



NTSB National Transportation Safety Board

Office of Aviation Safety

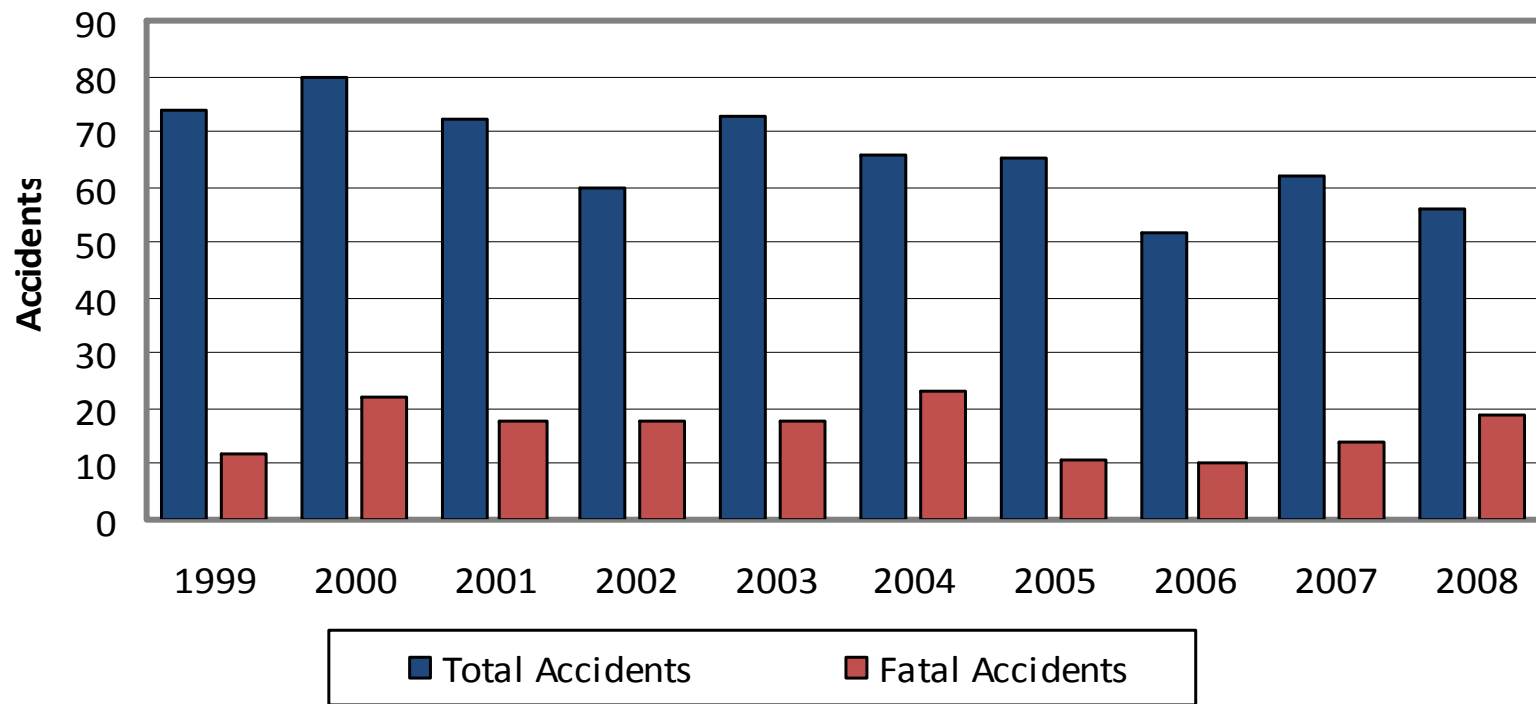
Corporate Aviation Safety Seminar

Deborah Hersman
Board Member, NTSB

April 22, 2009
Orlando, Florida

2008 Accident Statistics

On-demand Part 135 Accidents and Fatal Accidents
1999-2008





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NASCAR

Cessna 310R

Sanford, Florida
July 10, 2007

History of Flight

- Commercial pilot and ATP on personal flight
- Relatively short flight in good weather
- Pilots declared an emergency
 - “smoke in the cockpit”
 - Diverted to Sanford





