



NTSB National Transportation Safety Board

Managing Fatigue in Maritime Operations: Challenges and Opportunities

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Board Member

American Waterways Operators
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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

§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

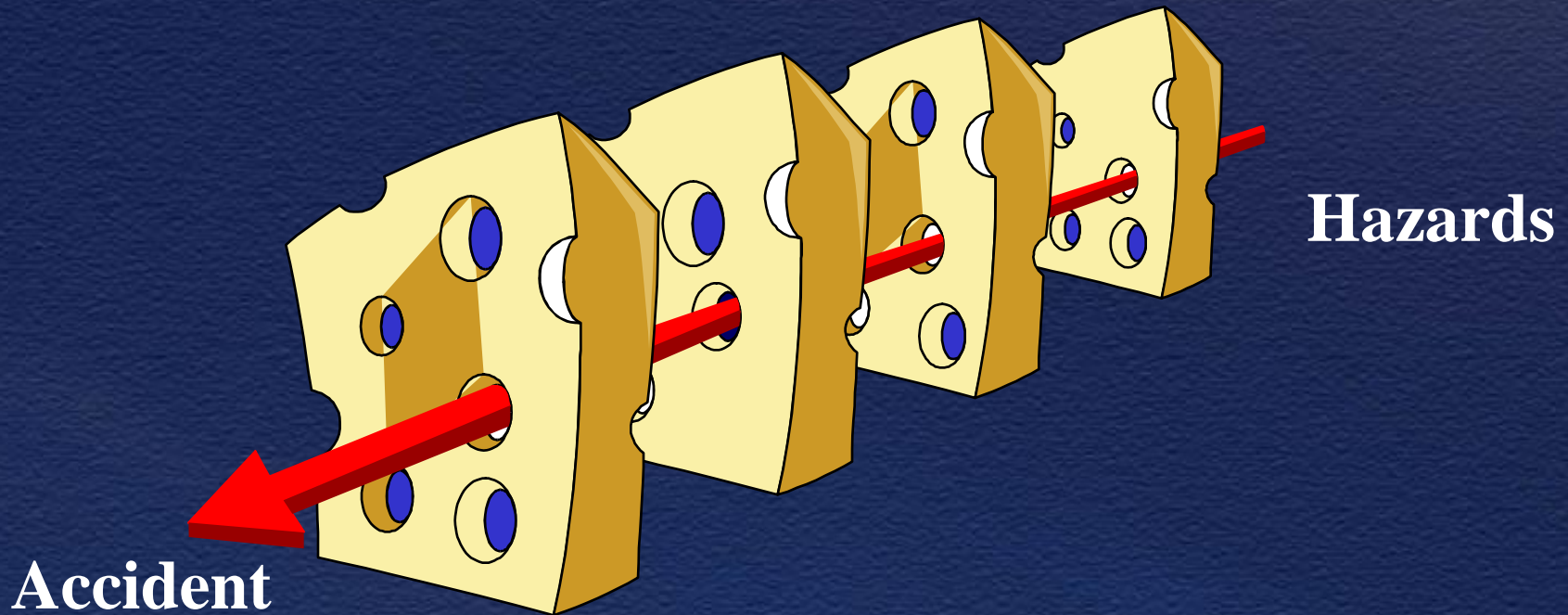


The NTSB is Responsible for Investigating:

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



“Swiss Cheese” Model (Reason)



Successive layers of defenses, barriers, and safeguards

Collision of Tankship *Eagle Otome* with Cargo Vessel *Gull Arrow*
and Subsequent Collision with the *Dixie Vengeance* Tow
Sabine-Neches Canal, Port Arthur, Texas
January 23, 2010



Accident Report

NTSB/MAR-11/04
PB2011-916404



**National
Transportation
Safety Board**

NTSB



Eagle Otome, Port Arthur, TX



January 23, 2010

NTSB



Probable Cause/Contributing Factors

“Contributing to the accident was the first pilot’s fatigue, caused by his untreated obstructive sleep apnea and his work schedule, which did not permit adequate sleep;”

Honorable John K. Lauber:

No Accident \neq
Safe Operation

NTSB Most Wanted List

Critical changes needed to reduce transportation accidents and save lives.



NATIONAL TRANSPORTATION SAFETY BOARD

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MOST WANTED LIST

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. The following are ten of the current issues.



