



**NTSB** National Transportation Safety Board

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# Effects of Commuting on Pilot Fatigue: An NTSB Perspective

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1967

**In 1967, the Congress created an independent NTSB within the newly formed Department of Transportation (DOT); expanded the NTSB's authority to include all modes of transportation.**





**In 1974, Congress made the NTSB completely independent of the DOT.**

*1974*





UNITED STATES CODE, TITLE 49

## CHAPTER 11—NATIONAL TRANSPORTATION SAFETY BOARD

### SUBCHAPTER 1—GENERAL

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1101. Definitions.

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### SUBCHAPTER 5—GENERAL

§1181. Definitions

Section 40102(a) of this title applies to this chapter.

### SUBCHAPTER 6—ORGANIZATION AND ADMINISTRATIVE

§1113. General organization

(a) ORGANIZATION.—The National Transportation Safety Board is an independent establishment of the Executive Branch of the Government.

(b) APPOINTMENT OF MEMBERS.—The Board is composed of 5 members appointed by the President, with the advice and consent of the Senate. Not more than 3 members may be appointed from the same political party. The members shall be appointed on the basis of technical qualification, professional standing, and demonstrated knowledge of accident reconstruction, safety engineering, human factors, transportation safety, or transportation regulation.

(c) TERMS OF OFFICE AND REMOVAL.—The term of office of each member is 7 years. An individual may be reappointed to fill a vacancy occurring before the expiration of the term for which the predecessor of that individual was appointed for the remainder of that term. When the term of office of a member ends, the successor may not be appointed until a successor is appointed and qualified. The President may remove a member for inefficiency, neglect of duty, or other cause.

(d) CHAIRMAN AND VICE CHAIRMAN.—The President shall designate, by and with the advice and consent of the Senate, a Chairman of the Board. The President also shall designate a Vice Chairman of the Board. The terms of both the Chairman and Vice Chairman are 2 years. When the Chairman is absent or unable to perform the duties of the office, the Vice Chairman shall perform the duties of the office.

# Mission

The NTSB is charged with:

- 1) determining the probable cause of transportation accidents
- 2) making recommendations to prevent their recurrence



## The NTSB is Responsible for Investigating:

- Aviation, highway, rail, marine, pipeline, and hazardous material accidents





Major product: safety recommendations

Moral compass and industry conscience



- 130,000+ accident investigations
- 13,000+ safety recommendations
  - 82% acceptance rate

# Go! Flight 1002



- early starts, multiple segment days, sleep apnea

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# Honorable John K. Lauber:

No Accident  $\neq$   
Safe Operation

# Guantanamo Bay Cuba

First NTSB aviation accident to cite fatigue as probable cause



- acute sleep loss, sleep debt, circadian disruption

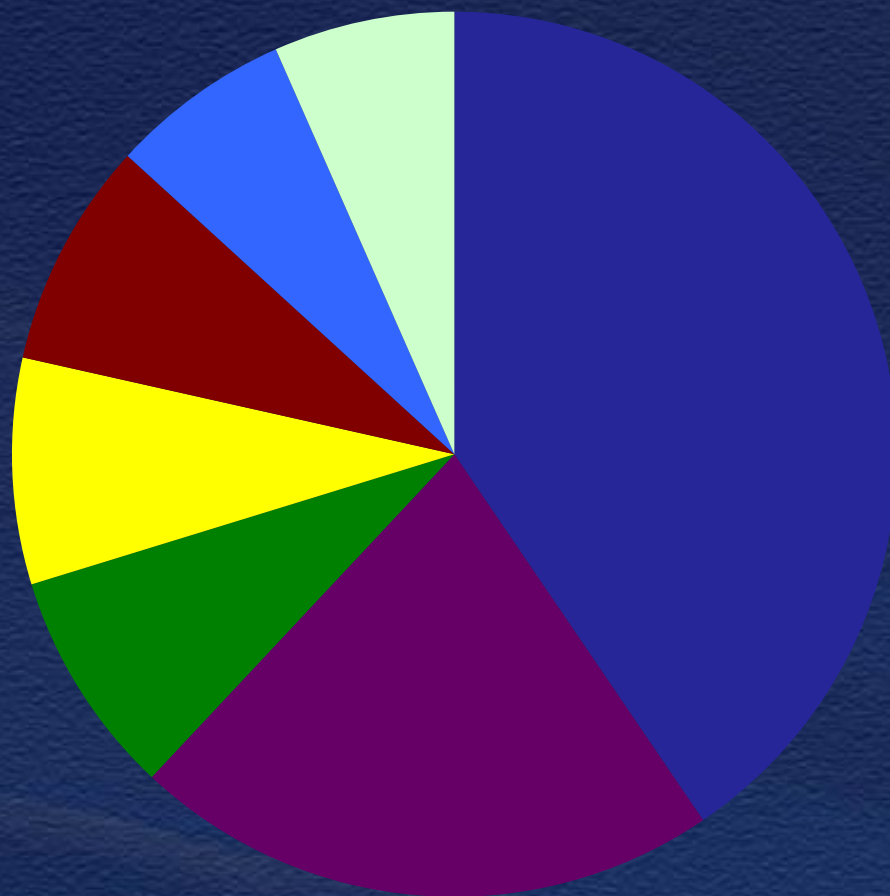
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# NTSB Recommendations

