National Transportation Safety Board

Annual Report
to Congress

2008 ANNUAL REPORT

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National Transportation Safety Board

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A Message from the Acting Chairman of the NTSB

MARK V. ROSENKER
Acting Chairman

I am pleased to present the 2008 Annual Report to Congress for the National Transportation Safety Board. Recognized internationally for our accident investigation expertise, the NTSB has been in the forefront of transportation safety issues for over 40 years, investigating more than 132,000 aviation accidents and thousands of surface transportation accidents. The 2008 Annual Report presents a snapshot of the agency's work over the last year, providing details of completed and ongoing investigations conducted by our dedicated staff of investigative professionals. The Annual Report also showcases key achievements for the Most Wanted List of Transportation Safety Improvements.

To provide more detail and clarity to the document, we have made a number of important improvements to the 2008 Annual Report over previous years. One example is the inclusion of maps identifying the locations of accident investigation launches to show the geographic breadth of our investigations. Additionally, each section describes "significant achievements" that illustrate how various organizational units of the NTSB contribute to agency strategic objectives. Also, for quick review and evaluation of key statistical information, we have provided "at a glance" boxes for each office showing, among other things, the number of accident investigation launches, report production statistics, the number of recommendations issued and closed, and staff demographic information. Furthermore, we have added new sections discussing the agency's accomplishments in International Outreach and Safety Activity, Information Technology, and Planning and Performance. We have also included an appendix highlighting the NTSB's progress in implementing Government Accountability Office recommendations. Finally, the 2008 Annual Report to Congress is printed in full color, including over 80 photographs and numerous other graphics.

We hope you find the 2008 Annual Report to Congress to be an interesting and informative document, providing a clear presentation of the agency and our activities and accomplishments during 2008.

Sincerely,

Mark V. Rosenker, NTSB Acting Chairman
July 1, 2009

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.

Since its inception, the NTSB has investigated more than 132,000 aviation accidents and thousands of surface transportation accidents.

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, the NTSB was charged with the additional responsibility of coordinating Federal assistance to families impacted by a major aviation accident. This was followed in 1998 by the Foreign Air Carrier Act and in 2008 by the Rail Passenger Disaster Family Assistance Act. While originally legislated to provide assistance following major aviation accidents, on a limited basis the program has expanded to provide assistance in all modes of transportation.

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 132,000 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 12,900 safety recommendations to more than 2,500 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 2008, the NTSB continued to push for safety improvements as 67 recommendations were officially closed after being implemented. These include 27 aviation, 15 highway, 10 marine, 7 railroad, 6 pipeline, and 2 intermodal 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 average acceptance rate for safety recommendations remained at just over 82 percent.

Another 129 recommendations were issued in 2008: 86 aviation, 21 highway, 14 railroad, and 8 marine.

To date, the Board has issued over 12,900 safety recommendations in various transportation modes to more than 2,500 recipients.

NTSB – 2008 At A Glance	
Established:	April 1, 1967
Number of Employees: (by HQ and Regions)	HQ: 299 Regional: 103
Major Reports and Products Adopted by the Board:	14 Major Reports 1 Summary Report 1 Special Investigation Report 20 Accident Briefs
Major Accident Launches:	19
Other Accident Launches:	221
International Accident Launches:	18
Recommendations Issued:	129
Recommendations Closed:	67 Closed Acceptable Status 19 Closed Unacceptable Status
Vehicle Recorder Readouts:	252
Materials Laboratory Examination Reports:	172
Vehicle Performance Reports:	51
Internet Address:	www.ntsb.gov

The total transportation-related workforce consists of 13.2 million people or 10% of the U.S. labor force.

Note: Selected transportation statistics displayed in the sidebars throughout this report were obtained from the ***Pocket Guide to Transportation 2009*** published by the Bureau of Transportation Statistics, Research and Innovative Technology Administration, U.S. DOT, January 2009.

2008 Annual Report

National Transportation Safety Board

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Most Wanted Safety Recommendations

The NTSB's Most Wanted List of Transportation Safety Improvements highlights safety-critical actions that the Department of Transportation (DOT) modal administrations, the U.S. Coast Guard, and the States need to take to help prevent accidents and save lives. In September and October 2008, the NTSB updated the Most Wanted List in the following issue areas:

Aviation

The NTSB is urging the Federal Aviation Administration to "Improve Safety of Emergency Medical Services (EMS) Flights." EMS aviation operations (conducted with either helicopters or fixed-wing aircraft) provide an important service to the public by transporting seriously ill patients or donor organs to emergency care facilities. The pressure to safely and quickly conduct these operations in various environmental conditions (for example, inclement weather, at night, and unfamiliar landing sites for helicopter operations) increases the risk of accidents when compared to other types of commercial flight operations.

The NTSB also added Safety Recommendation A-07-45 from the Comair, Lexington, Kentucky, accident investigation to the issue area "Improve Runway Safety." This recommendation addresses providing pilots with moving map displays or alerts in the cockpit when takeoffs are attempted from the wrong runway or a taxiway.

Safety Recommendation A-07-14 was also added to the issue area "Reduce Dangers to Aircraft Flying in Icing Conditions." This recommendation addresses enhanced guidance about when leading edge deice boots should be activated and was issued in connection with the Circuit City, Pueblo, Colorado, accident.

The NTSB renamed the issue area "Improve Audio and Data Recorders/Require Video Recorders" to "Require Image Recorders." Safety Recommendations A-99-16 through -18 related to audio and data recorders were closed during the year, leaving only recommendations addressing image recorders on the List.

19 Federal Most Wanted Safety Recommendations were closed acceptable in the past 5 years.

Highway

The NTSB is urging the Federal Motor Carrier Safety Administration (FMCSA) to "Restrict Use of Cellular Telephones" by commercial motor vehicle drivers, raising public awareness of the dangers in using cell phones and wireless communication devices while operating transportation vehicles.

The NTSB also wants the FMCSA to "Require On-board Electronic Recorders" to record accurate carrier records on driver hours of service (HOS) and accident conditions. Electronic on-board data recorders have the potential to efficiently and accurately collect and verify HOS for all commercial drivers, to establish the proper incentives and a level playing field for compliance with HOS rules, and, ultimately, to make our highways safer for all drivers.

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 by the bullets preceding each issue area and in the brackets following the issue.)

3 issue areas were removed from the Most Wanted List of Safety Improvements in 2008; fuel tank integrity, positive train control and railroad operator fatigue.

2008 Most Wanted List

Actions Needed by Federal Agencies

AVIATION

The Federal Aviation Administration should act to:

Improve Safety of Emergency Medical Services Flights [Red]

- Conduct all flights with medical personnel on board in accordance with commuter aircraft regulations.
- Develop and implement flight risk evaluation programs.
- Require formalized dispatch and flight-following procedures including up-to-date weather information.
- Install terrain awareness and warning systems on aircraft.

Improve Runway Safety [Red]

- Give immediate warnings of probable collisions/incursions directly to cockpit flight crews.
- Require specific air traffic control clearance for each runway crossing.
- Install cockpit moving map displays or automatic systems to alert pilots of attempted takeoffs from taxiways or wrong runways.
- Require landing distance assessment with an adequate safety margin.

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.
- Apply revised icing requirements to currently certificated aircraft.
- Require that airplanes with pneumatic deice boots activate boots as soon as the airplane enters icing conditions.

Improve Crew Resource Management [Red]

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

Require Image Recorders [Red]

- Install crash-protected image recorders in cockpits to give investigators more information to solve complex accidents.

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.

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:

Restrict Use of Cellular Telephones [Yellow]

- Prohibit cellular telephone use by commercial drivers of school busses and motorcoaches, except in emergencies.

Require On-board Electronic Recorders [Red]

- Require all interstate commercial vehicle carriers to use electronic on-board recorders to collect data on both driver hours of operation and accident conditions.

Improve 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 medical examiners are qualified.
- 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:

Prevent Collisions by Using Enhanced Vehicle Safety Technology [Yellow]

- Require adaptive cruise control and collision avoidance system standards for all new passenger and commercial vehicles.

Enhance Protection of Motorcoach Passengers [Yellow]

- Redesign motorcoach window emergency exits so they can be easily opened.
- Issue standards for stronger bus roofs; 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 an 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 an impact or rolls over.

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 up to age 8.

Enact Primary Seat Belt Enforcement Laws

- Increase number of people who wear seat belts through stronger enforcement laws that do not restrict officers to observing another offense first.

Reduce Distractions for Young Drivers

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

Eliminate Hard-Core Drinking Driving

- Enact legislation to reduce crashes involving repeat offenders who drink large amounts of alcohol, including:
  - Frequent, statewide sobriety checkpoints.
  - More effective measures (sanctions/treatment) for first time arrests with high blood alcohol concentration and repeat offenders.
  - Zero blood alcohol requirement for those already convicted of driving while intoxicated.
  - Administrative license revocation for refusing to take or failing an evidential test for alcohol.
  - Vehicle sanctions for DWI offenders to separate drinking from driving.
  - Elimination of plea-bargaining DWI offenses and programs that divert offenders and purge offense records.
  - DWI offense records retention for at least 10 years to identify repeat offenders.
  - Special sanction court-based programs such as DWI courts for hard core DWI offenders.

MARINE

Enhance Recreational Boating Safety

- Require mandatory education of boat operators.
- Require use of life jackets by children.

The NTSB and Congress

The NTSB provided testimony to Congressional committees several times during calendar year 2008. Following is a summary of testimony provided by Board Members and staff. Complete copies of NTSB testimony are available on the agency's website at http://www.ntsb.gov/speeches.htm.

Chairman Mark V. Rosenker testified before the Subcommittee on Aviation of the Transportation and Infrastructure Committee, U.S. House of Representatives, on April 23, 2008, on the reauthorization of the NTSB. In addition to a request for increases in funding and full-time positions, the testimony included the status of significant NTSB accident investigations underway; a request for explicit authority to investigate incidents; modifications to the investigative responsibility of the Board as currently directed by Congress, to include primary Federal investigative jurisdiction in maritime accidents deemed by the NTSB to be of sufficient national importance; and a request that Congress more clearly articulate the NTSB's right to access critical information related to an accident during an NTSB investigation.

Acting Chairman Rosenker testified before the Subcommittee on Surface Transportation and Merchant Marine Infrastructure, Safety, and Security of the Commerce, Science, and Transportation Committee, U.S. Senate, at a September 18, 2008, oversight hearing on bus safety. His testimony highlighted the significance of injury causation mechanisms, including motorcoach passenger protection, event data recorders, and motorcoach fire protection; the importance of oversight of the compliance review process, oversight of driver medical conditions, electronic onboard recorders for hours of service (fatigue), and the dangers posed from cell phone use by bus drivers; as well as the importance of utilizing improvements made in motorcoach technology, such as adaptive cruise control and collision warning systems, to lessen accidents and injuries.

Vice Chairman Robert L. Sumwalt, III, testified before the Subcommittee on Aviation of the Transportation and Infrastructure Committee, U.S. House of Representatives, at a hearing on runway safety held on February 13, 2008. His testimony highlighted the dangers presented by runway incursions and on-going initiatives to reduce or eliminate incursions, including runway status lights, automatic dependent surveillance-broadcast technologies, and improved air traffic control procedures. Vice Chairman Sumwalt's testimony also included a discussion of the problem of runway excursions, as well as the role of fatigue in the aviation transportation industry.

Member Kathryn O'Leary Higgins testified before the Subcommittee on Coast Guard and Maritime Transportation of the Transportation and Infrastructure Committee, U.S. House of Representatives, at a hearing on the "Coast Guard and National Transportation Safety Board Casualty Investigation Program" on May 20, 2008. Member Higgins' testimony centered on the need for establishing NTSB primacy, particularly in those marine investigations deemed to be of national significance.

Member Steven R. Chealander testified before the Subcommittee on Aviation Operations, Safety, and Security, Committee on Commerce, Science, and Transportation, U.S. Senate, on April 10, 2008, on the dangers caused by runway incursions, runway excursions, airframe structural icing, flammable fuel/air vapors in fuel tanks on transport-category aircraft, as well as the use of cockpit and flight data recorders, the need for cockpit video recorders, and the role of fatigue in aviation accidents and incidents.

Mitchell A. Garber, MD, NTSB Medical Officer, testified before the Committee on Transportation and Infrastructure, U.S. House of Representatives, on July 24, 2008, on the "FMCSA's Progress in Improving Medical Oversight of Commercial Drivers." The testimony discussed the role in accident causation of inadequate medical evaluations of operators with serious preexisting medical conditions, deficiencies in the oversight of commercial driver medical certification, as well as NTSB recommendations for a systematic overhaul of the driver certification process.

Thomas E. Haueter, Director, Office of Aviation Safety, testified before the Subcommittee on Aviation of the Transportation and Infrastructure Committee, U.S. House of Representatives, at a hearing on "FAA Aircraft Certification: Alleged Regulatory Lapses in the Certification and Manufacture of the Eclipse EQ-500," on September 17, 2008. His testimony discussed the circumstances of five accidents involving the Eclipse 500 that the NTSB is investigating, four of which occurred since April 2008.

Safety Recommendations and Advocacy

Safety Recommendations and Advocacy (SRA) is responsible for designing and coordinating strategies to implement safety recommendations and coordinates support to the families of transportation disaster victims.

SRA — 2008 At A Glance	
Number of Employees: (SRA & TDA)	HQ: 25
Major Reports and Products Adopted by the Board:	2 Reports
Major Accident Launches: (TDA)	5 Aviation 2 Highway 2 Rail
Other Accident Launches: (TDA)	6 Regional Aviation
Recommendations Issued:	129
Recommendations Closed:	67 Closed in Acceptable Status 19 Closed in Unacceptable Status
Transportation Disaster Assistance (TDA) is a part of the SRA Office – see TDA section later in this report.	

There were 1,003 open safety recommendations at the end of 2008

Safety recommendations are issued by the NTSB following the investigation of transportation accidents and other safety problems. Recommendations usually address a specific issue uncovered during an investigation or study and specify how to correct the situation. Letters containing the recommendations are sent to the organization best able to act on the problem, whether it is public or private.

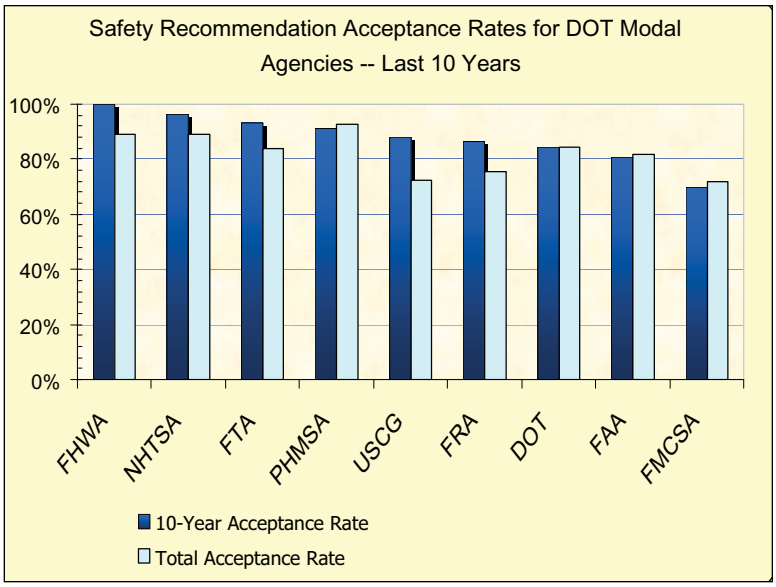
SRA's advocacy related outputs include the following:

- Most Wanted List - Critical changes needed to reduce transportation accidents and save lives.
- Federal Advocacy – Efforts to improve safety by encouraging the Federal DOT modal administrations[1] and DHS United States Coast Guard (USCG) to implement the Board's recommendations
- State Advocacy - Efforts to improve safety by encouraging states to implement the Safety Board's recommendations.
- Safety Alerts - Suggestions for improving safety.
- Statistics - Recommendations and adoption rates.

In 2008, the NTSB issued 129 recommendations, including 86 aviation, 21 highway, 14 railroad, and 8 marine recommendations. During the year, 67 recommendations were closed with an acceptable status, all having a positive impact on transportation safety.

Recommendations that were closed in an acceptable or acceptable alternate status in 2008 led to many safety improvements. Here are some examples:

1 Department of Transportation modal agencies include the following: Federal Aviation Administration (FAA), Federal Highway Administration (FHWA), Federal Motor Carrier Safety Administration (FMCSA), Federal Railroad Administration (FRA), Federal Transit Administration (FTA), National Highway Traffic Safety Administration, (NHTSA), and Pipeline and Hazardous Material Safety Administration (PHMSA).



The acceptance rate by DOT modal agencies and U.S. Coast Guard for the past 10 years is as follows, in highest to lowest order:

FHWA 100%

NHTSA 96%

FTA 93%

PHMSA 91%

USCG 88%

FRA 86%

DOT 85%

FAA 81%

FMCSA 70%

Aviation. Improved FAA oversight of maintenance activities at airlines; adoption by regional airlines of aviation safety action programs and flight operation quality assessment programs; improvements in the operations and oversight of civilian contractors to the military in Afghanistan; completion of research and issuance of guidance on realistic ice accumulations and ice shapes on in-flight aircraft; revisions to the static port heaters of DC-9/MD-80/90 aircraft to prevent in-flight fires; pilot procedures for dealing with lack of control of engines on Eclipse aircraft; revisions to the engine control system of helicopters powered by Rolls-Royce 250 Series engines; requirement of 2-hour cockpit voice recorders and that recorders receive electrical power from the most reliable source on aircraft; requirement that the flammability level in fuel tanks on transport-category aircraft be below a safe level; inspections of composite rudders on Airbus aircraft; revisions to routing of hydraulic lines on DC-10 aircraft to reduce susceptibility to damage from ruptured tire fragments; modification of air traffic control radar to provide conflict alerts to the greatest extent possible; and installation of revised windshield heat terminal blocks on Boeing aircraft, removing a source of in-flight smoke and fire events.

Highway. Improved work zone traffic control through review and revision of law enforcement strategies and highway engineering practices; revised air brake maintenance and inspection protocols; increased awareness for fractured or disconnected automatic slack adjuster control arms; revised scheduling practices and assessment programs for Greyhound driver traffic and logbook violations; development of standards for event data recorders installed on light-duty/passenger vehicles; revised Commercial Vehicle Safety Alliance inspector training and public awareness campaign to emphasize the dangers of manually adjusting automatic slack adjusters; revised regulations to prohibit a commercial motor vehicle from operating with wheel seal or other hub lubrication leaks; revised International Code Council bond-strength evaluation tables for the Fast Set formulation of Powers Power-fast epoxy; and informed design and construction agencies of potential for gradual deformation when using certain epoxies as anchor adhesives in sustained overhead tensile-load applications.

Marine. Installation of locally sounding smoke alarms in each passenger and crew stateroom on ships operated by Carnival Corporation; development and implementation of written go/no-go policies, based on risk-management principles, regarding transiting the Tillamook Bay bar (Tillamook, Oregon); requirement that passengers and crew on

small passenger vessels chartering out of Tillamook Bay wear lifejackets when rough bar warnings are in effect; dissemination of information to appropriate personnel, emphasizing the need to verify all buoy positioning data during routine position checks and during buoy redeployments in the Kill Van Kull waterway; and verification of the functionality of Hammar model H20 remote-release units for liferafts.

Railroad. Revised instructions for ERICO Products, Inc., Cadweld welding systems to address the proper placement of exothermic bond wire welds, especially in the vicinity of joint bars, and to make users aware that these welds create untempered martensite that could, under certain conditions, lead to fatigue cracking and rail failure; using locomotive engineer simulator training at Metra to go beyond developing basic skills and teaching strategies for effectively managing multiple concurrent tasks and atypical situations; evaluation of all Chicago Transit Authority (CTA) territories to determine the number of inspectors and the amount of time needed to ensure that adequate track inspections are conducted and appropriate changes implemented; examination and improvement of CTA's ability to communicate with passengers and perform emergency evacuations; development of a standard for maximum allowable wheel roughness by Washington Metropolitan Area Transit Authority, which then developed and implemented post-wheel-truing procedures to meet that standard; and modification of Norfolk Southern (NS) Railway Company's initial and recurrent training and operating rules to emphasize to its employees and the crews of other railroads operating on NS territory that any signal that appears to display extra lighted aspects in a signal head should be treated as an imperfectly displayed signal.

Pipeline. Language incorporated into American Society of Mechanical Engineers pressure piping codes (B-31.4 and B-31.8) to provide guidance to the operators of buried gas and hazardous liquid pipelines in developing effective damage prevention programs that ensure that operators' facilities are not damaged during directional drilling operations near the facilities.

In 2008, NTSB Board Members and staff testified at 10 legislative hearings, participated in 16 press events and participated in 104 meetings or conferences with State advocates or officials to advocate for our recommendations in 22 States and the District of Columbia.

State and Local Government Outreach

Efforts in 2008 to increase implementation of the NTSB's safety recommendations to the States resulted in the following progress:

1. Improve Child Occupant Protection:
   - Six States (Kentucky, Massachusetts, Michigan, Mississippi, Ohio, and Utah) enacted booster seat legislation.
   - One State (Maryland) upgraded its existing child restraint law.

2. Promote Youth Highway Safety:
   - One State (Minnesota) enacted a comprehensive graduated driver licensing law, including both a nighttime driving restriction and a restriction on the number of teenage passengers permitted to ride with a teenage driver.
   - One State (Louisiana) enacted legislation prohibiting the use of wireless communication devices by young drivers.

3. Eliminate Hard Core Drinking Driving:
   - Six States (Florida, Georgia, Hawaii, Maine, South Carolina, and West Virginia) implemented elements of the Safety Board's hard core drinking driving recommendation. Another six States (Alaska, Colorado, Connecticut, Missouri, Nebraska, and Washington) strengthened elements that they had already implemented.

4. Enhance Recreational Boating Safety:
   - One State (Iowa) enacted legislation strengthening its law requiring children to wear personal flotation devices (PFD). One State (Wyoming) implemented a new regulation that children use PFDs.

Safety Alerts

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

In 2008, the NTSB issued two new aviation safety alerts, bringing the total number of Safety Alerts to 14. The new aviation alerts, titled *Controlled Flight Into Terrain in Visual Conditions* and *Activate Leading Edge Deice Boots As Soon as Airplane Enters Icing Conditions*, were directed at pilots to inform them of important lessons learned from NTSB investigations about safely piloting aircraft. The first safety alert discussed several accidents that involved controlled flight into terrain by both instrument-rated and visual flight rules pilots operating under visual flight conditions at night in remote areas. Both the pilots and air traffic control appeared to have been unaware that the aircraft were in danger before the impact. The second safety alert addressed a widely held belief in the aviation community, among both operators and manufacturers, that pneumatic deice boots should not be activated until there is an ice buildup of between 1/4- and 1/2-inch thick and that early activation of the boots may result in "ice bridging" on the wing. The Board concluded that ice bridging does not occur on modern airplanes and, therefore, is not a reason to delay activation of the deice boots.

In 2008, NTSB issued two new aviation safety alerts, bringing the total number of Safety Alerts to 14

Five other safety alerts were updated with new statistics and information.

Key Challenges

- Increasing the NTSB's presence in state legislatures in order to elevate the priority of highway safety at the state level. The challenge is ensuring that the high priority of these issues is fully understood at the state level.
- Personnel losses within Safety Recommendations and Advocacy have reduced technical expertise—especially regarding alcohol-related policies. Overall, fully addressing the 250 open non-State safety recommendations and 7 issue areas on the Federal portion of the Most Wanted List with limited staff has been a significant challenge.

- Length and complexity of the rulemaking process has resulted in Federal agencies frequently not taking actions recommended by the NTSB in a timely manner. NTSB is challenged to ensure that the rulemaking process does not hamper the successful implementation of recommendations.

Significant Achievements

- Following a press conference to announce the annual list of Most Wanted recommendations to the States and highlight gaps in state safety laws, Ohio enacted a child booster seat law.
- The NTSB participated in the formation of eight State outreach coalitions (California, Hawaii, Illinois, Iowa, Maine, Massachusetts, North Carolina, and Virginia) that are supporting the recreational boating recommendations on the Most Wanted List. The Iowa coalition was successful in enacting child personal flotation device legislation.
- The NTSB added the issue area, "Improve Safety of Emergency Medical Services Flights" to the List of Most Wanted Transportation Safety Improvements and the FAA took immediate action on that issue area.
- Sixteen children ages 12 and under lost their lives in recreational boating accidents in 2007, compared to 29 children in 2006. This was a decrease of 45 percent from 2006 to 2007. In the 5 years prior to 2007, an average of 24 children died each year in boating accidents. The NTSB has recommended that all states enact minimum boating safety standards such as wearing of personal floatation devices by children

The overall acceptance rate for safety recommendations is 82%

Examples of Successfully Implemented Safety Recommendations

- The FAA took action to 1) require an immediate inspection of all Eclipse 500 airplane throttle quadrants and replacement of any units that fail the inspection, and 2) immediately develop an emergency procedure for a dual engine control failure on the Eclipse 500 airplane and incorporate that procedure into the airplane flight manual and quick reference handbook. The FAA issued an emergency airworthiness directive that satisfied the intent of the NTSB's recommendations (A-08-46 and -47).
- The FAA issued a final rule related to stability and handling in icing conditions (A-98-92).
- On July 16, 2008, the FAA issued its final rule on fuel tank inerting. This rule was the result of an NTSB recommendation aimed at eliminating fuel tank explosions in transport-category aircraft and had been on the NTSB's Most Wanted List of Transportation Safety Improvements since 2002. The recommendation was issued as a result of the NTSB's investigation of the break-up of TWA Flight 800 (A-96-174).

- Through our participation at Commercial Vehicle Safety Alliance (CVSA) workshops, highway safety experts from the NTSB urged the CVSA to focus on the wheel-bearing component recommendations from the Wilmer, Texas, motorcoach accident were reinforced and resulted in new items being added to the CVSA Out-of-Service Criteria regarding axle hub leaks (H-07-02).
- The cruise line industry installed automatic local-sounding smoke alarms in crew and passenger accommodation areas on company passenger ships (M-00-06 and -07).
- On October 16, 2008 the Rail Safety Improvement Act of 2008 was signed into law. Included in the Act is a provision to expand the DOT's regulatory authority over railroad hours of service. This provision addressed another safety issue area on the Board's MWL since 1990. The Board had asked the FRA to (a) require railroads to use scientifically based principles when assigning work schedules for train crewmembers, which consider factors that impact sleep needs, to reduce the effects of fatigue and (b) limit train crewmember limbo time to address fatigue. (R-06-14 and -15)
- The FRA published amendments to its Passenger Train Emergency Systems and Emergency Communication, Emergency Egress, and Rescue Access regulations, which require that rescue access windows be marked with retro-reflective material and with a uniquely recognizable symbol, sign, or other conspicuous marking to identify access instructions for removing the window. Although not part of the recommendation, the FRA also issued regulations on the minimum number and locations of windows intended for emergency responder access, including each seating area in intermediate levels in multilevel passenger cars (R-03-21). FRA's actions on this recommendation exceeded NTSB's expectations and received its best classification of Closed—Exceeds Recommended Action.
- Further, the Rail Safety Improvement Act mandated that the FRA, within 1 year of enactment, complete a study on the safety impact of the use of personal electronic devices, including cell phones, by railroad employees during the performance of their duties. In response, the FRA issued Emergency Order No. 26, effective October 27, 2008, restricting the improper use of certain electronic and electrical devices by on-duty railroad operating employees. In 2003, the Board had recommended that the FRA promulgate new or amended regulations that will control the use of cellular telephones and similar wireless communication devices by railroad operating employees while on duty so that such use does not affect operational safety. (R-03-1)
- The Rail Safety Improvement Act also includes among its provisions, the requirement for Class I railroads, and regularly scheduled intercity or commuter rail passenger carriers, to develop and submit to the Secretary of Transportation, within 18 months, its plan for the implementation of a Positive Train Control (PTC) system by December 31, 2015. Each plan must describe how it will provide for interoperability of the system with movements of trains of other railroad carriers over its lines. The PTC issue area was on the Board's Most Wanted List of Transportation Safety Improvements since its inception in 1990. (R-01-6)

Most Wanted Successes

Examples of the cumulative effect of actions taken in response to safety recommendations included on the Most Wanted List over the past 5 years:

- Twenty-five safety recommendations on the Federal portion of the Most Wanted List have been closed in the past 5 years.
- The issue area "Eliminate Flammable Fuel/Air Vapors in Fuel Tanks on Transport-Category Aircraft" was removed from the Most Wanted List as a result of rulemaking action by the FAA.
- Two issue areas were removed from the Most Wanted List as a result of Congressional action mandating the FRA to implement positive train control systems and to establish requirements that address train crew fatigue.
- Twenty-one legislative/regulatory changes were implemented in 2008 related to safety recommendations on the State portion of the Most Wanted List.

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.

AS — 2008 At A Glance	
Number of Employees:	HQ: 70 Regional: 57
Major Reports and Products Adopted by the Board:	2 Major Reports 1 Summary Report 1 Special Investigation Report 9 Accident Briefs
Major Accident Launches:	7
Other Accident Launches:	206 Regional Investigations
International Accident Assistance	18
Recommendations Issued:	86
Recommendations Closed:	27

Within the NTSB, the Office of Aviation Safety has the responsibility for investigating aviation accidents and incidents (about 1,750 annually) and for proposing probable cause 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 has 89 investigators and 38 support staff, which consists of managers, technical writers and editors, aviation accident analysts, and administrative staff.

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 its 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. Four regions operate out of nine office sites around the country. The Eastern Region has office sites located in Atlanta, Georgia; Miami, Florida; and Ashburn, Virginia. Locations for the

Central Region are in West Chicago, Illinois; Arlington, Texas; and Denver, Colorado. The Western-Pacific Region has offices located in Seattle, Washington; Gardena, California; and an investigator position in Hawaii. Finally, the Alaska Region operates out of Anchorage, Alaska. Five divisions comprise the headquarters office and reflect the organization of the NTSB's investigative process: Major Investigations, Operational Factors, Aviation Engineering, Human Performance and Survival Factors, and Writing and Editing.

For most of the nearly 1,750 commercial and general aviation accident/serious incidents investigated each year, a regional investigator, from one of the nine NTSB regional offices, serves as the investigator-in-charge. However, when the agency 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 expert leads a group of other specialists from Government agencies and industry as information is collected and analyzed. NTSB 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.

Map showing Major Aviation Launches During 2008

In 2008, the office launched on 7 major domestic investigations and 18 foreign accident investigations.

Operational Factors specialists provide expertise in three disciplines—air traffic control, operations, and weather. 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 formal participation of operators, manufacturers, labor representatives, and regulators as parties to NTSB investigations 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. Under appropriate supervision, the NTSB 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

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. The Board determined that the probable cause of the accident was the failure of the flight crew to execute a missed approach when visual cues for the runway were not distinct and identifiable. Contributing to the accident were (1) the crew's decision to descend to the instrument landing system decision height instead of the localizer (glideslope out) minimum descent altitude; (2) the first officer's long landing on a short contaminated runway and the crew's failure to use reverse thrust and braking to their maximum effectiveness; (3) the captain's fatigue, which affected his ability to effectively plan for and monitor the approach and landing; and (4) Shuttle America's failure to administer an attendance policy that permitted flight crewmembers to call in as fatigued without fear of reprisals. Five safety recommendations were issued to the Federal Aviation Administration (FAA) addressing training for rejected landings in deteriorating weather conditions and maximum performance landings on contaminated runways, standard operating procedures for the go-around callout, and pilot fatigue policies. The Board adopted the report on April 15, 2008.

In 2008, the office completed 3 major reports and continued work on 4 other major reports.

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 (TVC), Traverse City, Michigan, during a snowstorm. The aircraft received substantial damage, but the 52 people onboard were not injured. The Board determined that the probable cause of this accident was the pilots' decision to land at TVC without performing a landing distance assessment, which was required by company policy. This poor decision-making likely reflected the effects of fatigue produced by a long, demanding duty day, and, for the captain, the duties associated with check airman functions. Contributing to the accident were 1) the Federal Aviation Administration pilot flight and duty time regulations that permitted the pilots' long, demanding duty day and 2) the TVC operations supervisor's use of ambiguous and unspecific radio phraseology in providing runway braking information. Four safety recommendations were issued to the FAA addressing timely post accident drug testing, training on landing distance assessment performance, ground operations personnel communications, and criteria for runway closures in snow and ice conditions. The Board adopted the report on June 10, 2008.

Skydive Airplane Accident in Sullivan, Missouri

On July 29, 2006, about 1345 central daylight time, a de Havilland DHC-6-100, operated by Skydive Quantum Leap as a local parachute operation flight, crashed after takeoff from Sullivan Regional Airport, Sullivan, Missouri. The pilot and five parachutists were killed, and two parachutists were seriously injured. The Board determined that the probable cause of this accident was the pilot's failure to maintain airspeed following a loss of power in the right engine due to the

fracturing of compressor turbine blades for undetermined reasons. Contributing to some parachutists' injuries was the lack of a more effective restraint system on the airplane. Four safety recommendations were issued to the FAA and the United States Parachute Association addressing restraint systems for parachutists. The Board adopted the report on September 16, 2008.

Ongoing Major Aviation Investigations

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 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 midair while maneuvering in Phoenix, Arizona. Each helicopter was an American Eurocopter AS350B2. A pilot and passenger were onboard each helicopter and all four were fatally injured.

487 million passengers rely on safe airline transportation to and from the 67 largest airports (in 26 large hub areas).

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.

Cessna Citation Loss of Control Accident in Oklahoma City, Oklahoma

On March 4, 2008, a Cessna 500 was destroyed upon impact with terrain following a loss of control shortly after takeoff in Oklahoma City, Oklahoma. All five people on board sustained fatal injuries.

On-Ground Fire Aboard Airborne Express B767 in San Francisco, California

On June 28, 2008, a Boeing 767 operated by Airborne Express, caught fire just aft of the cockpit while the flight crew was preparing to start engines at San Francisco International Airport. No injuries were reported and the aircraft was substantially damaged.

Hawker Beechcraft BAE 125-800A Landing Accident in Owatonna, Minnesota

On July 31, 2008, a Hawker Beechcraft BAE 125-800A was destroyed when it impacted terrain during an attempted go-around at Owatonna Degner Regional Airport, Owatonna, Minnesota. The nonscheduled domestic passenger flight was operating under the provisions of 14 CFR Part 135. All eight people onboard sustained fatal injuries.

The Office of Aviation Safety has 13 major investigations currently in progress, each of which will be presented to the NTSB Board members for their deliberation at a Sunshine Meeting.

U.S. Forest Service Firefighting Helicopter Accident in Weaverville, California

On August 5, 2008, a Sikorsky S-61N helicopter crashed during takeoff near Weaverville, California. The helicopter was being operated under contract to the U.S. Forest Service by Carson Helicopter Services, Inc., as a public-use flight to transport firefighters. Nine people onboard were fatally injured, and four people were seriously injured.

Learjet 60 Takeoff Accident in Columbia, South Carolina

On September 19, 2008, a Learjet Model 60 overran the runway while departing Columbia Metropolitan Airport, Columbia, South Carolina. The nonscheduled domestic passenger flight was operating under the provisions of 14 CFR Part 135. Four people onboard sustained fatal injuries, and the other two people onboard suffered serious injuries.

Maryland State Police EMS Helicopter Accident in District Heights, Maryland

On September 27, 2008, a Eurocopter AS365N1, operated by the Maryland State Police, crashed during a medical evacuation flight. Four people were fatally injured and one person was seriously injured.

