



**National
Transportation
Safety Board**

International Flight Ops: An NTSB Perspective on Fatigue Challenges

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Fatigue Risk Management for International Operators
NBAA International Operators Conference
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Guantanamo Bay Cuba

First major aviation accident
NTSB cites fatigue as probable cause



- acute sleep loss, sleep debt, circadian disruption



NTSB

Observed Performance Effects

- Degraded decision-making
- Visual/cognitive fixation
- Poor communication/coordination
- Slowed reaction time





NTSB

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

“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 flight crew due to the effects of fatigue...”



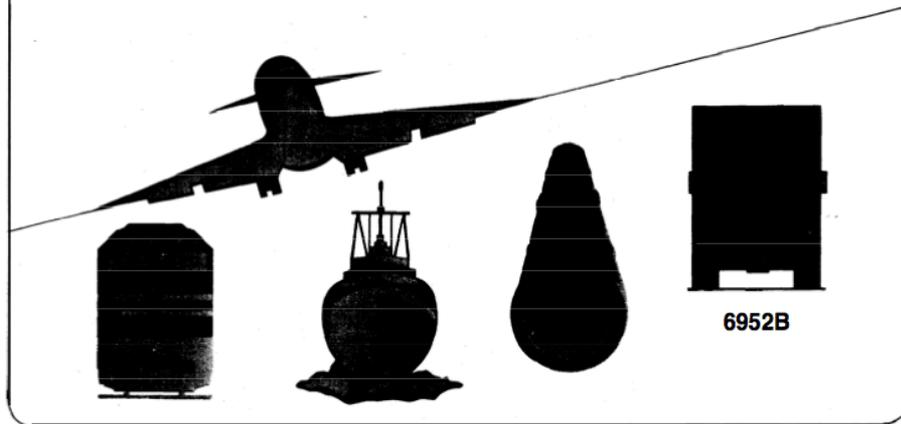
PB00-910401
NTSB/AAR-00/01
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**NATIONAL
TRANSPORTATION
SAFETY
BOARD**

WASHINGTON, D.C. 20594

AIRCRAFT ACCIDENT REPORT

**CONTROLLED FLIGHT INTO TERRAIN
KOREAN AIR FLIGHT 801
BOEING 747-300, HL7468
NIMITZ HILL, GUAM
AUGUST 6, 1997**



U.S. GOVERNMENT PRINTING OFFICE: 1989 O-942-885



NTSB

Korean Air Flt 801 (Guam, Aug. 6, 1997)



228 fatalities

26 serious injuries



NTSB

Korean Air Flt 801 (Guam, Aug. 6, 1997)

3.2 Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the captain's failure to adequately brief and execute the nonprecision approach and the first officer's and flight engineer's failure to effectively monitor and cross-check the captain's execution of the approach. Contributing to these failures were the captain's fatigue and Korean Air's inadequate flight crew training.

Contributing to the accident was the Federal Aviation Administration's intentional inhibition of the minimum safe altitude warning system at Guam and the agency's failure to adequately manage the system.

15. The captain was fatigued, which degraded his performance and contributed to his failure to properly execute the approach.



Fatal Aviation Accidents (examples: 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
- 7/08 Owatonna MN: 8 fatalities
- 2/09 Buffalo NY: 49 fatalities
- 6/09 Santa Fe NM: 2 fatalities



Honorable John K. Lauber:

