



NTSB National Transportation Safety Board

Federal Most Wanted List of Transportation Safety Improvements

“... a program to increase the public’s awareness of, and support for, action to adopt safety steps that can help prevent accidents and save lives.”

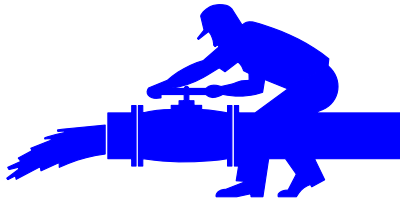
October 28, 2008

Safety Recommendations

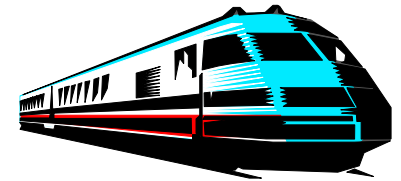
Issued Since 1967

TOTAL = 12,890

Pipeline 1235 9.6%



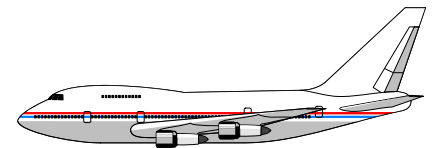
**Railroad 2109
16.4%**



**Marine 2325
18%**



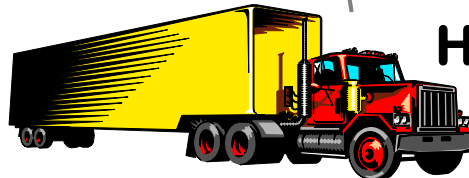
**Aviation 4865
37.7%**



Intermodal 234 1.8%



Highway 2122 16.5%



October 2008

1,011 Open Recommendations

- **Aviation: 510**
- **Highway: 271**
- **Railroad: 133**
- **Marine: 52**
- **Pipeline: 24**
- **Intermodal: 21**



Issue areas selected for intensive follow-up and heightened awareness because they:

- Will impact and enhance safety of the nation's transportation system
- Have a high level of public visibility and interest
- Will benefit from special form of encouragement



NTSB MOST WANTED

Transportation Safety Improvements

Most Wanted List Issue Areas

NTSB MOST WANTED LIST Transportation Safety Improvements



Actions Needed by Federal Agencies

AVIATION

The Federal Aviation Administration should:

- **Improve Safety of Emergency Medical Services Flights**
 - 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**
 - 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**
 - 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**
 - Require commuter and on-demand air taxi flight crews to receive crew resource management training.
- **Require Image Recorders**
 - Install crash-protected image recorders in cockpits to give investigators more information to solve complex accidents.
- **Reduce Accidents and Incidents Caused by Human Fatigue**
 - Set working hour limits for flight crews, 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. *(This recommendation also issued to National Air Traffic Controllers Assn.)*

MARINE

The U.S. Coast Guard should:

- **Reduce Accidents and Incidents Caused by Human Fatigue**
 - Set working hour limits for mariners based on fatigue research, circadian rhythms, and sleep and rest requirements.

HIGHWAY

The Federal Motor Carrier Safety Administration should:

- **Restrict Use of Cellular Telephones**
 - Prohibit cellular telephone use by commercial drivers of school buses and motorcoaches, except in emergencies.
- **Require On-board Electronic Recorders**
 - 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**
 - 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**
 - 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:

- **Prevent Collisions by Using Enhanced Vehicle Safety Technology**
 - Require adaptive cruise control and collision warning system standards for all new passenger and commercial vehicles.
- **Enhance Protection of Motorcoach Passengers**
 - 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 of School Bus Passengers**
 - Devise new standards to protect school bus passengers from being thrown out of their seats or ejected when a bus sustains an impact or rolls over.

PIPELINE

The Pipeline and Hazardous Materials Safety Administration should:

- **Reduce Accidents and Incidents Caused by Human Fatigue**
 - Set working hour limits for pipeline controllers based on fatigue research, circadian rhythms, and sleep and rest requirements.

NTSB Action/Timeliness Classification

- Unacceptable response
- Acceptable response, progressing slowly
- Acceptable response, progressing in a timely manner

October 2008



Office of Safety Recommendations & Advocacy

Darrin Broadwater

Mike Brown

Pat Cariseo

Barbara Grider

Nathan Hoyt

Jeff Marcus

Julie Perrot

Jim Rosenberg

Pat Sullivan

Terry Weaver



Today's Presenters

Dan Bower

Malcolm Brenner

Jim Cash

Mitch Garber

Pete Kotowski

Shane Lack

Kris Poland




Jana Price

Sandy Rowlett

Jim Southworth



Action / Timeliness Criteria

-  **Red:** Unacceptable response
-  **Yellow:** Acceptable response – progressing slowly
-  **Green:** Acceptable response – progressing in a timely manner



Improve Safety of Emergency Medical Services Flights



NTSB Special Investigation Report

- Adopted Jan. 25, 2006
- EMS provides an important service
- Pressures; challenging environment
- Analyzed 55 EMS accidents from:
 Jan. 2002 – Jan. 2005
- 54 fatalities, 19 serious injuries
- 29 of 55 accidents could have been prevented with corrective actions



Safety Improvements Wanted

- Conduct all EMS flights with medical personnel on board in accordance with Part 135 regulations. **A-06-12**
- Develop and implement flight risk evaluation programs. **A-06-13**
- Require formalized dispatch and flight-following procedures including up-to-date weather information. **A-06-14**
- Install terrain awareness and warning systems. **A-06-15**



Recent Helicopter EMS Accident Data

- 2006: 2 accidents (4 killed)
- 2007: 2 accidents (7 killed)
- 2008: 7 accidents (28 killed)
- Past 11 months:
 - **9 fatal EMS Accidents (all helicopters)**
 - **35 fatalities**