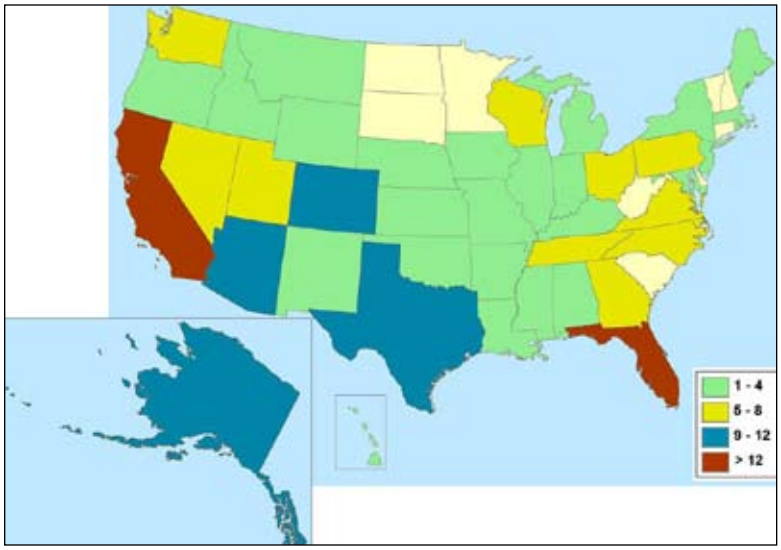
Continental Airlines Boeing 737 Takeoff Accident in Denver, Colorado

On December 20, 2008, a Boeing 737 operated by Continental Airlines, crashed during takeoff from Denver International Airport. There were 37 injuries among the passengers and crew, and no fatalities. The airplane was substantially damaged and experienced a postcrash fire.

Regional Aviation Operations

Regional aviation safety staff have launched on an average of 270 regional accident investigations per year.

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 these investigation as investigator-in-charge. This 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.



Map showing Regional Aviation Launches During 2008

Select Completed Regional Aviation Investigations

In the Eastern Region

Cargo Airplane Crash in Pownal, Vermont

On August 4, 2006, an Embraer 110P1, N59BA, operated by Business Air, Inc., doing business as AirNow, was destroyed when it impacted mountainous terrain in Pownal, Vermont. The certificated airline transport pilot was fatally injured. The Board determined that the probable cause of the accident was the pilot's misinterpretation of the airplane's position relative to the final approach fix, which resulted in the displacement of the descent profile by 6 nautical miles and the subsequent controlled flight into rising terrain. Contributing to the accident were the low clouds.

In the Central Region

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

On May 11, 2007, a Cessna 172N operated by Flying Neutrons Inc., and a Beech V35B airplane, operated by a private pilot, collided in flight near Blue Ash, Ohio. All three people on board the airplanes were fatally injured. The Board determined that the probable cause was the inadequate visual lookout of the pilots in both airplanes, and their failure to maintain clearance from each other's airplane.

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

On May 22, 2007, a Eurocopter AS350 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. The Board determined that the probable cause was the pilot's encounter with a vortex ring state and his inability to maintain control of the helicopter.

Air Ambulance Airplane Crash near Ruidoso, New Mexico

On August 5, 2007, a Beech E90B 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. The Board determined that the probable cause of the accident was the pilot's failure to maintain clearance from terrain due to spatial disorientation.

In 2008, the Office of Aviation Safety regional staff initiated 1,702 investigations and completed 1,837.

Air Ambulance Airplane Crash near Pagosa Springs, Colorado

On October 4, 2007, a Raytheon Aircraft Company C90A 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. The Board determined that the probable cause of the accident was the pilot's failure to maintain clearance from mountainous terrain. Contributing to the accident was the pilot's inadequate preflight planning, improper in-flight planning and decision making, the dark night, and the controller's failure to issue a safety alert to the pilot.

In the Western Pacific Region

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. 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. The Board determined that the probable cause of the accident was the failure of maintenance personnel to properly tighten (torque) the flight control servo lower attachment clevis and reinstall a functioning lock washer, which resulted in a flight control

disconnect and a complete loss of helicopter control. Contributing to the accident was the operator's failure to ensure its maintenance program was being executed in accordance with Federal regulations.

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., crashed near Haena on the island of Kauai, Hawaii. 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. The Board determined that the cause of the accident was the fatigue failure of the tail rotor blade root fitting due to a manufacturing defect, which resulted in the separation of the tail rotor system and loss of tail rotor control. A contributing factor to the accident were the trees that the helicopter struck during the autorotation.

The air transportation network includes 5,233 airports within U.S. airspace.

In the Alaska Region

Sightseeing Flight Crash in Ketchikan, Alaska (Taquan Air Service)

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 in 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. The Board determined the probable cause of this accident was the pilot's decision to continue under visual flight rules into an area of instrument meteorological conditions. Contributing to the accident was the pilot's inadequate weather evaluation and the FAA's inadequate surveillance of the commercial air tour operator.

Sightseeing Flight Crash in Ketchikan, Alaska (Seawind Aviation, Inc.)

On August 16, 2007, a float-equipped de Havilland DHC-2 airplane operated by Seawind Aviation, Inc., crashed in Ketchikan, Alaska. Of the nine people on board, five were fatally injured and four sustained serious injuries. The airplane was being operated as a visual flight rules sightseeing flight for cruise ship passengers under 14 CFR Part 135 and was returning to the Ketchikan Harbor Seaplane Base when the accident occurred. The Board determined that the probable cause of the accident were an inadvertent aerodynamic stall

resulting from the pilot's poor decision-making and inadequate planning and execution when he took off toward nearby rising terrain, in strong winds, under circumstances where his options for maneuvering were severely limited and where his safety margin was, thus, insufficient.

Select Ongoing Regional Aviation Investigations

In the Eastern Region

Sightseeing Helicopter Crash in Hudson River near New York City

On July 7, 2007, the pilot of a Eurocopter EC130 helicopter operated by Liberty Helicopters, Inc., executed an autorotation into the Hudson River in New York City after a main rotor failure. The seven people on board were not injured. The flight was being conducted as a sightseeing flight from West 30th Street Heliport.

The Office of Aviation Safety conducts about 1,750 aviation accident and incident investigations annually.

Business Jet Crash in West Gardiner, Maine

On February 1, 2008, a Cessna Citation 525 crashed in West Gardiner, Maine. All three people on board received fatal injuries. The flight was operated by a private pilot as a personal flight.

Turboprop Airplane Crash in Mount Airy, North Carolina

On February 1, 2008, a Raytheon Aircraft Company C90A was substantially damaged when it impacted terrain while executing a missed approach in Mount Airy, North Carolina. All six people on board were fatally injured.

In the Central Region

Air Taxi Helicopter Crash in the Gulf of Mexico

On December 29, 2007, a Bell 206 helicopter operated by Air Logistics LLC, crashed in the Gulf of Mexico while on approach to an offshore oil platform. All four people on board survived the crash; however, one person eventually drowned. Of the survivors, one was seriously injured and two received minor injuries.

In-Flight Collision of Two Emergency Medical Helicopters at Flagstaff, Arizona

On June 29, 2008, two Bell 407 emergency medical service helicopters collided in midair while approaching the Flagstaff Medical Center helipad in Flagstaff, Arizona. Seven people on board the helicopters were fatally injured.

Crash of Cargo Airplane in Columbus, Ohio

On September 1, 2008, a Convair 580 airplane operated by Air Tahoma Inc., crashed while attempting to return to Rickenbacker International Airport in Columbus, Ohio. Three people were fatally injured. The accident flight was the first flight following an extensive maintenance check.

Crash of an Emergency Medical Services Helicopter in Aurora, Illinois

On October 15, 2008, a Bell 222 helicopter operated by Air Angels Inc., was destroyed when it impacted a radio station tower and crashed in Aurora, Illinois. All four occupants were fatally injured. The emergency medical services flight was transporting a patient to Children's Memorial Hospital in Chicago, Illinois.

The staff of the Office of Aviation Safety features 89 accident investigators, who are located in 17 states and the District of Colombia.

In the Western Pacific Region

Midair Collision in McCall, Idaho

On May 2, 2008, a Cessna 172N and a Cessna 172 collided in-flight over McCall Municipal Airport, McCall, Idaho. Both airplanes were destroyed during the collision sequence and postcrash fire that ensued. Three people received fatal injuries and two sustained serious injuries. Both aircraft were on personal cross-country flights.

Air Taxi Helicopter Crash on Santa Catalina Island, California

On May 24, 2008, an Aerospatiale AS-350-D helicopter operated by Island Express Helicopters Inc., crashed while landing on Santa Catalina Island, California. Three people received fatal injuries and three people received serious injuries. The on-demand taxi flight originated in Long Beach, California, and was transporting passengers to Santa Catalina Island.

Cessna 172 Crash into a Home in Gearhart, Oregon

On August 4, 2008, a Cessna 172K crashed into a home in Gearhart, Oregon. Both people on the airplane and three people on the ground received fatal injuries, and three additional people on the ground received serious injuries. The airplane was being operated by a commercial pilot who had rented it the night before from an operator at Seaside Municipal Airport.

Corporate Turboprop Airplane Crash in Moab, Utah

On August 22, 2008, a Beech A100 owned and operated by Leavitt Group Wings LLC crashed after takeoff in Moab, Utah. All 10 people onboard were fatally injured. The flight was transporting medical personnel from a clinic in Moab back to Cedar City, Utah.

Firefighting Aerial Tanker Crash in Reno, Nevada

On September 1, 2008, a Lockheed SP-2H airplane operated by the California Department of Forestry and Fire Protection crashed after takeoff in Reno, Nevada. Three people on board were fatally injured. The firefighting flight was being operated with the intent to drop retardant.

Cessna 208B Crash near Naches, Washington

On October 7, 2007, a Cessna 208B collided with terrain near Naches, Washington. All 10 people on board sustained fatal injuries.

In the Alaska Region

Charter Flight Crash in Kodiak, Alaska

On January 5, 2008, a Piper PA-31-350 operated by Servant Air, Inc., as an air taxi crashed into the ocean following takeoff from Kodiak, Alaska. Six people were fatally injured, three people sustained serious injuries, and one person sustained minor injuries. The flight was en route to Homer, Alaska.

Helicopter Charter Flight Crash near Chickaloon, Alaska

On April 15, 2008, a Eurocopter AS350B2 helicopter operated by Era Helicopters LLC, crashed near Chickaloon, Alaska. Four people were fatally injured and one person received serious injuries.

International Aviation Accident Investigations

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

Map showing International Aviation Launches During 2008

Over the past 4 years, the NTSB has launched accredited representatives and technical advisors on an average of 19 foreign accidents per year.

British Airways Boeing 777 Landing Accident in London, England

On January 17, 2008, a British Airways Boeing 777, powered by two Rolls-Royce Trent 800 engines, crashed short of the runway on final approach to Heathrow International Airport, London, United Kingdom. One passenger was seriously injured, and eight passengers and four flight crewmembers sustained minor injuries. The airplane was substantially damaged. While on final approach, both engines failed to produce the commanded thrust and the airplane impacted the ground about 1,000 feet short of the runway. The NTSB sent an accredited representative and NTSB systems and powerplants specialists to assist the UK Air Accident Investigation Branch (AAIB) with its investigation. Technical advisors from the FAA and Boeing also assisted. The investigation resulted in the immediate

dissemination of a procedure for flight crews to follow to prevent the buildup of ice in the fuel system; hardware modifications are also in progress.

Cessna Citation 500 Takeoff Accident in Farnborough, Kent, United Kingdom

On March 30, 2008, a Cessna Citation 500 with Bermudian registration was destroyed when it impacted a residence shortly after takeoff from the Biggin Hill Airport, Farnborough, Kent, United Kingdom. The two flight crewmembers and three passengers were fatally injured. The NTSB sent an accredited representative and systems and powerplants specialists to assist the AAIB with its investigation. Technical advisors from the FAA and Cessna also assisted.

Hewa Bora Airways DC-9 Rejected Takeoff Accident in Goma, Congo

On April 15, 2008, a Hewa Bora DC-9-51 overran the runway and crashed into a residential area after a rejected takeoff in Goma, Congo. The aircraft was destroyed along with several residential buildings. Of the 86 passengers and 8 crewmembers onboard, 3 passengers received fatal injuries and 40 received minor or serious injuries. In addition, 37 people on the ground received fatal injuries and 71 received minor or serious injuries. The NTSB sent an accredited representative to assist the Republic of Congo with its investigation. Technical advisors from Boeing also assisted.

Flex Air Beech 1900 Accident in Rumbek, Sudan

On May 2, 2008, a Beech 1900C, operated by Flex Air of Nairobi, Kenya, experienced a loss of power in both engines and crashed near Rumbek, Southern Sudan. The 2 flight crewmembers and 18 passengers were fatally injured. The airplane was destroyed. The flight departed from Wau, Southern Sudan and was destined for Juba, Southern Sudan, with a stop at Rumbek. The NTSB sent an accredited representative to assist the Government of Southern Sudan with its investigation.

Kalitta Air Boeing 747 Takeoff Accident in Brussels, Belgium

On May 25, 2008, a Kalitta Air Boeing 747-200 overran the runway after a rejected takeoff at Brussels International Airport, Brussels, Belgium. There were no serious injuries to the four crew members or one passenger on board the airplane. The airplane was destroyed. The NTSB sent an accredited representative and structures, powerplants, and operations specialists to assist the Air Accident Investigation Unit (Belgium) with its investigation. Technical advisors from the FAA, Boeing, Pratt & Whitney, and Kalitta Air also assisted.

Panamanian Bell UH-1 Helicopter Accident in Panama City, Panama

On May 29, 2008, a Bell UH-1, operated by the Panamanian Servicio Aereo Nacional, was destroyed when it impacted buildings in Panama City, Panama. Eleven people onboard were fatally injured and one person was seriously injured. The VIP transport flight departed Enrique A. Jimenez Airport, Colon, Panama, and was destined for a waterfront hotel landing pad in Panama City, Panama. Passengers included senior officials from both Panama and Chile, including the Director General of the Chilean National Police (Los Carabineros), who were attending a United Nations-sponsored conference. The NTSB sent an accredited representative to assist the government of Panama with its investigation. Technical advisors from the FAA, Bell Helicopter, and Pratt & Whitney Canada also assisted.

TACA Airlines Airbus A320 Landing Accident in Tegucigalpa, Honduras

On May 30, 2008, a TACA Airlines Airbus A320, equipped with U.S.-manufactured International Aero Engines V2500 engines, overran the runway while landing at the Toncontin International Airport in Tegucigalpa, Honduras. The airplane was on a scheduled flight from San Salvador, El Salvador, to Miami, Florida, with a stop in Honduras. Of the 134 persons that were aboard the flight, three sustained fatal injuries and two people who were in cars

on a nearby street also sustained fatal injuries. The NTSB sent an accredited representative and a powerplants specialist to assist the Civil Aviation Authority of El Salvador (under delegation by the Government of Honduras) with its investigation. Technical advisors from the FAA and International Aero Engines also assisted.

USA Jet McDonnell Douglas DC-9 Accident in Saltillo, Mexico

On July 6, 2008, a USA Jet, Inc., McDonnell Douglas (Boeing) DC-9 crashed during approach to Saltillo, Mexico. The airplane was registered in the United States and was carrying cargo consisting of automobile parts. One person was fatally injured and one person sustained serious injuries. The NTSB sent an accredited representative and systems and meteorology specialists to assist Mexico's Direccion de Investigacion de Accidentes e Incidentes with its investigation. Technical advisors from the FAA, Boeing, and Pratt & Whitney also assisted.

Kalitta Air Boeing 747 Crash in Bogotá, Colombia

On July 7, 2008, a Kalitta Air Boeing 747-200 freighter crashed during a forced landing shortly after takeoff from El Dorado International Airport in Bogotá, Colombia. There were no fatalities and several serious injuries among the eight people on board, and the airplane was destroyed. The NTSB sent an accredited representative and powerplants, systems, operations, and human factors specialists to assist the Unidad Administrativa Especial de Aeronáutica Civil of Colombia with its investigation. Technical advisors from the FAA, Boeing Aircraft Company, and Pratt & Whitney also assisted.

Sikorsky S-92 Helicopter Landing Accident in Gapyeong, Republic of Korea

On July 19, 2008, a Sikorsky S-92A helicopter operated by Times Aerospace collided with trees while attempting to land in Gapyeong, Republic of Korea. Of the 16 persons on board, 2 persons suffered serious injuries and 14 suffered minor injuries, and the helicopter was destroyed. The NTSB sent an accredited representative and a helicopter operations specialist to assist the Korean Aviation and Railway Accident Investigation Board with its investigation. Technical advisors from the FAA, Sikorsky, and General Electric also assisted.

Qantas Airlines Boeing 747 Structural Damage and Depressurization in Manila, Philippines

On July 25, 2008, a Qantas Airlines Boeing 747-400 experienced structural damage and a rapid depressurization at 29,000 feet while en route from Hong Kong to Melbourne Australia. The crew made an emergency landing in Manila, Philippines. There were no reported injuries to the 365 people on board. The NTSB sent an accredited representative and an airworthiness specialist to assist the Australian Transport Safety Bureau with its investigation. Technical advisors from the FAA and Boeing also assisted.

Spanair MD-82 Takeoff Accident in Madrid, Spain

On August 20, 2008, a Spanair Boeing MD-82 crashed upon takeoff from Madrid Barajas International Airport, Madrid, Spain. Of the 172 people on board, 154 were fatally injured. The NTSB sent an accredited representative and systems, powerplants, and operations specialists to assist the Spanish Civil Aviation Accidents and Incidents Investigation

Commission with its investigation. Technical advisors from the FAA, Boeing, and Pratt & Whitney also assisted.

Cessna 208 Accident in Zacapa, Guatemala

On August 24, 2008, an Aero Ruta Maya Cessna 208 was destroyed during a forced landing following loss of engine power in Zacapa, Guatemala. Eleven people were fatally injured and three people were seriously injured. The NTSB sent an accredited representative to assist the Guatemalan Direccion General de Aeronautica Civil with its investigation. Technical advisors from the FAA and Cessna Aircraft Company also assisted.

Aeroflot-Nord Boeing 737 Landing Accident in Perm, Russia

On September 14, 2008, an Aeroflot-Nord Boeing 737 crashed on approach to Perm Airport in Perm, Russia. All 88 people on board were fatally injured. The NTSB sent an accredited representative and powerplants and airworthiness specialists to assist the Russian Interstate Aviation Committee with its investigation. Technical advisors from the FAA and Boeing also assisted.

Cessna 421B Accident in Ojinaga, Mexico

On September 15, 2008, a Volare Air Charter Cessna 421B collided with mountainous terrain in Ojinaga, Mexico. All four people on board were fatally injured. Onboard the airplane were the United States and Mexican Commissioners of the International Boundary and Water Commission, and the purpose of the flight was to coordinate joint U.S.-Mexican efforts to address flood control concerns. The NTSB sent an accredited representative to assist the Dirección de Investigación de

Incidentes y Accidentes Aviacion of Mexico with its investigation. Technical advisors from the FAA and Cessna also assisted.

Learjet Model 45 Accident in Mexico City, Mexico

On November 4, 2008, a Centro de Servicios Cooperatives Aeros Learjet Model 45 crashed while on approach to Benito Juárez Mexico City International Airport, Mexico City, Mexico. All nine people on board were killed. The NTSB sent an accredited representative and NTSB powerplants, airworthiness, operations, and air traffic control specialists to assist the Mexican Dirección General de Aeronáutica Civil with its investigation. Technical advisors from the FAA, Learjet, and Honeywell International also assisted.

Ryanair Boeing 737 Landing Accident in Rome, Italy

On November 10, 2008, a Ryanair Boeing 737-800 equipped with CFM56 engines experienced multiple birdstrikes affecting engine thrust while landing in Rome, Italy. The aircraft subsequently experienced a collapsed left main landing gear and other damage during the landing. There were no fatalities or serious injuries to the 166 passengers or 6 crew onboard. The NTSB sent a powerplants specialist to assist in the Government of Italy's investigation.

XL Airways A320 Accident near Perpignan, France

On November 27, 2008, an Airbus A320 equipped with IAE V2500 engines crashed into the Mediterranean Sea during approach to Perpignan, France. The airplane, which was conducting postmaintenance checks at the time of the accident, impacted the sea about 5 miles from the coastline. All seven people on board were fatally injured. The NTSB sent an accredited representative and a powerplants specialist to assist the French Bureau d'Enquêtes et d'Analyses with its investigation. Technical advisors from the FAA and International Aero Engines (a consortium that includes Pratt & Whitney) also assisted.

Special Investigation Report

Safety of Parachute Jump Operations

Since 1980, 32 accidents involving parachute operations aircraft have killed 172 people, most of whom were parachutists. The NTSB examined accident reports for parachute operations and identified recurring safety issues involving inadequate aircraft inspection and maintenance, pilot performance deficiencies, and inadequate FAA oversight and direct surveillance of parachute operations. As a result of this special investigation, the Board issued safety recommendations to the FAA and the United States Parachute Association.

Eight new recommendations were issued to the FAA and the United States Parachute Association. The Board adopted the report on September 16, 2008.

Public Hearings and Forums

Public Forum on Unmanned Aerial Systems

On April 29 and 30, 2008, the NTSB held a 2-day forum on the safety of unmanned aircraft systems (UAS). The forum provided an opportunity for the NTSB and interested parties to discuss the growing use of UAS and integration of UAS in the National Airspace System. Issues addressed included regulatory standards, system design, certification, and airworthiness. The forum was the result of the NTSB's investigation into a Predator B unmanned aircraft that crashed near Nogales, Arizona, in April 2006.

Public Hearing on Safety of Helicopter Emergency Medical Services (EMS) Operations

The NTSB will hold a 4-day public hearing on the safety of helicopter emergency medical services (EMS) operations beginning on February 3, 2009. Helicopter EMS operations provide an important service to the public by transporting seriously ill patients or donor organs to emergency care facilities. The pressure to conduct these operations safely and quickly in all conditions, including during inclement weather, at night, and on unfamiliar landing sites, has the potential to increase EMS operational risk compared to normal passenger-carrying aviation operations. The NTSB's goal in holding the hearing is to learn more about helicopter EMS operations so that it can better evaluate the factors that lead to accidents. The issues to be discussed include operational structure and models, flight operations, aircraft safety equipment, flight crew training, and oversight.

Key Challenges

- The Office of Aviation Safety is challenged to accomplish its mission within the constraints of current staffing levels. The 2008 ICAO audit recommended that the United States enable the NTSB to recruit more investigators to ensure the agency can continue conducting in-depth investigations into incidents that are likely to yield safety benefits.

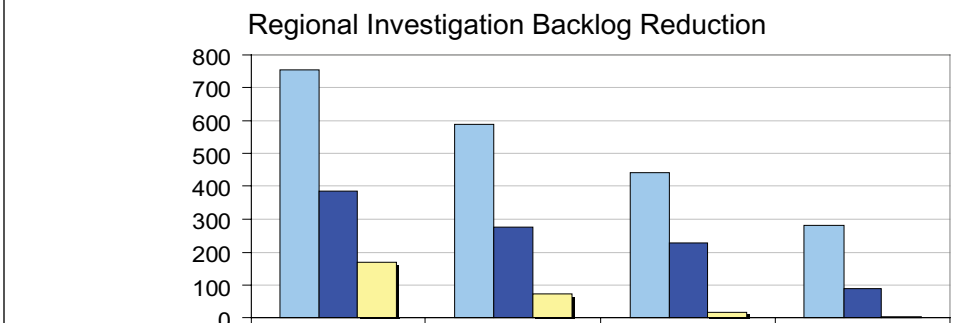
- In order to conduct thorough accident investigations, NTSB investigators must stay abreast of the latest technology employed in the aviation industry, such as composite materials, satellite navigation systems, flight recorders, and flight control software. Even when free training is available, the cost of the travel and per diem can be significant. The office's challenge is to identify the available resources and manpower to obtain training in these areas. Another challenge is the difficulty in scheduling training due to the number of accidents and limited number of investigators.
- One of every five employees in the Office of Aviation Safety is currently eligible to retire. The office's challenge is to develop its current workforce to take future leadership positions and to implement strategies to attract talented individuals to fill these positions.
- Under the provisions of ICAO Annex 13, the Office of Aviation Safety plays an important role in the investigation of foreign accidents involving a U.S. operator or a U.S.-manufactured airplane or engines. The number of major airline accidents worldwide has increased sharply, and Aviation Safety staff participate in an average of 19 major foreign accident investigations every year. This presents a particular challenge since the office must also continue to meet its mandate to investigate all aviation accidents in the United States.
- In 2006, the NTSB conducted its first investigation of an unmanned aerial vehicle accident. As a result, the NTSB issued 22 safety recommendations addressing UAS design, operation, and safety management. In April 2008, the NTSB held a 2-day public forum to discuss these unique vehicles. The office's challenge will be to advocate for these recommendations to improve UAS safety as these vehicles are increasingly integrated into the U.S. National Airspace System. On July 16, 2008, the Federal Aviation Administration issued its final rule on fuel tank inerting. This rule was the result of a Safety Board recommendation aimed at eliminating fuel tank explosions in transport category aircraft, and had been on the Board's Most Wanted List of Transportation Safety Improvements since 2002.

Significant Achievements

- On July 16, 2008, the FAA issued its final rule on fuel tank inerting. This rule was the result of an NTSB recommendation aimed at eliminating fuel tank explosions in transport-category aircraft and had been on the NTSB's Most Wanted List of Transportation Safety Improvements since 2002.
- On June 5, 2008, an Eclipse 500 airplane experienced a unique failure that resulted in an uncontrollable increase in the thrust from both engines. The NTSB's investigation revealed that a failure in the throttle quadrants caused the problem, and urgent recommendations were made to the FAA to inspect the rest of the fleet. As a result, several airplanes were found with this failure present and removed from service for repair without further incident.

- Two important NTSB Safety Alerts were issued in 2008—one addressing how pilots can prevent controlled flight into terrain when flying at night and the other reminding pilots of the importance of activating leading edge deice boots at the first sign of icing. These alerts provided pilots with information from recent investigations that they can use to prevent accidents.
- The investigation examined 32 accident reports for parachute operations and identified recurring safety issues involving inadequate aircraft inspection and maintenance, pilot performance deficiencies, and inadequate FAA oversight and direct surveillance of parachute operations. As a result of this special investigation, the Board issued eight new safety recommendations to the FAA and the United States Parachute Association.
- The AAIB is leading the investigation into the January 2008 accident in which a British Airways Boeing 777 lost engine power and crashed, likely due to an accumulation of ice within the fuel system. The NTSB, representing the State of Design and Manufacture of the aircraft, leads a U.S. team that includes NTSB specialists, the FAA, and Boeing. The cooperation of these international parties resulted in safety improvements that will reduce the risk of recurrence until design changes to the fuel system are available.
- The following graph presents the reduction of the regional aviation investigation backlog over the past four years.

In the past 6 years, the number of open regional investigations has been reduced from 2,231 to 560, a 75 percent reduction.



	End CY 2005	End CY 2006	End CY 2007	End CY 2008
6+ Months Old	751	586	442	284
12+ Months Old	386	277	228	89
24+ Months Old	169	72	18	5

- On August 6, 2008, a Delta Air Lines Boeing 757 equipped with Pratt & Whitney PW 2000 engines, experienced an uncontained failure of the right engine during takeoff in Las Vegas, Nevada. The FAA agreed with NTSBs findings and initiated rulemaking that would require inspection of PW2000 2nd stage turbine hubs in November 2008.

Highway Safety

HS — 2008 At A Glance	
Number of Employees:	HQ: 14 Regional: 15
Major Reports and Products Adopted by the Board:	3 Major Reports 4 Accident Briefs
Major Accident Launches:	3
Other Accident Launches:	7 Field Investigations
Recommendations Issued:	21
Recommendations Closed:	15

In 2008, the Office of Highway Safety's 29 staffmembers initiated 21 new investigations, conducted 1 public hearing, and completed 7 accident reports.

In the United States, motor vehicle travel is the primary means of transportation. According to the U.S. Census Bureau, more than 90 percent of U.S. households own at least one motor vehicle and 58 percent own two or more. Commercial motor vehicles also have an enormous effect on our transportation system. Nearly 10 million commercial trucks and buses are registered in the United States. Consequently, highway transportation accidents have a huge negative impact on our nation. According to the National Highway Traffic Safety Administration, 41,059 people were killed and 2.49 million people were injured in the estimated 6.02 million police-reported motor vehicle crashes in 2007. No other mode of transportation approaches highway in terms of the magnitude of the safety challenge—waterborne transportation, the next most dangerous mode of transport in terms of deaths per annum—in 2007 accounted for a total of 769 deaths in the United States, less than 2 percent of the number of fatalities in the highway mode. An average of about 112 people died each day in motor vehicle crashes in 2007, meaning that a person died in a crash every 13 minutes. The economic cost alone of motor vehicle crashes was more than $230 billion in 2000, which averaged out to a cost of about $820 for every person then living in the United States.

The NTSB is responsible for investigating selected highway accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring in the future. In 2008, the NTSB addressed and made safety recommendations concerning such important safety issues in the highway mode as highway-rail grade crossing safety, inadequate high occupancy vehicle (HOV) lane traffic control devices, inadequate motor carrier driver oversight, lack of event data recorders on motorcoaches, lack of motorcoach occupant protection, operator fatigue, fatigue technologies and countermeasures, and collision warning

Map showing Highway Launches During 2008

systems. As a result of the Minneapolis Interstate 35W bridge collapse investigation, the Board addressed numerous major bridge safety issues, including insufficient quality control procedures for designing bridges, insufficient Federal and State procedures for reviewing and approving bridge design plans and calculations, lack of guidance for bridge owners with regard to the placement of construction loads on bridges during repair or maintenance activities, exclusion of gusset plates in bridge load rating guidance, lack of inspection guidance for conditions of gusset plate distortion, and inadequate use of technologies for accurately assessing the condition of gusset plates on deck truss bridges.

Completed Highway Investigations

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

On June 13, 2004, about 8:39 p.m., a 1991 Kenworth tractor-auto transporter, traveling west on Interstate 30, near Sulphur Springs, Texas, collided with a 2002 Hyundai Santa Fe sport utility vehicle (SUV) that was stopped in a 0.5-mile-long traffic queue in the right-hand lane. The force of the collision pushed the Hyundai forward, into and under the trailer of a 2000 Peterbilt tractor-semitrailer combination unit, which was in turn pushed forward into a 2003 Lincoln Navigator SUV. The Lincoln was subsequently pushed forward into the trailer of a 2000 Volvo tractor-semitrailer combination unit. A fire erupted, involving the Hyundai and the Peterbilt trailer. All four occupants of the Hyundai and the driver of the Kenworth truck were fatally injured. The two occupants of the Lincoln received minor injuries; the occupants of the Peterbilt and Volvo trucks were not injured.

The NTSB's investigation of the Minneapolis bridge collapse was one of the largest and most complex surface transportation investigations the NTSB has ever undertaken.

The Safety Board determined that the probable cause of the Sulphur Springs multivehicle accident was the failure of the driver of the 1991 Kenworth tractor-auto transporter to identify and react in time to stopped traffic due to acute fatigue. Contributing to this accident were the failure of Waggoners Trucking Company, owner of the Kenworth truck, to provide adequate oversight of the driver's fitness for duty and compliance with hours-of-service requirements, and the failure of the Texas Department of Public Safety and the Texas Department of Transportation to provide clear advance warning to alert approaching traffic of the incident area and traffic queue. The Board adopted the report on February 25, 2008.

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

On November 23, 2005, the day before Thanksgiving, in Elmwood Park, Illinois, a traffic queue formed within the 366-foot-wide signaled Northeast Illinois Regional Commuter Railroad (METRA) highway-railroad grade crossing on eastbound West Grand Avenue. At the same time, METRA train 107 was approaching the crossing on the westbound tracks at a speed of 70 mph, as indicated by event data recorder information. The crossing lights activated and the crossing gates lowered 54 seconds before the train arrived. The traffic queue trapped some stopped vehicles within the grade crossing. As METRA train 107 approached the crossing, the engineer recognized the hazard and put the train into emergency braking. The train was unable to stop before colliding with approximately 6 of the stopped vehicles, pushing them into secondary impacts with 12 other vehicles. Seven automobile occupants received minor-to-serious injuries, and 3 of the approximately 400 train passengers reported minor injuries.

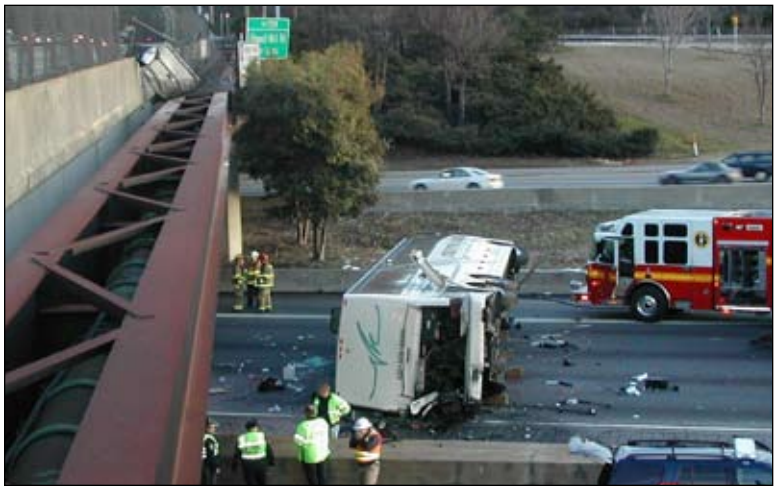
The impact destroyed 6 vehicles, and 12 vehicles had minor-to-extensive damage. The locomotive incurred minor damage and did not derail.

The Board determined that the probable cause of the Elmwood Park accident was a combination of factors that led to the development of a traffic queue on the West Grand Avenue highway-rail grade crossing and prevented queued vehicles from exiting the crossing prior to the arrival of a METRA train: the factors were the acute angle of intersection between West Grand Avenue and the railroad tracks, which resulted in an exceptionally wide grade crossing; the unusually heavy vehicle traffic that preceded the Thanksgiving holiday; and the complex street and rail pattern and related signal interactions between Harlem Avenue and the West Grand Avenue grade crossing, which frequently desynchronized the traffic signals along West Grand Avenue during peak travel times.

The Board issued one safety recommendation to the Governor of Illinois, asking that he require the Illinois Commerce Commission and the Illinois Department of Transportation to construct a grade separation in place of the West Grand Avenue grade crossing, and provide the necessary resources to effect this change. The Board adopted the report on June 10, 2008.

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

About 5:38 a.m. eastern standard time on Friday, March 2, 2007, a 2000 VanHool T2145 57-passenger motorcoach operated by Executive Coach Luxury Travel, Inc., and transporting 33 members of the Bluffton University baseball team, the driver, and his wife, was traveling south on Interstate 75 in Atlanta, Georgia. The motorcoach had departed from the university, about 60 miles southwest of Toledo, Ohio, about 7:00 p.m. the previous day and was en route to a competition in Sarasota, Florida. The 65-year-old relief driver, who had relieved the original driver about an hour



before the accident, had driven approximately 54 miles and, according to witnesses, was in the southbound HOV lane at milepost 250 when the motorcoach departed the interstate, traveling at highway speed, onto the HOV-only left exit ramp to Northside Drive. The exit ramp 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, the driver steered to the right and collided with the reinforced portland cement concrete bridge wall and chain-link security fence located along the southern edge of the eastbound lanes of the overpass. The motorcoach then overrode the bridge rail, rotated clockwise, and fell 19 feet onto the southbound lanes of the interstate. The motorcoach came to rest on its left side, perpendicular to the southbound lanes of Interstate 75. Two southbound passenger vehicles received minor damage from debris as the motorcoach fell onto Interstate 75; none of the passenger vehicle occupants were injured. Seven motorcoach occupants were killed: the driver, the driver's wife, and five passengers. Seven other passengers received serious injuries, and 21 passengers received minor injuries.

The Board determined that the probable cause of this accident was the motorcoach driver's mistaking the HOV-only left exit ramp to Northside Drive for the southbound Interstate 75 HOV through lane. Contributing to the accident driver's route mistake was the failure of the Georgia Department of Transportation to install adequate traffic control devices to identify the separation and divergence of the Northside Drive HOV-only left exit ramp from the southbound Interstate 75 HOV through lane. Contributing to the severity of the accident was the motorcoach's lack of an adequate occupant protection system.

Major safety issues identified in this accident included inadequate HOV lane traffic control devices, inadequate motor carrier driver oversight, lack of event data recorders on motorcoaches, and lack of motorcoach occupant protection. As a result of its investigation, the Board made a total of 10 safety recommendations to the Federal Highway Administration (FHWA) and the Georgia Department of Transportation. The Board also reiterated four recommendations to the National Highway Traffic Safety Administration (NHTSA). The Board adopted this report on July 8, 2008.

Of the modes of transportation accidents investigated by the NTSB, highway accidents account for the largest numbers of fatalities – 41,059 people lost their lives in motor vehicle accidents in 2007. (Annual highway fatalities have been declining, from 42,708 fatalities in 2006 and 43,510 fatalities in 2005.)