07/11/2007

History of Flight

- Last radio contact
 - Less than 1 minute later
 - Terminated midsentence
 - “shut off all radios, elec[trical]”
- Consistent with checklist guidance
- Last radar return about 3 miles from Sanford descending through 1,200 feet
- Airplane observed at low altitude, high speed, steep bank

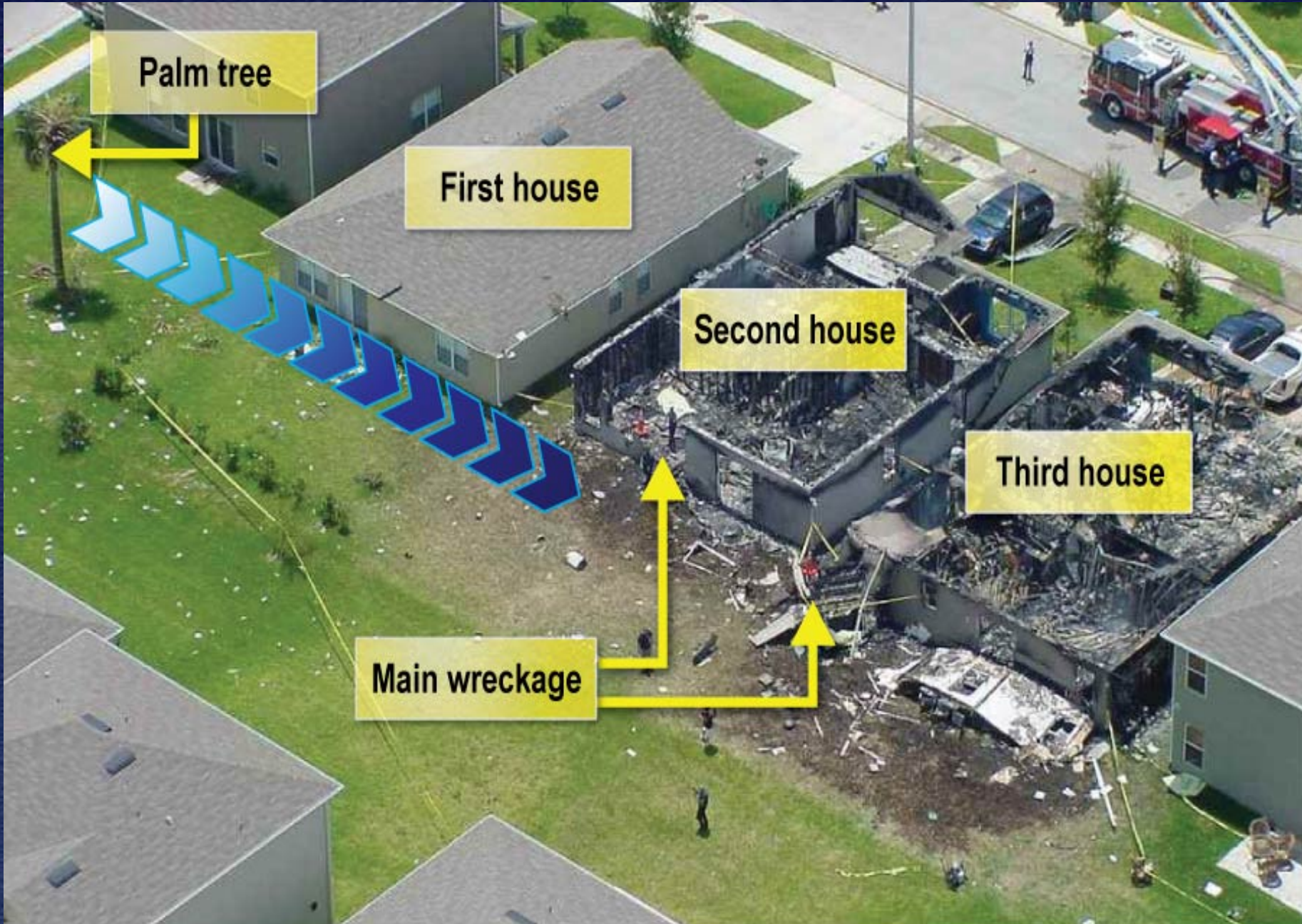
Palm tree

First house

Second house

Third house

Main wreckage



Wreckage and Impact Information

- No evidence of preimpact structural failure
- Thermal damage and soot patterns observed
 - Deck skin
 - Glare shield
 - Cabin door