Recent Fatal EMS Accidents

- ***Whittier, AK*** – Dec. 3, 2007 - BK117 - 4 fatal
- ***Cherokee, AL*** – Dec 30, 2007 - Bell 206 – 3 fatal
- ***S. Padre Island, TX*** – Feb. 5, 2008 -AS350 – 3 fatal
- ***La Crosse, WI*** – May 10, 2008 – EC135 – 3 fatal
- ***Huntsville, TX*** – June 8, 2008 – Bell 407 – 4 fatal
- ***Flagstaff, AZ*** – June 26, 2008 – Bell 407s – 7 fatal
- ***Greensburg, IN*** – Sept. 1, 2008 – Bell 206 – 3 fatal
- ***Forestville, MD*** – Sept. 28, 2008 – AS365N1 – 4 fatal
- ***Aurora, IL*** – Oct. 15, 2008 – Bell 222 – 4 fatal



NTSB MOST WANTED

Transportation Safety Improvements

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Operations Without Patients Onboard

*Require operators to conduct all EMS flights with medical personnel on board in accordance with commercial flight regulations. **A-06-12***

FAA Actions:

- Numerous notices and guidance materials
- No requirements yet, but rulemaking initiated
- Status: Open – Acceptable Alternate Response



Risk Evaluation

*Require EMS operators to develop and implement flight risk evaluation programs. **A-06-13***

FAA Actions:

- Issued Notice N8000.301
- Incorporated Notice into FAA Order 8900.1
- Still no requirement
- Proposed Status: **Open-Unacceptable**



Flight Dispatch

*Require formalized flight following and dispatch procedures including up-to-date weather. **A-06-14***

FAA Actions:

- May 2008: Published AC 120-96
- Operational Control Centers
- Not yet a requirement
- Status: Open-Acceptable

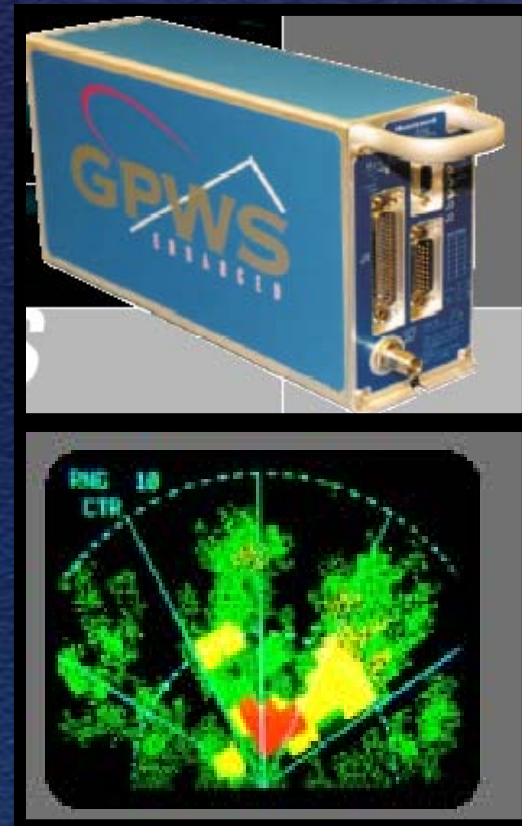


Terrain Awareness Warning Systems

Require EMS operators to install TAWS. A-06-15

FAA Actions:

- June 2006 - RTCA Committee
- March 2008 – Standards developed
- Jan. 2009 – TSO expected release
- Next step is rulemaking
- Status: Open- Acceptable



Improve Safety of Emergency Medical Services Flights

Proposed Safety Board Action

- Add issue area to Most Wanted List
- Add recommendations A-06-12 thru -15
- Reclassify A-06-12, 13 and 15 to “Open-Unacceptable”
- Assign red classification: Unacceptable response