Tractor-Semitrailer, Passenger Car, and School Bus Collision Near Lake Butler, Florida

About 2:40 p.m. on Wednesday, January 25, 2006, a 31-year-old truck driver, operating a 75,360-pound 2004 Freightliner truck tractor and 1998 Wabash box trailer combination unit, departed High Springs, Florida, transporting a load of bottled water, on an 85-mile trip to a company warehouse in

Jacksonville, Florida. Meanwhile, about 3:05 p.m., a 48-year-old school bus driver began her afternoon route in a 1996 Thomas Built school bus, Union County bus no. 13. The northbound school bus was stopped on State Route 121 at bus stop no. 10 to discharge two students. A 1993 Pontiac Bonneville—occupied by a 15-year-old driver and six passengers, ages 20 months to 15 years—was stopped behind the school bus. As the school bus was beginning to proceed, the Freightliner collided with the rear of the Pontiac and the bus. Police estimated the speed of the Freightliner to be 62 mph. The Freightliner and the Pontiac continued forward from the impact area, departing the travel lanes to the right. Both the Freightliner and the school bus sustained extensive impact damage. The Pontiac additionally experienced a postcrash fire. All seven occupants of the Pontiac were killed. Three of the nine students on the school bus were ejected from the rear of the vehicle and landed on highway pavement, seriously injured. One other student sustained serious injuries and was extricated from the bus by firefighters. The school bus driver, who was wearing a lap/shoulder belt, also sustained serious injuries. Five students and the truck driver received minor injuries. The students who had been discharged from the bus just before the accident were not injured.

The Board determined that the probable cause of this accident was the failure of the truck driver to maintain alertness due to fatigue from obtaining inadequate rest. Contributing to the accident was the failure of Crete Carrier Corporation to exercise proper oversight of the driver's hours of service. This report was adopted on August 22, 2008.

There are more than 46,837 miles of interstate highway and almost 4,000,000 miles of other roads in the United States.

Motorcoach Rollover Near Turrell, Arkansas

On October 9, 2004, about 5:02 a.m., a 1988 MCI 47-passenger motorcoach was southbound on Interstate 55 near Turrell, Arkansas, transporting 29 passengers to a casino in Tunica, Mississippi. Witnesses following the motorcoach prior to the accident estimated that it had been traveling about 70 mph. At the exit 23A interchange, the motorcoach veered to the right and entered the grassy area between the exit and entrance ramps. As it rotated in a clockwise direction, the motorcoach struck an exit sign, overturning onto its left side and sliding in a southwesterly direction. The left side of the vehicle struck the westernmost side of a 2-foot-deep earthen drainage ditch, and the motorcoach continued to roll over. As it rolled, the roof opened up, allowing passengers to be thrown from the open top. The motorcoach landed 65 feet from the drainage ditch and came to rest upside down. Its roof was lying on the ground (top side up), still hinged to the right side of the vehicle. The rollover and partial detachment of the roof resulted in the ejection of all 30

occupants. The motorcoach driver was not wearing his lap belt; the passenger seats were not equipped with seat belts. In total, 14 passengers and the driver were killed. Thirteen passengers were seriously injured, and two passengers received minor injuries.

The NTSB determined that the probable cause of this accident was the motorcoach driver's fatigued condition, which led him to drift from the left side of the roadway, contact rumble strips, oversteer to the right, and then move off the roadway. The detachment of the motorcoach roof was a contributing cause to the severity of injuries and the number of ejections. This report was adopted on August 22, 2008.

Tractor-Semitrailer Rollover and Motorcoach Accidents Near Osseo, Wisconsin

On October 16, 2005, an accident comprising two events occurred on Interstate Highway 94 (I-94) near Osseo, Wisconsin. The first event was the rollover of a truck-tractor semitrailer combination unit. The second event occurred when a motorcoach collided with the wreckage from the first event.

About 7:30 p.m. on October 15, 2005, a truck driver departed Munster, Indiana, on a trip to Minneapolis, Minnesota, driving a truck-tractor semitrailer operated by Whole Foods Market, Inc. At 1:58 a.m., the combination unit was traveling westbound on I-94 near milepost 85, when it departed the right-hand travel lane and paved shoulder. The unit left the roadway and entered the earthen, sloped roadside. The driver steered to the left, and the combination unit reentered the pavement and overturned onto its right side, so that it blocked both westbound lanes and shoulders of I-94. About 3 hours before, a group of marching band members from Chippewa High School left the University of Wisconsin to travel back to Chippewa Falls, Wisconsin, in four motorcoaches. The lead vehicle, a 55-passenger motorcoach owned by Chippewa Trails, Inc., was traveling westbound in the right-hand lane of I-94 when it collided with the overturned combination unit about 1:59 a.m. The motorcoach driver and four passengers were fatally injured. Thirty-five passengers received minor-to-serious injuries. The truck driver received minor injuries.

More than 5,000 people lost their lives in motorcycle accidents in 2007 in the United States.

The Board determined that the probable cause of the truck-tractor semitrailer rollover, the precipitating event in the accident sequence, and the motorcoach's subsequent collision with the truck, was the truck driver's falling asleep at the wheel, drifting from the roadway, and losing control of his vehicle. The truck driver was most likely fatigued

because he did not take full advantage of adequate rest opportunities provided to him during his off-duty time and, as a result, obtained inadequate and disrupted sleep prior to the accident. The motorcoach collided with the overturned truck because there were insufficient visual cues to permit the driver to identify the truck wreckage in time to avoid the collision.

Major safety issues identified in this report included operator fatigue, fatigue technologies and countermeasures, and collision warning systems. As a result of this accident investigation, the Board made a total of four safety recommendations to the Federal Motor Carrier Safety Administration (FMCSA), NHTSA, and Whole Foods Market, Inc. The Safety Board also reiterated two safety recommendations to NHTSA. The Board adopted this report on September 16, 2008.

Collapse of Interstate 35W Bridge, Minneapolis, Minnesota

About 6:05 p.m. central daylight time on Wednesday, August 1, 2007, the eight-lane, 1,907-foot-long Interstate 35W (I-35W) highway bridge over the Mississippi River in Minneapolis, Minnesota, experienced a catastrophic failure in the main span of the deck truss. As a result, 1,000 feet of the deck truss collapsed, with about 456 feet of the main span falling 108 feet into the 15-foot-deep river. A total of 111 vehicles were on the portion of the bridge that collapsed. Of these, 17 were recovered from the water. As a result of the bridge collapse, 13 people died, and 145 people were injured.

There are nearly 600,000 bridges, both urban and rural, in the United States.

On the day of the collapse, roadway work was underway on the I-35W bridge, and four of the eight travel lanes (two outside lanes northbound and two inside lanes southbound) were closed to traffic. In the early afternoon, construction equipment and construction aggregates (sand and gravel for making concrete) were delivered and positioned in the two closed inside southbound lanes. The equipment and aggregates, which were being staged for a concrete pour of the southbound lanes that was to begin about 7:00 p.m., were positioned toward the south end of the center section of the deck truss portion of the bridge and were in place by about 2:30 p.m. About 6:05 p.m., a motion-activated surveillance video camera at the Lower St. Anthony Falls Lock and Dam, just west of the I-35W bridge, recorded a portion of the collapse sequence. The video showed the bridge center span separating from the rest of the bridge and falling into the river.

The Board determined that the probable cause of the collapse of the I-35W bridge in Minneapolis, Minnesota, was the inadequate load capacity, due to a design error by Sverdrup & Parcel and Associates, Inc., of the gusset plates at the U10 nodes, which failed under a combination of (1) substantial increases in the weight of the bridge, which resulted from previous bridge modifications, and (2) the traffic and concentrated construction loads on the bridge on the day of the collapse. Contributing to the design error was the failure of Sverdrup & Parcel's quality control procedures to ensure that the appropriate main truss gusset plate calculations were performed for the I-35W bridge and the inadequate design review by Federal and State transportation officials. Contributing to the accident was the generally accepted practice among Federal and State transportation officials of giving inadequate attention to gusset plates during inspections for conditions of distortion, such as bowing, and of excluding gusset plates in load rating analyses. (Before determining that the collapse of the I-35W bridge initiated with failure of the gusset plates at the U10 nodes, the Safety Board considered a number of potential explanations. The following factors were considered, but excluded, as being causal to the collapse: corrosion damage in gusset plates at the L11 nodes, fracture of a floor truss, preexisting cracking, temperature effects, and pier movement.)

The following safety issues were identified in this investigation:

- Insufficient bridge design firm quality control procedures for designing bridges, and insufficient Federal and State procedures for reviewing and approving bridge design plans and calculations.
- Lack of guidance for bridge owners with regard to the placement of construction loads on bridges during repair or maintenance activities.
- Exclusion of gusset plates in bridge load rating guidance.
- Lack of inspection guidance for conditions of gusset plate distortion.
- Inadequate use of technologies for accurately assessing the condition of gusset plates on deck truss bridges.

There are more than 245 million registered motor vehicles in the United States, including nearly 10 million commercial trucks and buses.

In its report of the accident, the Board made a total of nine recommendations to the FHWA and the American Association of State Highway and Transportation Officials. One additional safety recommendation resulting from this investigation was issued to the FHWA in January 2008. The Board adopted this report on November 14, 2008.

Ongoing Highway Investigations

Motorcoach Rollover, Westport, New York

The NTSB continues to investigate a motorcoach rollover accident that occurred in the early evening on August 28, 2006, near the town of Westport, New York. As a 2000 MCI 55-passenger motorcoach carrying 52 passengers was traveling northbound on Interstate 87, descending a 5-percent grade at an estimated 75 mph, it 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, 5 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 about 10:10 a.m. central standard time when a 2006 Integrated Conventional Corporation 71-passenger school bus, transporting 40 students from Lee High School to the Huntsville Technology Center, was traveling in the left lane of an elevated two-lane Interstate Highway 565 transition ramp, near exit 19A, in Huntsville, Alabama. A 1990 Toyota Celica was in the left lane behind the school bus, also traveling to the Technology Center. According to witnesses, the Toyota moved to the right lane and accelerated in an attempt to pass the school bus. The driver of the Toyota stated that as he came alongside the school bus, his vehicle began "fishtailing" and became impossible to control. The Toyota veered to the left, striking the right front tire of the school bus. The vehicles remained in contact as they swerved to the left and struck a 32-inch-high cement bridge rail on the left side of the ramp. Physical evidence indicated that the school bus climbed the bridge rail. The school bus driver, who was not wearing his seat belt, was ejected from the school bus onto the roadway. The bus continued along the top of the bridge rail for about 117 feet before rolling over and falling 30 feet to a dirt and grass area beneath the ramp. The school bus landed on its front, bounced, and came to rest upright. Four students in the school bus were fatally injured. Thirty-three students received minor-to-serious injuries. Three students were not injured. The bus driver was seriously injured. After striking the bridge rail, the Toyota continued along the ramp. It curved to the right and came to rest against the north bridge rail. The driver and an 18-year-old passenger were not injured.

An estimated 3 trillion highway vehicle miles are traveled each year.

Motorcoach Roadway Departure and Overturn, Victoria, Texas

The NTSB is continuing its investigation of the Victoria, Texas, motorcoach accident. The accident took place on January 2, 2008, about 4:10 a.m. central standard time, when a motorcoach carrying 47 passengers ran off the roadway near Victoria, in Victoria County, Texas. The vehicle was operated by Capricorn Bus Lines and was on a scheduled trip from Monterrey, Mexico, to Houston, Texas. The motorcoach had departed from Monterrey about 7:30 p.m. on Tuesday, January 1, 2008. Local police reported that as the motorcoach was in the vicinity of Highways 59 and 77 south of Victoria, it appeared to have left the roadway.

The vehicle rolled over onto its right side and came to rest blocking all lanes of Highway 77. A subsequent accident occurred when a pickup truck collided with the motorcoach after it had come to rest. As a result of the accident, one passenger sustained fatal injuries and the remaining passengers sustained injuries ranging from minor to serious. The driver of the motorcoach and the pickup truck driver sustained minor injuries. In connection with this accident, the Board conducted a public hearing in October 2008.

Motorcoach Roadway Departure and Overturn, Mexican Hat, Utah

The NTSB is completing its investigation of the Mexican Hat, Utah, motorcoach accident, which occurred on January 7, 2008. About 8:02 p.m. mountain standard time, a 2007 MCI 56-passenger motorcoach with a driver and 52 passengers on board was traveling southbound, descending a 5.6-percent grade leading to a curve to the left, 1,800 feet north of milepost 29 on U.S. Route 163 in Utah. After entering the curve, the motorcoach departed the right side of the roadway at a shallow angle, striking the guardrail with the right-rear wheel about 61 feet before the end of the guardrail. The motorcoach traveled approximately 350 feet along the foreslope (portion of roadside sloping away from roadway), with the right tires off the roadway. The back tires lost traction as the foreslope transitioned into the drainage ditch. The motorcoach rotated counterclockwise as it descended an embankment. The motorcoach overturned, struck several rocks in a drainage ditch bed at the bottom of the embankment, and came to rest on its wheels. During the 360° rollover sequence, the entire roof of the motorcoach separated from the body, and 51 of the 53 occupants were ejected. As a result of this accident, 9 passengers were fatally injured and 43 passengers and the driver received injuries ranging from minor to serious. The weather was cloudy, and the roadway was dry at the time of the accident.

There are an estimated 44,000 motorcoaches in the United States and Canada.

School Bus Collision with Passenger Vehicle, Milton, Florida,

The NTSB is investigating a school bus accident that took place on May 28, 2008, in Milton, Florida. About 9:30 a.m. daylight savings time, a 2002 International/Bluebird 65-passenger, lap-belt-equipped school bus, operated by the Okaloosa County School District and transporting 14 third grade students, the 60-year-old bus driver, and 3 adult passengers on a school-sponsored field trip, was traveling westbound on Interstate 10 (I-10) approximately 10 miles east of Milton, Florida. The school bus had departed from the Walker Elementary School and was en route to the U.S. Navy Aviation Museum near Pensacola, Florida. The school bus was in the right traffic lane of the two-way, four-lane divided highway when it crossed partially into the left passing lane of I-10 westbound and collided with a 2002 Chevrolet Tahoe, which was traveling at an estimated speed of 70 to 75 mph in the left passing lane (the posted speed limit is 70 mph). The school bus was governed at a maximum speed of 55 mph. Postaccident inspection indicated that the Tahoe struck the left rear corner of the bus.

Subsequent to the collision, the Tahoe continued forward and onto the left shoulder and grass median of I-10. The school bus veered to the right, across the right fog line, then went across the inside westbound lane and shoulder and into the center median, where it rolled over. Before coming to rest, the body of the bus partially separated from the chassis. As a result of the accident, the lap/shoulder-belted bus driver and one lap-belted student on the school bus sustained serious injuries; the 3 adult passengers and the other 13 students, all of whom were secured by lap belts, received minor or no injuries. The driver of the Tahoe was uninjured.

Motorcoach Tire Failure; Motorcoach Roadway Departure and Overturn, Sherman, Texas (Sherman II)

The NTSB is continuing its investigation of the 2008 Sherman, Texas, motorcoach accident involving tire failure. About 8:15 p.m. on Thursday, August 7, 2008, a 2002, 56-passenger MCI motorcoach, operated by Iguala BusMex, departed from the Vietnamese Martyrs Catholic Church in Houston, Texas, with a driver and 54 passengers on board. The chartered motorcoach was en route to the Marian Days Festival in Carthage, Missouri. Approximately 4 1/2 hours later, on Friday, August 8, 2008, the motorcoach was involved in a multiple-fatality, single-vehicle collision in Sherman, Texas.

Prior to the collision, the motorcoach had traversed a 1,600-foot-long, 2.3º right-hand curve with a 3.75-percent downgrade. It had begun traversing a 1.5º left-hand curve on a 0.4-percent upgrade when it traveled onto the Post Oak Creek Bridge. As the motorcoach came onto the bridge, it experienced failure of a right steer axle retreaded tire. The motorcoach veered to the right, overrode a 7-inch-high, 18-inch-wide concrete curb, and struck the metal bridge rail. After riding against the bridge rail for about 120 feet and displacing approximately 136 feet of rail, the motorcoach departed the roadway, fell about 8 feet, and slid approximately 24 feet on its right side before coming to rest on the inclined, earthen bridge abutment. Seventeen occupants were fatally injured. In addition, the 52-year-old driver received serious injuries, and 37 passengers received minor-to-serious injuries.

The average motorcoach is estimated to travel 50,300 miles annually, and the motorcoach industry is estimated to consume almost 500 million gallons of fuel each year.

Tractor-Semitrailer Rollover/Compromised Bridge Parapet, Annapolis, Maryland

The NTSB is continuing its investigation of the Annapolis, Maryland, Chesapeake Bay Bridge accident that occurred on August 10, 2008. About 3:55 a.m., a 1997 Chevy Camaro, occupied by the 19-year-old driver and one passenger, was traveling on the south span (referred to as the eastbound span) of the William Preston Lane, Jr., Memorial Bridge (known as the Chesapeake Bay Bridge) near Maryland's Eastern Shore when it crossed the center line. At the time of the accident, the bridge's eastbound span was configured to handle two-way traffic because of construction on the westbound span. About that time, a 1999 International tractor with refrigerated semitrailer was traveling westbound. The Camaro struck the left front bumper of the tractor and was deflected away. The left front of the Camaro then struck the truck's #3 drive axle, causing it to dislodge. The Camaro rotated away from the truck and came to rest against the bridge's south parapet. The tractor semitrailer rotated to the left and impacted the south parapet.

A 2005 Toyota Prius traveling eastbound was struck in the left side by the left rear of the semitrailer. When the truck struck the parapet, a section approximately 24 feet long was dislodged, and a 12-foot-long section separated and fell into the Chesapeake Bay. After striking the parapet, the tractor semitrailer rolled over into the Chesapeake Bay. The truck driver sustained fatal injuries. The driver of the Camaro sustained serious injuries, and the passenger in the Camaro sustained minor injuries. The two occupants of the Prius were uninjured.

Special Investigation Report on Pedal Misapplication

A highway special investigation report on pedal misapplication in heavy vehicles currently under development will include discussion of several incidents investigated by the NTSB, including the following:

School Bus Accident in Liberty, Missouri. On May 9, 2005, a school bus accident took place in Liberty, Missouri, when 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 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 collision resulted in fatal injuries to the drivers of the Lincoln and the pickup truck. Forty-eight children and the bus driver sustained injuries ranging from minor to serious.

Fire Truck Crash in Asbury Park, New Jersey. On November 22, 2006, a 2006 HME fire truck operated by a 33-year-old firefighter crashed through the bay door of the firehouse located in Asbury Park, New Jersey. Damages to the fire truck and to the firehouse were estimated at $30,000 each. No injuries were sustained as a result of this accident.

School Bus Collision in Falls Township, Pennsylvania. On January 12, 2007, in Falls Township, Pennsylvania, a full-size transit-style school bus was traveling from the east building of the Pennsbury High School campus to the west building. Ten students and the driver 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 struck a brick abutment, injuring three more students. The students' injuries ranged from minor to serious; the bus driver was not injured.

School Bus Crash in Nanuet, New York. On January 12, 2007, a 1995 Blue Bird 65-passenger, conventional-style school bus, occupied solely by a 35-year-old driver, was traveling along the Garden State Parkway in Nanuet, New York, en route to the first pickup of the morning. The driver left the parkway at exit 14-1, Old Nyack Turnpike. As the bus approached the intersection of Old Nyack Turnpike and South Pascack Road, the driver failed to make the left turn onto South Pascack Road, continued

through the intersection, and crashed into a concrete and metal bridge railing above Pascack Creek. The bus driver was seriously injured.

School Bus Incident in Newtown, Pennsylvania. On February 11, 2008, a 1995 Thomas Built 78-passenger school bus was parked parallel to the curb in the parking lot of the Newtown Friends School, in Newtown, Pennsylvania. After loading 12 students, the 61-year-old driver reported that as he placed the bus in gear and released the parking brake, the bus suddenly accelerated. The school bus traveled 98 feet across the parking lot, bypassing the exit. The driver explained that he steered the bus toward an opening between a stopped car and a school staffmember directing traffic and ascended a 5-inch-high curb onto a grassy area. The bus then traveled about 44 feet across the grassy area and turned right onto an adjacent access road. The driver reported shifting into reverse, and the vehicle came to a stop on the access road, having traveled a total of 633 feet. This incident resulted in no damage or injuries.

Public Hearings

Public Hearing on Fatal Motorcoach Accident, Victoria, Texas

On October 7 and 8, 2008, the NTSB held a public hearing at NTSB headquarters in Washington, D.C., as part of its investigation into the cause of a fatal motorcoach accident that occurred on January 2, 2008, on U.S. Route 59 near Victoria, Texas, when a northbound motorcoach carrying 47 passengers overturned and struck a guardrail. One passenger was fatally injured, and 46 passengers and the driver sustained injuries ranging from minor to serious.

The motorcoach had entered the country from Mexico and was being operated by a Houston charter bus company. The bus was registered in Texas and was displaying Texas vehicle tags. The ongoing investigation of this accident uncovered a number of complex issues concerning passenger-carrying commercial vehicles, such as motorcoaches, which do not meet U.S. safety standards yet are imported, registered, and operated in the United States. These issues were deemed to warrant additional scrutiny by the NTSB, via a public hearing process. The hearing focused on the safety aspects of the U.S. entry, registration, and operation of passenger-carrying commercial vehicles that do not comply with the *Federal Motor Vehicle Safety Standards* (FMVSS), in an effort to discover loopholes that permit the registration of noncompliant foreign vehicles.

Board Member Deborah A. P. Hersman chaired the Victoria public hearing. The Board of Inquiry was composed of the chairman, NTSB senior management, and the hearing officer. The Board of Inquiry, a technical panel composed of NTSB staff, and party representatives from the FMCSA; NHTSA; the U.S. Department of Transportation Office of the Inspector General (USDOT OIG); the U.S. Department of Homeland Security Customs and Border Protection (CBP); Volvo/Prevost Car, Inc.; the American Bus Association; the United Motorcoach Association; and IRP, Inc., questioned the hearing witnesses. Witnesses included representatives from the following organizations: the FMCSA; NHTSA; the USDOT OIG; the CBP; the State of California Department of Motor Vehicles; the State

of Texas Department of Transportation; the State of Texas Department of Public Safety; the Commercial Vehicle Safety Alliance; IRP, Inc.; and 5-Star Specialty Programs (a division of Crump Insurance Services). The three panels that composed the hearing addressed the following topics:

- Current process for checking the compliance of passenger-carrying vehicles with the FMVSS when entering the United States.
- Vehicles that are noncompliant with the FMVSS that have been registered in the United States.
- Current process or method that determines or designates whether a vehicle is FMVSS compliant.

Information obtained through the hearing will be used by the NTSB during the preparation of a final report on the Victoria, Texas, accident, including the development of safety recommendations aimed at preventing similar accidents in the future.

Key Challenges

- Completing the Minneapolis I-35W bridge collapse investigation and report required extraordinary amounts of technical and engineering research and significant staff resources. The Office of Highway Safety is challenged to accomplish its mission within the constraints of current staffing levels.
- Preparing for the Victoria, Texas, public hearing on an expedited schedule, and coordinating and conducting this complex event while concurrently planning for the Minneapolis I-35W bridge collapse Board meeting. The challenge is to maintain schedules while ensuring that investigative quality is kept at the highest level.
- Maintaining a skilled and qualified workforce, capable of effectively investigating a technologically evolving highway transportation industry, with a limited training budget. The office's challenge is to develop its current workforce to meet investigative needs, and to implement strategies to attract talented individuals to fill key positions.

Significant Achievements

- Successfully completing the technically challenging investigation of the Minneapolis I-35W bridge collapse and issuing the final report, which contained recommendations concerning bridge design and inspection that will have far-reaching impacts on the safety of steel truss bridges nationally and internationally. Both Congress and the bridge industry have acknowledged the thoroughness and technical analysis of this effort, which has been one of the NTSB's largest surface transportation accident investigations to date, involving contributions from 43 individual staffmembers, representing more than 10 percent of the agency's workforce.

- Conducting the Victoria, Texas, public hearing secured valuable information on the newly identified and complex safety challenge of U.S. entry, registration, and operation of passenger-carrying commercial vehicles that do not comply with the FMVSSs.
- Finalizing the Atlanta, Georgia, investigation and report, and issuing safety recommendations via the report that highlight HOV lane design and left exit signage issues, which—when implemented—will improve the safety of HOV lanes and left exits not only in the Atlanta area but also, eventually, throughout the United States.
- As a result of the Office of Highway Safety's continuing efforts to advance the issue of the dangers of driver distraction (highlighted in the 2006 Alexandria, Virginia, motorcoach investigation), increasing numbers of transportation companies, both passenger carrier and commercial freight, are developing and enforcing policies that prohibit their drivers from using a cell phone while operating company vehicles.
- In January 2008, during, but prior to the completion of, the I-35W Minneapolis bridge collapse investigation, the NTSB made an important safety recommendation to the FHWA to include stresses on gusset plates when conducting the load capacity calculations for all non-load-path-redundant steel truss bridges within the National Bridge Inventory. The actions taken by the FHWA in response to this recommendation immediately focused the inspection resources of State departments of transportation on a heretofore unknown problem with gusset plates and improved the process by which such bridges are inspected and assessed, enhancing the safety of steel truss bridges throughout the United States.
- Legislation, H.R. 4690, *Bluffton University Safety Act of 2007,* HR 6747, *Motorcoach Enhanced Safety Act of 2008,* and S. 2326, *Motorcoach Enhanced Safety Act of 2007,* was introduced in the House and Senate to improve passenger safety on buses and motorcoaches. The development of this bill was directly influenced by the safety recommendations the NTSB made in connection with the Atlanta, Georgia; Wilmer, Texas; and 1999 bus crashworthiness study accident investigations.

Marine Safety

MS — 2008 At A Glance	
Number of Employees:	HQ: 16
Major Reports and Products Adopted by the Board:	3
Major Accident Launches:	3
Other Accident Launches:	4 Field Investigations
Recommendations Issued:	8
Recommendations Closed:	10

In 2008, the 16 members of the Office of Marine Safety initiated five new accident investigations, completed three reports, and continued work on one accident investigation.

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 2008, no overseas major marine accidents involving U.S.-registered ships were investigated by the NTSB. The NTSB also investigates marine accidents involving foreign-registered vessels operating in U.S. waters. Two of the three marine accident reports adopted in 2008 involved foreign- registered ships, as did two of the five new accidents investigated in 2008. NTSB also cooperates with foreign marine accident investigation authorities under guidelines established by the International Maritime Organization (IMO).

Map showing Marine Launches During 2008

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 NTSB 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 2008, the Office of Marine Safety had 12 positions for investigators. In 2008, four new investigators were hired.

On December 19, 2008, the NTSB Acting Chairman and the Commandant of the United States Coast Guard signed a Memorandum of Understanding (MOU) regarding marine casualty investigations. This MOU supersedes the previous one, which was signed on September 12, 2002. The Coast Guard and the NTSB share many responsibilities concerning marine accident investigations and maritime safety, and the new MOU clarifies the roles of the two agencies when both investigate the same marine accident. The MOU also identifies additional areas of cooperation, such as training, where efficiencies can be gained by working together.

The Office of Marine Safety has played a significant role in two International Maritime Organization (IMO) undertakings: The development of the marine casualty code and the revision of the Standards of Training, Certification and Watchkeeping for Seafarers.

Completed 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, who was 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 to a maximum angle of about 24°, resulting in 14 serious and 284 minor injuries to passengers and crewmembers.

Safety issues that were investigated in the accident were actions of the second officer, the captain, and staff captain; training in the use of integrated navigation systems; reporting of heeling incidents and accidents; and emergency response following severe incidents.

The Board determined that the probable cause of the *Crown Princess* accident was the second officer's incorrect wheel commands, executed first to counter an unanticipated high rate of turn and then to counter the vessel's heeling. Contributing to the cause of the accident were the captain's and staff captain's inappropriate inputs to the vessel's integrated navigation system while the vessel was traveling at high speed in relatively shallow water, their failure to stabilize the vessel's heading fluctuations before leaving the bridge, and the inadequate training of crewmembers in the use of integrated navigation systems. The Board adopted the report on January 30, 2008, and issued five recommendations.

There are more than 26,000 miles of navigable water channels in the United States.

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 at Baton Rouge, Louisiana. 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 and no pollution resulted from the allision.

Safety issues that were investigated included the pilot's actions, pilotage oversight, and postaccident alcohol testing.

The Board determined that the probable cause of the *Kition* allision was the pilot's attempt to execute the high-risk maneuver of turning at the dock immediately above the bridge rather than moving the vessel downriver through the bridge before turning or taking it well upriver, then turning. The Board adopted the report on August 12, 2008, and issued three recommendations.

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 and had the conn. 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.

Improved safety and other factors have resulted in a 21% reduction in recreational boating fatalities between 1990 and 2007.

Safety issues that were investigated included 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.

The Board determined that the probable cause of the grounding of the *Empress of the North* was the failure of the officer of the watch and the helmsman to navigate the turn at Rocky Island, which resulted from the master's decision to assign to the midnight-to-0400 watch an inexperienced, newly licensed deck officer who was not familiar with the route, the vessel's handling characteristics, or the equipment on the vessel's bridge. The Board adopted the report on November 4, 2008, and issued four recommendations.

Ongoing Marine Accident Investigations

Allision of Tankship M/T **Axel Spirit** *with Ambrose Light, 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 at the entrance to New York

Harbor. All three legs and the central column of the tower were damaged beyond repair and Ambrose Light was subsequently removed. Construction of a new tower would have cost $10 million and was deemed unnecessary, given modern onboard technology. Instead of a tower, lighted buoys were installed.

Safety issues in this accident included inadequate planning for the transit past Ambrose Light; inadequate bridge team communication during the approach to Ambrose Light; and failure to promptly report the allision and test for alcohol.

The Office of Marine Safety has participated in discussions of current safety issues at meetings of the intergovernmental Marine Accident Investigators International Forum.

Allision of Containership M/V **Cosco Busan** *with the San Francisco–Oakland Bay Bridge*

On November 7, 2007, in dense fog, the 901-foot containership M/V *Cosco Busan*, registered in Hong Kong, allided with the fendering system at the base of the Delta support tower 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, South Korea. A San Francisco bar pilot was navigating the ship. The accident was initially reported to have caused only a small oil spill, but revised estimates showed that the *Cosco Busan* released about 53,500 gallons of bunker oil into the bay. The resulting damage was over $2 million to the ship, $1.5 million to the bridge fendering system, and over $70 million for the environmental cleanup.

Safety issues in this accident included medical oversight of the *Cosco Busan* pilot; medical oversight of mariners in general; guidance for vessel traffic service operators in exercising authority to manage traffic; procedures for improving the assessment of oil spills in California waters; and training and oversight of the *Cosco Busan* crew.

Allision of Tankship M/V **Orange Sun** *with Dredge* **New York** *Newark Bay, New Jersey*

On January 24, 2008, the orange juice tankship M/V *Orange Sun* allided with the spudded-down dredge *New York* while the tanker was outbound in Newark Bay. The *Orange Sun* was under the navigational control of a local pilot who had not been informed of the ship's unusual steering characteristics. The vessel's master was aware of the steering anomaly but did not alert the pilot. The damage was about $6 million to the dredge and about $330,000 to the tankship.

Safety issues identified in this accident include bridge resource management procedures, specifically the lack of effective communication between master and pilot, and poor oversight of the helmsman by supervisors.

Sinking of U.S. Fishing Vessel M/V **Alaska Ranger**, *Bering Sea, West of Dutch Harbor, Alaska*

On March 23, 2008, the U.S. commercial fishing vessel *Alaska Ranger* sank about 120 nautical miles west of Dutch Harbor, Alaska, after taking on water in the rudder room. The vessel was carrying 45 crewmembers and 2 observers from the National Marine Fisheries Service. Four crewmembers were found dead and a fifth crewmember was found.

Safety issues in this accident pertain to the material condition of the vessel, the survivability of the accident, the actions of the ship's officers, and oversight of U.S. commercial fishing vessels.

Office of Marine Safety advocacy with the National Association of Boating Law Administrators contributed to the association's revision of its Charter Vessel Model Act to more closely match Coast Guard requirements for small passenger vessels following the October 2, 2005, capsizing of the New York state-certificated vessel Ethan Allen with the loss of 20 lives.

Fire on Board U.S. Passenger Vessel **Queen of the West** *Maryhill, Washington*

On April 8, 2008, the 221-foot-long paddlewheel vessel *Queen of the West* experienced an engineroom fire while on a 7-day river cruise between Astoria, Oregon, and Lewiston, Idaho. The vessel was carrying 124 passengers and 53 crewmembers. The *Queen of the West* was not required by regulations to carry installed fire detection and extinguishing systems but did so anyway, which greatly aided the crew in putting the fire out. No injuries or pollution resulted from the accident. The fire damage to the vessel was nearly $4 million.

The Office of Marine Safety led a 1 1/2-day training class for marine executives.

Safety issues identified in this accident include fire detection and extinguishing systems on board small passenger vessels and ventilation damper closure hardware.

Collision Between Passenger Ferry **Block Island** *and Coast Guard Cutter* **Morro Bay**, *Rhode Island Sound, Rhode Island*

On July 2, 2008, the passenger ferry *Block Island* and the Coast Guard cutter *Morro Bay* collided in dense fog on Rhode Island Sound. The ferry was traveling from Point Judith, Rhode Island, to the eastern end of Block Island and was carrying 295 passengers, 8 crewmembers, and 2 concession stand employees. The cutter was en route from Newport, Rhode Island, to New London, Connecticut. Both vessels were able to slow down and divert to prevent a hard impact, but the ferry's bow collided with the cutter's starboard side, sustaining about $46,000 in damage to the ferry and about $15,000 in damage to the cutter. No injuries resulted from the accident.

Safety issues identified in this investigation include safe speed in reduced visibility and ineffective use of the radars on board both vessels.

Sinking of F/V **Katmai** *in the Bering Sea West of Adak, Alaska*

On October 22, 2008, the 73-foot-long fishing vessel *Katmai*, carrying 11 crewmembers, was returning to Dutch Harbor, Alaska, when the vessel lost steering and the crew discovered that the steerage and enginerooms were flooded. The vessel then listed to starboard and the crew abandoned ship. Four crewmembers survived and seven died, two of whom were never found.

Safety issues identified in this accident include lack of stability regulations for commercial fishing vessels less than 79 feet in length, adequacy of Coast Guard statutory oversight authority, vessel-to-shore communications from remote fishing areas, actions of the master, fatigue, and management oversight of vessel condition and operations.

Public Hearings

Public Hearing – M/V **Cosco Busan** *Allision*

The M/V *Cosco Busan*, a 901-foot long containership, struck the fendering system of one of the support piers of the San Francisco–Oakland Bay Bridge in heavy fog on November 7, 2007. The allision spilled 53,500 gallons of heavy fuel oil into the bay, killing more than 2,500 birds and fouling over 26 miles of shoreline. A public hearing on the accident was held on April 8 and 9, 2008, at NTSB headquarters to interview the ship's crewmembers, the vessel pilot, Coast Guard officers, California officials, pilot associations, operating company representatives, and other experts. Although the Board had issued subpoenas to the witnesses, some of them declined to testify because of pending criminal investigations against them as a result of the accident. Issues explored at the hearing included the *Cosco Busan*'s bridge navigation equipment, the ship's safety management system, Coast Guard vessel traffic services in San Francisco, notification and response to the oil spill, and oversight of pilots.

Key Challenges

- The Office of Marine Safety is challenged to accomplish our mission within the constraints of current staffing and skill levels. The Office of Marine Safety has hired four investigators in the previous year and is planning to hire an additional one in the current year, resulting in the need to bring several investigators to

journeyman status at the same time. In addition, the challenge is to develop our current workforce to take future leadership positions and to implement strategies to attract talented individuals to fill these positions.