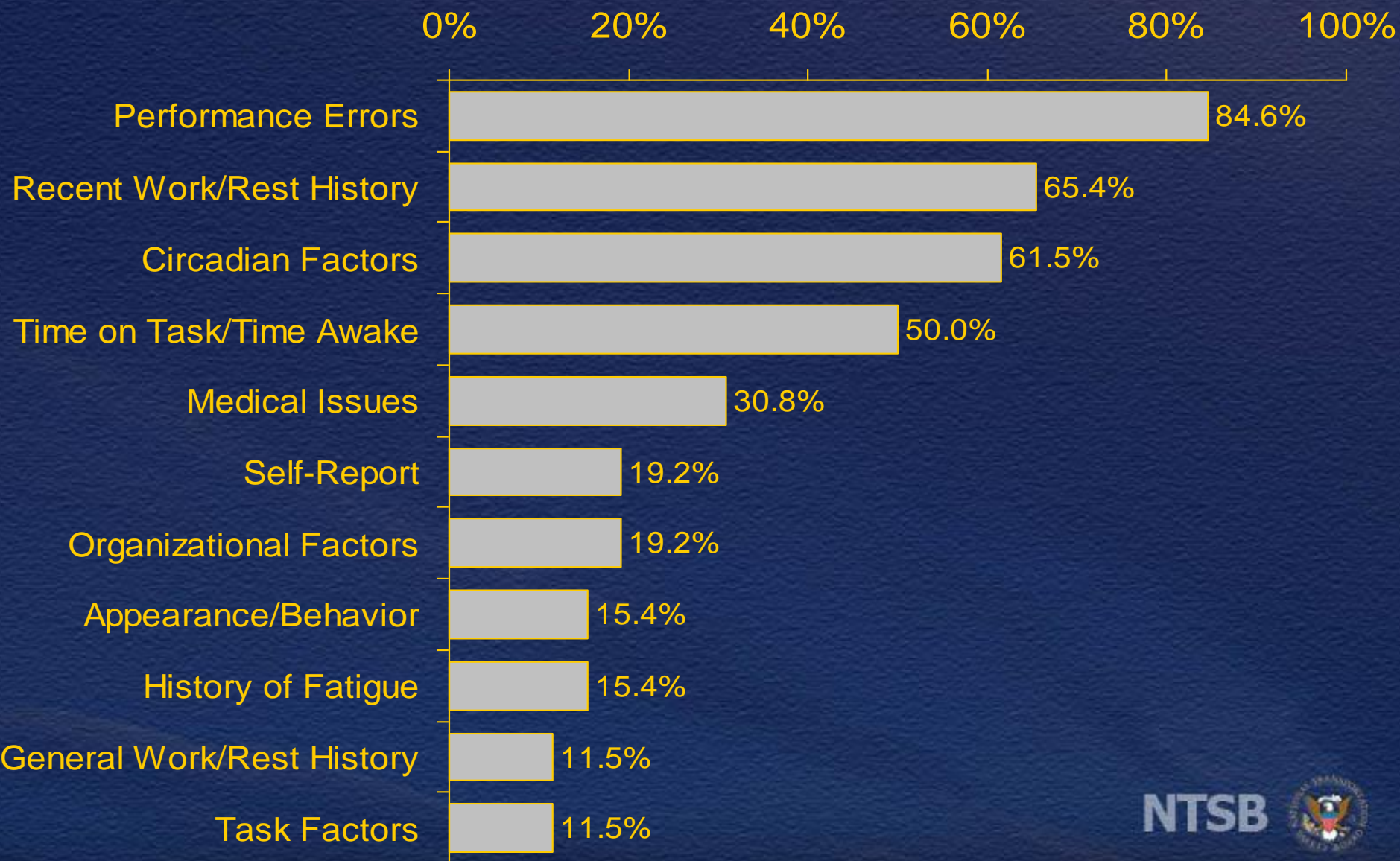
- MOST WANTED since 1990
- 150+ fatigue recommendations