Timeliness Classification

RED





NTSB National Transportation Safety Board

Federal Most Wanted Transportation Safety Improvements

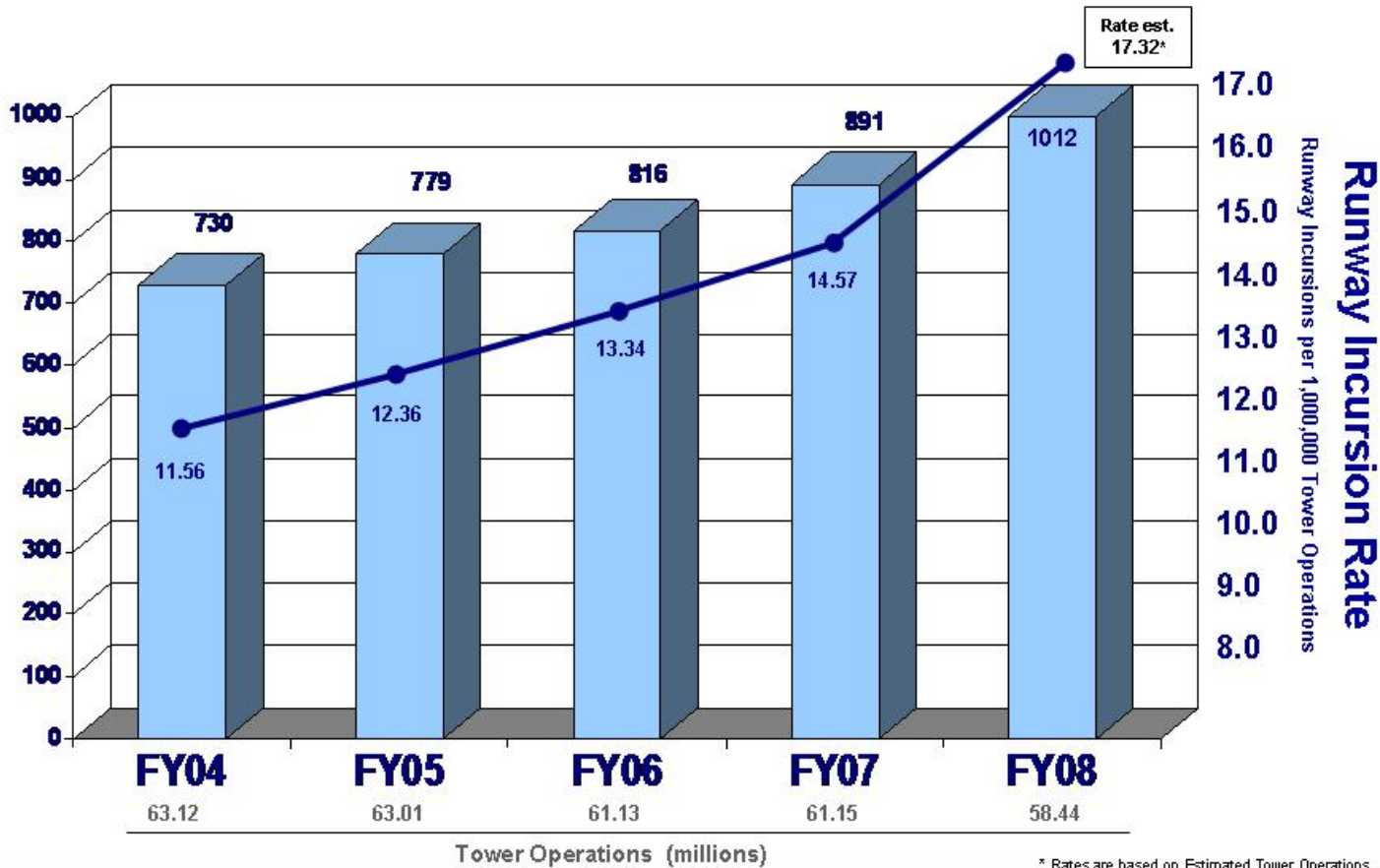
Improve Runway Safety

Runway Incursion

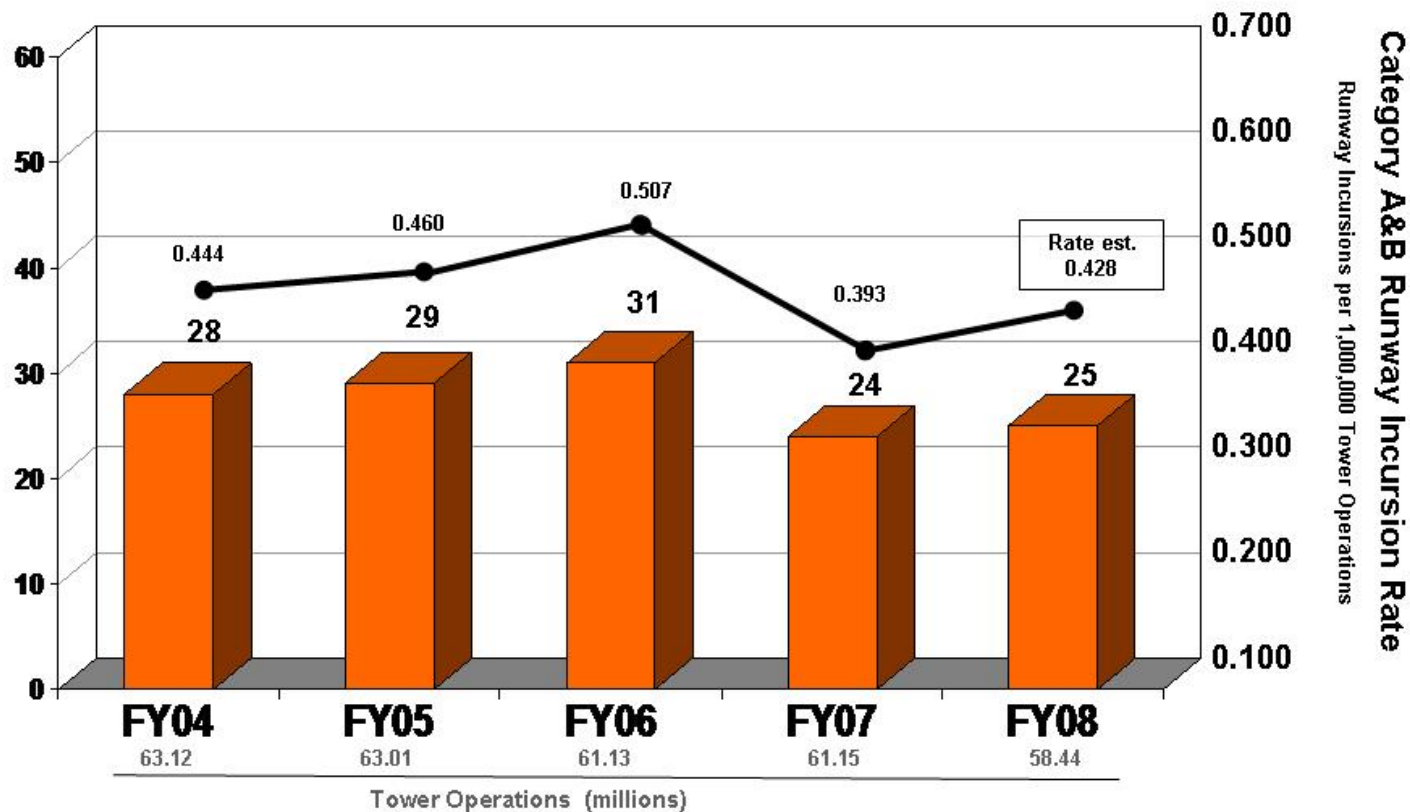
Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft.