Significant Achievements

- M/V *Crown Princess* investigation completed successfully, including the addressing of issues of complex vessel dynamics, maneuverability, and human factors related to automated navigation.
- The Office of Marine Safety conducted a public hearing and completed the investigation of the *Cosco Busan* accident, a complex and highly visible marine accident, within 15 months from the accident date, despite many obstacles presented by this complex case.
- The Office of Marine Safety participated in discussions that resulted in a new (December 19, 2008) U.S. Coast Guard–NTSB Memorandum of Understanding on Accident Investigations, broadening areas of cooperation and revising criteria for investigating marine accidents in U.S. waters.
- The Office of Marine Safety's participation in the Coast Guard's Marine Board of Investigation into the *Alaska Ranger* sinking helped to focus on aspects of the propulsion system and their effects on accident survivability.
- The Coast Guard revised its medical system in response to recommendations to require licensed pilots to provide proof of compliance with Coast Guard medical certification requirements issued as a result of the *Andrew J. Barberi* (Staten Island ferry) investigation.
- As a result of a recommendation arising from the *Lady D* investigation, the Coast Guard revised the passenger weight standards used to determine vessel stability. The Coast Guard published a notice of proposed rulemaking (NPRM) on passenger weight and inspected vessel stability requirements. The NTSB submitted comments on the NPRM to the Cost Guard docket on November 18, 2008, and stated that the proposed rule for increased assumed passenger weight that would be used in stability tests and calculations is responsive to its safety recommendation.
- Several state maritime academies have introduced lessons learned from the *Empress of the North* accident as a result of a recommendation to the academies to teach students the circumstances of the accident, including their responsibility as newly licensed officers.

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.

RPH — 2008 At A Glance	
Number of Employees:	HQ: 25 Regional: 11
Major Reports and Products Adopted by the Board:	2 Railroad Major Reports, 7 Railroad Briefs 1 Pipeline Report 1 HazMat Report (Rail)
Major Accident Launches:	4 Railroad 2 Pipeline 1 HazMat (Marine)
Other Accident Launches:	4 Railroad Field
International Accident Assistance	1 Aviation (HazMat—Quantas Airlines)
Recommendations Issued:	14
Recommendations Closed:	7 Railroad 6 Pipeline 2 Intermodal

In 2008, the Office of Railroad, Pipeline and Hazardous Materials Investigations had 36 staffmembers.

Class 1 Freight railroads own and maintain their own infrastructure, including 161,114 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 37 million carloads each year, including more than 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 agency analyzes selected rail accidents in depth, determining the probable cause 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 NTSB has established accident investigation criteria that help highlight accidents that involve significant safety issues.

Map showing Railroad/Pipeline Launches During 2008

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.

Completed Significant Railroad Investigations

Washington Metropolitan Area Transit Authority Train Struck Wayside Worker in Washington, D.C.

On May 14, 2006, a southbound Washington Metropolitan Area Transit Authority (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. According to signal system data logs, the southbound train was moving about 40 mph as it traveled past the interlocking. The Board determined that the probable cause of the accident was the failure of the automatic train control system (senior) mechanic to stay clear of the approaching southbound train either because he was not aware of the presence of the train or because he lacked a physical reference by which to identify a safe area outside the train's dynamic envelope. Contributing to the accident were WMATA Metrorail right-of-way rules and procedures that did not provide adequate safeguards to protect the wayside personnel from approaching trains, that did not ensure that train operators were aware of wayside work being performed, and that did not adequately provide for reduced train speeds through work areas. Also contributing to the accident was the lack of an aggressive program of rule compliance testing and enforcement on the Metrorail system. The Board adopted the report on January 23, 2008.

The Office of Railroad, Pipeline and Hazardous Materials Investigations launched on 11 accidents, completed 10 accident reports, and continued work on 17 open investigations.

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 killed 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. The Board determined that the probable cause of the accident was the failure of the walking track inspectors to maintain an effective lookout for trains and the failure of the train operator to slow or stop the train until she could be certain that the workers ahead were aware of its approach and had moved to a safe area. Contributing to the accident were WMATA Metrorail right-of-way rules and procedures that did not provide adequate safeguards to protect wayside personnel from approaching trains, that did not ensure that train operators were aware of the wayside work being performed, and that did not adequately provide for reduced train speeds through work areas. Also contributing to the

accident was the lack of an aggressive program of rule compliance testing and enforcement on the Metrorail system. The Board adopted the report on January 23, 2008.

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 Massachusetts Bay Commuter Railroad struck a track maintenance vehicle that was on the track near Woburn, Massachusetts. The track maintenance vehicle was thrown forward about 210 feet; the train did not derail. Of the six maintenance-of-way 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. As a result of the accident, 160 feet of rail, 80 crossties, and 100 tons of ballast had to be replaced. The cost, including labor, was $15,841. The accident damaged the lead control car and undercarriage of the train. Repairing the train cost an estimated $450,000. The track maintenance vehicle was destroyed; replacing it cost $95,000. Total estimated property damage was $560,841. The Board determined that the probable cause of the collision was the failure of the train dispatcher to maintain blocking that provided signal protection for the track segment occupied by the maintenance-of-way work crew, and the failure of the work crew to apply a shunting device that would have provided redundant signal protection for their track segment. Contributing to the accident was Massachusetts Bay Commuter Railroad's failure to ensure that maintenance-of-way work crews applied shunting devices as required. The Board adopted the report on March 18, 2008.

Derailment of Norfolk Southern Railway Company Train in New Brighton, Pennsylvania

On October 20, 2006, a Norfolk Southern Railway Company train, en route from the Chicago, Illinois, area 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, with several of the cars falling into the Beaver River. Of the 23 derailed tank cars, about 20 released ethanol, which subsequently ignited and burned for about 48 hours. Some of the unburned ethanol liquid was released into the river and the surrounding soil. Homes and businesses within a seven-block area of New Brighton and in an area adjacent to the accident were evacuated for 2 days. No injuries or fatalities resulted from the accident. The Norfolk Southern Railway Company estimated total damages to

be $5.8 million. The Board determined that the probable cause of the derailment was the Norfolk Southern Railway Company's inadequate rail inspection and maintenance program that resulted in a rail fracture from an undetected internal defect. Contributing to the accident were the FRA's inadequate oversight of the internal rail inspection process and its insufficient requirements for internal rail inspection. The Board adopted the report on May 13, 2008.

Commuter Train Highway-Railroad Grade Crossing Accident in Elmwood Park, Illinois

On November 23, 2005, in Elmwood Park, Illinois, a traffic queue formed within the 366-foot-wide signaled highway-railroad grade crossing on eastbound West Grand Avenue. At the same time, Northeast Illinois Regional Commuter Railroad (METRA) train 107 was approaching the crossing on the westbound tracks at a speed of 70 mph. The crossing lights activated, and the crossing gates lowered 54 seconds before the train arrived. Some stopped vehicles were trapped within the grade crossing. As the train approached the crossing, the engineer recognized the hazard and put the train into emergency braking. The train was unable to stop before colliding with approximately 6 of the stopped vehicles, pushing them into secondary impacts with 12 other vehicles. Seven automobile occupants received minor-to-serious injuries, and 3 of the approximately 400 train passengers reported minor injuries. The impact destroyed 6 vehicles, and 12 vehicles had minor-to-extensive damage. The Board determined that the probable cause of the accident was a combination of factors that led to the development of a traffic queue on the West Grand Avenue highway-rail grade crossing and prevented queued vehicles from exiting the crossing prior to the arrival of a METRA train: the factors were the acute angle of intersection between West Grand Avenue and the railroad tracks, which resulted in an exceptionally wide grade crossing; the unusually heavy vehicle traffic that preceded the Thanksgiving holiday; and the complex street and rail pattern and related signal interactions between Harlem Avenue and the West Grand Avenue grade crossing, which frequently desynchronized the traffic signals along West Grand Avenue during peak travel times. The Board adopted the report on June 10, 2008.

The Office of Railroad, Pipeline and Hazardous Materials Investigations issued 14 safety recommendations in 2008 to help contribute to industry safety.

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

On July 1, 2006, southbound Southeastern Pennsylvania Transportation Authority (SEPTA) passenger train 1143 collided head on with standing northbound SEPTA train 1134 near Abington, Pennsylvania. The southbound train was traveling about 11 mph when it struck the 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; three of them were admitted. Total property damage was about $179,700. The Board determined that the probable cause of the collision was the failure of the engineer on southbound train 1143 to comply with the wayside signals and stop the train on the main track at the Grove South Control Point. Contributing to the accident was the lack of a functioning cab signal system with automatic train control enforcement. Also contributing to the accident was a dispatcher

computer alarm system that did not adequately alert the train dispatcher to the overrun signal. The Board adopted the report on June 17, 2008.

Collision of Two Union Pacific Railroad Trains near Bertram, California

On November 10, 2007, eastbound Union Pacific Railroad (UP) freight train RVVCGC-07 struck the rear end of stopped eastbound UP freight train IGSMN-10 in Bertram, California. The striking train consisted of 6 locomotives and 60 loaded cars and was traveling about 28 mph when it collided with the stopped train, which consisted of 5 locomotives and 111 loaded cars. The stopped train was awaiting a scheduled meet with a westbound UP freight train when the accident occurred. As a result of the collision, the striking train's three lead locomotives derailed; they also caught fire due to a fuel tank that ruptured on impact. The local fire department extinguished the fire. The two crewmembers on board the striking train were killed. Total estimated damage was $2 million. The Board determined that the probable cause of the collision was the failure of the train crewmembers on the eastbound train to comply with wayside signal indications because they were likely asleep. Contributing to the accident was the lack of a positive train control system. The Board adopted the report on September 8, 2008.

Positive Train Control (PTC) is now legislatively required after 18 years on the NTSB's Most Wanted List.

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

On March 12, 2007, a CSX train, a mixed freight train, derailed near Oneida, New York. The train was en route from Buffalo, New York, to Selkirk, New York. At the time of the derailment, the train was traveling about 47 mph. The train consisted of 3 locomotives and 78 cars. Twenty-nine cars derailed. Six tank cars were breached, including four carrying liquefied petroleum gas, one carrying toluene, and one carrying ferric chloride. An explosion and fire followed that led local emergency response officials to close two elementary schools and evacuate a 1-mile area around the derailment site. Four firefighters were taken to a hospital for observation as a precaution because they had stepped in a pool of ferric chloride. There were no fatalities. Estimated damages and environmental cleanup costs were $6.73 million. The Board determined that the probable cause of the derailment and subsequent release of hazardous material was the failure of the rail from an undetected detail fracture that initiated from an area of shelling on the rail. The Board adopted the report on September 30, 2008.

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

On October 13, 2006, a UP switching brakeman was struck and killed by three coupled railroad cars at the UP's Watsonville Junction Yard in Pajaro, California. The brakeman had been assigned to a two-person crew (one brakeman, one conductor), which was a regular weekday assignment. Their assignment was to switch railroad cars using a remote-controlled locomotive. The Board determined that the probable cause of the UP brakeman being struck and killed was the brakeman's decision to board moving equipment. Contributing to the accident was the crew's failure to properly follow the UP's speed restrictions when switching cars. The Board adopted the report on December 5, 2008.

BNSF Railway Company Switchman Struck by Train During Remote-Control Switching Operations in Stockton, California

On August 30, 2007, a westbound BNSF Railway Company (BNSF) train, consisting of a locomotive and two cars, was being remotely controlled when it collided with the side of a standing tank car that was fouling a crossover between two tracks at BNSF's Mormon Yard in Stockton, California. A helper, who was remotely controlling the moving train, had been riding the side ladder on the leading end of a covered hopper car. When the hopper car collided with the tank car, the helper was killed. The Board determined that the probable cause of the collision between the BNSF yard train and standing rail cars at the crossover was the remote control foreman's failure to ensure that the crossover was not fouled when he lined switches to allow the helper to move the remotely controlled train through the crossover. Contributing to the accident was the yard trainmaster's failure to inform the remote control crew that a local train crew had left rail cars on track 132 that were not clear of the crossover. Contributing to the severity of the accident was the remote control helper's position on a side ladder of the train's leading rail car as he was controlling the train through the crossover. The Board adopted the report on December 5, 2008.

There are over 161,000 miles of Class 1 freight railroad tracks.

Ongoing Rail Investigations

Passenger Falls Between Train and Platform on Long Island Rail Road 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.

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 Union Pacific 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 Union Pacific conductor-pilot were on board. Two Harsco employees were killed. A fire began after the derailment. Property damages are estimated to be $14.7 million.

CSX Freight Train Derailment of Hazardous Materials/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. Emergency responders evacuated everyone within a 1-mile radius; as a precautionary measure, a school evacuated approximately 400 students. Approximately 25 residents were treated and released at local hospitals; no railroad employees were injured.

Approximately 97% of the 21,708 miles of trackage on which Amtrak operates is owned by freight railroads.

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

On October 10, 2007, an eastbound CSX 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 rising up from the middle of the train. Some of the derailed cars contained hazardous materials. There were 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 the evacuation of about 14,000 area residents 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. Damage exceeded $1.5 million.

Collision of Amtrak Passenger Train with Norfolk Southern Railway Company Freight Train near Chicago, Illinois

On November 30, 2007, near Chicago, Illinois, an Amtrak passenger train struck the rear end of a Norfolk Southern Railway Company 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.

Track Foreman and Contractor Struck by Amtrak Passenger Train in Providence, Rhode Island

On March 13, 2008, an eastbound Amtrak Acela passenger train en route from New York, New York, to Boston, Massachusetts struck two members of a four-person roadway work group. The accident occurred in Providence, Rhode Island. The roadway work group consisted of a track foreman, two trackmen, and a contractor hired to evaluate concrete ties. Of the two struck men, one was killed and the other was seriously injured.

Yard Foreman Struck by CSX Freight Car in Walbridge, Ohio

On April 1, 2008, a yard foreman at Stanley Yard in Walbridge, Ohio, was severely injured when he was struck by a free-rolling freight car. He had been too close to an adjacent yard track when he was struck. He lost his left arm and a portion of his left shoulder and sustained injuries to his head, face, and lungs. He survived the incident and underwent post-surgical rehabilitation.

Derailment of Chicago Transit Authority Passenger Cars on Elevated Track in Chicago, Illinois

On May 28, 2008, a southbound Chicago Transit Authority Green Line train, traveling from the 55th Street Station to the Cottage Grove/East 63rd Station derailed on an elevated track in Chicago, Illinois. The train was traveling about 25 miles per hour when it derailed. Three of the train's four cars derailed. Emergency responders evacuated most passengers to track level and then to a stairway leading to the street level. The Chicago Fire Department (CFD) removed some passengers from the train. The CFD reported that 14 of the 24 passengers on the train had minor injuries.

Rear-end Collision on Massachusetts Bay Transportation Authority Transit in Newton, Massachusetts

On May 28, 2008, a westbound Massachusetts Bay Transportation Authority (MBTA) light rail train, traveling about 38 mph collided with the rear of a westbound MBTA light rail train in Newton, Massachusetts. Each train consisted of two articulated passenger cars. On each train, an operator ran the train from a forward position in the lead car and a trail operator was in the second car. The MBTA estimated that the two trains were carrying between 185 and 200 passengers. The lead car of the striking train was derailed during the collision and sustained substantial damage. The operator of the striking train was killed, and three other crewmembers sustained minor injuries. Five passengers were injured. One of the passengers was seriously injured and was airlifted to a local hospital. The damage was estimated at $8.6 million.

Collision of a Southern California Regional Rail Authority (Metrolink) Passenger Train with a Union Pacific Railroad Freight Train near Chatsworth, California

On September 12, 2008, a westbound Southern California Regional Rail Authority (Metrolink) passenger train and an eastbound UP freight train collided head-on near Chatsworth, California. The Metrolink train derailed its locomotive and lead passenger car; the UP train derailed 2 locomotives and 10 cars. As a result of the collision, the Metrolink locomotive was shoved about 50 feet into the lead passenger car. Emergency response agencies reported that 102 injured persons were transported to local hospitals. There were 25 fatalities. Damage is estimated at $10.6 million.

The Office closed 15 safety recommendations in 2008 (7 Railroad, 6 Pipeline, 1 Intermodal Pipeline, and 1 Intermodal Hazardous Materials).

Southern California Regional Rail Authority (Metrolink) Passenger Train in Raking Collision with BNSF Railway Company Freight Train near Rialto, California

On November 20, 2008, an eastbound Metrolink passenger train collided with a westbound BNSF freight train near Rialto, California. The Metrolink train consisted of 1 locomotive and 4 passenger cars; the BNSF train consisted of 4 locomotives (2 in the front of the train, and 2 at the rear of the train) and 92 freight cars. The westbound BNSF train was entering a siding from a single main track. The Metrolink train slowed, but did not stop, and the corner of the Metrolink locomotive raked the side of the six BNSF cars and two rear locomotives as they moved into the siding. Three of the 15 passengers on the Metrolink train were transported to a hospital, but their injuries were not serious.

Transit Shuttle Train Strikes Wall at Miami International Airport

On November 28, 2008, a shuttle train, operating on a concourse guideway, failed to stop at the passenger platform and struck the wall at the end of the guideway in Miami International Airport near Miami, Florida. The three-unit train is a self-propelled, rubber-tired, automated people-mover vehicle. The train is designed to operate in an unmanned automatic mode, but it also has operating control panels at each end that a technician can use to move it in manual mode, if necessary. A technician assigned to monitor the train's operations was in the lead car, and the train was in automatic mode at the time of the accident. The technician and five passengers were injured. A person waiting on the platform also was injured.

There are nearly 2.5 million miles of gas and hazardous liquid pipelines in the United States.

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 2007, the Pipeline and Hazardous Materials Safety Administration (PHMSA) reported that the United States had approximately 2.32 million miles of natural gas pipeline. PHMSA also reported that transmission pipeline companies operated 300,932 miles of pipeline, while 1,344 distribution pipeline operators had about 1,200,987 miles of mainline and 814,819 miles of service line. In addition, 333 hazardous-liquid pipeline operators managed approximately 168,462 miles of hazardous-liquid pipelines.

In 2008, gas distribution operators reported 149 incidents, which, in total, caused 61 injuries, 7 fatalities, and property damage of more than $58.4 million. Gas transmission operators reported 137 significant incidents that caused 7 injuries and property damage of about $302 million. Hazardous liquid operators reported 130 significant accidents that caused 2 injuries, 2 fatalities, and $110 million of property damage. About 5.3 million gallons of product were spilled, resulting in a net loss of 4 million gallons.

Completed Significant Pipeline Investigations

Natural Gas Distribution Line Break and Subsequent Explosion and Fire in Plum Borough, Pennsylvania

On March 5, 2008, a natural gas explosion destroyed a residence in Plum Borough, Pennsylvania, killing a man and seriously injuring a 4-year-old girl. Two other houses were destroyed, and 11 houses were damaged. Property damage was $1 million. The Board determined that the probable cause of the leak, explosion, and fire was excavation damage to the 2-inch natural gas distribution pipeline that stripped the pipe's protective coating and made the pipe susceptible to corrosion and failure. The Board adopted the report on November 21, 2008.

The Office of Railroad, Pipeline and Hazardous Materials Investigations provided written responses to five NPRMs from the U.S. DOT (two pipeline, and three HazMat) in 2008.

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.

House Explosion Caused by Natural Gas Release From Main/Service Line in Rancho Cordova, California

On December 24, 2008, an explosion and fire caused by a natural gas leak destroyed a residence in Rancho Cordova, California. One person was killed, and five people, including one utility employee and one firefighter, were hospitalized. Two homes adjacent to the destroyed home were severely damaged, and several homes sustained minor damage.

Hazardous Materials Safety

Chemicals affect every sector of the economy and are essential to the nation's standard of living because they are vital to the production of products such as synthetic fabrics, medicines, packaging materials, and paints. In 2008, the American Chemistry Council reported an increase of more than 14.2 percent in chemical production volume between 2002 and 2007. The Council also reported that 5.7 million jobs in the United States are generated by the chemical industry (868,700 jobs are directly created by the industry, and 4.8 million jobs are indirectly created by the industry).

In December 2008, the Bureau of Transportation Statistics published its preliminary *2007 Commodity Flow Survey,* which shows shipment characteristics by industry. According to this preliminary report, the chemical manufacturing industry was responsible for more than 557 million tons of shipments; the petroleum and coal products manufacturing industry and the plastics and rubber products industry were responsible for more than 1.8 billion and 72 million tons of shipments, respectively.

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 19,257 incidents involving the release of hazardous materials. The incidents resulted in 10 fatalities, 220 injuries, and $71.6 million in damage. The number of reported incidents, fatalities, and injuries fluctuates from year to year. During the 10 years between 1998 and 2007, the transportation modes annually averaged 16,910 hazardous material incidents, involving 14 deaths and 283 injuries. Reported damage has also fluctuated but displayed a significant upward trend during the 10 years from 1998 to 2007. The $71.6 million in reported damage for 2007 is about a 55 percent increase from the $46.3 million in damage 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 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 carrying about 250 cylinders of flammable acetylene gas overturned on Interstate 10, releasing the acetylene gas. As a result of the accident, the released acetylene ignited. Several cylinders struck five nearby vehicles. No one was killed, but the truck driver sustained minor injuries. No evacuation was required; however, the highway was closed for about 10 hours following the accident.

Hazardous Materials Support of Completed Investigations in Other Modes

In 2008, the NTSB's Hazardous Materials investigative staff helped complete two railroad accident investigations.

Derailment of Norfolk Southern Railway Company Train in New Brighton, Pennsylvania

On October 20, 2006, a Norfolk Southern Railway Company train, en route from the Chicago, Illinois, area 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, with several of the cars falling into the Beaver River. Of the 23 derailed tank cars, about 20 released ethanol, which subsequently ignited and burned for about 48 hours. Some of the unburned ethanol liquid was released into the river and the surrounding soil. Homes and businesses within a seven-block area of New Brighton and in an area adjacent to the accident were evacuated for 2 days. No injuries or fatalities resulted from the accident. The Norfolk Southern Railway Company estimated total damages to be $5.8 million. The Board determined that the probable cause of the derailment was the Norfolk Southern Railway Company's inadequate rail inspection and maintenance program that resulted in a rail fracture from an undetected internal defect. Contributing to the accident were the FRA's inadequate oversight of the internal rail inspection process and its insufficient requirements for internal rail inspection. The Board adopted the report on May 13, 2008.

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

On March 12, 2007, a CSX train, a mixed freight train, derailed near Oneida, New York. The train was en route from Buffalo, New York, to Selkirk, New York. At the time of the derailment, the train was traveling about 47 mph. The train consisted of 3 locomotives and 78 cars. Twenty-nine cars derailed. Six tank cars were breached, including four carrying liquefied petroleum gas, one carrying toluene, and one carrying ferric chloride. An explosion and fire followed that led local emergency response officials to close two elementary schools and evacuate a 1-mile area around the derailment site. Four firefighters were taken to a hospital for observation as a precaution because they had stepped in a pool of ferric chloride. There were no fatalities. Estimated damages and environmental cleanup costs were $6.73 million. The Board determined that the probable cause of the derailment and subsequent release of hazardous material was the failure of the rail from an undetected detail fracture that initiated from an area of shelling on the rail. The Board adopted the report on September 30, 2008.

Hazardous Materials Support of Ongoing Investigations in Other Modes

Allision of Container Ship M/V **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 M/V *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 about 53,500 gallons of bunker oil into the San Francisco Bay. The oil spill affected and threatened many environmentally sensitive sites and endangered species 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.

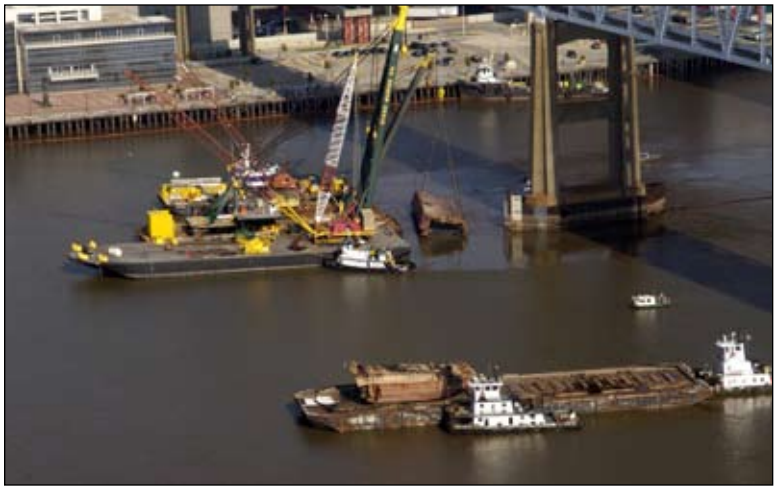
Derailment of CSX Train with Hazardous Materials/Fire near Shepherdsville, Kentucky

On January 16, 2007, a CSX train derailed 25 tank cars, 12 of which contained hazardous materials, near Shepherdsville, Kentucky. Of the 12 tank cars, 1 had only a residue of chlorine, but the other 11 cars were fully loaded. Of the fully loaded cars, four contained butadiene (a flammable gas) and one contained 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; as a precautionary measure, 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.

Collision of Chemical Tank Ship and Tank Barge on Lower Mississippi River in New Orleans, Louisiana

On July 23, 2008, the chemical tank ship M/T *Tintomara*, collided with the tank barge DM-932, which was being towed by the tug *Mel Olive*r on the Lower Mississippi River in New Orleans, Louisiana. About 282,828 gallons of fuel oil were released from the tank barge, which had been nearly split in half. As a result of the collision, a safety zone was imposed along about 100 miles of the lower Mississippi River, which halted traffic through this major commercial shipping channel for 6 days. The oil spill affected and endangered many environmentally sensitive sites along the lower Mississippi River in the jurisdictions of Jefferson, Orleans, Plaquemines, and St. Bernard Parishes.



Key Challenges

- The Office of Railroad, Pipeline and Hazardous Materials has limited resources to conduct investigations, and at the same time needs to address a significant accident investigation workload. As such, The Office is challenged to accomplish its mission within the constraints of current staffing levels.
- Maintaining staff's level of expertise and staying current with industry's improvements and technological advances in an environment of scarce training resources. The office's challenge is to develop its current workforce to meet investigative needs, and to implement strategies to attract talented individuals to fill key positions.
- A key challenge is to stay abreast of issues through technical committee work and to continue to engage in important outreach activities, all while travel resources continue to be scarce.

Significant Achievements

- The passage of the Rail Safety Improvement Act of 2008 resulted in new requirements for positive train control systems on the nation's railroads, emergency escape breathing apparatus requirements, limits on train crew waiting time and human fatigue management programs for railroad employees. (Also see the "Examples of Successfully Implemented Safety Recommendations" in the Safety Recommendations and Advocacy section of this report.)
- A Federal requirement that restricts the usage of cellular telephones in locomotive cabs was implemented, as recommended by the NTSB.
- New alcohol and drug testing requirements for railroad maintenance-of-way employees were included in the Rail Safety Improvement Act of 2008.
- The Federal Aviation Administration and Pipeline and Hazardous Materials Safety Administration sponsored public education programs addressing the safe shipment of lithium batteries.

Research and Engineering

RE — 2008 At A Glance	
Number of Employees:	HQ: 41 Regional: 1
Major Reports and Products Adopted by the Board:	1 Major Report -- 2004 Report on General Aviation Accident Data
Major Accident Launches:	13
International Accident Assistance	1
Recommendations Issued:	Developed 12 of the 86 Aviation Recommendations
Vehicle Recorder Laboratory Readout Reports:	252
Materials Laboratory Examination Reports	172
Vehicle Performance Reports	51

In 2008, the Office of Research and Engineering's 42 staffmembers developed 12 recommendations.

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 2008, 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, RE staffmembers are collaborating with the Federal Aviation Adminstration (FAA) on the use of text mining to facilitate research of the vast amount of textual material associated with aviation accident investigations. Staffmembers 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. In addition, staff from the Vehicle Performance Division met with the U.S. Navy NAVAIR team responsible for aircraft performance issues in U.S. Navy accident investigations to exchange information about technology, software, hardware, and methodologies.

In railroad safety, RE staff worked with the Federal Railroad Administration (FRA) and with engineers from the University of Illinois at Chicago (UIC), the Volpe Center, and ENSCO, Inc., on the UIC's railroad simulation program to ensure that the final product will be an effective tool for railroad accident investigations. In addition, work continued on the RailPlus software module, which is planned as an enhancement to the CIDER event recorder readout software. For the Chatsworth, California, rail investigation, RailPlus was used to determine the position of the locomotive each time a text message was sent or received; this information was then used to produce an animation of the event.

In marine safety, RE recorder staff has continued to collaborate with the United Kingdom's Marine Accident Investigation Branch to develop software tools for voyage data recorder (VDR) analysis. RE staffmembers also expanded use of its new kinematics

parameter extraction capability, which had been used in aviation investigations only, into marine investigations. The software, which quantifies the difference between actual movements of the ship as recorded by the VDR and expected movements as indicated by simulations, was used in the *Crown Princess* investigation to determine causes for the heeling event, and again for the *Orange* Sun to investigate the effectiveness of the ship's steering capabilities.

As for highway safety, RE staffmembers worked extensively with the Federal Highway Administration (FHWA) Turner-Fairbank Highway Research Center in the investigation of the Interstate 35W (I-35W) bridge collapse in Minneapolis, Minnesota. Finally, in 2008, the Safety Studies Division established working relationships with the National Highway Traffic Safety Administration's (NHTSA) Office of Emergency Medical Services dealing with the safety of helicopter emergency management systems and the National Institutes of Occupational Safety and Health dealing with ambulance safety.

Two divisions within RE underwent significant personnel changes in 2008. In the Materials Laboratory, a new metallurgist was added, the former laboratory chief retired, and a new laboratory chief joined the division. In addition, a new flight data recorder (FDR) specialist and a new cockpit voice recorder (CVR) specialist joined the Vehicle Recorder Division, a new chief was appointed, and the former chief assumed the responsibilities of Senior Technical Advisor for Vehicle Recorders.

In 2008, the Office of Research and Engineering's 42 staffmembers produced 51 vehicle performance factual reports, and animations; and completed 252 recorder readouts, transcripts, and studies in support of aviation, rail, marine, and highway investigations.

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, respond to requests for statistical data from the public, including Congress, and develop safety studies and other safety research products to further the NTSB's safety mission. In 2008, staff supported at least 12 accident investigations, launched on another 5, and engaged in a broad variety of research and support activities for Board Members and other offices. These research and support activities included three safety studies, two annual aviation accident data reports, multiple research assessments and data reports to support investigations, the development and rollout of a significant revision to the Aviation Data Management System, and numerous presentations and training for internal and external organizations. Key components of these activities include the following:

General Aviation Airbag Effectiveness. This safety study deals with general aviation (GA) airbag effectiveness. This study was approved in 2006 and data collection is scheduled for completion in late 2009. Airbags are now becoming standard equipment on newly manufactured GA aircraft. In November 2008, approximately 6,119 GA aircraft were equipped with airbags. The effectiveness of those airbags has been evaluated in simulations and in sled tests; however, their performance in surviable crashes is unknown. 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

The main cabin portion of a Cessna 172S that crashed in Fullerton, California, on September 30, 2008 (LAX08FA301). The deployed airbag is resting on the front left pilot seat.

with automobile airbags, examination of this new technology will enable the NTSB 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 have, to date, launched on 14 accidents to collect data for the study.

The Safety Studies and Statistical Analysis Division responded to 498 requests for aviation accident information in 2008, completing 410 data analysis requests and 88 requests for statistical analysis.

Glass Cockpit Displays in General Aviation Aircraft. This safety study was approved in late 2007 and continued through 2008. The introduction of advanced cockpit display technology into small aircraft raises a new set of potential concerns to the NTSB, such as equipment design and operation, pilot performance and training, and new accident investigation techniques. The change in aircraft equipment is occurring rapidly. In fewer than 5 years, the cockpits of small piston airplanes have transitioned from traditional analog gauges to digital displays. Data from the General Aviation Manufacturers Association indicate that more than 90 percent of new piston airplanes are now equipped with digital displays or "glass cockpits." Preliminary findings from ongoing investigations involving piston airplanes equipped with glass cockpits have raised questions about equipment design and pilots' ability to monitor cockpit displays—including their ability to identify and respond to equipment malfunctions. This ongoing study is an exploratory effort with two goals. The first is to characterize the fleet of glass cockpit piston aircraft and how they are used. The second is to produce sound safety-related comparisons of GA piston airplanes equipped with glass cockpits and those with conventional displays that can be used to define this emerging issue and direct future research.

NTSB Human Fatigue Investigation Methodology in Aviation Accidents. The NTSB has long recognized the safety risks associated with human fatigue in transportation safety and has issued over 100 fatigue-related safety recommendations in all modes of transportation. As a means to improve and standardize the methods for investigating fatigue in transportation accidents, staffmembers have developed a methodology for determining if human fatigue has contributed to a transportation accident. The human fatigue investigation methodology (HFIM) was designed to provide guidance to investigators in the collection and evaluation of evidence pertaining to fatigue.

This safety study is designed to systematically evaluate the HFIM by 1) asking air safety investigators (ASI) to apply the HFIM to all of their Part 135 air taxi field investigations for a defined period of time, 2) gathering and analyzing data obtained through those investigations, and 3) eliciting ASI feedback about their experiences using the HFIM. It is anticipated that the study will yield benefits in three ways. First, it will provide data about sleep and fatigue issues within Part 135, a segment that has received relatively little attention in terms of fatigue research; second, it will provide a training opportunity for field investigators to learn more about the issue of human fatigue; and third, it will allow for the refinement of the HFIM so that it can be a more useful tool for investigators.

2004 Report on General Aviation Accident Data. During 2008, the NTSB adopted and published the report on general aviation accident data for calendar year 2004. The special topic included in the report addressed the new light sport aircraft and sport pilot certificate rules. This topic was selected because the rule was enacted in 2004, and it represents a significant regulatory change affecting general aviation.

2005 Report on Air Carrier Accident Data. During 2008, staff compiled data for the report on air carrier aviation accident data for calendar year 2005. The report covers aircraft operated by U.S. air carriers under 14 *Code of Federal Regulations* (CFR) Parts 121 and 135 of the *Code of Federal Regulations.* The report includes data for the years 1996–2004 as historical context for the 2005 statistics, as well as a listing of all air carrier accidents for 2005.

Other Research Products. In 2008, staff developed a comprehensive research assessment of the risk of rural bus travel to support the Mexican Hat, Utah, motor coach accident investigation. This assessment has been included as part of the draft Mexican Hat accident report and has resulted in a draft recommendation. Staff also developed an assessment of the status of intelligent vehicle technologies and their potential for improving traffic safety. This research provided the basis for a presentation given by the NTSB Acting Chairman at an annual conference on intelligent vehicle technologies.

In addition to these safety studies and reports, division staff undertook the following major efforts in 2008:

eADMS. In 2008, staff completed work on a major revision to the NTSB's Aviation Data Management System (ADMS), now called the enhanced ADMS (eADMS). This revision was designed by Safety Study Division staff and was implemented in collaboration with the Offices of Aviation Safety and the Chief Information Officer. The goal of this revision was to improve database efficiency and accuracy and to reduce investigator workload relative to their data entry requirements.

Accident Data and Public Records. Data specialists continue to respond to requests for aviation accident information, completing 410 data analysis requests and 88 requests for statistical analysis in 2008. 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

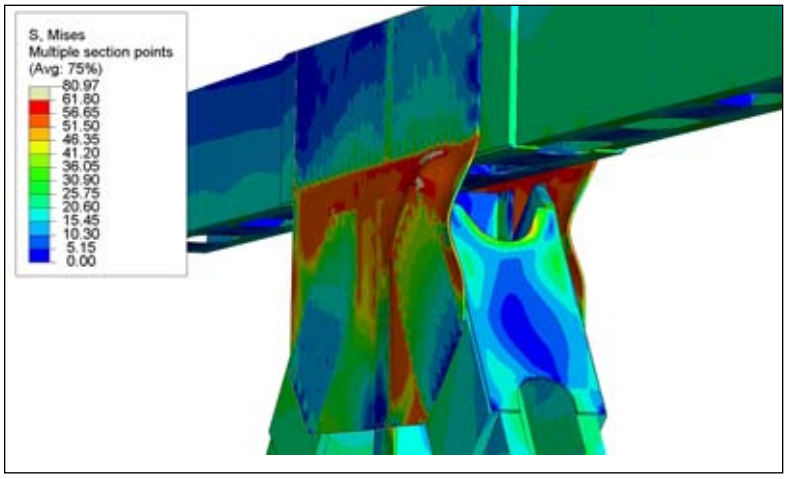
to the NTSB website, combined with complete download and text search capabilities, now allows many researchers to complete their own analyses, especially for simple, straightforward analyses. More complex requests for aviation accident data, however, continue to be handled by the RE data specialists, who also publish monthly and annual U.S. civil aviation statistical information on the NTSB website.