No Accident \neq
Safe Operation



NTSB

Go! Flight 1002



- early starts, multiple segment days, sleep apnea



NTSB

Four Fatigue Factors +

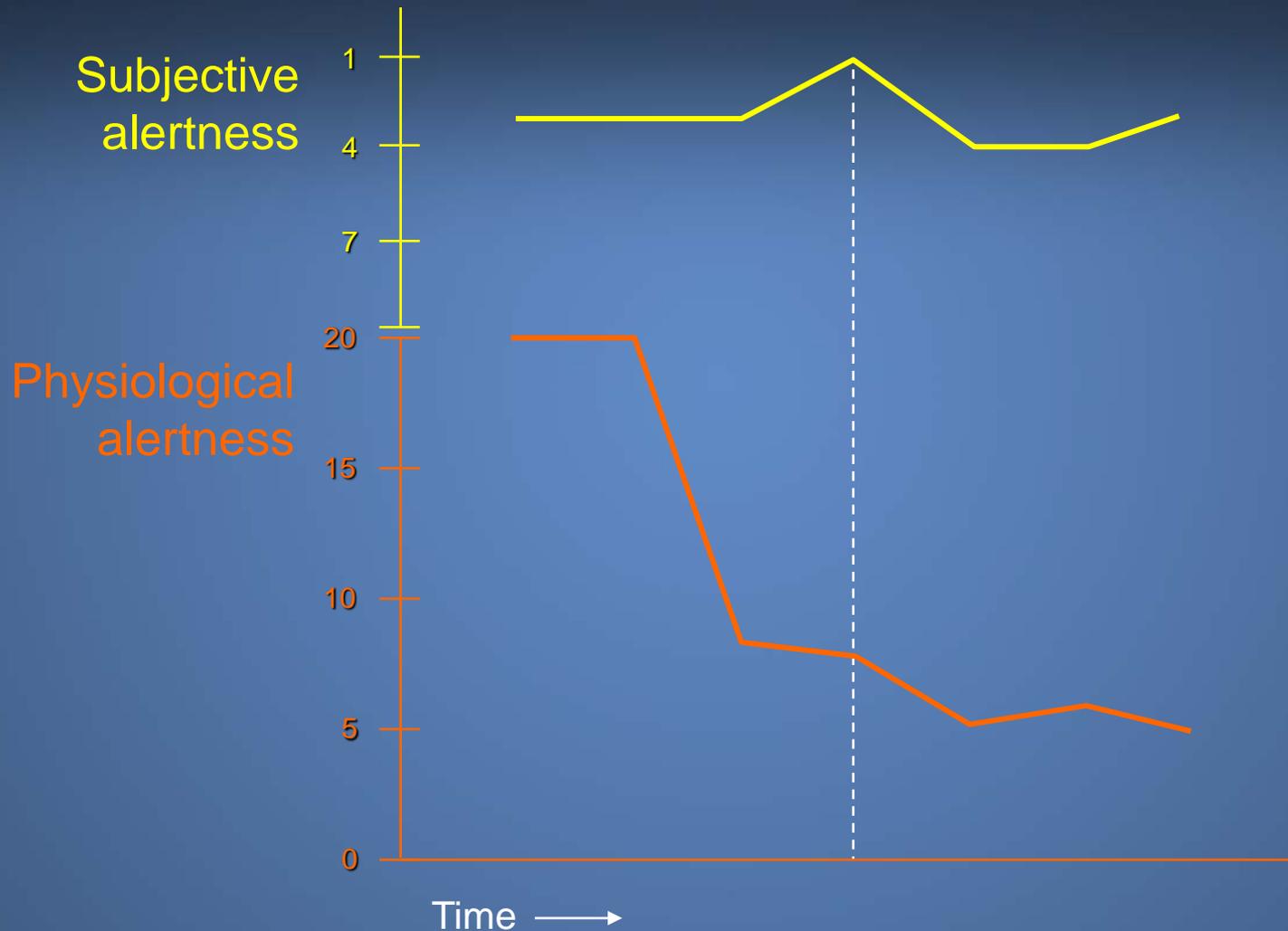
- Sleep loss
- Continuous hours of wakefulness
- Circadian/time of day
- Sleep disorders
- Other considerations



Fatigue Risks



Alertness Reports Often Inaccurate



Adapted from Sasaki et al., 1986



NTSB



Home > Transportation Safety > Most Wanted List

SHRE [f](#) [t](#) [e](#) ...