All Categories of Runway Incursions



Category A and B Runway Incursions



* Rates are based on Estimated Tower Operations



Safety Improvements Wanted

Runway Incursions

Require a ground movement safety system that will prevent incursions and provide a direct warning to flight crews. **A-00-66**

Require all runway crossings be authorized only by a specific clearance. **A-00-67**

Require runway crossing clearances be issued only after a previous runway has been crossed. **A-00-68**



Safety Improvements Wanted

Runway Incursions

Require that all 14 *Code of Federal Regulations* Part 91K, 121, and 135 operators install on their aircraft cockpit moving map displays or an automatic system that alerts pilots when a takeoff is attempted on a taxiway or a runway other than the one intended. **A-07-45**



Non-Fatal Runway Incursion Accident

North Central State Airport
Pawtucket, RI

Piper PA-30



Beech A36



Non-Fatal Runway Incursion Accident

Reading Regional Airport / Carl A. Spaatz Field
Reading, PA

Tractor



Cessna 550



Category B Incursion



Chicago, IL
July 21, 2008
12:47 CDT



NTSB MOST WANTED

Transportation Safety Improvements

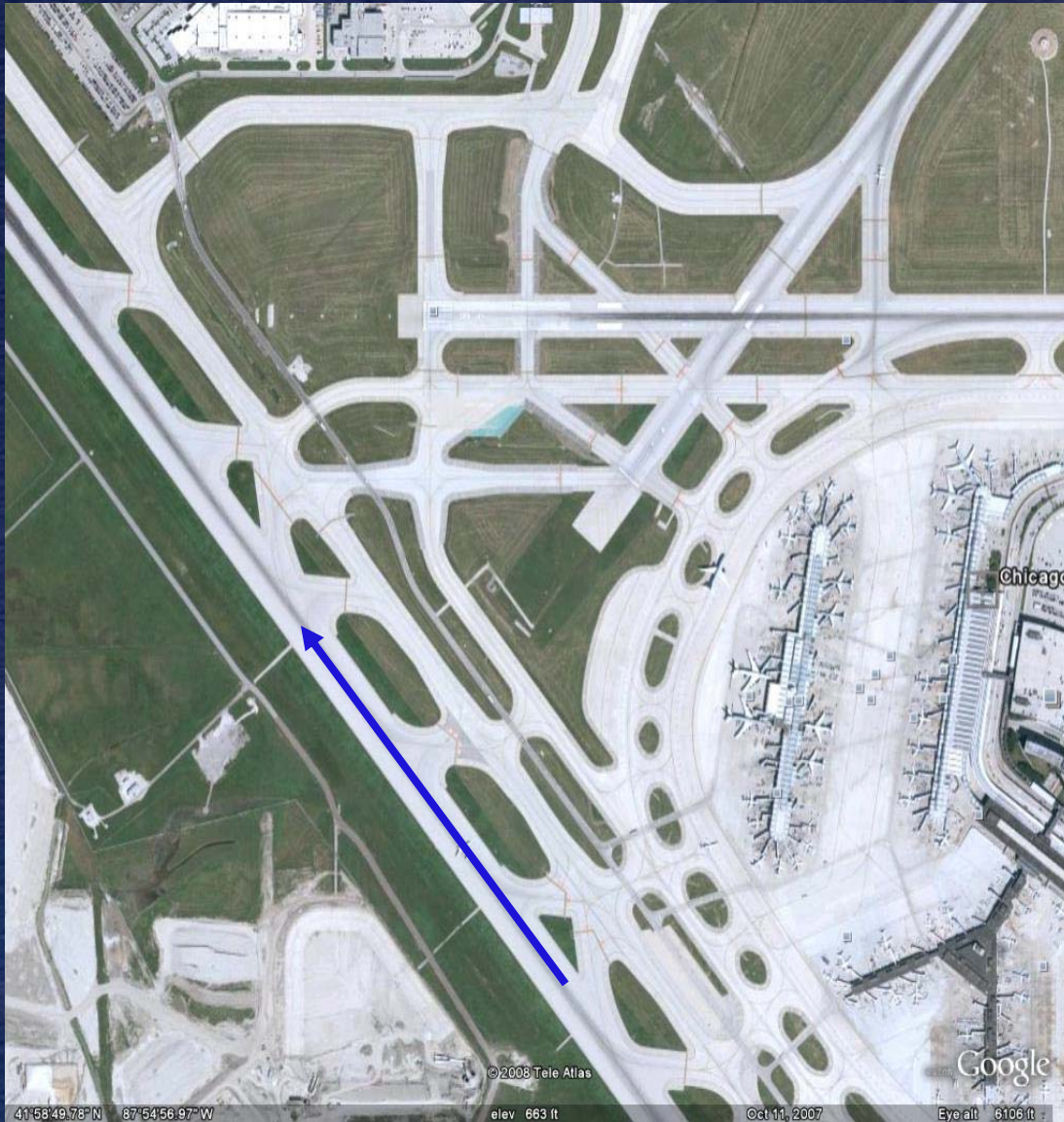
Chicago, IL
July 21, 2008
12:47 CDT



NTSB MOST WANTED

Transportation Safety Improvements

Chicago, IL
July 21, 2008
12:47 CDT



NTSB MOST WANTED

Transportation Safety Improvements

Chicago, IL
July 21, 2008
12:47 CDT



NTSB **MOST WANTED**

Transportation Safety Improvements



NTSB **MOST WANTED**

Transportation Safety Improvements

Final Approach Runway Occupancy Signal



Runway Status Lights



Enhanced Airport Lighting Program



NTSB MOST WANTED

Transportation Safety Improvements



Automatic
Dependant
Surveillance -
Broadcast



NTSB **MOST WANTED**

Transportation Safety Improvements



Southwest Airlines
Chicago, IL
December 8, 2005



Safety Improvements Wanted

Require landing distance assessment with an adequate safety margin for every landing. **A-07-57**