Addressing Human Fatigue



General Aviation Safety



Safety Management Systems



Runway Safety



Bus Occupant Safety



Pilot & Air Traffic Controller Professionalism



Recorders



Teen Driver Safety



Addressing Alcohol-Impaired Driving



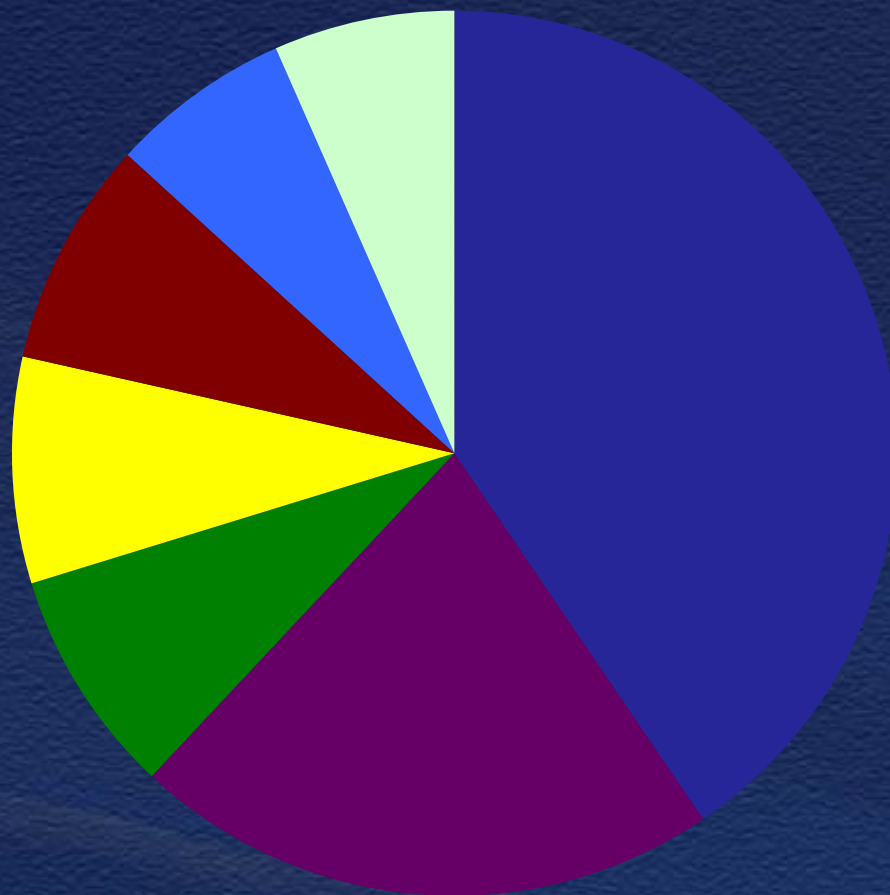
Motorcycle Safety



NTSB Recommendations

- MOST WANTED since 1990
- ~200 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

Education/Strategies

- Develop a fatigue education and countermeasures training program
- Educate operators and schedulers
- Include information on use of strategies: naps, caffeine, etc.
- Review and update materials

Hours of Service / Scheduling

- Science-based hours of service
- Allow for at least 8 hours of uninterrupted sleep
- Reduce schedule irregularity and unpredictability

Health Related Recommendations

- Develop standard medical exam to screen for sleep disorders; require its use
- Educate companies/individuals about sleep disorder detection/treatment; sedating effects of certain drugs
- Ensure operators with apnea are effectively treated before granting unrestricted medical certification

