



**National
Transportation
Safety Board**

NTSB Recommendations and Fatigue Countermeasures

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Board Member

NTSB Investigating Human Fatigue Factors
November 22, 2013



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





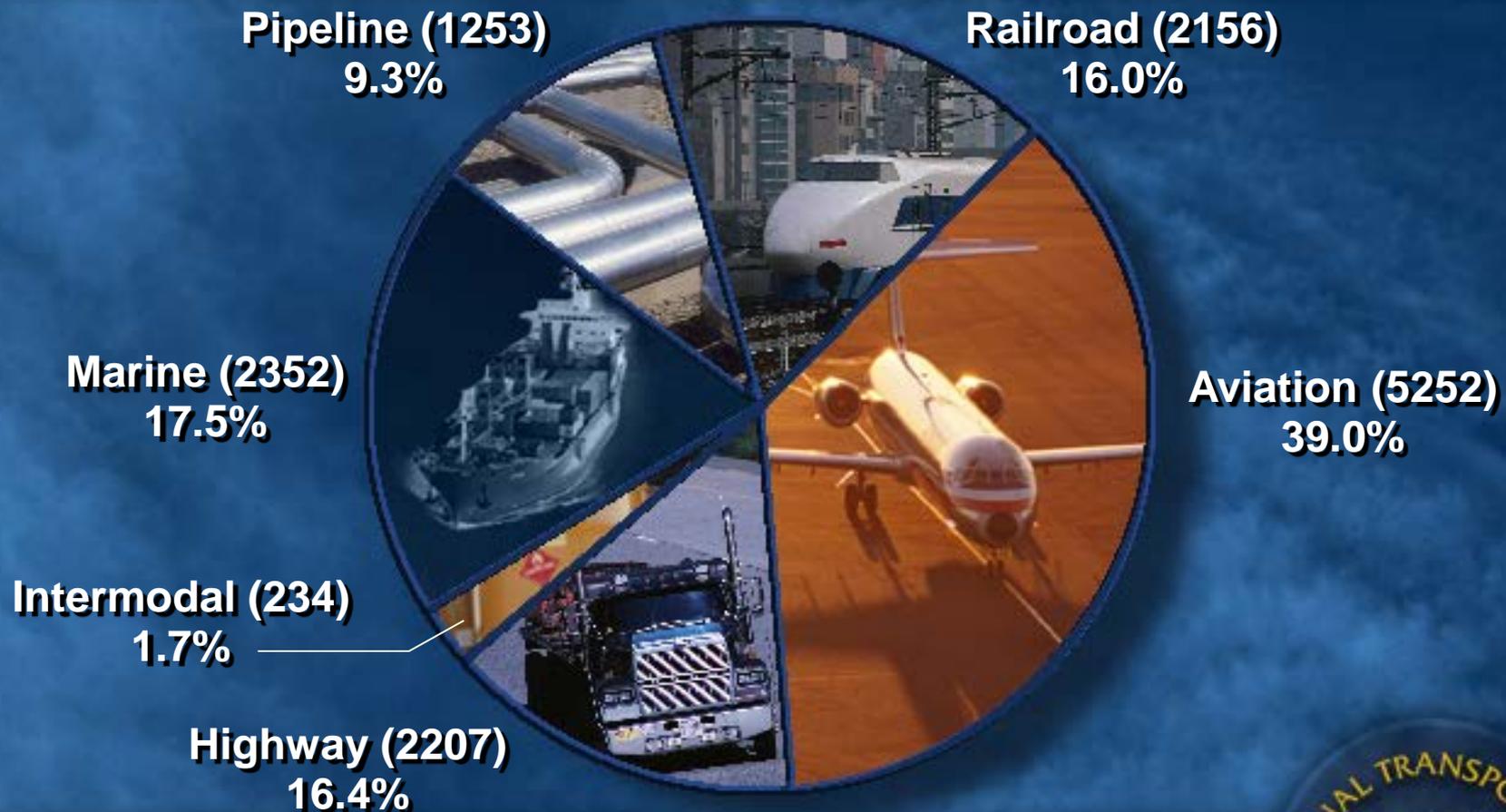
All Modes

Independent Federal Agency: Created in 1967

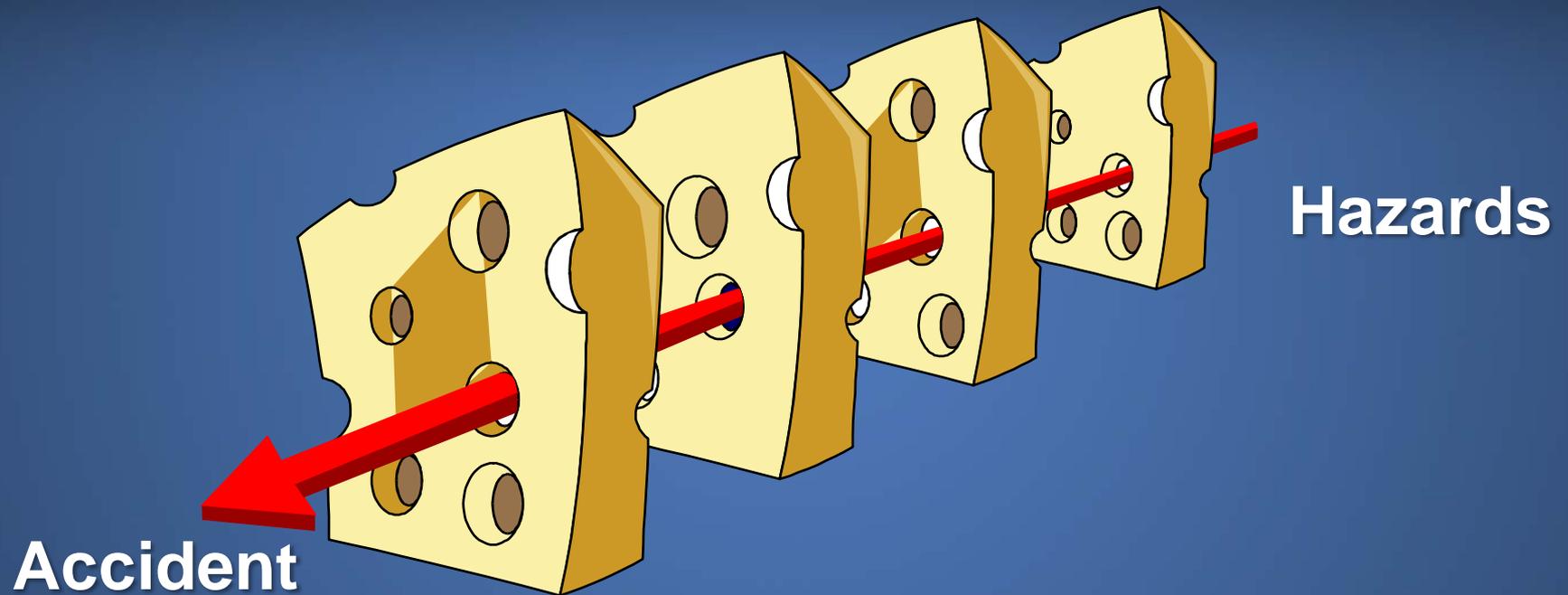
- ~ 132,000 accident investigations
- 13,500+ safety recommendations
- ~ 2,500 organizations/recipients
- 82% acceptance rate



13,454 Safety Recommendations issued since 1967



“Swiss Cheese” Model (Reason)



Successive layers of defenses, barriers, and safeguards

NTSB Characterized as:

‘moral compass and industry conscience’

NTSB Chairman Deborah A.P. Hersman



NTSB

Go! Flight 1002



- early starts, multiple segment days, sleep apnea



NTSB

Honorable John K. Lauber:

No Accident \neq
Safe Operation



NTSB