Improve Runway Safety

Proposed Safety Board Action

- Keep issue area on Most Wanted List
- Add recommendation A-07-45
- Retain red classification: Unacceptable response

Timeliness Classification

RED



Reduce Dangers to Aircraft Flying in Icing Conditions



Safety Improvements Wanted

- Research into effects of in-flight icing, including freezing rain and critical ice shapes **A-98-92**
- Upgrade aircraft certification standards and operational procedures **A-96-54, A-96-56, A-07-16 (supercedes A-98-100)**



FAA - Recent Actions

Airplane Performance and Handling Characteristics in Icing Conditions

- FAA issued final rule – Effective October 2007
- Results of research sponsored by FAA and NASA (as requested in **A-98-92**) are currently included in Appendix R of AC 20-73A



FAA - Recent Actions

Activation of Ice Protection

- Require means to ensure timely activation of airframe ice protection*
- FAA issued NPRM – April 2007
- Safety Board provided comments to FAA
- Final Rule to be issued November 2008



Deice Boot Operation - New airplanes

- **Part 25** - NPRM intends to require ice protection system activation as soon as airplane enters icing conditions.
- **Part 23** – AC 23.1419-2C advises to operate deice boots at first sign of icing.



Deice Boot Operation

- Many current manufacturer's guidance states boots should be operated when ice is $\frac{1}{4}$ - to $\frac{1}{2}$ - inch thick, and one AFM states
 - “early activation of the boots may result in ice bridging on the wing”
- Deice Boot Bridging – Ice in the shape of an inflated deice boot forms as the boot is cycled, which cannot be removed by subsequent cycles



**No evidence that modern turbine-powered
airplanes are at risk for bridging**

Total number of accidents investigated by the
Board related to bridging = **0**



Recommendation A-07-14

- Require manufacturers and operators of pneumatic deice boot-equipped airplanes to revise the guidance contained in their manuals and training programs to emphasize that leading edge deice boots should be activated as soon as the airplane enters icing conditions



Reduce Dangers to Aircraft Flying in Icing Conditions

Proposed Safety Board Action

- Keep issue area on Most Wanted List
- Add recommendation A-07-14
- Retain red classification: Unacceptable response

Timeliness Classification

RED



Require Image Recorders



Video Recorder Update

- Technical Standard Order July 2006
- EUROCAE Standards work



Recorder Activity

- Helicopter image recorder
- Performance based recorder rule



Require Image Recorders



Require Image Recorders

Proposed Safety Board Action

- Rename issue area and keep it on Most Wanted List
- Retain red classification: Unacceptable response

Timeliness Classification

RED



Improve Crew Resource Management



Safety Improvements Wanted

Require on-demand charter operators that conduct dual-pilot operations to establish and implement a FAA-approved crew resource management training program for their flight crews.

A-03-52



Minnesota Accident

- Eveleth, MN
(10/02)
- 8 fatal



Crew Resource Management Training

- Techniques for improved crew coordination, workload management, and error reduction



FAA Actions

- **April 2004** – Aviation rulemaking committee reviewing Part 135 changes. NPRM anticipated in 2005.
- **June 2006** – Revisions to Part 135 forthcoming. NPRM anticipated in 2007.
- **April 2008** – NPRM anticipated by end of 2008.



Continued Crew-Involved Accidents



- Montrose, CO (11/04)
 - 3 fatal, 3 seriously injured
- Houston, TX (11/04)
 - 3 fatal
- Teterboro, NJ (2/05)
 - 4 seriously injured

FAA Actions Remaining

- Complete rulemaking to establish requirement for Part 135 on-demand operators to implement CRM training in accordance with Part 121 standards



Improve Crew Resource Management

Proposed Safety Board Action

- Keep issue area on Most Wanted List
- Keep red classification: Unacceptable response

Timeliness Classification

RED



Implement Positive Train Control Systems





Placentia, CA

April 23, 2002



Macdona, TX

June 28, 2004



Graniteville, SC

January 6, 2005



Anding, MS

July 10, 2005

10 9:25AM

Human Factors Causes

- Fatigue
- Sleep-Apnea
- Medication
- Reduced visibility
- Distractions



Safety Improvements Wanted

- Facilitate development and implementation of positive train control systems that include collision avoidance, and
- Require implementation of positive train control on main line tracks, giving priority to high-risk corridors where commuter and intercity passenger railroads operate.