Materials Laboratory

The Materials Laboratory comprises metallurgists, materials scientists, mechanical engineers, and fire and explosion specialists. Staffmembers examine, analyze, and test parts and wreckage from over 150 accidents in a typical year in support of accident investigations from all transportation modes. In addition to fracture surface evaluation (fractography) and other traditional failure analysis testing, the Laboratory generates finite element models of structures to evaluate stress and deformation patterns.

Of particular note in 2008 was the Materials Laboratory's substantial effort in the Minneapolis I-35W bridge collapse investigation. Staff led a modeling group that included the State University of New York at Stony Brook, Dassault Systemes Simulia Corporation, and the FHWA's Turner-Fairbank Highway Research Center. The finite element analysis modeling, truss element deformation mapping, and fractographic analysis confirmed that the bridge failed due to a bending instability of the gusset plate at the western U10 node due to insufficient design of the gusset plate.

The Materials Laboratory completed 172 reports, developed 9 recommendations, and launched to 5 accident sites, including 1 international accident.



Modeling using finite element analysis was used to simulate the stresses and resultant deformation for the Node U10W gusset-buckling failure mode for the I-35 bridge collapse accident. The red indicates areas of severe stress in the gusset plate that led to its failure.

In 2008, the Materials Laboratory completed 172 reports, developed 9 recommendations, and launched to 5 accident sites, including 1 international accident. Summaries of some of the more significant cases are outlined below.

- For the investigation of the fractured main rotor blades from Robinson Helicopters associated with three foreign accidents (Dominican Republic, Fiji, and New Zealand) and an incident in Australia, staff determined that the failure was due to adhesive de-bonding and developed five safety recommendations to the FAA addressing certification, manufacturing, and nondestructive testing of main rotor blades.

- While investigating six events involving two different Eurocopter helicopter models, staff identified a wear failure mode in the splined connection that drives the hydraulic pump. Staff developed two safety recommendations to the FAA and two to the European Aviation Safety Agency regarding metallurgical and lubrication maintenance inadequacies in the splined connection.
- For the investigation of MD 902 helicopter accidents involving the fatigue failure of the vertical stabilization control system rod ends, staff developed reports that were quickly referenced by the helicopter manufacturer to redesign the components to avert future failures.
- Staff supported the Office of Rail, Pipeline and Hazardous Materials in the investigation of a rail accident in New Brighton, Pennsylvania, which resulted in two recommendations to the FRA. Materials Laboratory staff advocate for these recommendations during quarterly FRA Rail Integrity Task Force meetings.
- For several investigations into fan blade releases in General Electric CF-34 engines on Bombardier CRJ-200 jets, staff discovered that subsurface-origin fatigue cracks were due to dwell-time fatigue. This work led to a recommendation to the FAA to require more oversight of engine manufacturers when accrediting new suppliers and changes to forging processes.
- Staff supported the investigation of an uncontained engine failure resulting from cracking in the second-stage turbine-hub blade retaining-lugs on a Pratt & Whitney PW2037 engine from a Boeing 757 incident in Las Vegas, Nevada. This work resulted in two recommendations to the FAA requiring more frequent inspections of the second-stage turbine hubs.
- Fire and explosion investigators are engaged in the investigation of two major aviation accidents that occurred in 2008: the Airborne Express Boeing 767-200 freighter plane fire in San Francisco, California, and the Kalitta Air Boeing 747 freighter accident in Bogotá, Colombia. To help determine the cause of the Airborne Express Boeing 767-200 freighter plane fire, fire and explosion specialists conducted tests at the FAA Technical Center, Atlantic City, New Jersey, to determine the susceptibility of conductive oxygen lines to failure and ignition when energized by electrical current. Fire and explosion specialists also investigated a GA in-flight fire in North Las Vegas, Nevada, and a marine accident (*Queen of the West*) engine fire in Maryhill, Washington, and supported a Federal Bureau of Investigation (FBI) investigation of an aircraft fire in Fargo, North Dakota.

ABX Boeing 767-200 freighter plane fire.

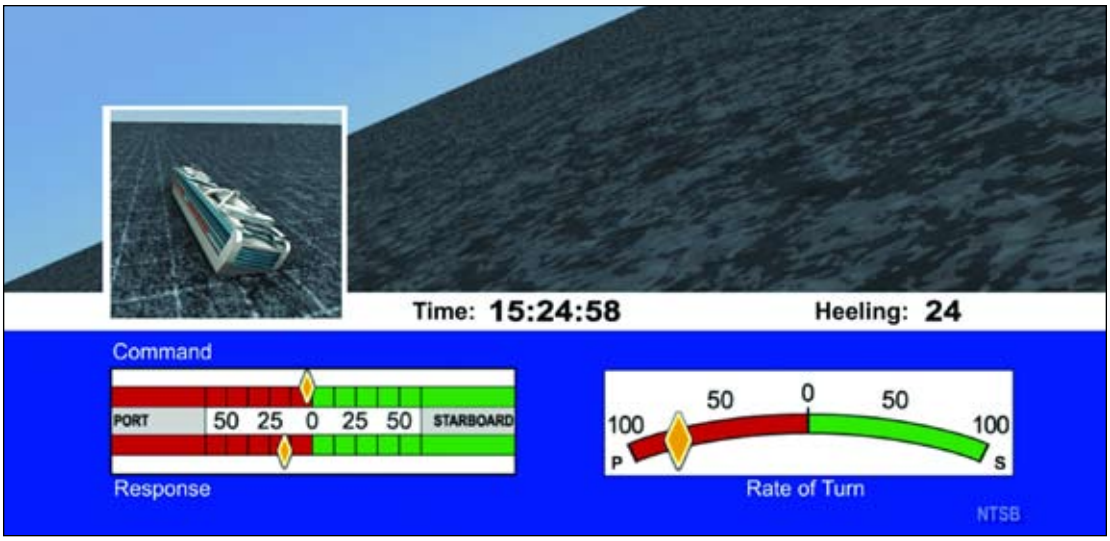
Vehicle Performance Laboratory

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, develops video animations of accident scenarios, and participates in and directs research into fluid and thermal sciences and other special projects. In 2008, staff produced 51 factual reports, as well as several white papers and animations, launched to 3 accident sites, supported 68 accident investigations, and developed 3 safety recommendations. 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 2008 include the following:

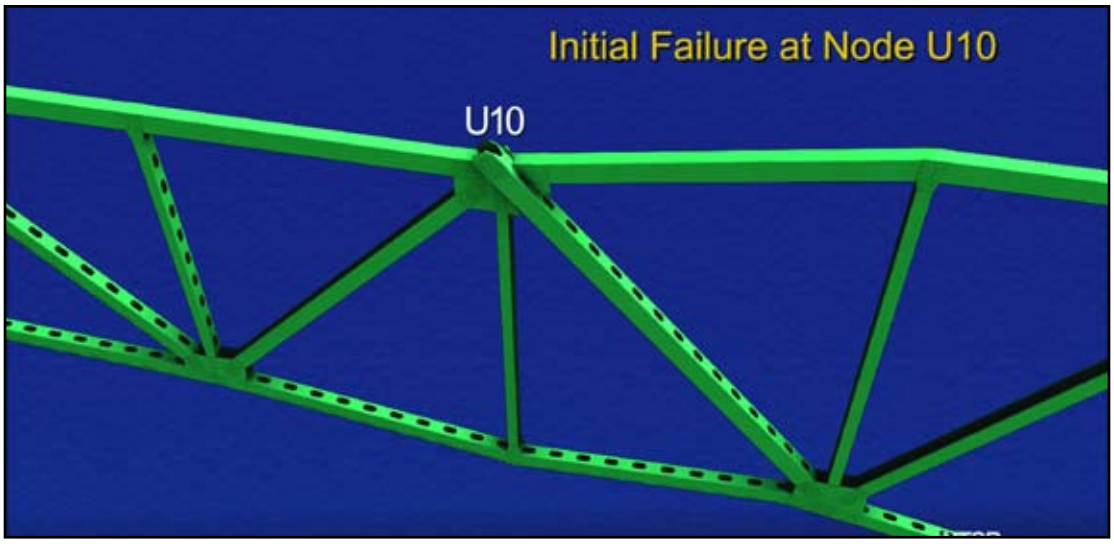
The Vehicle Performance Division has the capability to perform simulations of numerous airplanes, from large transports to regional jets to turboprops to single-engine general aviation airplanes.

- In conjunction with the Teterboro, New Jersey, runway overrun accident, staff developed three recommendations—two to the FAA and one to Transport Canada, Civil Aviation—to address safety and training issues associated with mistrim characteristics of the Bombardier Challenger CL 600.
- For the Continental Airlines flight 1404 runway excursion accident in Denver, Colorado, staff documented tire marks and impact scars on the runway and the entire length of the excursion leading to the wreckage. Work is ongoing to examine flight recorder data.
- For the school bus rollover in Milton, Florida, which involved a school bus that left the interstate and rolled several times on the median, staff examined damage to the bus and documented injuries to passengers. Several school age children on the bus were wearing safety belts.
- For the BAE 125-800A Hawker jet accident in Owatonna, Minnesota, staff examined radar data and is performing additional performance calculations based on enhanced ground proximity warning system data available for the aircraft's electronics.
- For the Mexican Hat, Utah, motorcoach accident, staff designed and wrote a software package to determine motorcoach speed from the onboard video recording system and determined the maximum velocity that the motorcoach could have achieved on the downgrade leading to the accident site.
- For the Milwaukee, Wisconsin, Cessna 550 medical flight accident, staff developed and implemented an engineering simulation within the laboratory to examine the possible equipment failures and control inputs that matched the recorded radar data and CVR data for the accident.
- For the accident involving a Maryland State Police helicopter in Beltsville, Maryland, staff examined automatic dependent surveillance-broadcast data to determine the flightpath and descent rates for the accident helicopter.
- For the Osseo, Wisconsin, collision involving an overturned tanker truck and a motorcoach, staff used advanced simulation capabilities recently obtained within the division to examine the benefits that would have been possible if the tanker had been equipped with a stability control system.

- Staff supported two foreign investigations.
  - For the Kalitta Airlines Boeing 747 takeoff accident in Bogotá, Colombia, staff performed simulations of the progressive engine-out failure scenario during the accident sequence and examined climb capability in the failed engines scenarios.
  - For the Lear 45 accident in Mexico City, Mexico, which carried several high-ranking Mexican government officials, staff processed radar data for the accident aircraft and the preceding Boeing 767 and used NASA software to examine the potential for a wake vortex encounter.
- For the Traverse City, Michigan, runway overrun accident involving a Pinnacle Airlines Bombardier CRJ-200, staff conducted a performance study of the approach and landing roll, calculated airplane braking coefficients, and performed simulations to test various landing and braking scenarios.
- Staff produced six animations to aid in explaining highway, rail, and aviation accidents at public Board Meetings, including the animation that helped to explain the bridge and gusset plate design, construction, and failure mode of the Minneapolis I-35 bridge collapse.
- Staff provided technical support, including detailed vehicle and occupant simulations, to 29 regional GA investigations and 4 regional highway and railroad vehicle accident investigations.



Still image from the animation of the heeling accident on the M/V Crown Princess. This was the first animation created using data from the voyage data recorder. The animation shows a view from the ship's bridge, a three-quarter rear view, the time of day, the heeling rate, and indicators displaying the rudder command and response and the rate of turn.

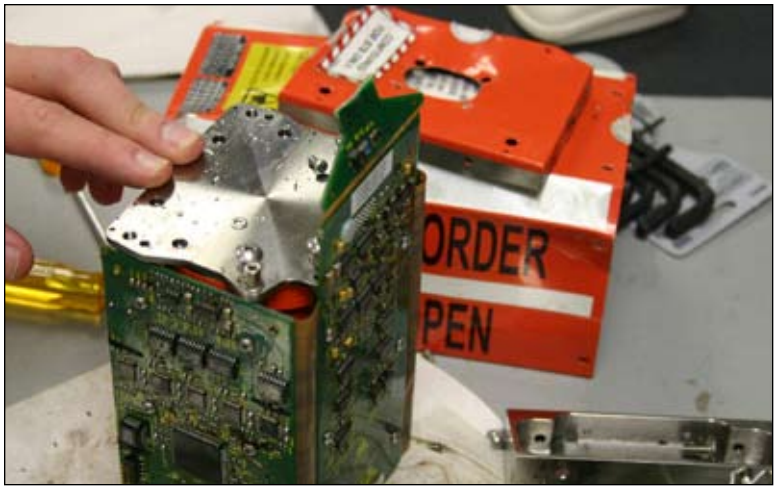


Still image from the animation of the initial failure of the Minneapolis I-35W bridge collapse. The animation uses a three-dimensional engineering model to show how the compression diagonal shifted, how the U10 node was pulled down through the diagonal, and how deformations developed in other structural members of the main truss.

Vehicle Recorder Laboratory

The Vehicle Recorder Division received 362 recording devices, a 41% increase over 2007.

The Vehicle Recorder Laboratory received 362 devices and completed 252 readouts, transcripts, and studies in support of aviation, rail, marine, and highway investigations in 2008. The laboratory also reviewed and developed a response to a notice of proposed rulemaking (NPRM) regarding filtered data. Laboratory workload continued to increase due to 1) the expanded use of advanced technology such as global positioning system units and avionics displays (almost 150 of which were received in 2008), 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 support requested for international aviation investigations (69 foreign recorders received). To keep pace with these increasing demands, the Recorder Division 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:



Vehicle Recorder staff removing memory for readout from damaged flight recorder.

- 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.
- Added the capability to read tape-based FDRs.
- Developed data recovery capability for new-generation, solid-state recorders (used in all transportation modes) when damage to these recorders renders normal readout tools inadequate.
- Continued 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.

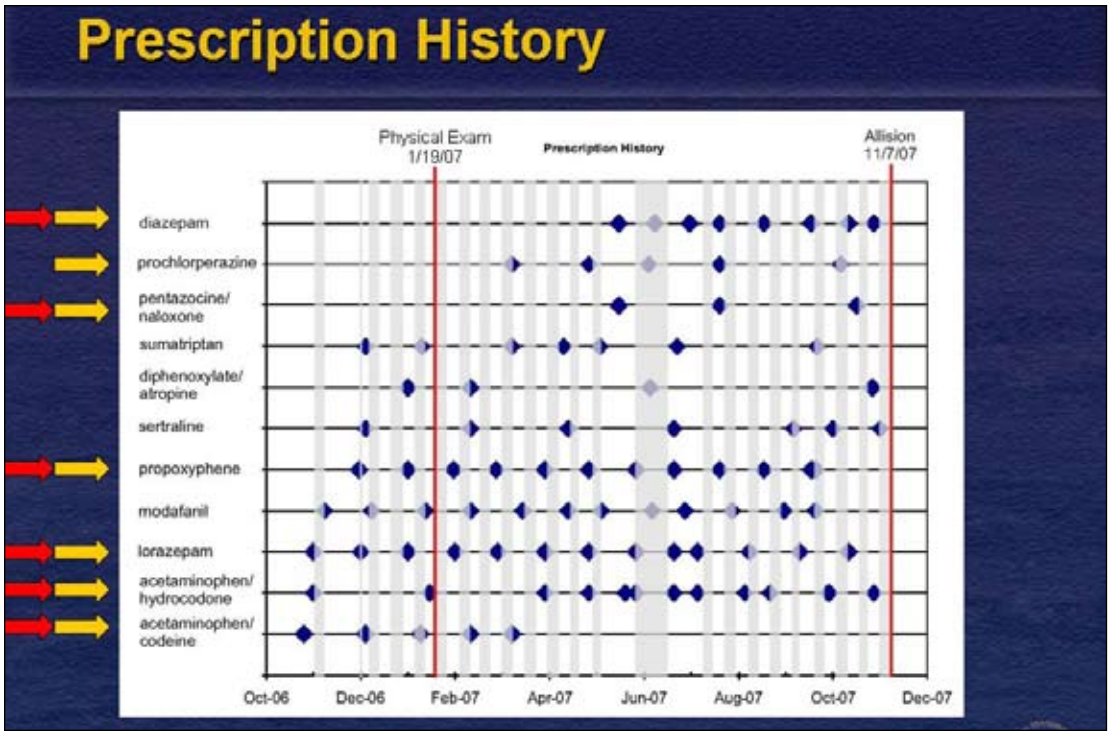
Examples of Vehicle Recorder Laboratory casework in 2008 include the following major investigations:

- For the Chatsworth, California, rail accident in September, vehicle recorder staff are providing extensive data, video, and phone record analysis to document the timeline of events leading to the accident.
- For the investigation of the December 2008 Continental Airlines Boeing 737 accident in Denver, Colorado, vehicle recorder staff led the efforts to read out and analyze the FDR and CVR recorded information.

Medical Factors

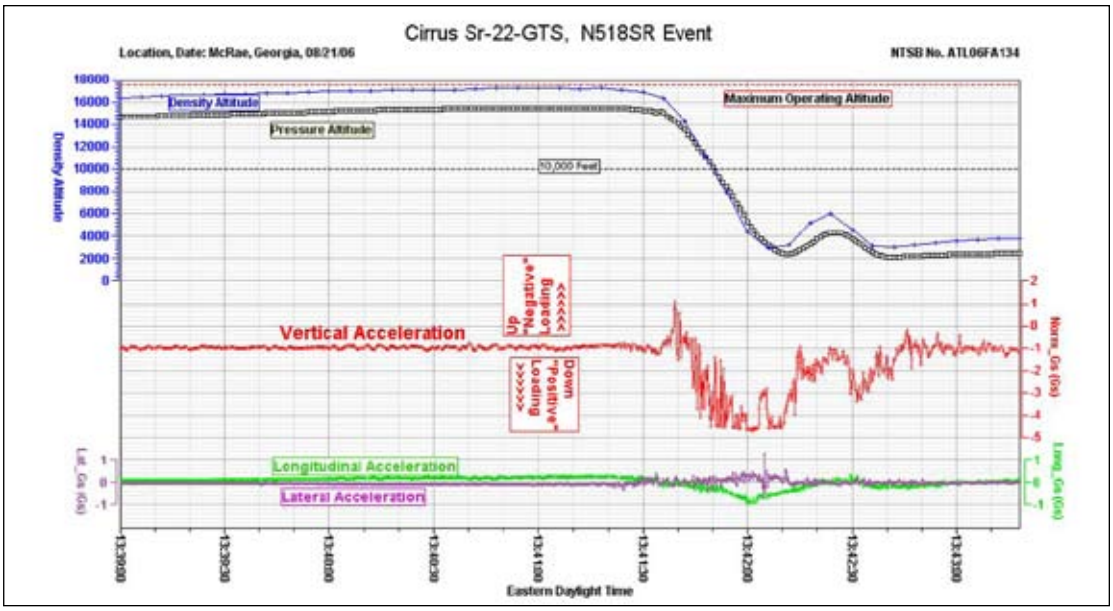
Staff provided medical consultation to accident investigators in all modes on more than 100 accidents in 2008. Medical issues addressed in 2008 accident investigations included, among others, substance dependence and other psychiatric disorders, hypoxia, obstructive sleep apnea, and the use of psychoactive prescription and over-the-counter medications. Summaries of the more important efforts are listed below:

- Staff worked extensively with marine investigators to identify and document relevant medical issues for the M/V *Cosco Busan* container vessel allision with the San Francisco Bay Bridge and with rail investigators for the Chatsworth, California, rail accident.
- Staff coordinated with aviation investigators on the investigation of incidents of flight attendant incapacitation in light of the lack of medical standards for flight attendants, particularly given the increased frequency of single flight-attendant operations.



Slide from Board Meeting on Cosco Busan container vessel allision with the San Francisco Bay Bridge depicting prescriptions of psychoactive medications filled for the pilot with his on-duty schedule overlaid in gray.

- Staff also coordinated on a letter to the U.S. Coast Guard regarding the appropriate evaluation of mariners with symptoms or diagnoses of substance dependence.
- Staff presented testimony regarding the NTSB's accident experience and recommendations on medical oversight of licensed commercial drivers to the House Committee on Infrastructure and Transportation.
- At the FRA's request, staff participated in the selection of an FRA medical officer, a new position developed in part as a result of FRA interactions with NTSB medical staff.
- At NHTSA's request, staff participated in a NHTSA research-planning meeting regarding potentially impairing drugs and separately with a NHTSA expert panel on developing protocols for impairment for driving under the influence of drugs.
- At the request of a U.S. Air Force (USAF)-contracted scientist, staff reviewed a proposal for evaluation of USAF hypoxia training in light of NTSB recommendations following the October 25, 1999, accident involving Payne Stewart.
- Staff regularly addresses internal occupational health issues as part of the NTSB's Occupational Health and Safety Committee and, in 2008, assisted in the development of draft comprehensive formal protocols for investigator safety during foreign accident investigations, as well as a formal evaluation of the success of the ongoing office ergonomics program initiated by RE staff.



Graphical representation of data from avionics displays for general aviation aircraft incident involving both hypoxia and G-induced loss of consciousness.

Key Challenges

- A key challenge involves managing resources effectively when requests for data and statistical support continue to increase for the Safety Studies and Statistical Analysis Division while staff resources diminish.
- The Vehicle Recorder Division's most significant challenge continues to be the increase in workload due to the proliferation of nontraditional recording devices, without comparable funding for equipment and tools development and a comparable increase in staff.
- The Vehicle Performance Division's most significant challenge continues to be maintaining state-of-the-art technical capability within the recent budgetary restrictions.

Significant Achievements

- Work was completed on a major revision to the NTSB's aviation data management system—NTSB's primary accident database—now called the enhanced ADMS. The implementation of eADMS is a significant enhancement to the agency's aviation data system that will improve accuracy and efficiency.
- The Materials Laboratory provided a substantial level of work investigating the physical damage and performing structural modeling of the Minneapolis I-35W bridge collapse. The Minneapolis I-35W bridge collapse accident report was adopted by the Board on November 18, 2008, 15 months after the accident.

- In 2008, the Vehicle Recorder Division continued the development of its next generation flight data analysis software and began collaborating with the FAA by providing the software via a memorandum of agreement.
- Vehicle Performance staff authored three technical papers that were accepted and published at technical conferences in 2008.
- Rulemaking activities on when to activate ice protection systems and when the flight crew should exit icing conditions was initiated by FAA as a direct result of NTSB recommendations.
- The U.S. Coast Guard, in response to a letter from the NTSB, modified its draft guidelines on medical certification of mariners to include appropriate long-term evaluation and follow-up for mariners diagnosed with substance dependence.

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 and their families. The agency's primary responsibility involves coordination between Federal agencies, commercial airlines, State and local authorities, and the families of 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.

In 2008, Congress passed the Rail Passenger Disaster Family Assistance Act, which gave the NTSB responsibilities to assist victims of major passenger rail disasters. The requirements of the act are very similar to those listed above for aviation disasters.

Map showing TDA Launches During 2008

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. While the office is responsible for major aviation accidents and recently major rail passenger disasters, the team has assisted in accidents in all other modes of transportation, including support to regional investigators for general aviation accidents.

Primary responsibilities of the team upon arrival at an accident site include coordinating resources of local, State, and Federal agencies; establishing a Joint Family Support Operations Center; and ensuring that the airline establishes a Family Assistance Center. In addition, the team maintains contact with family members following the on-scene phase of an accident to provide investigation updates and notification of public hearings and/or Board meetings and to respond to various other questions and concerns raised by family members.

Since its inception, TDA personnel has launched on 142 total NTSB investigations.

Accident Launches

Highway Accident, Mexican Hat, Utah

On January 6, 2008, a chartered bus taking skiers home to Arizona ran off a curvy road in Mexican Hat, Utah, and rolled down an embankment in a crash that split open the vehicle's roof. Nine passengers were fatally injured and 44 others, including the driver, received injuries ranging from minor to serious. A TDA specialist was launched to the scene to assist NTSB Office of Highway Safety investigators. Support was provided to the families involved and technical support on victim recovery and identification was given to the bus company operator and to the local medical examiner.

Aviation Accident, McCall, Idaho

On May 2, 2008, a Cessna 172N and a Cessna 172 collided in-flight over the approach end of runway 34 at McCall Municipal Airport, McCall, Idaho. Both airplanes were destroyed during the collision. The commercial pilot on board one of the aircraft received serious injuries and his passenger sustained minor injuries. Of the four occupants aboard the other aircraft, the private pilot and two passengers were killed; the third passenger received serious injuries. TDA specialists worked with victim families as well as friends of the victims in the local community.

In 2008, TDA personnel launched on 9 major accident investigations and 6 regional aviation investigations.

Aviation Accident, Santa Catalina Island, California

On May 24, 2008, an Aerospatiale AS-350-D helicopter operated by Island Express Helicopters Inc., impacted terrain while landing on Santa Catalina Island, California, during a 14 *Code of Federal Regulations* (CFR) Part 135 on-demand, commercial flight. The flight departed the Queensway Bay Heliport, Long Beach, California, earlier. The commercial pilot, a company employee, and one passenger were killed, and three passengers were seriously injured. A

TDA specialist launched to the accident to assist the investigator-in-charge. The specialist contacted all survivors at the hospital and the families of the fatally injured passengers to provide information regarding the accident investigation. In addition, the specialist met with the county coroner and the Department of State (the pilot was a foreign national).

Railroad Accident, Newton, Massachusetts

On May 28, 2008, two Massachusetts Bay Transportation Authority Green Line trains collided in Newton, Massachusetts. Both trains consisted of two cars, one of which rear-ended the other causing major damage on both trains, multiple injuries, and trapped the female operator of one of the two trains, who subsequently died. A TDA specialist launched to assist the NTSB rail investigators by providing assistance to the injured passengers and to the family of the fatally injured operator in this accident.

Aviation Accident, Flagstaff, Arizona

On June 29, 2008, two Bell 407 emergency medical service helicopters collided in midair while approaching the Flagstaff Medical Center helipad in Flagstaff, Arizona. Both helicopters were destroyed. All seven occupants on board the helicopters sustained fatal injuries. TDA specialists launched to assist the investigator-in-charge by providing assistance to the families of the accident victims. Additionally, the TDA specialist coordinated the use of a Federal Bureau of Investigation (FBI) Evidence Response Team for the investigation and provided technical support to the local coroner on victim recovery and identification.

Aviation Accident, Owatonna, Minnesota

On July 31, 2008, a Hawker Beechcraft BAE 125-800A, registered to MVA Aircraft Leasing Inc., and operated by East Coast Jets, was destroyed when it impacted terrain during an attempted go-around from runway 30 at Owatonna Degner Regional Airport, Owatonna, Minnesota. The nonscheduled domestic passenger flight was operating under the provisions of 14 CFR Part 135. Visual meteorological conditions prevailed at the time of the accident, and an instrument flight rules flight plan had been filed and activated for the flight, but had been cancelled before the landing. The pilot, co-pilot, and six passengers sustained fatal injuries. TDA specialists launched to the accident scene and assisted families of the victims, including several family members who traveled to Owatonna. Technical support on victim recovery and identification was also provided to the local coroner.

TDA staff continues to provide support to family members for approximately 70 general aviation accident investigations.

Aviation Accident, Gearhart, Oregon

On August 4, 2008, a Cessna 172K impacted a small neighborhood residence in Gearhart, Oregon. The airplane was operated by the commercial pilot under the provisions of 14 CFR Part 91. The pilot, passenger, and three people on the ground were killed, and three people on the ground were seriously injured. TDA specialists launched to the accident scene to assist several family members who traveled to Gearhart and provided information/assistance to those that did not travel. Technical support was also given to the local coroner on victim recovery and identification.

Aviation Accident, Weaverville, California

On August 5, 2008, a Sikorsky, S-61N helicopter crashed near Weaverville, California. Postimpact fire destroyed the helicopter. The airline transport pilot and eight passengers were fatally injured, and the commercial copilot and three passengers were seriously injured. The helicopter was being operated under contract to the U.S. Forest Service by Carson Helicopter Services, Inc., as a public-use flight. TDA specialists launched to the accident scene and assisted with providing information to the family members of the crew and passengers. They also provided technical support to the local coroner on victim recovery and identification.

Highway Accident, Sherman, Texas

On August 8, 2008, at 12:45 am central daylight time, a charter bus carrying 55 passengers ran off US Highway 75 and landed on its side in Sherman, Texas. Seventeen passengers were fatally injured and 37 passengers and the driver received injuries ranging from minor to serious. A TDA specialist launched to this accident at the request of the Office of Highway Safety. The specialist coordinated with local American Red Cross representatives and made contact with all family members of injured passengers who were located in eight hospitals in two states. Investigative updates were also provided to the family members of the deceased passengers.

Aviation Accident, Moab, Utah

On August 22, 2008, a Beech A100 impacted hilly terrain shortly after takeoff from Canyonlands Field Airport, Moab, Utah. The airplane was being operated under the provisions of 14 CFR Part 91. The certificated commercial pilot and nine passengers were fatally injured. The airplane was destroyed during a postimpact fire. TDA specialists assisted with providing information to the family members of the crew and passengers. They also provided technical support on victim recovery and identification to the local coroner.

Aviation Accident, Columbus, Ohio

On September 1, 2008, a Convair 580 airplane operated by Air Tahoma Inc., was destroyed when it impacted terrain as it was attempting to return to Rickenbacker International Airport, Columbus, Ohio. The captain, first officer, and a company pilot sitting in the observer seat were fatally injured. TDA specialists assisted with providing information to the family members of the crew and passengers. They also provided technical support on victim recovery and identification to the local coroner.

Aviation Accident, Columbia, South Carolina

On September 19, 2008, a Learjet Model 60 overran the runway while departing Columbia Metropolitan Airport, Columbia, South Carolina. The two crewmembers and two passengers were fatally injured, and the other two passengers suffered serious injuries. The flight was operated as a nonscheduled domestic passenger flight under the provisions of 14 CFR Part 135. TDA specialists were launched to the scene to support the investigative team. The specialists met with the family members of the survivors and were in contact with the families of the deceased.

Railroad Accident, Chatsworth, California

On September 12, 2008, a collision of a Southern California Regional Rail Authority (Metrolink) passenger train and a Union Pacific Railroad freight train occurred in Chatsworth, California. Twenty-five passengers and crew were fatally injured and an additional 140 passengers and crew were injured. Two TDA specialists were requested by NTSB rail investigators to support those injured and killed in this accident. In conjunction with American Red Cross and Metrolink, the TDA specialists attempted to contact all victims of the accident. In addition, they provided technical assistance to Metrolink representatives on scene regarding victim assistance issues. TDA also facilitated a request from the investigative team to support the FBI Evidence Response Team with wreckage documentation at the accident site.

Aviation Accident, District Heights, Maryland

On September 27, 2008, a Eurocopter AS365N1, registered to and operated by the Maryland State Police as a medical evacuation flight, was substantially damaged when it collided with trees and terrain in Walker Mill Regional Park, District Heights, Maryland. The commercial pilot, one flight paramedic, one field provider, and one of two automobile accident patients being transported were fatally injured. At the request of the investigative team, a TDA specialist was sent to the scene. The specialist met with the family of the survivors and was in contact with the families of the deceased.

Aviation Accident, Denver, Colorado

On December 20, 2008, Continental Airlines flight 1404, a Boeing 737-500, departed the left side of runway 34R during takeoff from Denver International Airport. The scheduled, domestic passenger flight, operated under the provisions of 14 CFR Part 121, was en route to George Bush Intercontinental Airport, Houston, Texas. There were 37 injuries among the passengers and crew, and no fatalities. The airplane was substantially damaged and experienced a postcrash fire. TDA specialists provided guidance from NTSB headquarters in Washington, DC, regarding family assistance issues.

Regional Accident Support

In addition, TDA staff continues to provide support to family members for approximately 70 general aviation accident investigations.

NTSB Training Center Courses

In 2008, TDA provided comprehensive courses for professionals who assist families of major transportation accident victims. The hands-on instruction provides participants with operational expertise that enables 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, multicultural memorial services, and effective family briefings. (See the Training Center section of this report for additional information on TDA training.)

In 2008, TDA offered five courses, including one new 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.

In 2008, a total of 210 students attended TDA training courses.

- **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 (medical, dental, DNA), changes in procedures in criminal events, survival factors issues for the forensic responder, post-response issues: site visits, memorials, family interactions, 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, communicating effectively with local and State responders, the NTSB, the Federal Aviation Administration, the FBI, and airlines and airport tenants.
- **Transportation Disaster Response – A Course for Emergency Responders (TDA 402) – New for 2008.** Designed specifically for emergency responders and planners, this course provides participants with the tools to most effectively manage a major transportation disaster. Audio/video materials, case studies, recent examples and panel discussions are employed to illustrate key principles of the unique aspects of responding to major transportation disasters. Some of the topics covered include, integrating ICS 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, handling 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. This course was developed and presented with direct input from the New Jersey State Police, Office of Emergency Preparedness.

In 2008, TDA staff taught approximately 90 senior state, county, local and international police commanders at the FBI's National Academy in Quantico, Virginia .

TDA Partnerships with Other Agencies

The NTSB and TDA have memoranda of understanding with the American Red Cross, U.S. Department of Homeland Security, 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.

TDA, with input from Federal partners and the air carriers, updated the "Federal Plan for Aviation Disasters." This plan update was completed and published in December 2008.

The NTSB also held an air carrier meeting in Washington, D.C., on December 9, 2008. This meeting brought together major air carriers' family assistance personnel to examine recent responses and address concerns. The updated "Federal Plan for Aviation Disasters" was distributed to all the air carriers during this meeting and posted on the NTSB's public website.

In 2008, the NTSB also presented information to numerous groups, including Port of New York and New Jersey Police Department, Airport Law Enforcement Association, Occupational Therapy Management Association, American Association of Airport Executives, FBI National Academy – Crisis Management Course, Armed Forces Institute of Pathology, FBI Office for Victim Assistance, Mississippi Emergency Management Conference, Department of Health and Human Services, U.S. Coast Guard Miami, International Association for Identification, FAA Airport Safety Conference, and University of Tennessee.

In addition, TDA held seminars and meetings focusing on family assistance, first responder responsibilities, and management of transportation disasters for Northwest Airlines, United/United Express Airlines, American Airlines, Delta Air Lines, Virgin America, New York City Chief Medical Examiner's Office, Senate Office of Sergeant at Arms, Safe Skies over Africa program, Mine Safety Health Administration, and Air Tahiti Nui.

Key Challenges

- Implementation of the Rail Passenger Family Assistance Act of 2008 (charging the NTSB with primary responsibility for coordinating assistance to victims of major passenger rail disasters) will require extensive resources that are not currently available at the NTSB.

Significant Achievements

- A total of 44 students attended the new revised and enhanced TDA course *Transportation Disaster Response – A Course for Emergency Responders.* The course provides participants with the tools to most effectively manage a major transportation disaster.
- In 2008, TDA staff revised and updated the Federal Family Assistance Plan for Aviation Disasters, (http://www.ntsb.gov/Publictn/2008/Federal-Family-Plan-Aviation-Disasters-rev-12-2008.pdf) a comprehensive response plan outlining the roles and responsibilities of various responder agencies.

International Outreach and Safety Activity

During 2008, the NTSB developed and published three international outreach plans to ensure an integrated and systematic approach for international outreach and advocacy. The *International Advocacy Plan* focuses on the NTSB's advocacy efforts through other investigative agencies, as well as Canadian highway officials. The *International Aviation Strategic Plan* supports aviation safety by promoting interaction with the International Civil Aviation Organization (ICAO) to help revise ICAO standards and recommended practices (SARPS) and foster development of new guidance protocols. Finally, the *International Marine Coordination Plan* describes the objectives to be met by the NTSB's participation in international maritime affairs. All three plans are fully aligned with goals and objectives contained in the NTSB Strategic Plan.

The following are key international outreach accomplishments.