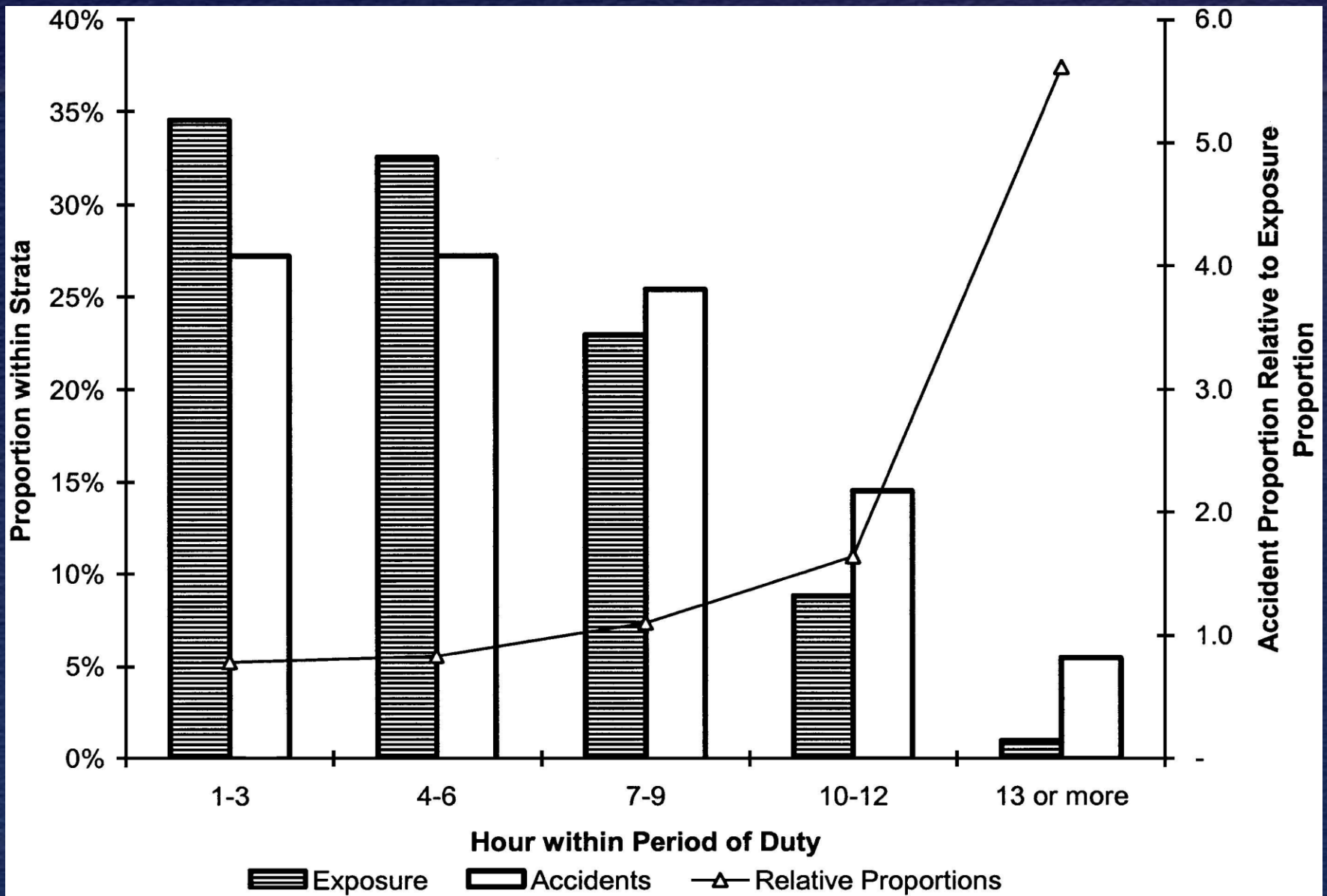
# Complex Issue: Requires Multiple Solutions