R-01-6



Rail Safety Improvement Act of 2008

- **Implementation plan for a PTC system**
 - **Develop and submit plan within 18 months**
 - **Implement a PTC system by December 31, 2015**
- **Must describe how it will provide for Interoperability**



PTC Interoperability Standards

- **BNSF Railroad**
- **CSX Transportation**
- **Norfolk Southern Railway**
- **Union Pacific Railroad**



Implement Positive Train Control Systems

Proposed Safety Board Action

- Classify R-01-06: Closed Acceptable Action
- Remove issue area from Most Wanted List



**Restrict The Use
of Cellular Telephones
by Motorcoach Drivers**



Highway

Alexandria, Virginia

November 14, 2004

Motorcoach Collision with
Alexandria Avenue Bridge
overpass on George Washington
Memorial Parkway



NTSB MOST WANTED

Transportation Safety Improvements

2000 Prevest Motorcoach



Restricted Clearance Signs



Driver's Cellular Telephone Use

- Driver used hands-free cellular telephone
- 12-minute conversation documented
- Driver and witnesses reported use



NTSB Recommendation

Publish regulations prohibiting cellular telephone use by commercial driver's license holders with a passenger-carrying or school bus endorsement, while driving under the authority of that endorsement, except in emergencies. **H-06-27**



FMCSA Actions

- Study of potential benefits/applicability of rulemaking restricting use of cell phones by drivers of passenger-carrying CMVs
 - Study to be completed end of Oct. '08 and include:
 - school bus operations
 - property-carrying CMV drivers
 - data on cellular telephone-caused driving distractions



Restrict Use of Cell Phones by Motorcoach Drivers

Proposed Safety Board Action

- Add issue area to Most Wanted List
- Add recommendation H-06-27
- Assign yellow classification: Acceptable response – progressing slowly.

Timeliness Classification

YELLOW



Require Electronic On-board Data Recorders



Safety Improvements Wanted

- Require all interstate commercial vehicle carriers to use electronic on-board recorders that collect and maintain data concerning driver hours of service in a valid accurate and secure manner under all circumstances including accident conditions to enable carriers and their regulators to monitor and assess hours-of-service compliance. **H-07-41**



FMCSA Actions

- NPRM issued January 2007
- Motor Carriers found to have HOS violations in two consecutive CRs in a two year period
- Affects about 930 motor carriers



FMCSA Actions

- Encourage carriers to install EOBRs by eliminating certain paperwork requirements
- Random examination of driver records during compliance review



Require Electronic On-board Data Recorders

Proposed Safety Board Action

- Add issue area to Most Wanted List
- Add recommendation H-07-41
- Assign red classification: Unacceptable response

Timeliness Classification

RED



Improve the Safety of Motor Carrier Operations



Safety Improvements Wanted

- Change the way safety fitness ratings are determined so adverse vehicle and driver performance alone are sufficient to result in an overall unsatisfactory rating for the carrier **H-99-6**



FMCSA Actions

- Under Comprehensive Safety Analysis 2010, developing new performance-based operational model
- Operational Model Testing Phase I began February 2008
- Operational Model Testing Phase II began September 2008



FMCSA Actions

- Compliance Reviews continue during Operational Model Testing of CSA 2010
- Safety Fitness Determination Regulations in place by 2010; NPRM in February 2009
- FMCSA Motor Carrier Safety Advisory Committee



Improve the Safety of Motor Carrier Operations

Proposed Safety Board Action

- Keep issue area on Most Wanted List
- Retain yellow classification:
Acceptable response, progressing slowly

Timeliness Classification

YELLOW



Prevent Medically Unqualified Drivers from Operating Commercial Vehicles



Safety Improvements Wanted

Develop comprehensive medical oversight program that addresses:

- Examiner qualifications
- Adequacy of regulations
- Non-regulatory guidance
- Review process
- Tracking mechanisms
- Enforcement and Reporting

H-01-17 through H-01-24



FMCSA Actions

- Medical Review Board – multiple topics considered **H-01-19**
- Medical Examiner Handbook – portions online **H-01-20**
- Examiner test development **H-01-20**



FMCSA Actions Remaining

- National Registry of Certified Medical Examiners NPRM
 - Delayed; now expected Nov 2008 **H-01-17**
- Final Rule merging CDL/medical certificates
 - Delayed; now expected Dec 2008 **H-01-22, -23**
- No improvements to current system



Prevent Medically Unqualified Drivers from Operating Commercial Vehicles

Proposed Safety Board Action

- Keep issue area on Most Wanted List
- H-01-20 to Open – Acceptable Response
- H-01-22 and -23 to Open – Unacceptable Response
- Retain red classification: Unacceptable response

Timeliness Classification

RED



Enhance Protection for Motorcoach Passengers



Safety Improvements Wanted

- Develop Standards for an Occupant Protection System for all accident types **H-99-47**
- Roof strength requirements to provide maximum survival space **H-99-50**
- Easy opening window and roof exits that stay open during evacuations **H-99-9**



NHTSA Actions

2007: NHTSA's Approach to Motorcoach Safety

- Full-scale frontal crash test

2008: Additional Testing

- Roof strength tests
- Sled tests



Enhance Protection for Motorcoach Passengers

Proposed Safety Board Action

- Keep issue area on Most Wanted List
- Retain yellow classification: Acceptable response – progressing slowly

Timeliness Classification

YELLOW



Enhance Protection for School Bus Passengers



Safety Improvements Wanted

- Develop performance standards for school bus occupant protection systems that account for frontal impact collisions, side impact collisions, rear impact collisions, and rollovers. **H-99-45**
- Once standards have been developed, require newly manufactured school buses to have an occupant crash protection system that meets the newly developed performance standards and retains passengers, including those in child safety restraint systems, within the seating compartment throughout the accident sequence for all accident scenarios. **H-99-46**



NHTSA Actions

2007: Public meeting for stakeholders to discuss seat belts on large school buses and NPRM

2008: Final rule



Enhance Protection for School Bus Passengers

Proposed Safety Board Action

- Keep issue area on Most Wanted List
- Keep yellow classification: Acceptable response, progressing slowly