Maintenance Discrepancy

| | | | |
|---|-------------------|--|---|
| AIRCRAFT: N561N | DATE: 07-09-07 | -ACTT | |
| MAINTENANCE WRITE-UP | | -ACTL | |
| Entered By: ACT | Location: DAB | MAINTENANCE CLEARING ACTION | |
| | | <input checked="" type="checkbox"/> Repaired | <input type="checkbox"/> Replaced |
| | | <input type="checkbox"/> Released- Could Not Duplicate | <input type="checkbox"/> Loaner Installed |
| RADAR WENT DARK DURING CRUISE FLIGHT. RECYCLED NO RESPONSE... SMELL OF ELECTRICAL COMPONENTS BURNING TURNED OFF UNIT - PULL RADAR CB - SMELL WENT AWAY. - RADAR INOP | | Corrective Action: | |

“SMELL OF ELECTRICAL COMPONENTS BURNING”



Events - Previous Day

- Brief in-office discussion
- Airplane not inspected, modified, or grounded
- Airplane remained available for flight

Specific Actions Not Taken

- Required by FARs
- Remove from flight status
- Examine/Inspect
 - Airworthiness determination
- Disposition accordingly
 - Collar, placard and document
 - Repair and document

Probable Cause

- **Actions and decisions by NASCAR's corporate aviation division's management and maintenance personnel to allow the accident airplane to be released for flight with a known and unresolved discrepancy**
- **The accident pilots' decision to operate the airplane with that known discrepancy, a discrepancy that likely resulted in an in-flight fire.**

Wiring Routed Beneath Fire Damage

Heat damage (behind)



Radar display

Circuit breaker panel

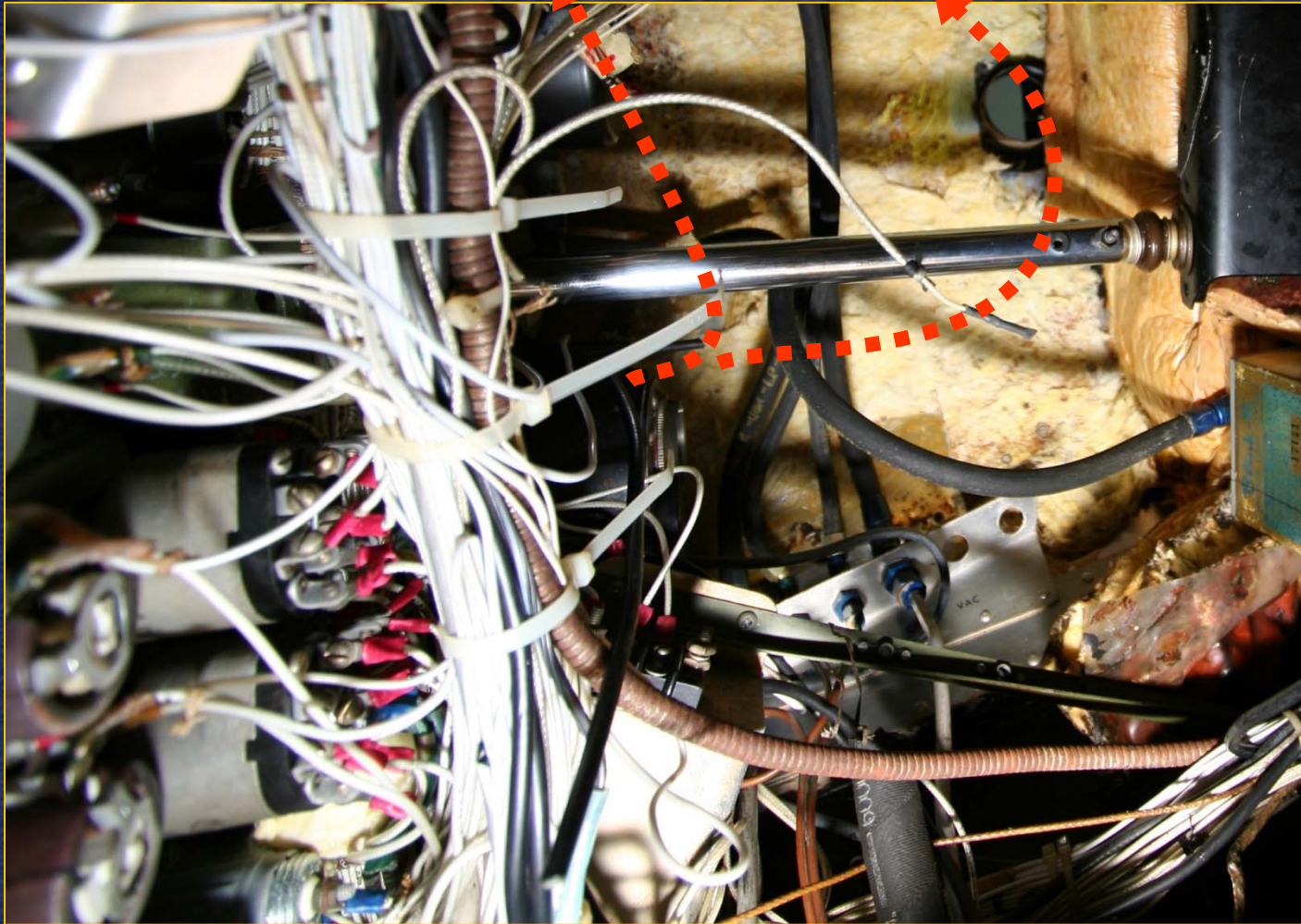
The dashed line shows the wiring path behind the instrument panel of a similar airplane