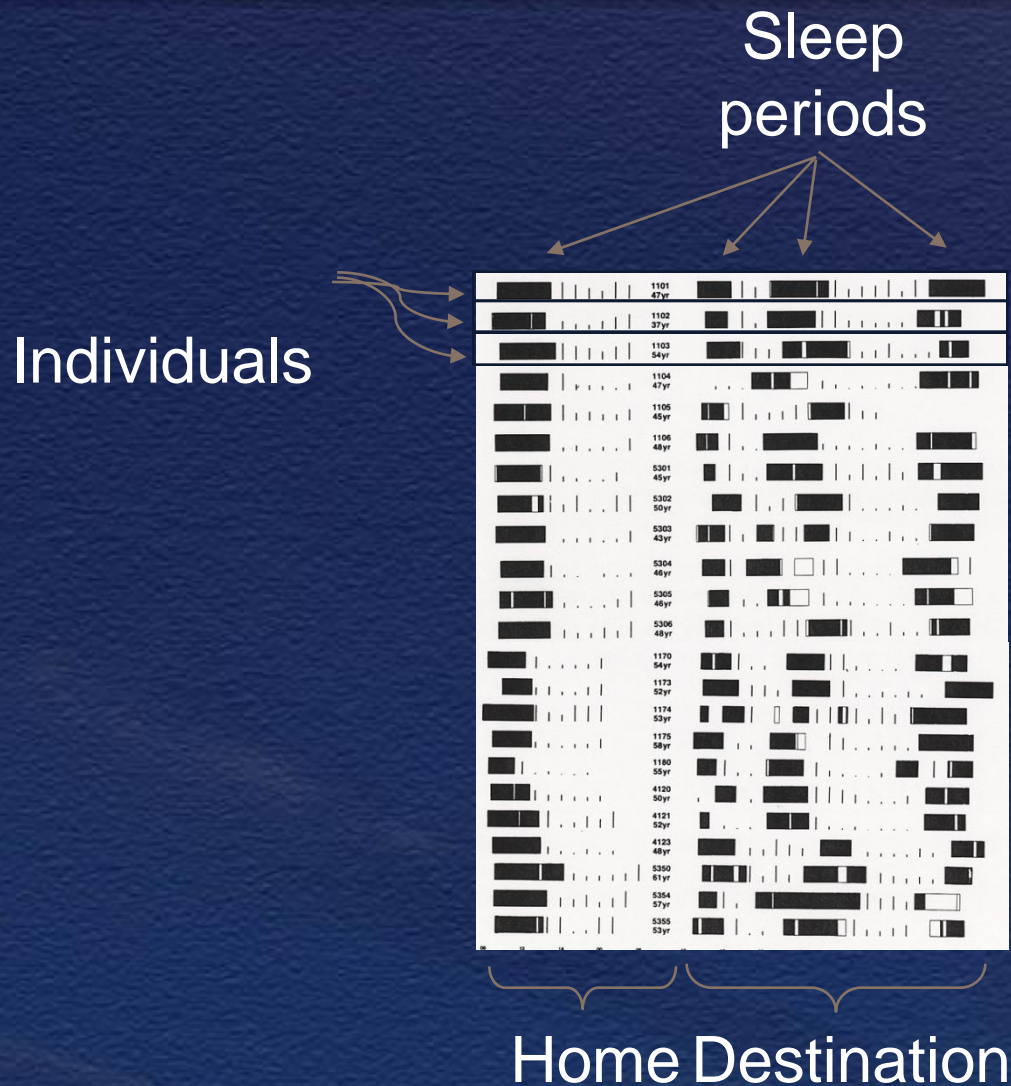
- Scheduling Policies and Practices
- Education
- Organizational Strategies
- Raising Awareness
- Healthy Sleep
- Vehicle and Environmental Strategies
- Research and Evaluation