Timeliness Classification

YELLOW



Prevent Collisions by Using Enhanced Vehicle Safety Technology

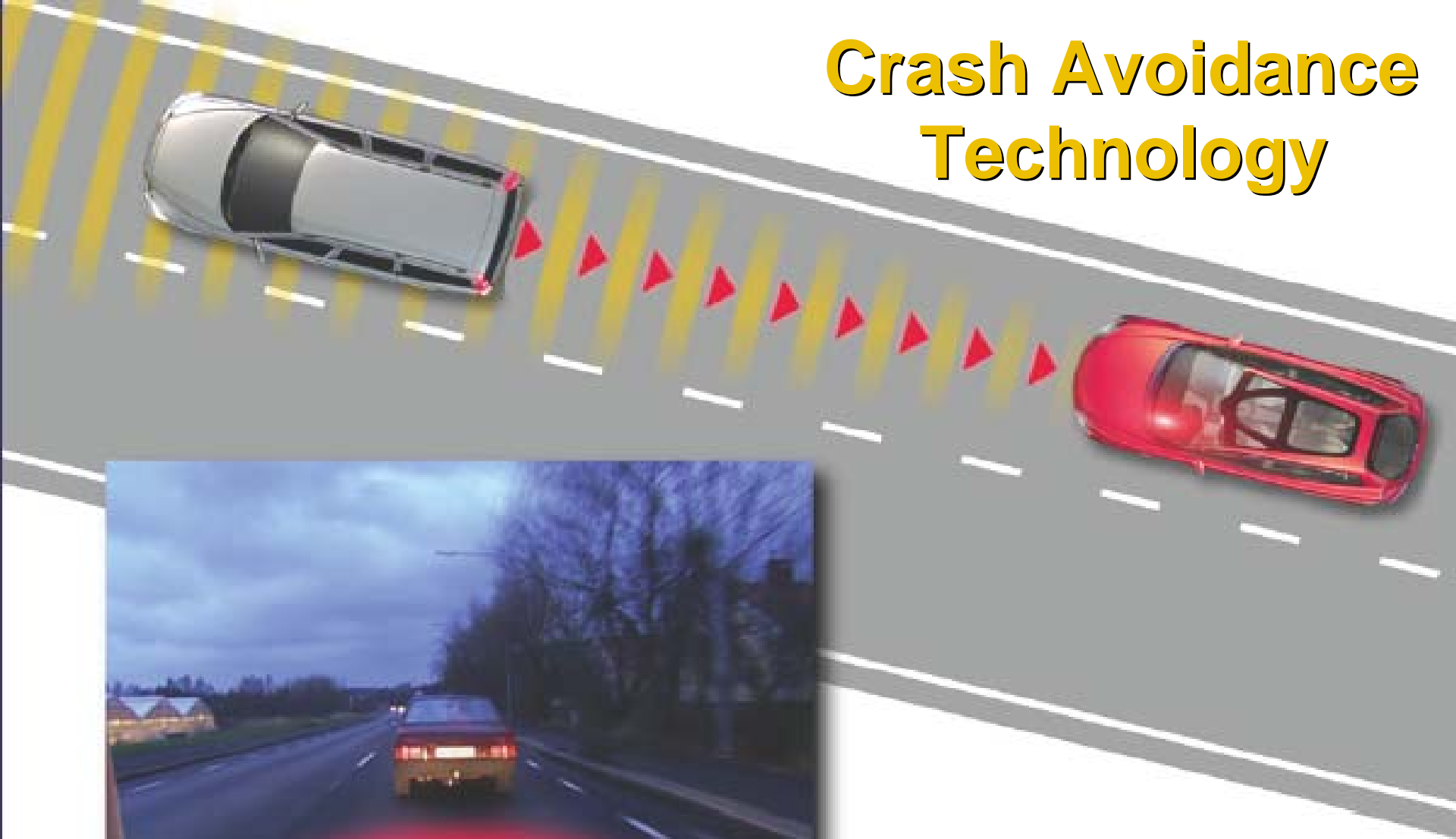


Safety Improvements Wanted

- Complete rulemaking on adaptive cruise control and collision warning system performance standards for new commercial vehicles (**H-01-6**) and passenger vehicles (**H-01-8**) addressing obstacle detection, timing of alerts, and human factors guidelines, such as the mode and type of warning.