Wiring Behind Instrument Panel

(Exemplar airplane)

To radar display

Soot flow paths



Aft,
toward
pilot seat

Forward,
toward
nose

To circuit breaker panel

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Circuit Breaker Theory

- Classic Theory
 - One circuit breaker reset allowable
 - If true problem exists, breaker will trip again
- Fact
 - Pulling and resetting circuit breaker may stop symptoms, but may also allow further wire damage to develop

Safety Management Systems

- Unresolved maintenance discrepancy
- Low-time, commercial pilot acted as PIC on personal flight
- SMS programs increasingly common
- SMS programs help ensure adherence to SOPs



Jefferson City, MO October 14, 2004

SMS Regulatory Activities

- ICAO mandate for States to establish SMS requirements by January 2009
- FAA efforts
 - June 2006: Issued AC 120-92 “Introduction to Safety Management Systems for Air Operators”
 - December 2006: rulemaking activities began

NASCAR Post-Accident Changes

- SOP revisions
- Established SMS program
- Successfully completed IS-BAO registration audit
- Expanded grounding authority
- Improved maintenance reporting and tracking methods
 - Forms
 - Communications procedures
 - Status boards



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Open Investigations

Butte, MT

March 22, 2009





Approximate Energy
Path (245°)

Initial Impact Point

Columbia, SC

September 19, 2008







By Mary Montserrat-Howlett

Owatonna, MN

July 31, 2008





Chicago, IL

June 5, 2008





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Fatigue in Aviation

Most Wanted List

Actions needed by States

HIGHWAY

Improve Child Occupant Protection

- Enact State laws requiring booster seats for young children.

Enact Primary Seat Belt Enforcement Laws

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

Promote Youth Highway Safety

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

Eliminate Hard Core Drinking Driving

- Enact State legislation and take other actions that are proven to reduce crashes involving those who repeatedly drink large amounts of alcohol and drive including:
 - Frequent, statewide sobriety checkpoints.
 - Legislation to create stricter sanctions for those arrested the first time with a high blood alcohol concentration of 0.15 or higher.
 - Zero blood alcohol requirement for convicted DWI offenders when they get their license back.
 - Administrative rather than court-based license revocation for refusing to take or failing the sobriety test.
 - Vehicle sanctions for DWI offenders.
 - Eliminate plea-bargaining DWI offenses and programs that divert offenders and purge the offense record.
 - Retain DWI records for at least 10 years to identify and prosecute repeat offenders.
 - Develop and operate special sanction court-based programs for hard core DWI offenders.