# Fatigue Indicators

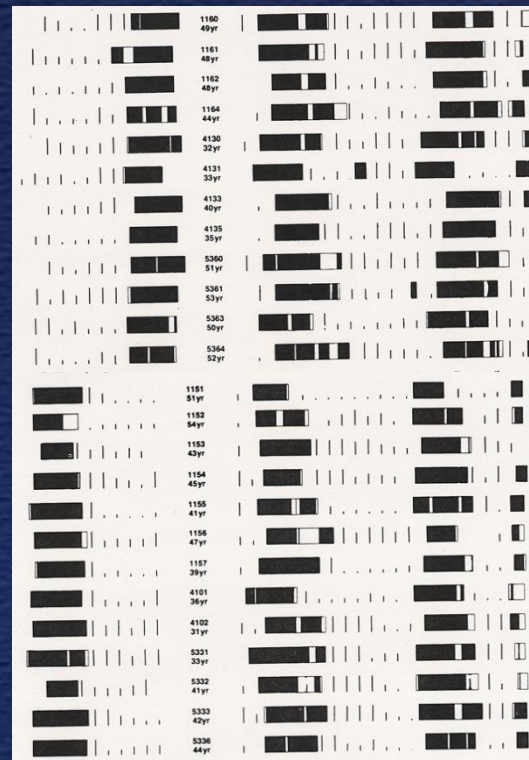




# After Traveling Eastward



# After Traveling Westward



Home Destination

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# Continental Connection (Colgan Air) Buffalo NY (February 12, 2009)



- 50 fatalities; commuting, acute sleep loss

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# Crew Fatigue Factors

- Captain
  - acute sleep loss (lounge, interrupted)
  - cumulative sleep debt (6 – 12 hrs)
  - awake at least 15 hrs
  - landing at normal bedtime
- First Officer
  - commuted overnight from Seattle
  - 8.5 hrs sleep in previous 34 hrs  
(in-flight, crew room)



# Geographic Distribution of Colgan Air Pilots Based at Newark, New Jersey

137 EWR pilots: 93 (68%) commuted

Less than 100 miles: 45 Connecticut, New Jersey, New York, Pennsylvania

100 to 199: 13 Maryland, Massachusetts, New York, Pennsylvania, Rhode Island

200 to 399: 29 Maine, Massachusetts, New Hampshire, New York, North Carolina, Pennsylvania, Virginia

400 to 999: 20 Florida, Georgia, Illinois, Iowa, Michigan, Ohio, South Carolina, Tennessee, West Virginia

1,000 or more: 29 California, Colorado, Florida, Louisiana, Minnesota, Nevada, Texas, Utah, Washington

# NTSB Findings

24. The pilots' performance was likely impaired because of fatigue, but the extent of their impairment and the degree to which it contributed to the performance deficiencies that occurred during the flight cannot be conclusively determined.
25. All pilots, including those who commute to their home base of operations, have a personal responsibility to wisely manage their off-duty time and effectively use available rest periods so that they can arrive for work fit for duty; the accident pilots did not do so by using an inappropriate facility during their last rest period before the accident flight.
26. Colgan Air did not proactively address the pilot fatigue hazards associated with operations at a predominantly commuter base.
27. Operators have a responsibility to identify risks associated with commuting, implement strategies to mitigate these risks, and ensure that their commuting pilots are fit for duty.

# NTSB Recommendation

Require all 14 *Code of Federal Regulations Part 121, 135, and 91K operators* to address fatigue risks associated with commuting, including identifying pilots who commute, establishing policy and guidance to mitigate fatigue risks for commuting pilots, using scheduling practices to minimize opportunities for fatigue in commuting pilots, and developing or identifying rest facilities for commuting pilots. (A-10-16)

# Commuting Considerations

- Complexity
  - fatigue science/physiology/individuals
  - operational demand/experience/history
  - mutual benefits/shared responsibility
  - economics
  - lifestyle
- Definition?
- Scheduling
  - W coast crew commuting for E coast flying

# Commuting Considerations

- Science
  - data available/needs
  - methodologies
  - peer review process
- Fitness for Duty
- Regulatory vs advisory approach
- Prevent recurrence?





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