- NTSB staff presented papers at the Flight Safety Foundation International Aviation Safety Symposium on unmanned aerial vehicles, spatial disorientation, and runway safety.
- NTSB staff hosted about 30 visits from foreign delegations, including visits from the European Aviation Safety Agency, ICAO, and the airworthiness authorities from Brazil and Ecuador.
- NTSB staff chaired the U.S. delegation to the ICAO Accident Investigation Group 2008 conference, which included participants from 75 states and 12 observer organizations.
- The NTSB participated in the accident investigation portion of the ICAO Universal Safety Oversight Audit of the United States, in which the U.S. received 91 of a possible 100 points and was cited for the professionalism and enthusiasm of its personnel who interacted with the audit team.
- NTSB staff briefed the U.S. Ambassador on international aviation safety issues on several occasions at ICAO headquarters in Montreal.
- NTSB experts taught a course on Investigating Fatigue Factors to civil aviation officials in Australia.
- The Vehicle Recorder Laboratory delivered FTSE flight recorder software to the aviation industry to encourage the free exchange of flight recorder documentation in the aviation community.
- Vehicle Recorder Laboratory staff continued its active involvement in the European Organization for Civil Aviation Equipment Working Group for lightweight flight recorder specification development. The effort is scheduled to be complete in spring 2009.
- The chief of the Vehicle Performance Division delivered a keynote address at the SAE International Aircraft and Engine Icing Conference in Seville, Spain, in which he reviewed recent icing accidents and NTSB recommendations related to icing.

- Research and Engineering staff continue to participate in discussions with all modal agencies regarding medication use by transportation operators, consistent with NTSB recommendations on the topic, and assisted National Highway Traffic Safety Administration staff in 2008 in the projected development of a priori protocols that could be used to test medications for their effects on transportation operators, which is not now routinely required or conducted.

Information Technology

The Office of the Chief Information Officer (OCIO) is a relatively new office at the NTSB (created in late calendar year 2005), and the 2008 edition marks the office's first appearance in the NTSB Annual Report. The primary mission of OCIO is to enable the execution of the NTSB safety mission by providing information technology (IT) services that support and improve key work processes. OCIO also performs other critical agency functions, such as ensuring compliance with the Freedom of Information Act and Privacy Act support.

In keeping with best practices, IT Strategic Goals and focus areas are aligned with overall NTSB Strategic Goals. A summary of how IT Strategic Goals contribute to the overall NTSB Strategic Goals is presented below, demonstrating how IT strategies contribute to the agency's overall mission. In addition, internal and external objectives are met by adhering to a core framework of five Strategic Principles in delivering IT products and services:

- ***Alignment****: NTSB*'s strategic mission and management goals are supported by aligning IT with major program areas.
- ***Enterprise Approach****:* To maximize effective use of technology, NTSB is migrating to integrated, NTSB-wide business processes and technologies.
- ***Teamwork****:* Offices serve as partners for a variety of IT initiatives. This approach fosters shared ownership, embraces diversity, leverages strengths and is consistent with best practices.
- ***Process Maturity****:* Continuous improvement in IT processes is achieved by following appropriate published process maturity models.
- ***Measurable****:* Achievement of strategic goals is measured and reported regularly.

NTSB has 7 Information Technology Strategic Goals, which are fully aligned with the 4 overall NTSB Strategic Goals.

NTSB IT Strategic Goals

- ***Enterprise Architecture (EA)***: Leverage EA to improve NTSB's mission performance and realize its strategic goals and objectives.
- ***IT Security***: Protect the availability, confidentiality and integrity of NTSB's IT resources.
- ***E-Government***: Improve the efficiency and effectiveness of NTSB business processes.
- ***IT Capital Planning & Investment Control (CPIC)***: Improve the planning, execution and management of IT investments.
- ***IT Infrastructure***: Provide enterprise solutions – improving the quality, accessibility, and information sharing capabilities between NTSB and its customers.
- ***Information and Records Management***: Create an effective knowledge-sharing environment while meeting information management standards and requirements.

- ***IT Workforce Management***: Ensure the availability of IT human capital capable of meeting the goals and NTSB mission challenges.

Best Practice and Regulatory Framework

To ensure compliance with the IT Management Reform Act of 1996 (also known as the Clinger-Cohen Act), the NTSB hired its first permanent Chief Information Officer in late 2006. In 2007 and 2008, the OCIO restructured both its organization and its business processes to more effectively address Clinger-Cohen requirements. For example, a Chief Enterprise Architect was hired; initial technical, business, service and performance reference models were developed; and an enterprise architecture transition roadmap was published. In addition, with the OCIO, the NTSB has focused on improving its compliance with the provisions of the Federal Information Security Management Act (FISMA) of 2002; as a result of progress in this area, a material weakness with respect to FISMA compliance was removed from the NTSB's Annual FISMA report in 2008, and the agency achieved its best scores to date.

Key Challenges

- Meeting the need for enhanced IT security in support of evolving Homeland Security initiatives and in response to evolving and sophisticated threats.
- Effectively managing the integration of new and emerging technology into core NTSB business processes that support the agency mission.
- Meeting the increased expectations of stakeholders for innovative and faster IT service applications, and balancing those expectations with the necessity to deploy technology in a systematic, cost-effective and secure manner.

In 2008, NTSB implemented a pilot program to post investigative docket materials on its public website.

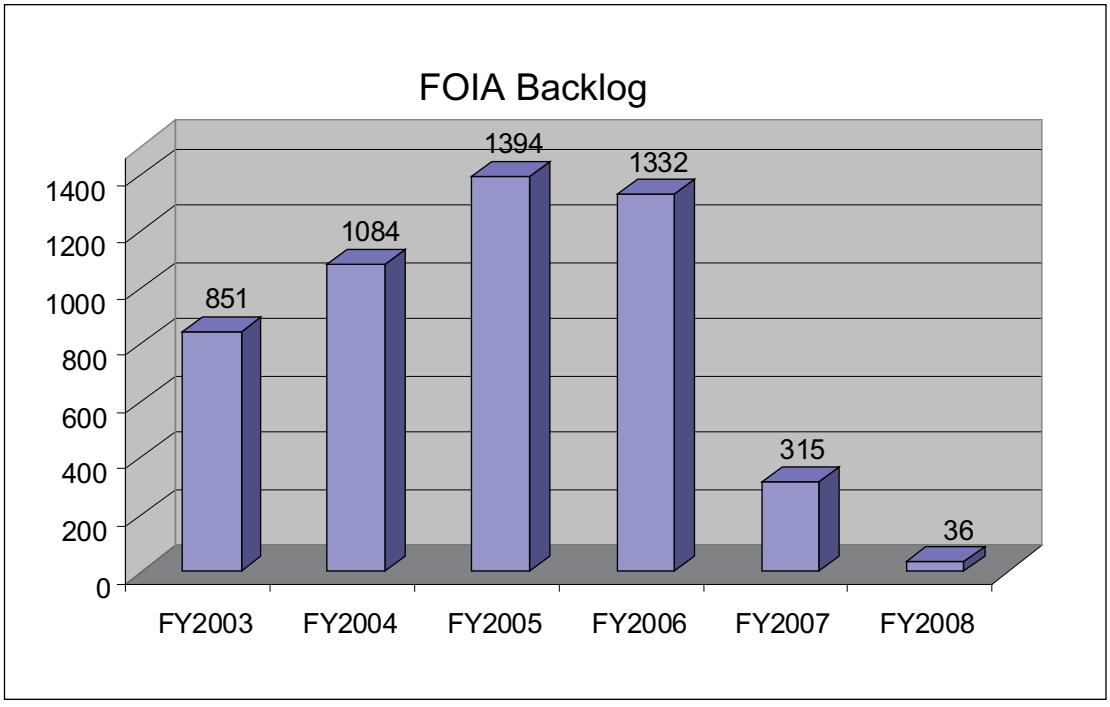
Significant Achievements

- OCIO continued to develop the NTSB's Enterprise Architecture program in 2008. The office also developed IT business and reference models and synchronized them with existing systems to support effective program and project performance.
- The IT Security program achieved a number of milestones in 2008. For example, 7 of 10 longstanding Department of Transportation Office of Inspector General recommendations were closed. Working in partnership with the Office of the Managing Director, OCIO developed a number of privacy policies and fielded the agencywide privacy training program. As a result of sustained improvement in the NTSB's IT security posture, the agency received its most positive FISMA report to date.
- In 2008, the Systems Support Division focused on providing application and application support aimed at leveraging technology to improve business

processes, provide greater and easier access to data and information, and to expand the use of E-Government initiatives. The NTSB implemented Really Simple Syndication (RSS) feeds to provide another avenue for stakeholders to receive press releases, safety recommendations, and other information from NTSB modal offices. OCIO also surveyed the customer base for the NTSB public website in an effort to ensure that the data and information provided effectively meets constituent needs. Finally, the NTSB now makes full use of regulations.gov to facilitate public comment on notices for proposed rulemaking and announcements for upcoming Board meetings and public hearings.

- The OCIO began working in partnership with the agency's Chief Financial Officer to establish an IT Capital Planning and Investment Control process consistent with government best practices. As a result, OCIO has moved to a system of 3-year budget forecasts for IT capital and support expenditures and more detailed and refined tracking of annual expenditures.
- The Computer Services Division (CSD) in OCIO continued to upgrade the NTSB's IT infrastructure, enhance IT security, and improve customer service delivery. The CSD also continued progress toward the goal of encrypting 100 percent of mobile computing devices, reaching a 95 percent compliance level. Finally, to improve communication with customers requesting help desk support, CSD now provides a real-time dashboard to track help desk tickets.
- The Records Management Division continued to improve the posture of NTSB's FOIA program. Key items completed included an update of the NTSB's FOIA website to ensure compliance with the E-FOIA Act of 1996 and elimination of the agency's FOIA backlog. The backlog once stood at 1,394 requests in 2005 and totaled 315 at the start of fiscal year 2008; it was reduced to 36 by the end of fiscal year 2008.

NTSB's Freedom of Information Act request backlog has dropped by 97% from 2006-2008.



Planning and Performance

During 2008, The NTSB made significant improvements in the area of planning and performance, in support of goals and objectives outlined in the fiscal year (FY) 2007-2012 Strategic Plan, which was published in February 2007. As background, the NTSB Strategic Plan specifies four strategic goals to which all NTSB activities are aligned and individual office contributions are made. The current strategic goals of the NTSB are the following:

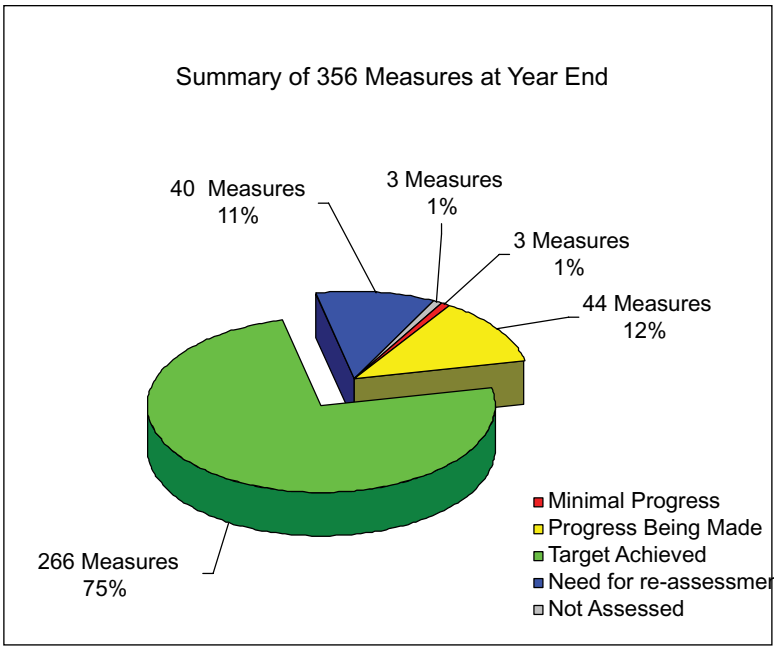
Strategic Goal 1—Accomplish objective investigations of transportation accidents to identify issues and actions that improve transportation safety

Strategic Goal 2—Increase our impact on the safety of the transportation system

Strategic Goal 3—Outstanding stewardship of resources

Strategic Goal 4—Organizational excellence

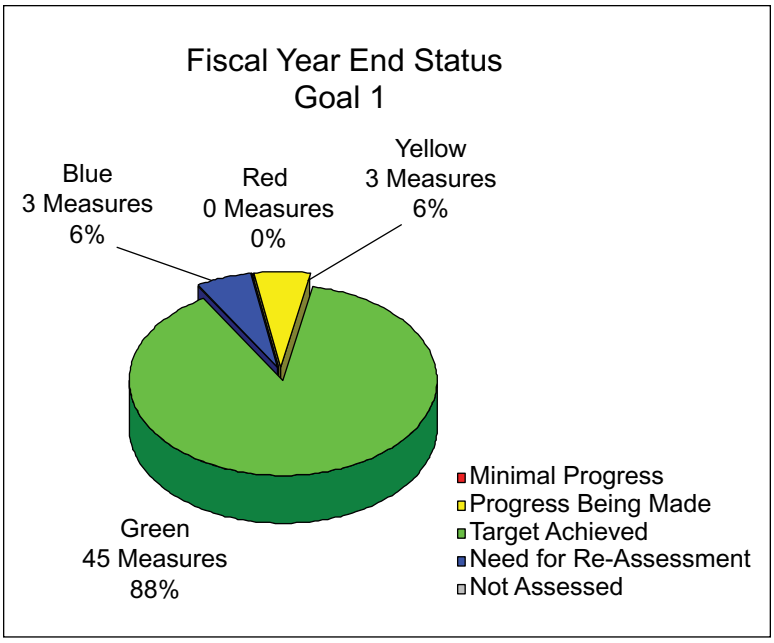
The NTSB continued its strategic planning process started in 2007 by implementing the fiscal year 2008 operating plans. Each 2008 plan reflected the individual office strategies and performance measures with associated target levels. The performance measures included in the operating plans were closely monitored by agency management during the year to ensure their successful completion. The number of performance measures in the operating plans varied among the offices—from about 10 to over 40. Through September 2008, the NTSB monitored and evaluated over 350 performance measures from the 12 plans and ensured that resources were allocated to maximize the opportunities for achievement.



The NTSB Strategic Plan includes 17 separate strategic objectives which help steer the agency toward accomplishing its mission.

Overall, the NTSB executive management is pleased with the agency's performance during 2008, as shown through the overall achievement of the 12 office operating plans. For the fiscal year ending September 30, NTSB fully achieved 75 percent of 356 performance

measured tracking during the year. Furthermore, for Goal 1, the agency achieved 88 percent of key mission-related performance measures, such as those pertaining to investigative activity and report publishing. After the year was completed, the 2008 performance measures were evaluated to determine whether they should be included or modified for the fiscal year 2009 operating plans, which were finalized by November 2008. The 2009 operating plans include 136 distinct performance measures, of which 49 are outcome- or results-oriented, in accordance with best practices. The remainder can be classified as either output performance measures or efficiency performance measures.



There are almost 50 outcome-based performance measures in NTSB's 12 Office operating plans.

The four tables below show key measures in the FY2009 operating plans. Note that each measure is associated with a specific strategic objective, which is in turn aligned with one of the four strategic goals. As the tables indicate, the NTSB's performance measures focus on both internal outcomes to improve agency operations, as well as on outcomes that will lead to overall safety improvements in the transportation industry. In fact, as Strategic Objective 1.5 shows; the agency is focusing much of its management attention on achieving concrete legislative and regulatory actions (outcomes) resulting from NTSB recommendations. The performance measures noted in Advocacy (2.4) give appropriate visibility to the NTSB's effort to influence implementation of the recommendations on the Federal Most Wanted List. Finally, to foster Long-Range Planning (4.1), an updated strategic plan is being developed, which will reflect the aggregate improvements in the planning process since the first strategic plan was issued. The first table below shows report production targets developed during 2008, which are included in the fiscal year 2009 operating plans.

Strategic Objective	Performance Measure	AS FY 09 Target	HS FY 09 Target	MS FY 09 Target	RPH FY 09 Target	Performance Measure Type
1.3 Appropriately Scale the Investigative Response to Accidents	Number of products adopted by the Board including public hearings	9	5	3	6	Output
	Average time to complete Board-adopted products	15 months	15 months	15 months	15 months	Efficiency

In addition, the NTSB developed several industry outcome performance measures in 2008, which are shown in the second table.

Strategic Objective	Performance Measure	FY 09 Target	Performance Measure Type
1.5 Constructively Affect the Transportation Industry	Percentage of major investigations that result in Board-adopted safety recommendations	100%	Outcome
	Action by transportation authorities, such as rulemaking, state enforcement, or legislative change for motorcoach-related safety issues	1 or more actions	Outcome
	Final rules, industry standards, or operating procedures adopted in rail industry	1 or more actions	Outcome
	Legislative action in rail industry	1 or more actions	Outcome
2.4 Advocacy	Number of successfully implemented Federal Most Wanted List recommendations within the last 5 years	8	Outcome
	Number of changes to legislation or regulations that address NTSB State Most Wanted List recommendations	7	Outcome
	Number of state advocacy efforts engaged in to increase the NTSB's impact on safety transportation system	50	Outcome

NTSB's Strategic Plan will be fully updated and re-published during 2009.

For Strategic Goal 3 (outstanding stewardship of resources), the NTSB has the following key performance measures.

Strategic Objective	Performance Measure	FY 09 Target	Performance Measure Type
3.2 Understand and control costs	Obtain audit opinion which indicates that financial statements are in auditable condition	Yes	Outcome
	Reduce rate of work-related injuries and illnesses per 100 employees	1.99	Outcome

Finally, for Strategic Goal 4 (organizational excellence), NTSB developed these key performance measures during 2008.

Strategic Objective	Performance Measure	FY 09 Target	Performance Measure Type
4.1 Long-Range Planning	Publish Annual Report to Congress	2008 report	Output
	Publish Updated IT Strategic Plan	2009 plan	Output
	Publish Updated Strategic Plan	2010 plan	Output
4.3 Enhance human capital planning	Percentage of external hires filled within the 45-day standard	90%	Outcome
	Percentage of implemented actions from the NTSB Strategic Human Capital Plan	50%	Outcome
	Publish Strategic Training Plan	1 plan	Output
4.4 Foster effective internal communications	Percentage of employees who are satisfied or very satisfied with effectiveness of communications	Varies by Office (up to 75%)	Outcome

Overall, the above performance measures reflect the agency's view that the NTSB's accomplishments result in significant outcomes that improve transportation safety, as well as agency operations. By having offices focus on results-oriented performance measures, management attention is constantly directed toward important agency activities, and this attention improves agency operations. In addition, these improvements directly influence the NTSB's 17 strategic objectives, the primary intent of the strategic plan, which contributes to achieving the four strategic goals. This performance measurement process was fully embedded during 2008.

NTSB Training Center

Background

Located in Ashburn, Virginia, the NTSB Training Center provides training opportunities for all NTSB employees and others from the transportation community through a variety of course offerings in the various modes of transportation. The core curriculum continues to be key investigative courses that focus on competencies important to safety investigations for NTSB staff and outside participants. The Workforce Development 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.

Almost 1,200 training participants completed course work at the Training Center and off-site during 2008, of which 953 students attended courses that were offered at the Training Center Campus in Ashburn, Virginia.

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

- Ensuring and improving the quality of accident investigations through critical thought and instruction;
- 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, an understanding of NTSB investigative processes and procedures for potential parties to an investigation, 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 strategic objectives are to 1) maintain a competent and effective investigative workforce, 2) align and improve the NTSB management team, and 3) enhance strategic human capital planning. There are

specific training strategies within each of these broad objectives. The NTSB is currently developing a detailed agency strategic training plan that cascades training strategies into specific performance measures. This plan will present a road map for monitoring whether present and future competency needs are fully addressed by the NTSB training program.

In addition, Training Center personnel developed a facility business plan to address methods by which the Training Center can support the NTSB's mission more efficiently—for example, 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 these objectives 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.

During 2008, the NTSB continued to 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 cost recovery for the Training Center's facilities and services. The collection of tuition and fees for facility use during 2008 continued to make it possible for the Training Center to recover 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 several years.

Training and Educational Needs of NTSB Employees

Since 2007, the NTSB's Training Officer has focused heavily on expanding the training programs for NTSB employees. A total of eight Workforce Development Program courses were held during 2007 for NTSB employees. The NTSB Training Center exceeded its goal of expanding the Workforce Development Curriculum to include more than 30 courses and seminars by delivering a number of new training courses, seminars, and forums in 2008. New areas of training offered in 2008 included Project Management, executive leadership programs and Individual Development Plans with associated

training. Partnerships with other U.S. Government agencies continue with the Small Agency Council (SAC) partnership and the continuation of the GoLearn partnership with OPM.

In 2008 the NTSB Training Center expanded its offerings to the NTSB personnel with a wide variety of training opportunities that directly supported many of the 17 strategic objectives. The training offerings served the needs of the employees in several learning modalities and in diverse locations. While the clear majority of training occurred at the NTSB Training Center, some courses were offered in the regions closest to the NTSB regional offices to save on travel expenditures.

For 2009, the Training Center has developed an improved and enhanced training plan by incorporating the results from the training needs assessment survey, individual development plans, strategic objectives, and lessons learned from 2008 training. The training for this year includes:

- Mandatory subjects in the areas of computer security, safety, COTR, and EEO
- Regional seminars to provide learning opportunities in management- and leadership-related subjects
- Continued partnership with the Department of Interior University
- Increased emphasis on the GoLearn training from the Office of Personnel Management
- Leadership training for all levels of personnel
- Personal productivity training using several modalities

Training Offered to the Transportation Community

The Training Center attracts members of the United States 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.

The Training Center has also embarked on the development of the following series of new initiatives that are expected to premiere in FY2009:

- Rotorcraft Accident Investigation (5 days)
- Marine Accident Investigation (5 days)
- Marine Safety Investigations for Marine Professionals (2 days)

Training Center personnel are also examining the possibilities of presenting some courses in various centrally located areas throughout the United States to get the safety message out to a broader audience. The following pilot programs are being examined:

- Family Assistance During Transportation Disasters
- Managing Communications During an Aircraft Disaster

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, and representatives from local, State, and Federal law enforcement agencies.

NTSB training is known throughout the world as an effective means to increase investigative knowledge.

Transportation safety and security 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 33 foreign countries sent a total of 112 investigators and other transportation professionals to Training Center programs in 2008. This included 11 countries that were not represented in 2007: Bahamas, Finland, France, Republic of Korea, Latvia, Malaysia, People's Republic of China, Philippines, Republic of South Africa, Slovenia, and Switzerland. Many of these foreign countries heavily rely on the NTSB Training Center to train their personnel each year.

Partnerships

Furthering its commitment to meeting the training needs of those in other areas of the government and the transportation safety and security 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) investigative arms– the Engineering and Safety Center (NESC) (which was established shortly after the Columbia space shuttle accident) and the Marshall Space Flight Center (MSFC). The Training Center is working with the MSFC and NESC at Hampton Roads to act as a continuing venue to conduct training seminars with the participation of NTSB staff. Additionally, the Training Center is actively working with the Army Air National Guard (ANG) Safety Center at Fort Rucker to develop and present a 2-week Aviation Accident Investigation School several times per year exclusively tailored for the ANG.

The following is a list of the organizations that participated in alliances or partnerships with the NTSB Training Center during 2008:

- Federal Aviation Administration
  - International Joint Training – Aviation Accident Investigation under development
  - Flight Standards District Offices – Safety Management Systems
- Armed Forces Institute of Pathology
- NASA
- George Washington University
- U.S. Coast Guard and State Representatives
- National Association of State Boating Laws Administrators
- Federal Bureau of Investigation
- People's Republic of China – Aircraft Accident Investigation for the Civil Aviation Administration
- Director of National Intelligence – Investigative Training/Critical Thinking
- Department of Homeland Security – Investigative Training/Critical Thinking

Training Programs

In 2008, almost 1,200 individuals attended 68 NTSB Training Center programs and seminars—representing about a 6 percent increase in attendance over 2007, and more than twice the number of programs and seminars. Several programs were offered more than once during the year.

Title	Total Students
AVIATION	
Accident Investigation Orientation (offered twice)	101
Aircraft Accident Investigation (offered twice)	87
INTERMODAL	
Photo-Documentation Series (three courses below)	
-- Technical Photography (offered twice)	19
-- Advanced Accident Site Photography (offered twice)	19
-- Digital Image Processing (offered twice)	19
MARINE	
Accident Investigation Orientation for Marine Professionals	42
PUBLIC AFFAIRS	
Managing Communications During an Aircraft Disaster	93
RAIL	
Accident Investigation Orientation for Rail Professionals	20
TRANSPORTATION DISASTER RESPONSE	
Family Assistance (offered twice)	94
Advanced Skills in Disaster Family Assistance	31
Airport Preparedness Program	45
Transportation Disaster Response-Emergency Responders	44
PARTNERSHIPS	
Aircraft Accident Investigation for the Civil Aviation Administration of the People's Republic of China	15
WORKFORCE DEVELOPMENT CURRICULUM FOR NTSB EMPLOYEES	
Investigator-In-Charge: On Scene Policies, Procedures, and Practices Review	56
IMS Seminars (offered 9 courses)	13
How to Do More in Less Time with Less Stress	16
Blackberry Boot Camp (offered twice)	14
Changing Your Outlook (offered twice)	14
Mid Career Retirement Planning Seminar	22
SES Forums (offered 5 courses)	40
Managing Projects	23
CBD Forum (offered 6 courses)	27
Project Leadership, Management and Communication	24
Quality for Project Managers	17
Retirement Planning Seminar	24
Administrative Support Staff Course	5
Media Training for NTSB Investigators	11
Conducting Effective Technical Presentations (offered twice)	12

In 2008, the NTSB Training Center delivered a total of 68 courses, including 49 courses and seminars in the Workforce Development curriculum that were offered solely to NTSB employees.

WORKFORCE DEVELOPMENT CURRICULUM FOR NTSB EMPLOYEES (Continued)	
Accident/Incident Report Writing (offered twice)	14
How to Increase Your Personal and Professional Productivity (offered twice)	18
Trench Safety	4
Hazardous Waste Operations and Emergency Responders (offered twice)	8
Hazardous Waste Operations and Emergency Responders Refresher (offered twice)	19
Confined Space Entry (offered three times)	14
Crane Operator Training	7
Forklift Safety	2
Team Training for Administrative Operations	34
American Sign Language	13
Managing the Federal Employee Discipline & Performance	12
Small Agency Council Courses (20 courses)	18
Administrative Professional Day	10
Career, Qualify of Life and Leadership Forums (3 courses)	12
Various Audio Book Program Courses	66
TOTALS	**1,198**

The Training Center project management curriculum has helped increase the agency's use of project management techniques.

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 issues 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 each course's quality and value.

Facility Use

The Ashburn facility is a 72,000 square-foot building 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 collapse bridge in Minneapolis, Minnesota. Consequently, the warehouse is actively used for training and wreckage examination.

The NTSB's utilization of the training center has increased dramatically in the last several years.

The NTSB Training Center facility provides the NTSB space to continue operations during emergencies in accordance with the 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. The NTSB continues to sublet the majority of the first floor to the Department of Homeland Security, Federal Air Marshalls Service. During 2008, the NTSB also entered into an Agreement with the Department of Homeland Security – Intelligence and Analysis Division to use three classrooms on the second level on a continuing basis.

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 2008, 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 2008 in the facility:

- American Bus Association
- American Institute of Aviation and Astronautics
- Armed Forces Institute of Pathology
- Captive Resources
- Department of Homeland Security

- Drug Enforcement Administration
- Flight Safety Foundation
- International Association of Chiefs of Police
- National Aeronautics and Space Administration
- National Air Transportation Association
- National Association of State Boating Law Administrators
- Office of the National Director of Intelligence
- Society of Automotive Engineers International
- United Motorcoach Association
- U.S. Coast Guard

Cost Recovery

The marketing strategy of the Training Center business plan is to maximize cost recovery 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 space. During calendar year 2008, the NTSB Training Center took in $1,432,132 from course tuition and fees, facility rentals, and interagency COOP agreements. This represents an increase of about 3 percent over 2007. 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, supplies, and to finance a reserve for equipment replacement.

Key Challenges

- Maintain or increase revenue in an environment of high competition for training resources.
- Develop and employ new methods for marketing services, facilities and courses to other organizations.
- Develop effective online training alternatives for residence courses.
- Upgrade/repair IT and audio-visual systems to address changes in technology.
- Develop and employ an agency-wide system for evaluating and measuring the effect of courses in improved performance of employees.

Significant Achievements

- Expanded NTSB Workforce Development course offerings based on employee training needs, developed new courses, and evaluated current training courses.

- Maintained the NTSB Training Center staff at three full-time positions while expanding the curriculum.
- Increased the level of cost recovery for the Training Center.
- 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.
- Utilized electronic learning and Small Agency Council course offerings to improve the effectiveness of NTSB staff in performing the agency's mission.
- Completed the introduction of formal individual development plans for NTSB supervisors and staff. These IDPs support 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.
- Reduced training costs by transitioning to complete electronic delivery of course materials for participants.
- Provided a facility for laboratory and analysis activities, such as the structure from the Minneapolis I-35W bridge collapse.
- Continued to improve the quality of NTSB 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.

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's 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.

The Office of Administrative Law Judges disposed of 69 percent of its caseload in 2008.

Either the certificate holder or the FAA may appeal the judges' decisions to the five-member 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 both sides.

A certificate holder can appeal the Board's decision 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 Board's 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's 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 2008, the Board received one marine appeal and issued two rulings on marine cases.

There were 391 aviation certificate appeals filed with the NTSB's Office of Administrative Law Judges in 2008; 187 of these cases were from emergency orders. The Board's judges held 70 hearings and closed 382 cases in 2008.

During 2008, 39 of the judges' decisions were appealed to the NTSB. The Board decided 55 appeals, reversing the judge's decision in 4 cases and remanding one case to the judges for further proceedings. Eighteen of the Board's decisions were appealed to the U.S. Court of Appeals, which rendered 24 decisions in 2008. The Court affirmed the Board in 4 cases and dismissed 20 cases for procedural reasons.

Thirteen EAJA applications were filed with the Safety Board's administrative law judges in 2008, and the judges decided 10 EAJA cases. In 2008, five of the judges' EAJA decisions were appealed to the full Board which issued rulings in two EAJA cases.

There were 391 aviation certificate appeals filed with the NTSB's Office of Administrative Law Judges in 2008; 187 of these cases were from emergency orders. The agency's judges held 70 hearings and closed 382 cases in 2008.

Member Profiles

MARK V. ROSENKER
Acting Chairman

Mark V. Rosenker of Virginia was sworn in as the 11th Chairman of the National Transportation Safety Board on August 11, 2006. His 2-year term as Chairman expired in August 2008; President Bush nominated Mr. Rosenker for a second 2-year term as Chairman and also appointed him Vice Chairman and, as a result, Acting Chairman Rosenker has been head of the agency, either as Chairman or Acting Chairman, since March 2005. He is currently serving his second 5-year term as Member, which expires December 31, 2010.

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, D.C., 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 United States. 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 as a member of the American Battle Monuments Commission (ABMC). After serving 4 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 37 1/2 -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 its highest honor, the Confluence Award, twice. 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. In addition, in September 2007, the National Association of State Boating Law Administrators (NASBLA) presented Chairman Rosenker with the NASBLA Award for his years of promoting boating safety.

Mr. Rosenker was the Board Member on scene for the NTSB'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 struck by a transit train and killed; the January 2007 derailment of a CSX freight train in Shepherdsville, Kentucky, that resulted in a hazardous materials spill and fire; the August 2007 collapse of the I-35W bridge in Minneapolis, Minnesota, that killed 13 motorists who were crossing the bridge at the time of the collapse; the June 2008 midair collision of two emergency medical services helicopters in Flagstaff, Arizona; the investigation of the crash of the small aircraft piloted by adventurer Steve Fossett, after the wreckage was found in October 2008, more than a year after the aircraft was reported missing; and the March 2009 crash of a single-engine plane in Butte, Montana, that killed all 14 persons aboard. He also was part of the NTSB's Go Team for the June 2003 capsizing of the charter fishing vessel *Taki-Tooo*, near Garibaldi, Oregon, which took the lives of 11 of the 19 people aboard.

In April 2008, Mr. Rosenker chaired the NTSB's public hearing into the accident involving the containership M/V *Cosco Busan,* which struck the fendering system of the San Francisco-Oakland Bay Bridge.

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 13 major transportation accidents:

- September 2008 crash of a Maryland State Police emergency medical services helicopter, Forestville, Maryland;
- September 2008 crash of a business jet in Columbia, South Carolina;
- August 2008 crash of a chartered motorcoach in Sherman, Texas;
- November 2007 allision of the containership M/V *Cosco Busan* with the San Francisco-Oakland Bay Bridge resulting in the release of 53,500 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 Comair flight 5191 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 chartered aircraft into an airport warehouse at Teterboro, New Jersey;
- January 2005 freight train collision and hazardous material release in Graniteville, South Carolina; and
- November 2004 collision of two Washington Metropolitan Area Transit Authority trains at the Woodley Park Station in Washington, D.C.

Member Hersman also participated in the on-scene investigation of the crash of an aircraft in Jefferson City, Missouri in October 2004.

Member Hersman has chaired a number of public events hosted by the NTSB. In October 2008, she chaired a 2-day public hearing on an accident in Victoria, Texas, involving a motorcoach that did not comply with the *Federal Motor Vehicle Safety Standards*. In September 2006, she chaired a 2-day public forum on motorcycle safety. In July 2006, she

chaired a 2-day public hearing investigating the February 2006 fire on board United Parcel Service flight 1307. She also chaired a 3-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. Member Hersman is also a certified Child Passenger Safety Technician. She has also completed the 40-hour HAZWOPER (Hazardous Waste Operations and Emergency Response Standard) training course.

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 expired 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.

Since her appointment to the NTSB, Member Higgins served as the Board Member on scene for the Safety Board's investigations into the May 2006 crash in Washington, D.C., of a MedSTAR medevac 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 the 1,000 passengers riding the train during rush hour in downtown Chicago; the January 2007 derailment of a Metro transit car carrying more than 100 passengers at the beginning of rush hour in Washington, D.C.; 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, the driver's wife, and five baseball players, and injuring 29 others, from a small college in Ohio; the May 2007 grounding of the cruise ship *Empress of the North* near Juneau, Alaska; the May 2008 crash of two MBTA commuter trains in Newton, Massachusetts that killed the operator of one train and injured several passengers; the August 2008 crash of a Forest Service helicopter near Redding, California that killed the pilot and 9 firefighters; the September 2008 collision in Chatsworth, California, of a Metrolink commuter train and a Union Pacific freight train that killed 24 passengers and the Metrolink engineer, and injured 102 others; the January 2009 intentional ditching of US Airways flight 1549 into New York's Hudson River with no fatalities and 5 serious injuries.

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. She also chaired a public forum on "The Safety of Unmanned Aircraft Systems" in June 2008, and chaired a March 2009 public hearing on the fatal collision of the Metrolink commuter train and the UP freight train in Chatsworth, California.

Ms. Higgins brings 36 years of experience in the public and private sectors to her appointment. Before her term at the NTSB, she was President and CEO of TATC Consulting and served as 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, Department of Transportation, Federal Aviation Administration (FAA), and U.S. Coast Guard on a number of matters, including the 1996 accidents involving ValuJet flight 592 and TWA flight 800, 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

Robert L. Sumwalt
Member

Robert L. Sumwalt was sworn in as the 37th Member of the National Transportation Safety Board on August 21, 2006, whereupon President Bush designated him as Vice Chairman of the Board for a 2-year term, ending August 2008. His term of office as a Board Member will run until December 31, 2011.

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 32 years, including 24 years as an airline pilot with Piedmont Airlines and then US Airways. He logged over 14,000 flight hours and earned 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. From 2002 to 2004, he served on the US Airways Flight Operations Quality Assurance 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 prior to joining the NTSB. 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 has written extensively on aviation safety matters, having published over 85 articles and papers in aviation trade publications. He has broad experience in writing aircraft operations manuals and airline and corporate aviation policy and procedure guidelines. Before joining the Board, he was 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, Member Sumwalt served as the Chairman of the Board of Inquiry for the NTSB's February 2009 public hearing regarding emergency medical services helicopters. Additionally, he has served as the Member on-scene for the following accidents: the December 20, 2008, accident involving Continental Airlines flight 1404, a Boeing 737-500 that departed the left side of the runway during takeoff roll at Denver International Airport and caught fire; a November 30, 2007, collision between an Amtrak passenger train and a standing Norfolk Southern freight train in Chicago, Illinois; a November 1, 2007, liquid propane pipeline rupture and explosion in Carmichael, Mississippi; a July 10, 2007, aviation accident in which a twin-engine Cessna 310R airplane impacted homes in a residential area in Sanford, Florida; and the October 20, 2006, derailment of a Norfolk Southern train in New Brighton, Pennsylvania. Mr. 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

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 was also 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, 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, Virginia.

