131 BUT NOT INVESTIGATED

<i>Mode</i>	<i>ACCIDENT DATE</i>	<i>ACCIDENT LOCATION</i>	<i>ACCIDENT CIRCUMSTANCES</i>		<i>REASON NOT INVESTIGATED</i>
<i>RR-Trespassers</i>	7-Dec-07	Medina, TX	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	8-Dec-07	Palm Beach, FL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	9-Dec-07	Rowan, NC	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	10-Dec-07	Halifax, NC	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	10-Dec-07	Franklin, OH	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	10-Dec-07	Plymouth, MA	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	11-Dec-07	Madison, GA	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	12-Dec-07	Deleware, Pa	Standing on tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	12-Dec-07	Broward, FL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	14-Dec-07	Charleston, Sc	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	15-Dec-07	Bossier, LA	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	15-Dec-07	Union, SC	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	16-Dec-07	Broward, FL	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	17-Dec-07	Mckinley, NM	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	18-Dec-07	Wabaunsee, KS	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	19-Dec-07	Hennepin, MN	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	19-Dec-07	Brevard, FL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	20-Dec-07	Duval, FL	Driving on trackage, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	20-Dec-07	Lake, IL	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	20-Dec-07	Cabarrus, NC	Walking on tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	21-Dec-07	Chester, SC	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	21-Dec-07	Newton, MS	Crossing tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	21-Dec-07	Fresno, CA	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	23-Dec-07	Berks, PA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	23-Dec-07	San Joaquin, CA	Sitting in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	26-Dec-07	Merced, CA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	26-Dec-07	Orange, CA	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	28-Dec-07	Broward, FL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	29-Dec-07	Columbia, FL	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	29-Dec-07	Indian River, FL	Laying in tracks, struck by train; two fatalities.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	29-Dec-07	Los Angeles, CA	Jumping from train, struck by train.	Trespasser-related	Limited Board resources
<i>RR-Trespassers</i>	31-Dec-07	Monmouth, NJ	Laying in tracks, struck by train.	Trespasser-related	Limited Board resources

Appendix B

Ongoing Accidents Exceeding The Expected Time Allotted For Completion By Board Order

ONGOING ACCIDENTS EXCEEDING THE EXPECTED TIME ALLOTTED FOR COMPLETION BY BOARD ORDER

MODE	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES	WAS REQUIRED TO COMPLETE ACCIDENT REPORT
AVIATION			<i>None to report</i>	
HIGHWAY	9-Oct-04	Turrell, Arkansas	Single vehicle motorcoach rollover	Limited staff of technical writers, report delayed to allow completion of higher priority investigations. Also, primary issue of fatigue countermeasures best addressed through multiple events rather than single accident thus this accident has been combined with Lake Butler, Florida, and Osseo, Wisconsin, accidents into a single report to increase likelihood of recommendation adherence.
HIGHWAY	16-Oct-05	Osseo, Wisconsin	Single-vehicle accident involving overturned tractor-semitrailer and subsequent motorcoach collision.	Limited staff of technical writers, report delayed to allow completion of higher priority investigations. Also, primary issue of fatigue countermeasures best addressed through multiple events rather than single accident thus this accident has been combined with Turrell, Arkansas, and Lake Butler, Florida, accidents into a single report to increase likelihood of recommendation adherence.
HIGHWAY	25-Jan-06	Lake Butler, Florida	Car and school bus rear-ended by truck	Limited staff of technical writers, report delayed to allow completion of higher priority investigations. Also, primary issue of fatigue countermeasures best addressed through multiple events rather than single accident thus this accident has been combined with Turrell, Arkansas, and Osseo, Wisconsin, accidents into a single report to increase likelihood of recommendation adherence.
HIGHWAY	9-May-05	Liberty, Missouri	School bus and cars	Limited staff of technical writers, report delayed to allow completion of higher priority investigations. Also, primary issue of unintended acceleration best addressed through multiple events rather than single accident thus this accident has been combined with five other similar cases into a Special Investigation Report on unintended acceleration.
HIGHWAY	28-Aug-06	Westport, New York	Tire blowout and motorcoach rollover	Complex issues concerning axle weight, speed, braking, and tire behavior point to recommendations counter to conventional wisdom. Needed to develop knowledge and data to prove alternative view required extensive test track testing.
HIGHWAY	20-Nov-06	Huntsville, Alabama	School bus over bridge rail	Limited staff of technical writers, report delayed to allow completion of higher priority investigations.
MARINE	18-Jul-06	Atlantic Ocean, near Florida	Ship heeling incident	Involved new technology -- needed to develop knowledge
PIPELINE			<i>None to report</i>	
RAILROAD	14-May-06	Washington, D.C.	WMATA train struck employee	Limited Resources
RAILROAD	20-Oct-06	New Brighton, PA	Train derailment - unit train of ethanol	Limited Resources
RAILROAD	9-Nov-06	Baxter, CA	Rail grinding train derailment	Limited Resources and technical complexity - investigation continuing
RAILROAD	30-Nov-06	Alexandria, VA	WMATA train struck two employees	Limited Resources