



NTSB National Transportation Safety Board

Managing Fatigue Risks to Enhance Transportation Safety: Issues and Opportunities

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Opening Remarks
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UNITED STATES CODE, TITLE 49
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SUBCHAPTER 5—GENERAL

§1181. Definitions

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

SUBCHAPTER 6—ORGANIZATION AND ADMINISTRATIVE

§1183. General organization

(a) ORGANIZATION.—The National Transportation Safety Board is an independent constitutional body of the Government.

(b) APPOINTMENT OF MEMBERS.—The Board is composed of 5 members appointed by the President, by and with the advice and consent of the Senate. Not more than 3 members may be appointed from the same political party. 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. At the end of the term, the President may appoint a member to fill a vacancy occurring before the expiration of the term for which the predecessor of that member was appointed for the remainder of that term. When the term of office of a member ends, the President may reappoint a member if the member is appointed and qualified. The President may remove a member for inefficiency, neglect of duty, or other cause in office.

(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**





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

Guantanamo Bay Cuba

First NTSB aviation accident to cite fatigue as probable cause



- acute sleep loss, sleep debt, circadian disruption

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Accident Investigation: Fatigue Factors

- Acute sleep loss/cumulative sleep debt
- Continuous hours of wakefulness
- Time of day/circadian effects
- Sleep disorders

Uncontrolled In-Flight Collision with Terrain
AIA Flight 808, Douglas DC-8-61, N814CK
U.S. NAS, Guantanamo Bay, Cuba, August 18, 1993

Probable cause:

“The National Transportation Safety Board determines that the probable causes of this accident were the impaired judgment, decision making, and flying abilities of the captain and flightcrew due to the effects of fatigue...”

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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)



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Fatal Airline Accidents (fatigue cited)

- 8/97 Guam: 228 fatalities
- 6/99 Little Rock AK: 11 fatal
- 10/04 Kirksville MO: 11 fatalities
- 8/06 Lexington KY: 49 fatalities
- 2/09 Buffalo NY: 49 fatalities

Go! Flight 1002



- early starts, multiple segment days, sleep apnea

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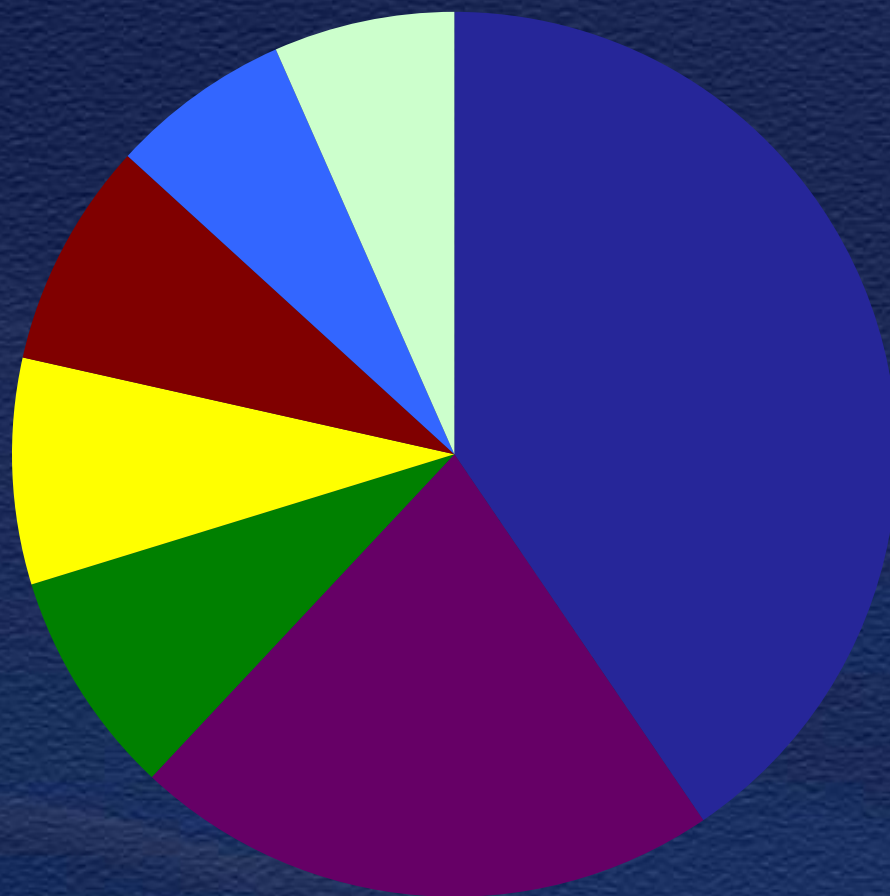
Honorable John K. Lauber:

No Accident \neq
Safe Operation

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

Modeling: Issues/Opportunities

- Technology advances = revolution
- Tremendous societal needs
- Integrate 'fatigue' management into daily operations/activities
- Strengths vs. limitations
- Outcomes and expectations
- Development/evolution plan
- Science-based/data-driven



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