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, "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 left the Board on February 28, 2009.

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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			***None to report***	
HIGHWAY			***None to report***	
MARINE			***None to report***	
PIPELINE			***None to report***	
RAILROAD		**Accidents involving Freight Trains**		
RR--Freight	1/1/08	LUSK, WY	UP derailment, $2.88M. Broken rail, 32 cars derailed.	Limited Board resources
RR--Freight	1/6/08	INDIANAPOLIS, IN	CSX train struck rail cars, $1.77M, Cars rolled out from yard onto main track.	Limited Board resources
RR--Freight	1/10/08	GRANDVIEW, MO	KCS derailment, $1.9M. Rail angle bar broke under train.	Limited Board resources
RR--Freight	1/12/08	AUGUSTA, KS	BNSF collision, $4.99M. Train struck rear of another train, derailing 10 cars.	Limited Board resources
RR--Freight	1/12/08	TRENTON, ND	BNSF derailment, $2.43M. 23 cars derailed due to broken car knuckle.	Limited Board resources
RR--Freight	1/15/08	MELROSE, IA	BNSF derailment, $1.4M. No cause determined.	Limited Board resources
RR--Freight	1/15/08	CARROLL, IA	UP derailment, $2.16M. Rail defect.	Limited Board resources
RR--Freight	1/23/08	CANASTOTA, NY	CSX derailment, $1.22M. Broken rail joint bar.	Limited Board resources
RR--Freight	1/26/08	FOXBORO, WI	BNSF derailment, $1.16M. 36 cars derailed.	Limited Board resources
RR--Freight	1/27/08	SPOON BUTTE, WY	UP derailment, $1.1M. 27 cars derailed due to defective or missing rail spikes.	Limited Board resources
RR--Freight	1/28/08	GLOBE, AZ	AZER derailment, $1.4M. Bridge collapsed.	Limited Board resources
RR--Freight	2/1/08	ELTOPIA, WA	BNSF derailment, $2.2M.	Limited Board resources
RR--Freight	2/9/08	NORTHPORT, NE	UP derailment, $1.2M. 20 cars derailed.	Limited Board resources
RR--Freight	3/3/08	MECCA, CA	UP derailment, $1.43M. Overheated journal.	Limited Board resources
RR--Freight	3/6/08	FAIRFIELD, NE	UP derailment, $2M. Broken insulated joint bar.	Limited Board resources
RR--Freight	3/15/08	BOZEMAN, MT	MRL derailment, $1.84M. Broken rail.	Limited Board resources
RR--Freight	3/16/08	PICA, AZ	BNSF derailment, $2.12M. Broken rail.	Limited Board resources
RR--Freight	3/18/08	WEST VIENNA, IL	UP derailment, $1.4M. Track structure damaged by flooding.	Limited Board resources
RR--Freight	4/12/08	GLAMIS, CA	UP derailment, $1.1M. Broken rail joint bar.	Limited Board resources
RR--Freight	4/20/08	SAGINAW, MO	KCS derailment, $1.1M. Track structure.	Limited Board resources
RR--Freight	4/25/08	NORTH BUENA VISTA, IA	ICE derailment, $3.78M. Bridge washed out by flood.	Limited Board resources
RR--Freight	5/24/08	WARNER ROBINS, GA	NS derailment, $1.1M. Cause unknown.	Limited Board resources
RR--Freight	6/3/08	BARRY, IL	NS derailment, $1.74M. 31 cars derailed.	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	6/3/08	BASTROP, TX	UP derailment, $1.92M. Broken rail joint bar.	Limited Board resources
RR--Freight	6/9/08	WESTMINSTER, CO	BNSF derailment, $1.1M. Vandalism.	Limited Board resources
RR--Freight	6/23/08	GIBSLAND, LA	KCS derailment, $1.35M. Locomotive struck log truck at crossing.	Limited Board resources
RR--Freight	6/23/08	LEMOYNE, NE	UP derailment, $1.5M. Broken rail.	Limited Board resources
RR--Freight	6/24/08	PINGREE GROVE, IL	ICE derailment, $1.89M. Cause not identified.	Limited Board resources
RR--Freight	7/4/08	KREMLIN, MT	BNSF derailment, $1.2M. Extreme gust of wind swept cars from track.	Limited Board resources
RR--Freight	7/9/08	GUTTENBERG, IA	ICE derailment, $1.16M Train struck boulder in track.	Limited Board resources
RR--Freight	7/29/08	RENO, MN	ICE derailment, $2.29M. 28 cars derailed.	Limited Board resources
RR--Freight	8/6/08	LUCERNE, WY	BNSF derailment, $1.4M. Track washed out.	Limited Board resources
RR--Freight	8/23/08	ALVIN, TX	UP derailment, $1.46M. 14 cars derailed.	Limited Board resources
RR--Freight	9/25/08	NEW CAMBRIA, MO	BNSF derailment, $1.85M. Drawbar pin came out between first and second car.	Limited Board resources
RR--Freight	10/22/08	PLAINS, MT	MRL derailment, $1.35M. 19 cars derailed.	Limited Board resources
RR--Freight	10/23/08	CANEY, OK	UP derailment, $1.1M. Locomotive traction motor locked up.	Limited Board resources
RR--Freight	10/24/08	BARING, MO	BNSF derailment, $2.5M. 35 cars derailed.	Limited Board resources
RR--Freight	10/28/08	MAPLE RIVER, IA	UP derailment, $1.25M. Broken rail.	Limited Board resources
RR--Freight	11/9/08	HIBBING, MN	BNSF derailment, $2.2M. Broken rail.	Limited Board resources
RR--Freight	11/11/08	WEVER, IA	BNSF derailment, $1.03M. Rail failure.	Limited Board resources
RR--Freight	11/17/08	LYNDHURST, NJ	NS derailment, $1.43M. Train struck tunnel.	Limited Board resources
RR--Freight	11/20/08	KENT, OH	CSX derailment, $1.01M. Cause undetermined.	Limited Board resources
RR--Freight	11/22/08	MOBILE, AL	TASD side collision, $1.55M. Train struck during switching movement.	Limited Board resources
RR--Freight	11/22/08	HEDLEY, TX	BNSF derailment, $1.64M.	Limited Board resources
RR--Freight	11/25/08	ELGIN, NV	UP derailment, $1.68M. Broken rail.	Limited Board resources
RR--Freight	12/7/08	NOLAN, ND	BNSF derailment, $2M. Broken rail.	Limited Board resources
RR--Freight	12/14/08	TRENTON, ND	BNSF derailment, $1.66M.	Limited Board resources
RR--Freight	12/17/08	DRESBACH, MN	SOO side collision, $1.54M. Train from siding struck 50th car on mainline.	Limited Board resources
RR--Freight	12/18/08	AURORA, IL	BNSF derailment, $1.4M. Nine cars derailed.	Limited Board resources
RR--Freight	12/27/08	CARLIN, NV	UP derailment, $2M. Broken rail.	Limited Board resources
RR--Freight	12/30/08	FRYBURG, ND	BNSF derailment, $1.45M. Flat spots on wheels.	Limited Board resources
RR--Pass.		**Accidents involving Passenger Trains**		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.	1/2/08	BOWIE, MD	Amtrak Train 110 sustained damage to train. Defective pantograph unit.	Limited Board resources
RR--Pass.	1/2/08	BOWIE, MD	Amtrak Train 2100 sustained damage to train. Defective pantograph unit.	Limited Board resources
RR--Pass.	1/2/08	BEDFORD HILLS, NY	MNCW train struck automobile on track.	Limited Board resources
RR--Pass.	1/3/08	NEWARK, NJ	NJT train pantograph dislodged, causing damage to train and catenary.	Limited Board resources
RR--Pass.	1/4/08	NORWALK, CT	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	1/4/08	NEW BRUNSWICK, NJ	Amtrak sustained damage to train. Defective pantograph unit.	Limited Board resources
RR--Pass.	1/6/08	SANTA FE SPRINGS, CA	Amtrak struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	1/6/08	LOS NIETOS, CA	Amtrak struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	1/8/08	CHICAGO, IL	Fire on outside of passenger car, caused by defective circuit breaker.	Limited Board resources
RR--Pass.	1/10/08	MADERA, CA	Amtrak struck a flatbed truck at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	1/12/08	ABERDEEN, MD	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	1/14/08	OAKLAND, CA	Amtrak struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	1/17/08	BALDWIN PARK, CA	SCAX train struck a truck at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	1/17/08	HAMILTON, NJ	NJT train derailed after heating transformer dropped into gauge of track.	Limited Board resources
RR--Pass.	1/19/08	CHICO, CA	Amtrak struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	1/25/08	SIMI VALLEY, CA	SCAX train struck a rock slide near entrance to a tunnel.	Limited Board resources
RR--Pass.	1/25/08	LONGWOOD, FL	Amtrak struck a garbage truck at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	1/25/08	LONGWOOD, FL	Amtrak struck a tractor-trailer at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	1/25/08	HOUSTON, TX	Amtrak struck a tractor-trailer at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	1/26/08	ABERDEEN, MD	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	1/29/08	TERRELL, TX	Amtrak struck a flatbed truck at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	1/29/08	TERRELL, TX	Amtrak struck a tractor-trailer at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	1/30/08	BRONX, NY	MNCW train struck a fence that fell from an overhead bridge. Fence tangled underneath passenger cars.	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.	2/1/08	PHILADELPHIA, PA	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	2/2/08	NIAGARA, ND	Amtrak struck a pickup truck at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	2/7/08	WASHINGTON, DC	Amtrak locomotive struck the rear of an Amtrak train at a low speed, causing the rear car to derail.	Limited Board resources
RR--Pass.	2/9/08	PUYALLUP, WA	Amtrak struck a crane at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	2/11/08	NESHAMINY, PA	SEPTA sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	2/12/08	PINELAWN, NY	LIRR struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	2/20/08	NEW BUFFALO, MI	Amtrak struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	2/22/08	WASHINGTON, DC	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	3/4/08	OXNARD, CA	SCAX struck a tractor-trailer at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	3/7/08	ABERDEEN, MD	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	3/7/08	PROVIDENCE, RI	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	3/8/08	RYE, NY	MNCW train passengers evacuated from car because of smoke, due to a failed traction motor.	Limited Board resources
RR--Pass.	3/11/08	SUMMIT, NJ	NJTR sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	3/17/08	WINDSOR LOCKS, CT	Amtrak train derailed one locomotive and one car after striking mudslide. No injuries.	Limited Board resources
RR--Pass.	3/20/08	PERRYVILLE, MD	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	3/21/08	BRIDGEPORT, CT	MNCW sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	3/21/08	PELHAM, NY	MNCW sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	3/25/08	WILMINGTON, DE	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	3/25/08	ALTAMONTE SPGS, FL	Amtrak train struck a forklift that was fouling the railroad right-of-way.	Limited Board resources
RR--Pass.	3/25/08	CANTON, MA	CSX rail car rolled from side track and struck MBTA train.	Limited Board resources
RR--Pass.	3/27/08	JAMAICA, NY	LIRR standing train struck at low speed by LIRR train in passenger station. No injuries.	Limited Board resources
RR--Pass.	3/27/08	JAMAICA, NY	LIRR train derailed two cars at low speed in the station.	Limited Board resources
RR--Pass.	3/30/08	WESTPORT, CT	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	4/1/08	DEL MAR, CA	SDNX train struck an automobile that was abandoned in the track.	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.	4/2/08	GARY, IN	Amtrak struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	4/3/08	ELKTON, MD	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	4/5/08	PROVIDENCE, RI	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	4/8/08	BALTIMORE, MD	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	4/13/08	NEW YORK, NY	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	4/30/08	NEW YORK, NY	A PATH train was evacuated due to smoke, caused by an electrical fire.	Limited Board resources
RR--Pass.	5/9/08	LONG ISLAND CITY, NY	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	5/10/08	MARTIN, OH	Amtrak struck a pickup truck at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	5/17/08	BEEBE, AR	Amtrak struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	5/18/08	KINGSTON, RI	Amtrak sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	5/19/08	WEST PALM BEACH, FL	Tri-Rail train struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	5/24/08	ALBUQUERQUE, NM	Amtrak train operated over a derail in the yard, derailing the locomotive at low speed.	Limited Board resources
RR--Pass.	5/27/08	CRYSTAL SPRINGS, MS	Amtrak struck a garbage truck at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	5/28/08	HANFORD, CA	Amtrak was struck by a tractor-trailer at a highway-rail grade crossing, causing the derailment of passenger cars. No injuries reported.	Limited Board resources
RR--Pass.	5/28/08	SAN JUAN CAPISTRANO, CA	Amtrak struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	5/28/08	NEWARK, NJ	NJT train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	6/2/08	PELHAM, NY	MNCW train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	6/3/08	BREWSTER, NY	MNCW struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	6/10/08	FORDHAM, NY	Smoke in car of MNCW train due to defective traction motor.	Limited Board resources
RR--Pass.	6/11/08	LAYTON, UT	UFRC struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	6/12/08	PHILADELPHIA, PA	SEPTA train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	6/13/08	NEW YORK, NY	Amtrak train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	6/18/08	PHILADELPHIA, PA	Smoke on SEPTA train due to defective traction motor.	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.	6/19/08	CHICAGO, IL	NIRC passenger injured due to broken highway-rail grade crossing gate which got entangled with the train's vestibule door.	Limited Board resources
RR--Pass.	6/27/08	STOCKTON, CA	ACEX train struck a bumping post at low speed in the passenger station.	Limited Board resources
RR--Pass.	6/27/08	WOODBRIDGE, NJ	NJT train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	7/1/08	SHAFTER, CA	Amtrak struck a pickup truck at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	7/6/08	ELMIRA, CA	Amtrak struck by a pickup truck at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	7/11/08	LA VETA, CO	SLRG derailed first two axles of locomotive at low speed over a broken rail.	Limited Board resources
RR--Pass.	7/11/08	NEW ROCHELLE, NY	MNCW train fire in cab car, caused by a 600 volt jumper cable grounded to car. Passengers evacuated due to smoke.	Limited Board resources
RR--Pass.	7/18/08	LEVITTOWN, PA	Amtrak train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	7/19/08	WESTPORT, CT	MNCW train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	7/21/08	WASHINGTON, DC	Amtrak struck automobile that was fouling the track.	Limited Board resources
RR--Pass.	7/21/08	ODENTON, MD	Amtrak train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	7/28/08	AVONDALE, LA	Rear axle of Amtrak train derailed while operating over yard track at low speed.	Limited Board resources
RR--Pass.	8/4/08	STAMFORD, CT	MNCW train struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	8/8/08	DETROIT, MI	Amtrak locomotive derailed one axle at low speed due to defective crossties.	Limited Board resources
RR--Pass.	8/15/08	CANBY, OR	Amtrak struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	8/16/08	ELKTON, MD	Amtrak train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	8/17/08	NORWALK, CT	MNCW train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	8/22/08	POMPANO BEACH, FL	Amtrak struck a tractor-trailer at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	8/29/08	WASCO, CA	Amtrak struck a tractor-trailer at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	8/29/08	FAR HILLS, NJ	NJT train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	8/29/08	NEW ROCHELLE, NY	Amtrak train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	9/2/08	BUCODA, WA	Amtrak struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	9/3/08	RENSSELAER, NY	Amtrak train derailed at low speed over a gapped switch in the yard.	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.	9/6/08	NEW HAVEN, CT	Amtrak train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	9/8/08	JOLIET, IL	Amtrak derailed one car at low speed while making reverse move through a crossover.	Limited Board resources
RR--Pass.	9/8/08	MANSFIELD, MA	Amtrak train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	9/9/08	FORT WORTH, TX	TRE struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	9/10/08	LAYTON, UT	UFRC struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	9/11/08	LAS VEGAS, NM	Amtrak struck a pickup truck at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	9/11/08	LAS VEGAS, NM	Amtrak struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	9/12/08	CORONA, CA	SCAX train struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	9/14/08	MATTAWAN, MI	Amtrak struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	9/28/08	HARTFORD, IL	Amtrak struck a pickup truck at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	9/28/08	OLYMPIA, WA	Amtrak train toilet retention tank fell off. Baggage car ran over tank at low speed and derailed.	Limited Board resources
RR--Pass.	10/6/08	BURLINGAME, CA	Caltrain struck a tractor-trailer at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	10/15/08	NORWALK, CT	MNCW train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	10/23/08	PEAPACK, NJ	NJT train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	10/26/08	HUTTO, TX	Amtrak struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	10/27/08	BALTIMORE, MD	Amtrak train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	10/30/08	SAN MATEO, CA	Caltrain struck a pickup truck at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	10/30/08	ATTLEBORO, MA	Amtrak train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	11/6/08	SAN JOSE, CA	Caltrain struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	11/9/08	CHICAGO, IL	Amtrak train derailed two rear cars due to a broken rail while operating at low speed. No injuries.	Limited Board resources
RR--Pass.	11/13/08	TRENTON, NJ	Amtrak train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	11/17/08	WESTPORT, CT	MNCW train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	11/19/08	JAMAICA, NY	LIRR train pulling out of station passed a stop signal a struck another LIRR passenger train, damaging both trains. 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.	11/23/08	JAMAICA, NY	LIRR train derailed the 8th car due to wheel climb at heel block of switch, due to low speed. No injuries.	Limited Board resources
RR--Pass.	11/24/08	ATTLEBORO, MA	Amtrak train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	11/29/08	ROCKY MOUNT, NC	Amtrak struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	12/4/08	PROVIDENCE, RI	Amtrak train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	12/5/08	WASHINGTON, DC	Amtrak train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	12/5/08	CENTRALIA, WA	Amtrak struck a tractor-trailer at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	12/7/08	PROVIDENCE, RI	Amtrak train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	12/8/08	BRIGHTON, IL	Amtrak struck a tractor-trailer at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	12/11/08	BALTIMORE, MD	Amtrak struck an automobile at a highway-rail grade crossing.	Limited Board resources
RR--Pass.	12/12/08	EDGEWOOD, MD	Amtrak train sustained damage to pantograph unit.	Limited Board resources
RR--Pass.	12/13/08	WASHINGTON, DC	Amtrak derailed two cars at low speed while proceeding from shop track.	Limited Board resources
RR--Pass.	12/22/08	SANTA CLARA, CA	Amtrak derailed two cars at low speed while it was being shoved into station.	Limited Board resources
RR--Transit		**Accidents involving Transit Trains**		
RR--Transit	1/1/08	DALLAS, TX	Passenger injured while running towards the train as the train doors were closing.	Limited Board resources
RR--Transit	1/1/08	NEW ORLEANS, LA	Rail Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	1/2/08	NEW YORK, NY	Trespasser struck.	Limited Board resources
RR--Transit	1/3/08	NEW ORLEANS, LA	Pedestrian struck by streetcar. Taken by EMS to hospital.	Limited Board resources
RR--Transit	1/3/08	NEW ORLEANS, LA	Streetcar struck tour bus.	Limited Board resources
RR--Transit	1/4/08	MALDEN, MA	Rail Fire on Transit Vehicle. No Injuries.	Limited Board resources
RR--Transit	1/4/08	SAN JOSE, CA	Pedestrian didn't see train approaching and stepped in front of train resulting in a fatality.	Limited Board resources
RR--Transit	1/4/08	SAN FRANCISCO, CA	The train operator violated the right of way of the pedestrian and struck the pedestrian	Limited Board resources
RR--Transit	1/6/08	SANTEE, CA	Rail Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	1/7/08	SAN FRANCISCO, CA	Pedestrian crossing in front of the train was struck.	Limited Board resources
RR--Transit	1/8/08	SAN FRANCISCO, CA	Pickup truck struck by train.	Limited Board resources
RR--Transit	1/11/08	NEW YORK, NY	Trespasser struck.	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--Transit	1/11/08	SAN FRANCISCO, CA	Fire truck struck at highway-rail grade crossing.	Limited Board resources
RR--Transit	1/13/08	NEW ORLEANS, LA	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	1/15/08	BROOKLYN, NY	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	1/16/08	SOUTH PASADENA, CA	Collision at Grade Crossing. 2 Injuries	Limited Board resources
RR--Transit	1/18/08	SAN JOSE, CA	Trespasser struck.	Limited Board resources
RR--Transit	1/19/08	BOSTON, MA	Passenger struck by approaching train.	Limited Board resources
RR--Transit	1/20/08	DENVER, CO	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	1/23/08	NEW ORLEANS, LA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	1/28/08	ST. LOUIS, MO	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	2/1/08	PORTLAND, OR	Collision at Grade Crossing. 2 Injuries.	Limited Board resources
RR--Transit	2/2/08	LOS ANGELES, CA	Passenger injured while approaching moving train.	Limited Board resources
RR--Transit	2/3/08	EL CERRITO, CA	Trespasser struck.	Limited Board resources
RR--Transit	2/4/08	NEW ORLEANS, LA	Streetcar struck pedestrian.	Limited Board resources
RR--Transit	2/4/08	DENVER, CO	Train struck automobile on right of way. 1 injury.	Limited Board resources
RR--Transit	2/8/08	HOUSTON, TX	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	2/8/08	BOSTON, MA	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	2/9/08	BOSTON, MA	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	2/9/08	BOSTON, MA	Collision at Grade Crossing. 1 fatality.	Limited Board resources
RR--Transit	2/10/08	QUEENS, NY	Trespasser struck.	Limited Board resources
RR--Transit	2/10/08	NEW YORK, NY	Trespasser struck.	Limited Board resources
RR--Transit	2/11/08	NEW ORLEANS, LA	Two streetcars collided due to improper switching.	Limited Board resources
RR--Transit	2/12/08	PHILADELPHIA AREA, PA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	2/13/08	BROOKLYN, NY	Person struck by train.	Limited Board resources
RR--Transit	2/17/08	LOS ANGELES, CA	Collision at Grade Crossing. 1 injury.	Limited Board resources
RR--Transit	2/17/08	MILTON, MA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	2/20/08	REVERE, MA	Rail Fire on Transit Vehicle. No Injuries.	Limited Board resources
RR--Transit	2/22/08	CHESTNUT HILL, MA	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	3/2/08	SAN FRANCISCO, CA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	3/3/08	SAN DIEGO, CA	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	3/4/08	SAN FRANCISCO, CA	Collision at Grade Crossing. 1 fatality.	Limited Board resources
RR--Transit	3/4/08	MEMPHIS, TN	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	3/5/08	PHILADELPHIA, PA	Collision at Grade Crossing. 3 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--Transit	3/5/08	SAN FRANCISCO, CA	Collision at Grade Crossing. 3 Injuries.	Limited Board resources
RR--Transit	3/5/08	NEW YORK, NY	Person struck by train.	Limited Board resources
RR--Transit	3/9/08	NEW YORK, NY	Person struck by train.	Limited Board resources
RR--Transit	3/13/08	BOSTON, MA	Rail Fire on Transit Vehicle. No Injuries.	Limited Board resources
RR--Transit	3/14/08	DENVER, CO	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	3/14/08	SANTEE, CA	Collision at Grade Crossing. 1 Fatal Injury.	Limited Board resources
RR--Transit	3/16/08	BRONX, NY	Trespasser struck.	Limited Board resources
RR--Transit	3/18/08	HOUSTON, TX	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	3/19/08	SAN FRANCISCO, CA	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	3/19/08	CHESTNUT HILL, MA	Rail Fire on Transit Vehicle. No Injuries.	Limited Board resources
RR--Transit	3/19/08	MEMPHIS, TN	Van struck moving trolley. 2 Injuries.	Limited Board resources
RR--Transit	3/21/08	SAN JOSE, CA	Main Line Derailment.	Limited Board resources
RR--Transit	3/21/08	SAN FRANCISCO, CA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	3/25/08	SAN FRANCISCO, CA	Pedestrian struck.	Limited Board resources
RR--Transit	3/28/08	SAN FRANCISCO, CA	Collision at Grade Crossing. 2 Injuries.	Limited Board resources
RR--Transit	3/30/08	LOS ANGELES, CA	Train struck automobile on right of way. 1 injury.	Limited Board resources
RR--Transit	4/1/08	SAN FRANCISCO, CA	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	4/3/08	SAN DIEGO, CA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	4/4/08	BRONX, NY	Trespasser struck.	Limited Board resources
RR--Transit	4/5/08	HOUSTON, TX	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	4/5/08	NEW YORK, NY	Train struck automobile on right of way. 1 injury.	Limited Board resources
RR--Transit	4/6/08	CHICAGO, IL.	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	4/6/08	EL CAJON, CA	Passenger fatally injured after detraining and falling against departing train.	Limited Board resources
RR--Transit	4/7/08	LONG BEACH, CA	Pedestrian struck while running to beat train.	Limited Board resources
RR--Transit	4/7/08	LOS ANGELES, CA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	4/16/08	SAN FRANCISCO, CA	Main Line Collision and Derailment at Grade Crossing. No Injuries	Limited Board resources
RR--Transit	4/16/08	CHULA VISTA, CA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	4/17/08	SAN FRANCISCO, CA	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	4/17/08	SAN FRANCISCO, CA	Main Line Collision and Derailment at Grade Crossing. No Injuries	Limited Board resources
RR--Transit	4/19/08	BALTIMORE, MD	Collision at Grade Crossing. 2 Injuries.	Limited Board resources
RR--Transit	4/20/08	CHICAGO, IL.	Main Line Derailment. 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--Transit	4/20/08	MEMPHIS, TN	Main Line Derailment. 1 injury.	Limited Board resources
RR--Transit	4/22/08	CHICAGO, IL.	Collision at Grade Crossing. 1 Fatal Injury	Limited Board resources
RR--Transit	4/22/08	HOUSTON, TX	Collision at Grade Crossing. 2 Injuries.	Limited Board resources
RR--Transit	4/24/08	CHICAGO, IL.	Passenger struck by approaching train.	Limited Board resources
RR--Transit	4/27/08	SAN DIEGO, CA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	4/27/08	SAN FRANCISCO, CA	Pedestrian struck by streetcar.	Limited Board resources
RR--Transit	5/1/08	MEMPHIS, TN	Collision at Grade Crossing. 3 Injuries.	Limited Board resources
RR--Transit	5/1/08	HOUSTON, TX	Pedestrian struck by train.	Limited Board resources
RR--Transit	5/2/08	SAN FRANCISCO, CA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	5/2/08	CHICAGO, IL.	Passenger struck by approaching train.	Limited Board resources
RR--Transit	5/4/08	NEW YORK, NY	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	5/6/08	LOS ANGELES, CA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	5/6/08	DALLAS, TX	Pedestrian struck by train.	Limited Board resources
RR--Transit	5/8/08	LONG BEACH, CA	Collision at Grade Crossing. 2 Injuries.	Limited Board resources
RR--Transit	5/8/08	PHILADELPHIA, PA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	5/10/08	HAYWARD, CA	Rail Fire on Transit Vehicle. No Injuries.	Limited Board resources
RR--Transit	5/11/08	SAN FRANCISCO, CA	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	5/14/08	BOSTON, MA	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	5/16/08	SAN FRANCISCO, CA	Collision at Grade Crossing. No Injuries.	Limited Board resources
RR--Transit	5/19/08	ST. LOUIS, MO	Trespasser struck.	Limited Board resources
RR--Transit	5/20/08	SAN JOSE, CA	Trespasser struck.	Limited Board resources
RR--Transit	5/20/08	SAN FRANCISCO, CA	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	5/20/08	LA MESA, CA	Person on skateboard struck by train.	Limited Board resources
RR--Transit	5/21/08	SILVER SPRING, MD	Trespasser struck.	Limited Board resources
RR--Transit	5/21/08	SAN FRANCISCO, CA	Train struck automobile on right of way. 3 injuries.	Limited Board resources
RR--Transit	5/23/08	PORTLAND, OR	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	5/24/08	MINNEAPOLIS, MN	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	5/25/08	SAN FRANCISCO, CA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	5/26/08	BALTIMORE, MD	Train struck automobile on right of way.	Limited Board resources
RR--Transit	5/31/08	PHILADELPHIA, PA	Trespasser struck.	Limited Board resources
RR--Transit	6/1/08	WASHINGTON, DC	Trespasser struck.	Limited Board resources
RR--Transit	6/4/08	NEW YORK, NY	Trespasser struck.	Limited Board resources
RR--Transit	6/5/08	MEMPHIS, TN	Train struck automobile on right of way.	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--Transit	6/5/08	SAN FRANCISCO, CA	Rail Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	6/7/08	LOS ANGELES, CA	Trespasser struck.	Limited Board resources
RR--Transit	6/7/08	MEMPHIS, TN	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	6/8/08	HOUSTON, TX	Trespasser struck.	Limited Board resources
RR--Transit	6/9/08	ARLINGTON, VA	Main Line Derailment. 1 Injury	Limited Board resources
RR--Transit	6/9/08	CHICAGO, IL.	Trespasser struck.	Limited Board resources
RR--Transit	6/9/08	HOUSTON, TX	Collision at Grade Crossing. 2 Injuries.	Limited Board resources
RR--Transit	6/10/08	CHICAGO, IL.	Trespasser struck.	Limited Board resources
RR--Transit	6/10/08	CAMDEN, NJ	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	6/12/08	BROOKLYN, NY	Passenger struck by approaching train.	Limited Board resources
RR--Transit	6/15/08	SAN JOSE, CA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	6/16/08	BROOKLYN, NY	Trespasser struck.	Limited Board resources
RR--Transit	6/20/08	SAN JOSE, CA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	6/22/08	PORTLAND, OR	Collision at Grade Crossing. 2 Injuries.	Limited Board resources
RR--Transit	6/22/08	HOUSTON, TX	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	6/23/08	ST. LOUIS, MO	Trespasser struck.	Limited Board resources
RR--Transit	6/23/08	CHICAGO, IL.	Passenger struck by approaching train.	Limited Board resources
RR--Transit	6/24/08	LOS ANGELES, CA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	6/25/08	HOUSTON, TX	Collision at Grade Crossing. 2 Injuries.	Limited Board resources
RR--Transit	6/25/08	NEW ORLEANS, LA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	6/28/08	MEMPHIS, TN	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	6/30/08	SAN FRANCISCO, CA	Collision at Grade Crossing. No Injuries.	Limited Board resources
RR--Transit	7/3/08	HOUSTON, TX	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	7/5/08	DALLAS, TX	Rail Fire on Transit Vehicle. No Injuries.	Limited Board resources
RR--Transit	7/6/08	CLEVELAND, OH	Collision at Grade Crossing. 2 Injuries.	Limited Board resources
RR--Transit	7/8/08	SAN FRANCISCO, CA	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	7/9/08	BEAVERTON, OR	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	7/11/08	HOUSTON, TX	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	7/12/08	STONE MOUNTAIN, GA	Rail Fire on Transit Vehicle. 1 Injury.	Limited Board resources
RR--Transit	7/13/08	SAN FRANCISCO, CA	Main Line Collision and Derailment at Grade Crossing. No Injuries	Limited Board resources
RR--Transit	7/14/08	LEMON GROVE, CA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	7/14/08	CHICAGO, IL.	Passenger struck by approaching train.	Limited Board resources
RR--Transit	7/19/08	CHICAGO, IL.	Main Line Derailment. 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--Transit	7/24/08	CHICAGO, IL.	Passenger injured by moving train.	Limited Board resources
RR--Transit	7/31/08	HOUSTON, TX	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	7/31/08	SPRINGFIELD, PA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	7/31/08	SAN FRANCISCO, CA	Pedestrian struck by train.	Limited Board resources
RR--Transit	8/3/08	CHICAGO, IL.	Collision at Grade Crossing. 1 Injury	Limited Board resources
RR--Transit	8/5/08	PHILADELPHIA, PA	Collision at Grade Crossing. 7 Injuries.	Limited Board resources
RR--Transit	8/5/08	NEW ORLEANS, LA	Collision at Grade Crossing. 2 Injuries.	Limited Board resources
RR--Transit	8/11/08	PASADENA, CA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	8/14/08	MURRAY, UT	Passenger struck by approaching train.	Limited Board resources
RR--Transit	8/14/08	SAN FRANCISCO, CA	Main Line Collision and Derailment at Grade Crossing. No Injuries	Limited Board resources
RR--Transit	8/18/08	MEMPHIS, TN	Main Line Collision and Derailment at Grade Crossing. No Injuries	Limited Board resources
RR--Transit	8/18/08	CHICAGO, IL.	Passenger struck by approaching train.	Limited Board resources
RR--Transit	8/20/08	NEW ORLEANS, LA	Collision at Grade Crossing. 2 Injuries.	Limited Board resources
RR--Transit	8/20/08	SAN FRANCISCO, CA	Collision at Grade Crossing. 1 Fatal Injury.	Limited Board resources
RR--Transit	8/21/08	SAN FRANCISCO, CA	Collision at Grade Crossing. 8 Injuries.	Limited Board resources
RR--Transit	8/21/08	CHICAGO, IL.	Train struck automobile on right of way.	Limited Board resources
RR--Transit	8/22/08	PITTSBURGH, PA	Collision at Grade Crossing. 2 Injuries.	Limited Board resources
RR--Transit	8/25/08	MINNEAPOLIS, MN	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	8/25/08	NEW ORLEANS, LA	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	8/26/08	BUFFALO, NY	Main Line Derailment. No Injuries	Limited Board resources
RR--Transit	8/26/08	CLEVELAND, OH	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	8/29/08	SAN FRANCISCO, CA	Collision at Grade Crossing. 2 Injuries.	Limited Board resources
RR--Transit	8/30/08	CHICAGO, IL.	Passenger struck by approaching train.	Limited Board resources
RR--Transit	9/1/08	HAYWARD, CA	Rail Fire on Transit Vehicle. No Injuries.	Limited Board resources
RR--Transit	9/6/08	MEMPHIS, TN	Main Line Collision and Derailment at Grade Crossing. No Injuries	Limited Board resources
RR--Transit	9/10/08	CHICAGO, IL.	Passenger struck by approaching train.	Limited Board resources
RR--Transit	9/15/08	PHILADELPHIA, PA	Rail Fire on Transit Vehicle. 4 Injuries.	Limited Board resources
RR--Transit	9/19/08	LOS ANGELES, CA	Collision at Grade Crossing.	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--Transit	9/23/08	BALTIMORE, MD	Collision at Grade Crossing. 1 Injury.	Limited Board resources
RR--Transit	10/1/08	SAN FRANCISCO, CA	Train struck automobile on right of way.	Limited Board resources
RR--Transit	10/3/08	NEW YORK, NY	Trespasser struck.	Limited Board resources
RR--Transit	10/4/08	ARLINGTON, VA	Trespasser struck.	Limited Board resources
RR--Transit	10/4/08	BALTIMORE, MD	Passenger struck by approaching train.	Limited Board resources
RR--Transit	10/7/08	NEW YORK, NY	Trespasser struck.	Limited Board resources
RR--Transit	10/7/08	NEW YORK, NY	Trespasser struck.	Limited Board resources
RR--Transit	10/8/08	SALT LAKE CITY, UT	Person on bike struck by train.	Limited Board resources
RR--Transit	10/10/08	WASHINGTON, DC	Trespasser struck.	Limited Board resources
RR--Transit	10/14/08	SAN FRANCISCO, CA	Maintenance worker struck by train.	Limited Board resources
RR--Transit	10/14/08	NEW YORK	Trespasser struck.	Limited Board resources
RR--Transit	10/16/08	NEW YORK, NY	Person struck by train.	Limited Board resources
RR--Transit	10/22/08	BUFFALO, NY	Pedestrian walked into side of train.	Limited Board resources
RR--Transit	10/22/08	NEW ORLEANS, LA	Bicyclist struck by streetcar.	Limited Board resources
RR--Transit	10/23/08	CHICAGO, IL.	Passenger struck by approaching train.	Limited Board resources
RR--Transit	10/27/08	SAN JOSE, CA	Pedestrian struck by train.	Limited Board resources
RR--Transit	10/30/08	NEW ORLEANS, LA	Pedestrian struck by streetcar.	Limited Board resources
RR--Transit	11/12/08	HOUSTON, TX	Train struck automobile on right of way.	Limited Board resources
RR--Transit	11/14/08	HOUSTON, TX	Pedestrian struck by train.	Limited Board resources
RR--Transit	11/17/08	SAN JOSE, CA	Pedestrian struck by train.	Limited Board resources
RR--Transit	11/20/08	CHICAGO, IL.	Train struck automobile on right of way.	Limited Board resources
RR--Transit	11/21/08	HOUSTON, TX	Train struck automobile on right of way.	Limited Board resources
RR--Transit	11/22/08	LOS ANGELES, CA	Trespasser struck.	Limited Board resources
RR--Transit	11/25/08	SAN FRANCISCO, CA	Train struck automobile on right of way.	Limited Board resources
RR--Transit	12/1/08	SAN DIEGO, CA	Trespasser struck.	Limited Board resources
RR--Transit	12/4/08	HOUSTON, TX	Pedestrian struck by train.	Limited Board resources
RR--Transit	12/4/08	BALTIMORE, MD	Train struck automobile on right of way.	Limited Board resources
RR--Transit	12/4/08	SAN DIEGO, CA	Collision at Grade Crossing.	Limited Board resources
RR--Transit	12/6/08	NEW ORLEANS, LA	Bicyclist struck by streetcar.	Limited Board resources
RR--Transit	12/8/08	SAN DIEGO, CA	Train struck automobile on right of way.	Limited Board resources
RR--Transit	12/8/08	DENVER, CO	Collision at Grade Crossing.	Limited Board resources
RR--Transit	12/10/08	NEW YORK, NY	Trespasser struck.	Limited Board resources
RR--Transit	12/12/08	WASHINGTON, DC	Smoke on train. Train evacuated.	Limited Board resources
RR--Transit	12/15/08	MARYLAND	Pedestrian struck by train.	Limited Board resources
RR--Transit	12/17/08	WASHINGTON, DC	Trespasser struck.	Limited Board resources
RR--Transit	12/19/08	CHICAGO, IL.	Train struck automobile on right of way.	Limited Board resources
RR--Transit	12/24/08	NEW YORK, NY	Trespasser struck.	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--Transit	12/24/08	SAN DIEGO, CA	Trespasser struck.	Limited Board resources
RR--Transit	12/28/08	SAN DIEGO, CA	Pedestrian struck by train.	Limited Board resources
RR--Transit	12/29/08	SAN FRANCISCO, CA	Train struck automobile on right of way.	Limited Board resources
RR--Employees		**Employee Fatalities**		
RR-Employees	1/8/08	LAKE, IL	NIRC Employee lining switches on Main/Branch	Limited Board resources
RR-Employees	2/3/08	COOK. IL	NS Employee releasing hand brakes, struck by locomotive on Main/Branch	Limited Board resources
RR-Employees	2/10/08	BERGEN, NJ	NJTR Employee fatality; Struck by Train when fouled Main track	Limited Board resources
RR-Employees	3/5/08	SHEBOYGAN, WI	WSOR Employee crushed between cars while riding side of car during derailment	Limited Board resources
RR-Employees	3/7/08	LIVINGSTON, NY	LA&L Employee fell off locomotive while servicing in engine house	Limited Board resources
RR-Employees	3/27/08	CHASE, KS	BNSF Employee struck by moving train while walking	Limited Board resources
RR-Employees	5/17/08	JOHNSON, TX	UP machine operator ran over by rail car	Limited Board resources
RR-Employees	5/26/08	ROBESON, NC	CSX Employee Crushed; close clearance	Limited Board resources
RR-Employees	5/29/08	POTTER, TX	UP Employee killed while riding a freight car due to slipping/falling	Limited Board resources
RR-Employees	6/8/08	HARRIS, TX	UP trainman struck by moving train	Limited Board resources
RR-Employees	6/26/08	MACON, IL	CN bridge worker killed while working on bridge	Limited Board resources
RR-Employees	8/20/08	PRINCE GEORGES, MD	Amtrak signal employee killed by moving train	Limited Board resources
RR-Employees	8/29/08	GRANT, OK	UP Employee killed in highway-rail crossing accident	Limited Board resources
RR-Employees	9/10/08	VIGO, IN	INRD Employee crushed between tie pile and derailed freight car while riding side	Limited Board resources
RR-Employees	9/23/08	DELAWARE, PA	CSX Employee struck and killed while walking on a bridge	Limited Board resources
RR-Employees	10/8/08	JOHNSON, NC	CSX machine operator crushed by excavating machinery	Limited Board resources
RR-Employees	10/15/08	MORGAN, AL	CSX Employee killed while riding side of freight car when car struck other equip	Limited Board resources
RR-Employees	11/15/08	YELLOWSTONE, MT	MRL Yard Employee struck by moving freight car	Limited Board resources
RR-Employees	12/3/08	ADAMS, CO	DRIR Switchtender struck by tractor-trailer truck while crossing road	Limited Board resources
RR-Employees	12/9/08	PLATTE, MO	BNSF Signal maintainer struck by moving freight train	Limited Board resources
RR-Tresspassers		**Accidents involving Tresspassers**		
RR-Tresspassers	1/1/08	KING, WA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/4/08	MCLEAN, IL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/5/08	HARRISON, MS	Laying in tracks, struck by train.	Limited Board resources