MARINE

Enhance Recreational Boating Safety

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



National Transportation Safety Board

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November 2007



NTSB MOST WANTED LIST

Transportation Safety Improvements

2008

*Critical changes needed to reduce
transportation accidents and save lives.*

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Fatigue Management Systems

- Develop guidance based on empirical and scientific evidence for operators to establish fatigue management systems
- Develop and use a methodology that will continually assess the effectiveness of fatigue management systems

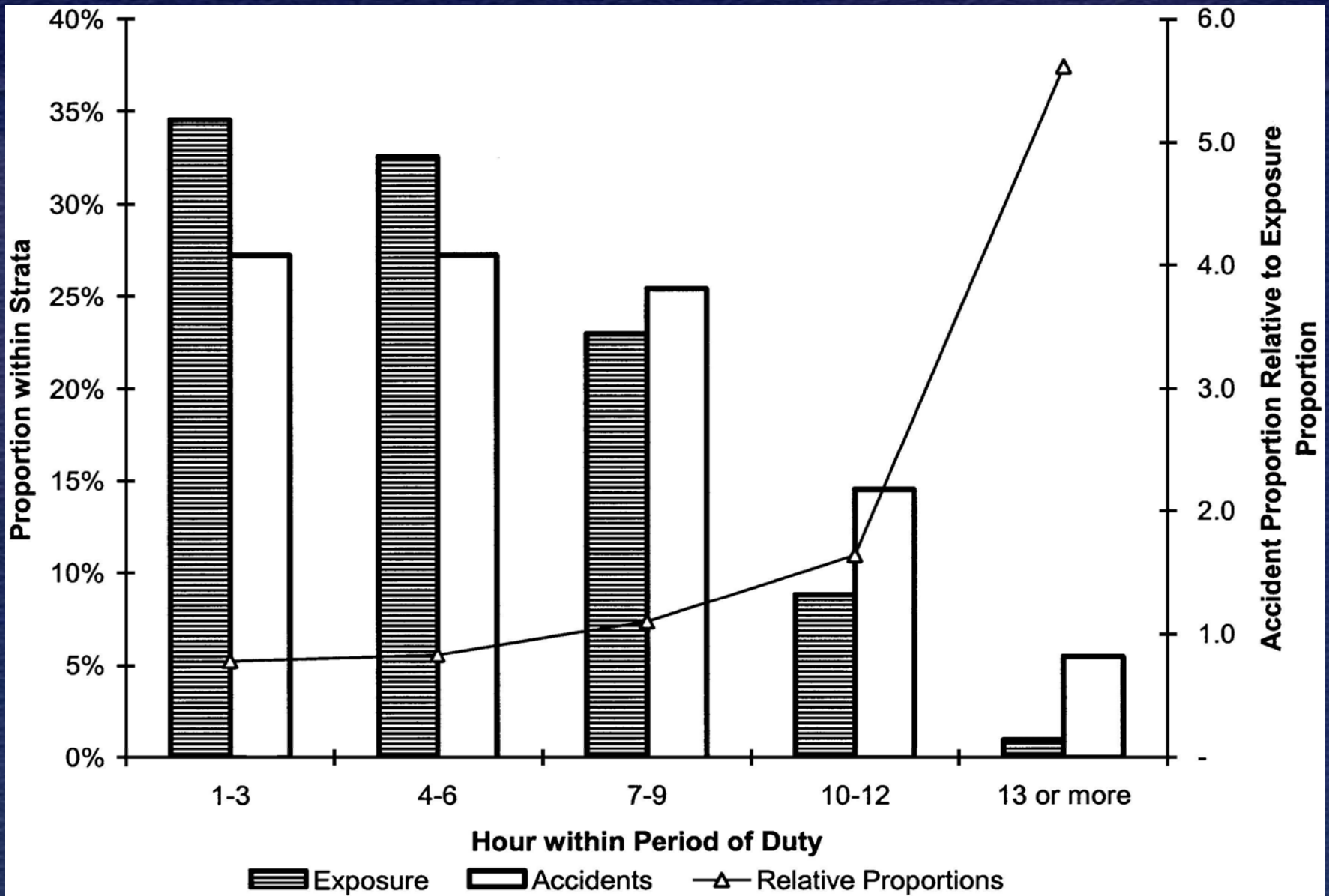
Go! Flight 1002



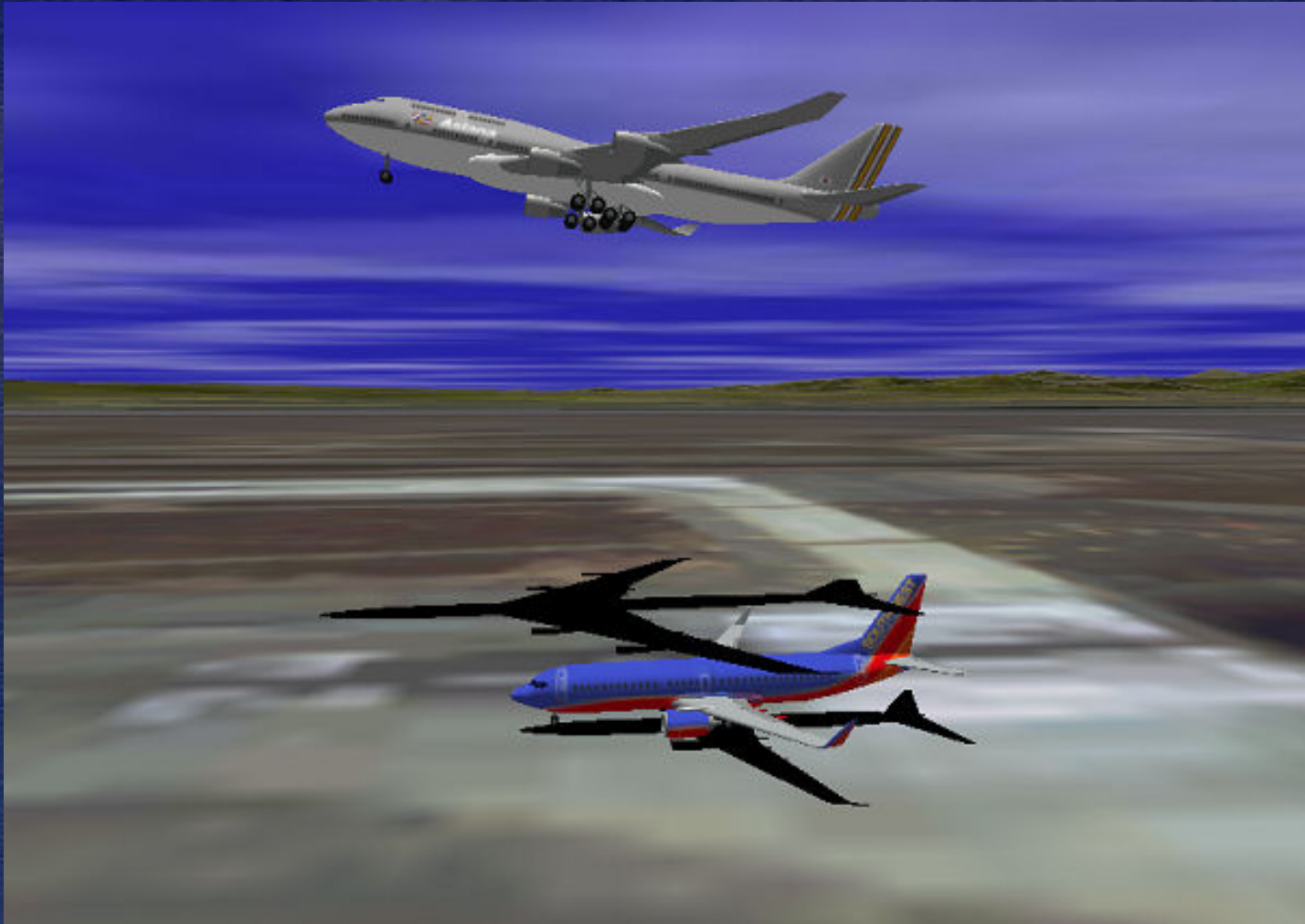


Traverse City, MI, April 12, 2007





Runway Incursion at LAX



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Runway Incursion between Asiana B747-400 and Southwest B737

Los Angeles International Airport
Los Angeles, California

August 19, 2004

NTSB Continuing Fatigue Efforts

- Studies
 - Fatigue Investigation Methodology Study
- Outreach
 - Training Center Course on Investigating Human Fatigue Factors
- Recommendations and Advocacy
- Most Wanted List



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