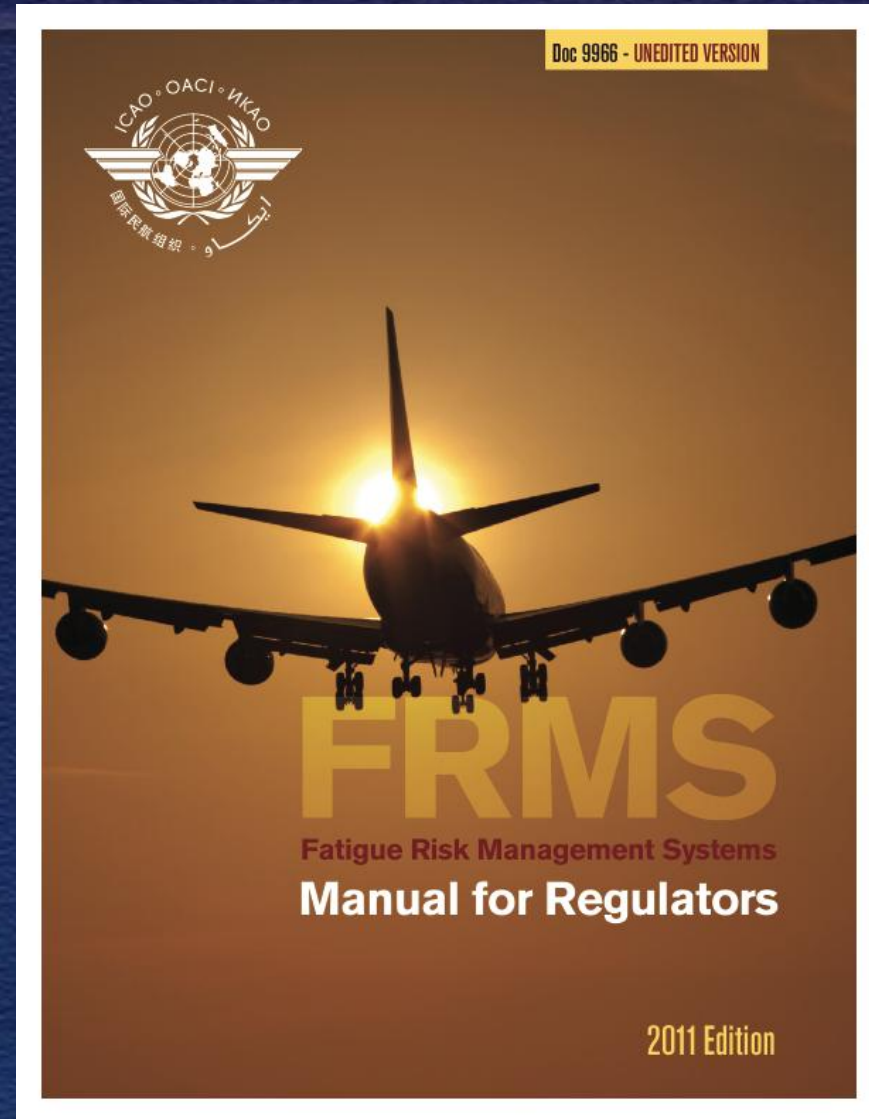
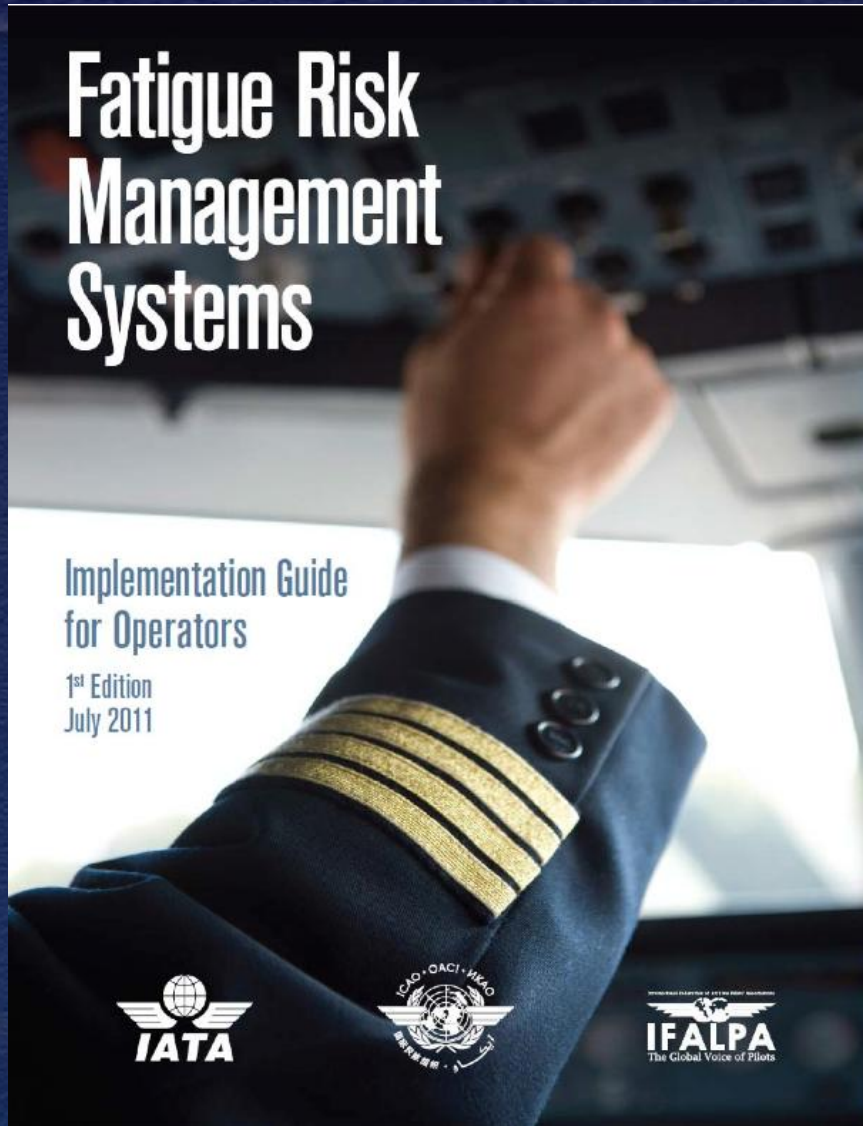
Organizational Strategies

- Non-punitive fatigue call-in policy

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

Aviation Example



Opportunities

- Methodologies:
 - survey, laboratory, simulator, operational
- Industry best practices
- Collaboration/coordination
- Evaluate effectiveness \longrightarrow improve
- Strategic plan: near- and long-term objectives

Success requires . . .

A culture change that supports
different attitudes and behaviors

Changing Safety Culture

Safety goal . . .

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NTSB