GA Accident: GULF OF MEXICO (February 17, 1994)

THE PILOT FELL ASLEEP WHILE ENROUTE FROM SPRINGFIELD, KY TO CROSSVILLE, TN WHEN HE AWOKE 5 HOURS LATER HE FOUND THAT HE WAS OVER THE GULF OF MEXICO, 210 MILES SOUTH OF PANAMA CITY, FL, AND HAD ONLY 20 MINUTES OF FUEL REMAINING. HE DECLARED MAYDAY ON 121.5 AND WAS ASSISTED BY COAST GUARD AND AIR FORCE AIRCRAFT. THEY DIRECTED HIM TO THE NEAREST AIRPORT, ST. PETERSBURG, FL WHILE ENROUTE TO THE AIRPORT THE ENGINES QUIT DUE TO FUEL EXHAUSTION AND THE AIRCRAFT WAS DITCHED, 70 MILES WEST OF ST. PETERSBURG. HE WAS RESCUED BY A COAST GUARD HELICOPTER.



GA Accident: GULF OF MEXICO (February 17, 1994)

- The National Transportation Safety Board determines the probable cause(s) of this accident to be:

THE PILOT'S PHYSIOLOGICAL CONDITION (FAILURE TO REMAIN AWAKE) RESULTING IN EXTENDED FLIGHT OVER WATER FOLLOWED BY FUEL EXHAUSTION, TOTAL LOSS OF ENGINE POWER, AND DITCHING BEFORE RETURNING TO LAND.