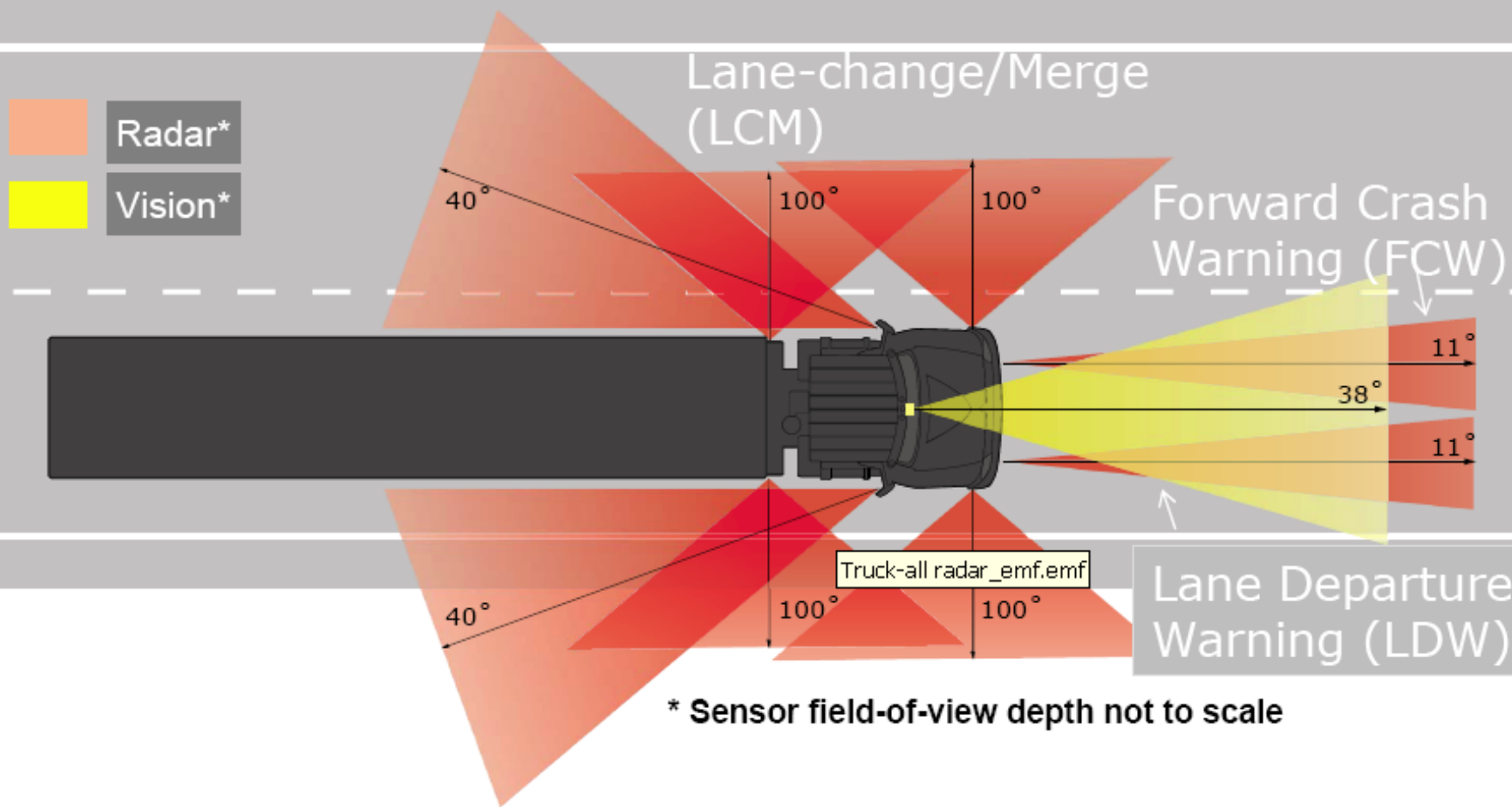


Crash Avoidance Technology





Integrated Safety System



NHTSA Actions

2005/2007: Positive results from passenger car and commercial truck field testing

2005-2008: IVBSS research and prototype vehicle development

2008-2009: IVBSS field operational testing of passenger car and commercial truck prototypes

July 2008: NHTSA includes crash avoidance technologies in NCAP ratings



Prevent Collisions by Using Enhanced Vehicle Safety Technology

Proposed Safety Board Action

- Keep issue area to Most Wanted List
- Keep yellow classification: Acceptable response – progressing slowly

Timeliness Classification

YELLOW



Reduce Accidents and Incidents Caused by Human Fatigue





NTSB National Transportation Safety Board

Federal Most Wanted Transportation Safety Improvements

Reduce Railroad Accidents Caused by Human Fatigue

Railroad

- Macdona, TX recommendations to FRA
 - R-06-14: Scientific principles for work schedules
 - R-06-15: Limit “limbo time”
- Testimony to Congress



Rail Safety Improvement Act of 2008

- Hours of service for train and signal employees
- Limitations on “limbo time”
- Required fatigue management plans
- Regulatory authority to revise hours of service in accordance with scientific and medical research



Railroad Fatigue

Proposed Safety Board Action

- Reclassify recommendations R-06-14 and R-06-15 as “Closed – Acceptable Action”
- Remove issue area “Reduce Railroad Accidents Caused by Human Fatigue” from Most Wanted List





NTSB National Transportation Safety Board

Federal Most Wanted Transportation Safety Improvements

**Reduce Aviation Accidents
Caused by Human Fatigue**

Aviation (Flight Crew)

- **A-94-194, A-95-113, A-06-10**
- Flight/duty time limits set in 1938 and 1958
- 1995 NPRM to update flight/duty time regulations
– no final rule issued
- June 2008 FAA Fatigue Symposium
- Fatigue risk management systems



Aviation (Maintenance)

- **A-97-71**
- FAA has conducted research on fatigue in maintenance, but no rulemaking proposed
- FAA stated it plans to address fatigue through education and training
- 2007 letter to FAA



Aviation (Air Traffic Controllers)

- **A-07-30, A-07-31, A-07-32**
- **FAA working group**
- **Fatigue awareness and countermeasures training program for controllers**



Aviation Fatigue

Proposed Safety Board Action

- Keep issue area on Most Wanted List
- Keep red classification: Unacceptable response

Timeliness Classification

RED





NTSB National Transportation Safety Board

Federal Most Wanted Transportation Safety Improvements

**Reduce Marine Accidents
Caused by Human Fatigue**

Marine

- **M-99-1**
- Work-hour limitations date to early 1900s
- International Maritime Organization
- Crew Endurance Management System (CEMS)
- 2007 staff briefing



Marine Fatigue

Proposed Safety Board Action

- Keep issue area on Most Wanted List
- Keep red classification: Unacceptable response

Timeliness Classification

RED





NTSB National Transportation Safety Board

Federal Most Wanted Transportation Safety Improvements

**Reduce Pipeline Accidents
Caused by Human Fatigue**

Pipeline

- **P-99-12**
- No Federal hours-of-service regulations exist for controllers of pipeline systems
- PHMSA Notice of Proposed Rulemaking



Pipeline Fatigue

Proposed Safety Board Action

- Keep issue area on Most Wanted List
- Keep yellow classification: Acceptable response – progressing slowly

Timeliness Classification

YELLOW