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



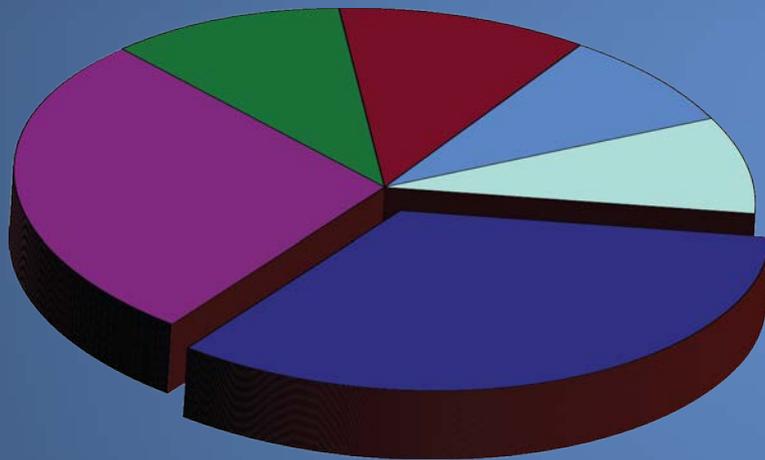
NTSB Recommendations

- MOST WANTED 1990 - 2011
- ~200 fatigue recommendations



Complex Issue:

Requires Multiple Solutions



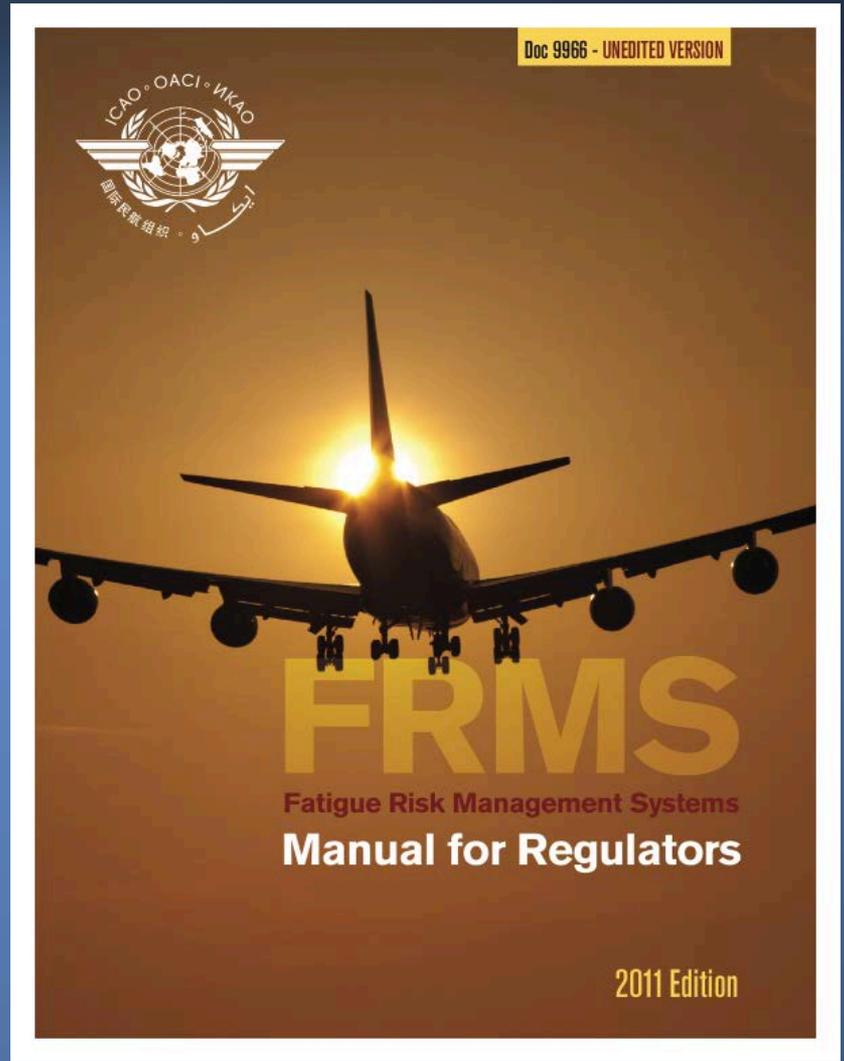
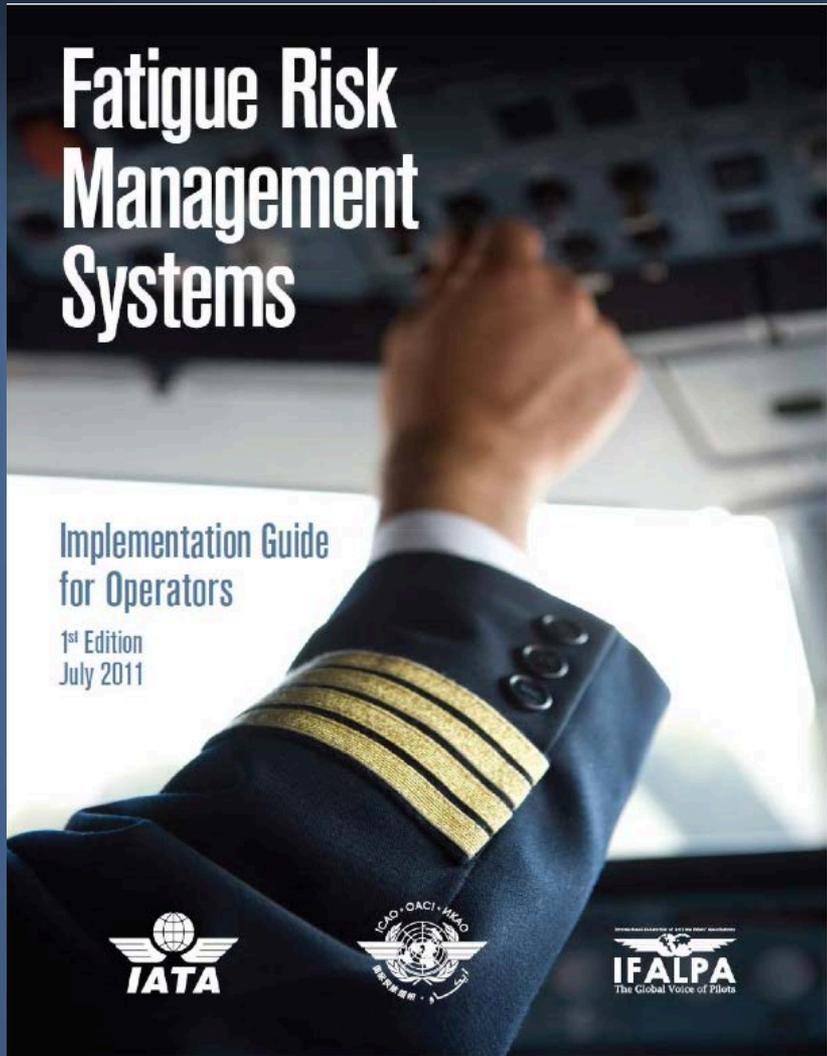
- Scheduling Policies and Practices
- Education/Awareness
- Organizational Strategies
- Healthy Sleep
- Vehicle and Environmental Strategies
- Research and Evaluation

NTSB Fatigue Recommendations: Fatigue Management Systems

- Develop guidance based on empirical and scientific evidence for operators to establish fatigue management systems
- Establish an ongoing program to monitor, evaluate, report on, and continuously improve fatigue management programs implemented by motor carriers to identify, mitigate, and continuously reduce fatigue-related risks for drivers.



Examples



Manage Fatigue = Enhance Safety

- Promote culture change
- Educate everyone
- Acknowledge risks
- Take action!



Good sleep, safe travels.



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