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Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES	REASON NOT INVESTIGATED
RR-Tresspassers	1/6/08	BEXAR, TX	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/6/08	STARK, OH	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/7/08	POLK, AR	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/9/08	CONTRA COSTA, CA	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/10/08	WASHTENAW, MI	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/10/08	WINDHAM, CT	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/11/08	JOHNSTON, NC	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/11/08	GRAYSON, KY	Stopped while being chased by police. Struck by train.	Limited Board resources
RR-Tresspassers	1/13/08	ORLEANS, LA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/13/08	RICHLAND, LA	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/13/08	JEFFERSON, AL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/19/08	PIERCE, WA	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/19/08	ALLEGAN, MI	Riding on off-road vehicle, struck by train.	Limited Board resources
RR-Tresspassers	1/19/08	BRONX, NY	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/19/08	LOS ANGELES, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/21/08	ALLEGHENY, PA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/22/08	SACRAMENTO, CA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/22/08	DU PAGE, IL	Riding on off-road vehicle, struck by train.	Limited Board resources
RR-Tresspassers	1/23/08	POLK, FL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/26/08	LA PAZ, AZ	Fell while crossing between cars of moving train.	Limited Board resources
RR-Tresspassers	1/28/08	MILLS, IA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/29/08	COWLITZ, WA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	1/30/08	BERKELEY, SC	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/1/08	SAN BERNARDINO, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/2/08	DAVIS, UT	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/4/08	ADAMS, CO	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/6/08	MIDDLESEX, MA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/6/08	ORANGE, FL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/6/08	CLEARFIELD, PA	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/7/08	MONTGOMERY, MD	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/7/08	PALM BEACH, FL	Person attempting to escape from police, struck by train.	Limited Board resources
RR-Tresspassers	2/8/08	PIMA, AZ	Person attempting to escape from police, struck by train.	Limited Board resources
RR-Tresspassers	2/9/08	JOHNSON, MO	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/13/08	SAN DIEGO, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/13/08	KING, WA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/13/08	TIOGA, NY	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/16/08	MARION, FL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/16/08	COLUMBIA, WI	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/17/08	ORANGE, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/17/08	GREENE, MO	Riding on off-road vehicle, struck by train.	Limited Board resources
RR-Tresspassers	2/18/08	MUSKOGEE, OK	Walking on tracks, struck by train.	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-Tresspassers	2/19/08	LEHIGH, PA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/21/08	PHILADELPHIA, PA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/21/08	ROBESON, NC	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/22/08	SANTA BARBARA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/22/08	MARINETTE, WI	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/23/08	RUTHERFORD, TN	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/24/08	ANOKA, MN	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/24/08	PETERSBURG, VA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/24/08	MARION, IN	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/24/08	ORANGE, TX	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/28/08	SANTA CLARA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	2/28/08	BRISTOL, MA	Riding on side of train, fell under wheels.	Limited Board resources
RR-Tresspassers	3/1/08	MIDDLESEX, NJ	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/1/08	BROWN, KS	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/3/08	SAN DIEGO, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/3/08	WILSON, TN	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/6/08	MONTEREY, CA	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/6/08	WESTMORELAND, PA	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/6/08	KNOX, TN	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/8/08	SAN DIEGO, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/8/08	DICKINSON, KS	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/9/08	MARION, TN	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	3/10/08	BUCKS, PA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/14/08	SULLIVAN, NH	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/14/08	SAN DIEGO, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/14/08	MAVERICK, TX	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/18/08	WESTCHESTER, NY	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/20/08	JOHNSON, MO	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/21/08	VENTURA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/21/08	WAYNE, OH	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/21/08	DUVAL, FL	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	3/22/08	FRESNO, CA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/22/08	COCONINO, AZ	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/22/08	SACRAMENTO, CA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/23/08	SAN FRANCISCO, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/26/08	CONTRA COSTA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/26/08	NEWBERRY, SC	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	3/26/08	CABARRUS, NC	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/26/08	GIBSON, IN	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/27/08	FRESNO, CA	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/27/08	SOMERSET, NJ	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/28/08	VENTURA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/28/08	WAYNE, GA	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/29/08	TARRANT, TX	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/30/08	CHAMPAIGN, IL	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/30/08	TROUP, GA	Walking on tracks, struck by train.	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-Tresspassers	3/30/08	ERIE, OH	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	3/31/08	EMERY, UT	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/1/08	DADE, GA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/1/08	MACON, IL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/2/08	JACKSON, MO	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/3/08	MADERA, CA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/7/08	CONTRA COSTA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/8/08	WASHINGTON, VA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/9/08	SHELBY, TN	Fell off railroad bridge.	Limited Board resources
RR-Tresspassers	4/10/08	DELAWARE, PA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/10/08	KERN, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/10/08	DEFIANCE, OH	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/10/08	DEFIANCE, OH	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/12/08	FAIRFIELD, CT	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/12/08	NEW HAVEN, CT	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/13/08	VENTURA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/14/08	CONTRA COSTA, CA	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/14/08	ESCAMBIA, FL	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/15/08	WAYNE, MI	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/16/08	BROWARD, FL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/16/08	SACRAMENTO, CA	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/16/08	BERNALILLO, NM	Fell off railroad bridge.	Limited Board resources
RR-Tresspassers	4/17/08	FORT BEND, TX	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/17/08	SKAGIT, WA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/17/08	ROSS, OH	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/18/08	MERCED, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/19/08	SHELBY, AL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/19/08	MARICOPA, AZ	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/21/08	KING, WA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/21/08	SAN DIEGO, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/21/08	HAMILTON, TN	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/21/08	PALM BEACH, FL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/23/08	CREEK, OK	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/23/08	BROOME, NY	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/24/08	BERKS, PA	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	4/24/08	DELAWARE, PA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/25/08	ESSEX, NJ	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/26/08	PALM BEACH, FL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/26/08	WEBB, TX	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/27/08	COOK, IL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/27/08	COOK, IL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/27/08	WEBB, TX	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	4/29/08	BROWARD, FL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/1/08	LAKE, IN	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/2/08	LAWRENCE, OH	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/2/08	HAMILTON, TN	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/3/08	CUMBERLAND, PA	Running on tracks, struck by train.	Limited Board resources

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Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES	REASON NOT INVESTIGATED
RR-Tresspassers	5/3/08	PALM BEACH, FL	Body observed in track. Not sure when hit.	Limited Board resources
RR-Tresspassers	5/4/08	MIDDLESEX, NJ	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/5/08	LANCASTER, PA	Electrical shock due to contact with 3rd rail, catenary, pantograph	Limited Board resources
RR-Tresspassers	5/5/08	HOUSTON, GA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/6/08	COOK, IL	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/6/08	FREMONT, CO	Riding on off-road vehicle, struck by train.	Limited Board resources
RR-Tresspassers	5/7/08	KING, WA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/7/08	JOHNSTON, NC	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/7/08	MONTGOMERY, MD	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/7/08	MACON, IL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/8/08	PIERCE, WA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/8/08	COOK, IL	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/8/08	SOMERSET, NJ	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/9/08	ROCKLAND, NY	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/9/08	HARRIS, TX	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/9/08	MOULTRIE, IL	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/10/08	HARALSON, GA	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/10/08	WASHOE, NV	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	5/11/08	CUYAHOGA, OH	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/12/08	YORK, SC	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/13/08	DONA ANA, NM	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/14/08	CLAY, FL	Fell off railroad bridge.	Limited Board resources
RR-Tresspassers	5/14/08	BERNALILLO, NM	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/15/08	ERIE, NY	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/16/08	CLAY, NE	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/16/08	LINCOLN, NC	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/16/08	JEFFERSON, WV	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/17/08	ESSEX, NJ	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/17/08	DE KALB, GA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/18/08	BEXAR, TX	Riding on off-road vehicle, struck by train.	Limited Board resources
RR-Tresspassers	5/23/08	BERGEN, NJ	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/23/08	PALM BEACH, FL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/24/08	ALAMANCE, NC	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/24/08	BROWN, WI	Driver drove over grass, sidewalk and into track in front of train.	Limited Board resources
RR-Tresspassers	5/26/08	NEWTON, MO	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/27/08	COOK, IL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/27/08	HAMILTON, OH	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/27/08	MONROE, GA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/31/08	DAVIDSON, TN	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/31/08	HAWKINS, TN	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/31/08	DU PAGE, IL	3-year-old playing near tracks, struck by train.	Limited Board resources
RR-Tresspassers	5/31/08	NATCHITOCHES, LA	Riding on train, fell off.	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-Tresspassers	5/31/08	RAMSEY, MN	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	6/1/08	BOSSIER, LA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/1/08	SUSSEX, VA	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/1/08	ALLEGHENY, PA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/2/08	DU PAGE, IL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/2/08	SCOTT, TN	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/4/08	PALM BEACH, FL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/4/08	WILLACY, TX	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/4/08	FOND DU LAC, WI	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/5/08	PRESTON, WV	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/5/08	ESSEX, NJ	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/5/08	FRANKLIN, OH	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/6/08	BAY, FL	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/6/08	LAUDERDALE, MS	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/8/08	WORCESTER, MA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/8/08	MARICOPA, AZ	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/9/08	BREVARD, FL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/13/08	SHERMAN, TX	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/14/08	RICHLAND, SC	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/15/08	POTTER, TX	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	6/15/08	MONMOUTH, NJ	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/17/08	ALAMEDA, CA	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/17/08	ESSEX, MA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/17/08	SANTA CLARA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/18/08	MADISON, IL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/20/08	MONMOUTH, NJ	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/20/08	SACRAMENTO, CA	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	6/21/08	LAKE, IL	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/22/08	SACRAMENTO, CA	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	6/24/08	HARPER, KS	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/24/08	SUFFOLK, MA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/24/08	PASSAIC, NJ	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/25/08	MIDDLESEX, MA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/26/08	MIDDLESEX, NJ	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/26/08	KOOTENAI, ID	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	6/28/08	FLATHEAD, MT	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/29/08	BELL, KY	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/29/08	HARDIN, KY	Fell off railroad bridge.	Limited Board resources
RR-Tresspassers	6/30/08	NASSAU, NY	Fell off passenger platform in front of train.	Limited Board resources
RR-Tresspassers	6/30/08	SUFFOLK, NY	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	6/30/08	SAN MATEO, CA	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/2/08	PALM BEACH, FL	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/4/08	JEFFERSON, KY	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/5/08	MARION, OR	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/6/08	ROCKLAND, NY	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/6/08	WAYNE, NY	Walking on tracks, struck by train.	Limited Board resources

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Mode	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES	REASON NOT INVESTIGATED
RR-Tresspassers	7/7/08	KING, WA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/7/08	WHITESIDE, IL	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/9/08	BALTIMORE, MD	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/9/08	TANGIPAHOA, LA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/10/08	MACON, MO	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/10/08	ALAMEDA, CA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/11/08	SUFFOLK, NY	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/12/08	HARNETT, NC	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/13/08	MCLEAN, IL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/14/08	TRAVIS, TX	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	7/17/08	CONTRA COSTA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/19/08	MCCLAIN, OK	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/19/08	CUYAHOGA, OH	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/19/08	RIVERSIDE, CA	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	7/20/08	HENRY, IL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/20/08	MCKINLEY, NM	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/22/08	SOMERSET, NJ	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/23/08	LUZERNE, PA	Fell off railroad bridge.	Limited Board resources
RR-Tresspassers	7/24/08	DONA ANA, NM	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/25/08	PETTIS, MO	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/25/08	BELL, TX	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/25/08	ST CLAIR, IL	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/26/08	COOK, IL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/26/08	LINN, OR	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/27/08	BALTIMORE, MD	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	7/28/08	SANDUSKY, OH	Struck by on-track equipment	Limited Board resources
RR-Tresspassers	7/29/08	NEW HAVEN, CT	Struck by on-track equipment	Limited Board resources
RR-Tresspassers	7/30/08	SANTA CLARA, CA	Struck by on-track equipment	Limited Board resources
RR-Tresspassers	7/30/08	LINCOLN, MT	Struck by on-track equipment	Limited Board resources
RR-Tresspassers	7/30/08	LAFAYETTE, LA	Struck by on-track equipment	Limited Board resources
RR-Tresspassers	7/31/08	COLUMBIA, FL	Struck by on-track equipment	Limited Board resources
RR-Tresspassers	8/1/08	MARION, OR	Struck by on-track equipment	Limited Board resources
RR-Tresspassers	8/1/08	BULLITT, KY	Struck by on-track equipment	Limited Board resources
RR-Tresspassers	8/1/08	SUFFOLK, NY	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/1/08	ORANGEBURG, SC	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/1/08	MAHNOMEN, MN	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/1/08	WASHOE, NV	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/2/08	WESTMORELAND, PA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/2/08	DE KALB, IL	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/3/08	BARTOW, GA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/3/08	BUCKS, PA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/3/08	MARICOPA, AZ	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/4/08	GRANT, KY	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/5/08	WORCESTER, MA	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/5/08	DE KALB, IL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/5/08	BUCKS, PA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/8/08	DU PAGE, IL	Standing in tracks, struck by train.	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-Tresspassers	8/8/08	SANTA CRUZ, AZ	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/9/08	MCKINLEY, NM	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/9/08	CIBOLA, NM	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/9/08	CIBOLA, NM	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/9/08	KNOX, TN	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/10/08	CLACKAMAS, OR	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/10/08	CLARK, OH	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/10/08	GUADALUPE, TX	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/10/08	WEBB, TX	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/10/08	WASHINGTON, MN	Fell off railroad bridge.	Limited Board resources
RR-Tresspassers	8/13/08	DU PAGE, IL	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/14/08	JACKSON, MS	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/14/08	FORREST, MS	Crawling under train. Train began moving.	Limited Board resources
RR-Tresspassers	8/14/08	LA SALLE, TX	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/15/08	BUTLER, PA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/15/08	GREENVILLE, SC	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/16/08	PULASKI, KY	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/16/08	ANDERSON, TX	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/17/08	COBB, GA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/18/08	WAYNE, MI	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/19/08	ERIE, PA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/21/08	CUMBERLAND, NC	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/21/08	TARRANT, TX	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/21/08	KENEDY, TX	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/22/08	THURSTON, WA	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/24/08	COOK, IL	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/24/08	MONMOUTH, NJ	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/24/08	SAN BERNARDINO, CA	Driving automobile on track right-of-way, struck by train.	Limited Board resources
RR-Tresspassers	8/24/08	WHITESIDE, IL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/26/08	CLAY, AR	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/28/08	COFFEE, TN	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/28/08	MIDDLESEX, MA	Train struck trespasser. Cause unknown.	Limited Board resources
RR-Tresspassers	8/28/08	PINAL, AZ	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/29/08	MONMOUTH, NJ	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/29/08	RHEA, TN	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/30/08	CHAMPAIGN, IL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/30/08	BURLEIGH, ND	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/30/08	ELBERT, GA	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/30/08	PALM BEACH, FL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/31/08	BALTIMORE, MD	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/31/08	BALTIMORE, MD	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/31/08	JOHNSTON, NC	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	8/31/08	MERCED, CA	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/1/08	RIVERSIDE, CA	Walking on tracks, struck by train.	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-Tresspassers	9/1/08	PIERCE, WA	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/1/08	DELAWARE, PA	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/2/08	PORTER, IN	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/3/08	WASHINGTON, DC	Walked into side of train.	Limited Board resources
RR-Tresspassers	9/4/08	BERGEN, NJ	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/4/08	LOUDON, TN	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/5/08	DAVIDSON, TN	Fell trying to cross moving train.	Limited Board resources
RR-Tresspassers	9/5/08	MULTNOMAH, OR	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/6/08	SUFFOLK, MA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/6/08	BERKS, PA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/7/08	KENEDY, TX	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/9/08	TIPPECANOE, IN	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/9/08	GASTON, NC	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/13/08	LARIMER, CO	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	9/13/08	JEFFERSON, IA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/13/08	COLUMBIA, NY	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/13/08	KENT, MI	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/16/08	AUSTIN, TX	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/17/08	VENTURA, CA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/19/08	SAN MATEO, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/20/08	DELAWARE, OH	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/20/08	DICKSON, TN	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/21/08	ORANGE, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/21/08	CONTRA COSTA, CA	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/21/08	WARREN, NJ	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/22/08	WAUKESHA, WI	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/24/08	COOK, IL	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/24/08	MONROE, IN	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/27/08	POLK, FL	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/27/08	CLEVELAND, NC	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/27/08	CLARK, NV	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/28/08	NORFOLK, MA	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/28/08	BUTTE, CA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/29/08	MCKINLEY, NM	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/29/08	BROWARD, FL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/30/08	BERGEN, NJ	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	9/30/08	ALAMANCE, NC	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/1/08	LINCOLN, NV	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	10/3/08	ALAMEDA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/3/08	COCONINO, AZ	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/3/08	JEFFERSON, TN	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/4/08	ROCKDALE, GA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/4/08	PASSAIC, NJ	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/5/08	DOOLY, GA	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/5/08	DADE, FL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/6/08	APACHE, AZ	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/6/08	ERIE, PA	Walking on tracks, struck by train.	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-Tresspassers	10/6/08	DADE, FL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/7/08	HAYS, TX	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/8/08	WARREN, IL	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/8/08	ST CROIX, WI	Riding on off-road vehicle, struck by train.	Limited Board resources
RR-Tresspassers	10/11/08	SAN PATRICIO, TX	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	10/11/08	CAMBRIA, PA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/12/08	PUEBLO, CO	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	10/12/08	SANTA BARBARA, CA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/15/08	CIBOLA, NM	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/15/08	WAKE, NC	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/18/08	NORFOLK, MA	Stepped into path of train.	Limited Board resources
RR-Tresspassers	10/18/08	HARRISON, IN	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/18/08	TAYLOR, TX	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/19/08	JOHNSON, KS	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/21/08	COOK, IL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/22/08	SAN JOAQUIN, CA	Crawling under train. Train began moving.	Limited Board resources
RR-Tresspassers	10/25/08	GUILFORD, NC	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/25/08	JACKSON, MO	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/26/08	ERIE, OH	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/26/08	KANAWHA, WV	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/26/08	HARRIS, TX	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/27/08	SAN DIEGO, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/27/08	ROCKLAND, NY	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/28/08	COOK, IL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/28/08	KNOX, TN	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/28/08	COOK, IL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/31/08	HANCOCK, IN	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	10/31/08	MECKLENBURG, NC	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/1/08	BUTTE, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/1/08	CONTRA COSTA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/3/08	MIDDLESEX, NJ	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/3/08	CRAWFORD, MI	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/3/08	ESSEX, MA	Automobile got onto tracks and into tunnel. Train struck automobile, killing occupant.	Limited Board resources
RR-Tresspassers	11/3/08	FAYETTE, TN	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/4/08	MONTGOMERY, AL	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/4/08	SAN BERNARDINO, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/6/08	SANTA BARBARA, CA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/7/08	BRISTOL, MA	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/7/08	LEXINGTON, SC	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/7/08	PERRY, MO	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/7/08	RIVERSIDE, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/8/08	BALTIMORE, MD	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/9/08	SANTA ROSA, FL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/10/08	NEW CASTLE, DE	Standing in tracks, struck by train.	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-Tresspassers	11/10/08	SANTA BARBARA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/10/08	GASTON, NC	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/11/08	SAN BERNARDINO, CA	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/12/08	NASSAU, NY	Jumped onto tracks to retrieve an item and was struck by train.	Limited Board resources
RR-Tresspassers	11/14/08	NEVADA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/14/08	MONTGOMERY, PA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/15/08	MOBILE, AL	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/15/08	ANDERSON, TX	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/18/08	NEW HAVEN, CT	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/21/08	BERRIEN, MI	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/23/08	MERCED, CA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/24/08	BERGEN, NJ	Running on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/24/08	GUILFORD, NC	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/26/08	YUMA, AZ	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	11/29/08	TORRANCE, NM	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	11/29/08	DU PAGE, IL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/1/08	ALAMEDA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/1/08	MARSHALL, AL	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/2/08	MESA, CO	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/3/08	SACRAMENTO, CA	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	12/4/08	SHELBY, TN	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/4/08	ULSTER, NY	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/5/08	SAN MATEO, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/7/08	FLOYD, GA	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/9/08	HAMPSHIRE, MA	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/11/08	ST JOHNS, FL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/11/08	PIMA, AZ	Sitting in tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/13/08	HARALSON, GA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/15/08	ORANGE, CA	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	12/17/08	SACRAMENTO, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/18/08	COCONINO, AZ	Riding on train, fell off.	Limited Board resources
RR-Tresspassers	12/18/08	GREENVILLE, SC	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/18/08	EL PASO, TX	Standing in tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/18/08	MADERA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/22/08	HABERSHAM, GA	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/24/08	SUFFOLK, MA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/25/08	NEVADA, CA	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/27/08	KLAMATH, OR	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/27/08	HILLSBOROUGH, FL	Struck by on-track equipment	Limited Board resources
RR-Tresspassers	12/27/08	SUFFOLK, NY	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/28/08	MARION, WV	Walking on tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/29/08	MOBILE, AL	Laying in tracks, struck by train.	Limited Board resources
RR-Tresspassers	12/31/08	SANTA CLARA, CA	Sitting in tracks, struck by train.	Limited Board resources

Appendix B

Accidents Exceeding the Expected Time Allotted for Completion by Board Order

ACCIDENTS EXCEEDING THE EXPECTED TIME ALLOTTED FOR COMPLETION BY BOARD ORDER

MODE	ACCIDENT DATE	ACCIDENT LOCATION	ACCIDENT CIRCUMSTANCES	EXPLANATION WHY ADDITIONAL TIME REQUIRED TO COMPLETE ACCIDENT REPORT
AVIATION	6/4/07	Milwaukee, WI	Medical Transport crash into Lake Michigan	Technical Complexity
AVIATION	7/10/07	Sanford, FL	In-flight fire on NASCAR Corporate flight	Limited Resources/Technical Complexity
AVIATION	7/27/07	Phoenix, AZ	Midair Collision between News Helicopters	Limited Resources/Technical Complexity
AVIATION	9/28/07	St. Louis, MO	Engine Fire on American Airlines MD-80	Technical Complexity
HIGHWAY	9/20/04	Sherman, Texas	Median Crossover, Collision, and Fire	Limited Resources
HIGHWAY	5/9/05	Liberty,	School Bus Accident	Will be part of special report on pedal
HIGHWAY	8/28/06	Westport, New York	Motorcoach Rollover (tire blowout and motorcoach rollover)	Technical Complexity
HIGHWAY	11/20/06	Huntsville, Alabama	School Bus/Passenger Car Collision and Rollover (school bus over over bridge rail)	Limited Resources
HIGHWAY	1/12/07	Falls Township, Pennsylvania	School Bus Accident	Will be part of special report on pedal misapplication.
MARINE	11/7/07	San Francisco, California	Allision of Container Ship *Cosco Busan* with San Francisco-Oakland Bay Bridge	Major investigation that was complicated by difficulty in interviewing the ship's crew, pilot, and operating company because of concurrent criminal investigations by the Department of Justice. The Safety Board also held a two-day public hearing in April 2008, which delayed the report production.
PIPELINE	11/1/07	Carmichael, Mississippi	Propane Pipeline Rupture/Fire	Limited Resources/Technical Complexity
RAILROAD	11/9/06	Baxter, California	Derailment of rail grinder	Awaiting information from external source(s)/Limited Resources/Technical
RAILROAD	1/16/07	Shepherdsville, Kentucky	Train derailment of hazardous materials/fire	Limited Resources/Technical Complexity
RAILROAD	10/10/07	Painesville, Ohio	Train derailment of hazardous materials/fire/evacuation	Limited Resources

Appendix C

National Transportation Safety Board Assessment of Progress Toward Implementation of GAO Recommendations, December 2008

The following is NTSB's progress report towards adopting GAO recommendations, shown here in the same format as GAO report GAO-08-652T. Following each table, there is an NTSB management analysis that discusses improvements since the testimony's issuance on April 23, 2008. We are mainly focused in this discussion on areas where the agency has shown significant progress since the earlier GAO assessment. As with the April GAO testimony, a full bubble indicates the status as *fully implemented*, a half bubble indicates *significant progress*, and an empty bubble indicates *limited progress*, based on our internal evaluation.

Management Recommendations

No.	GAO Recommendation	GAO Assessment Apr. 2008	NTSB Assessment Dec. 2008
1	**Communication** Develop mechanisms to facilitate communication from staff to management.	●	●
2	**Strategic Planning** Develop a revised strategic plan	◖	●
3	**Information Technology (IT)** Develop an IT plan	◖	●
4	**Knowledge Management** Develop a knowledge management plan	◖	◖
5	**Organizational Structure** Align organizational structure to implement strategic plan	●	●
6	Eliminate unnecessary management layers	◖	●
7	**Human Capital Management** Develop a human capital plan	◖	●
8	**Training** Develop a strategic training plan	○	○

9	Develop a core curriculum for investigators	○	◖
10	**Financial Management** Correct violation of the Anti-Deficiency Act related to purchasing accident insurance for employees on official travel	●	●
11	Correct violation of the Ant-Deficiency Act related to agency's lease of the training center	◖	◖
12	Develop a full cost accounting system to track time employees spend on each investigation and in training	○	○

Discussion

The NTSB has made significant progress addressing all of the general management recommendations originally issued by GAO in May and November 2006 and updated in April 2008. For example, the agency has greatly improved communications by disseminating management advisories, increasing the frequency of staff meetings, holding several all hands meetings, and chartering a communications advisory committee. Two agencywide communications surveys were implemented 1 year apart, and the second survey revealed significant improvements.

For Strategic Planning and Management, the NTSB has developed 12 office operating plans that flow from the overall agency Strategic Plan. For Fiscal Year (FY) 2009, these plans include 136 performance measures, of which 49 are "outcome" or "results" oriented, in accordance with Office of Management and Budget (OMB) and GAO guidance. In addition, the NTSB recently published an Organizational Assessment as part of its FY 2008-2007 Performance and Accountability Report, which details the significant process made in the area of Strategic Management.

As for other specific plans, the NTSB has published an IT Strategic Plan; which was published August 2007 and revised October 2008. This revised plan reflects items highlighted in GAO meetings and include a greater degree of linkage to all NTSB IT Strategic Goals, an explanation of the objectives that were achieved in FY07 and FY08, as well as objectives targeted for the remainder of the 5-year plan period. Concerning management layers, a recent restructuring in the Office of Aviation Safety realigned the field structure such that needless management layers were eliminated.

Finally, the Training Center has isolated key competencies that are critical for various types of positions and has made progress in procuring or developing training to address these competencies. For example, Investigator-in-Charge training was implemented during February 2008, to ensure cross modal standardization of investigative procedures. Also, the instructions for developing individual development training plans (IDPs) include a requirement for addressing core competencies, and all agency staff completed these plans in April 2008. The Training Center curriculum is under periodic review to ensure that it matches with the developmental needs of the workforce. The strategic human capital plan offers more insight into how the NTSB develops its training approaches consistent with government-wide best practices advocated by the Office of Personnel Management (OPM). Finally,

we expect to develop and publish a Strategic Training Plan during the summer of 2009, which will include specific training strategies as well as performance measures to gauge progress against each course of action for completion of training objectives.

Accident Investigation Mission and Safety Studies Recommendations

No.	GAO Recommendation	GAO Assessment Apr. 2008	NTSB Assessment Dec. 2008
1	**Accident Selection** Develop agency orders for all modes articulating risk-based criteria for selecting which accidents to investigate	◖	◖
2	**Recommendation Close-out** Computerize related documentation and use concurrent reviews	◖	◖
3	**Report Development** Identify better practices in the agency and apply them to all modes	◖	◖
4	**Safety Studies** Increase Utilization of safety studies	○	○

Discussion

Since the GAO report was finalized in April 2008, we have developed and published formal risk-based launch criteria for the Office of Highway Safety, to complement a similar document already published for the Office of Railroad, Pipeline, and Hazardous Materials Investigations. We are currently in the process of finalizing a similar methodology for another office. In addition, we are developing an agencywide system based on Microsoft Sharepoint that will streamline and increase the use of technology in both the recommendation close-out process and the report development process. Finally, we expect to develop new guidelines to address the issue of completing safety studies in the near future.

Training Center Utilization Recommendations

No.	GAO Recommendation	GAO Assessment Apr. 2008	NTSB Assessment Dec. 2008
1	Maximize the delivery of core investigator curriculum at its training center	◖	◖
2	Develop plans to increase utilization of the training center	◖	●

Discussion

Since the GAO report was issued, the NTSB has taken a number of additional steps to increase the utilization of the Training Center. In August 2007, the NTSB entered into an agreement with the Federal Air Marshalls Service to sublease a majority of the first floor of the building. Since that time, the principal accomplishment is the completion of an additional rental agreement to the Department of Homeland Security during the summer 2008. With these two large agreements, other smaller short-term rentals, and additional classroom offerings, the Training Center has increased its utilization greatly. In fact, NTSB is forecasting that the overall utilization rate from all rental and classroom sources to be 43% during FY 2009. For background information and to review NTSB's approach to managing the Training Center, see the *2007 Annual Report to Congress (http://www.ntsb.gov/publictn/2008/SPC0801.pdf)*.

Information Technology and Privacy Recommendations

No.	GAO Recommendation	GAO Assessment Apr. 2008	NTSB Assessment Dec. 2008
	FISMA		
1	Ensure that the CIO monitors all key corrective actions and provides the necessary funding and human resources	◖	◖
	Access Controls		
2	Remove access authorities to NTSB's systems from personnel who are no longer NTSB employees	●	●
3	Maintain documentation supporting the initial access granted to a user	◖	◖
4	Develop detailed operational procedures to guide system security officers and system owners in the process of recertifying users	○	◖
5	Develop a process to properly analyze and complete the annual recertification of users' access authorities	○	◖
6	Implement a control to automatically suspend an account after a period of non-use	○	●
	Privacy Act		
7	Update the plan of action milestones to reflect the current status of NTSB's actions to address Privacy Act and OMB Memoranda	●	●
8	Comply with requirements of the Privacy Act and policy set forth by OMB Memoranda	○	◖

Discussion

In the area of compliance with the Federal Information Security Management Act (FISMA), the NTSB remains on progress with respect to completion of current corrective actions and providing necessary funding and human resources consistent with overall agency resources. FISMA scores continue to improve across the board and the most recent report indicated the NTSB's best performance to date with respect to FISMA compliance, including no material weaknesses from the last audit. In addition, the NTSB has fully addressed the issues of removing access authorities for individuals who leave the agency and automatically suspending accounts after a specified period. In addition, the agency has made progress in the area of annual recertification of user access authorities. The establishment of new user access is tracked in the new hire process and documented in the NTSB's automated tracking system. Furthermore, the NTSB has updated operational bulletins providing guidance and standards in the creation and maintenance of user accounts that explicitly address the requirements of recertifying users and their access rights. Finally, a control to automatically suspend an account after a pre-set period of non-use has been established.

The NTSB has made significant progress in the area of privacy. The agency published a comprehensive and fully revised set of Systems of Records Notices in the *Federal Register* during the summer of 2008, and the NTSB also finalized and published eight agencywide procedures documents related to privacy. Further, the agency developed an online privacy awareness training course, and the entire workforce successfully completed the new training. Finally, we have developed role-specific privacy training and plan to roll this out during fiscal year 2009.

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