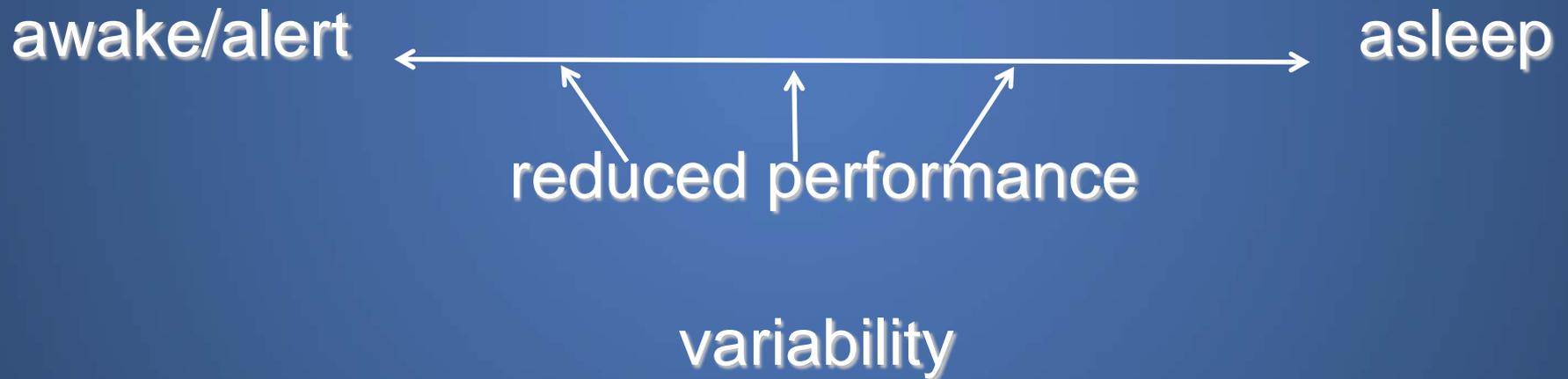


Challenges of a 24/7 Society

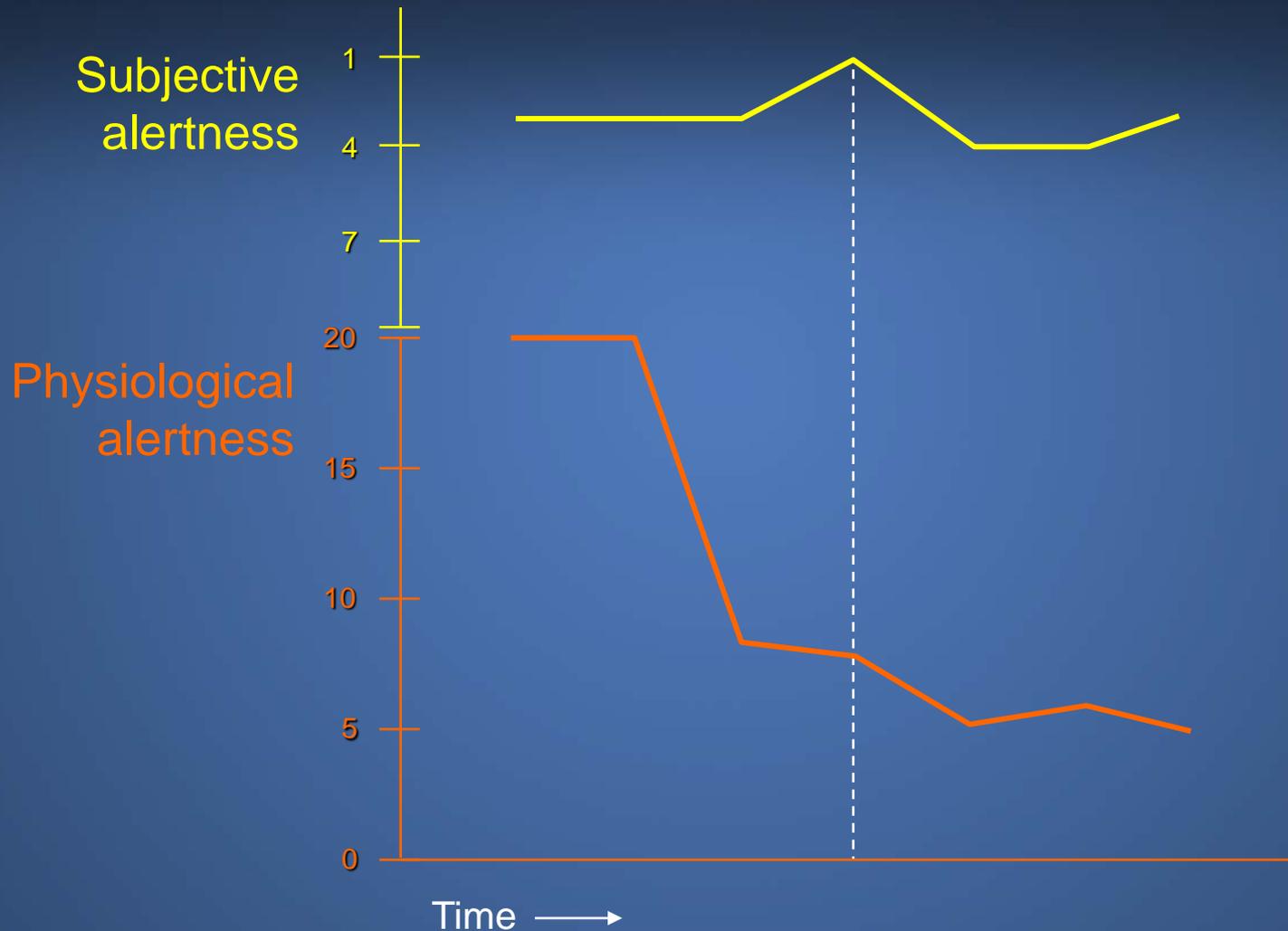


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Fatigue Risks



Alertness Reports Often Inaccurate



Adapted from Sasaki et al., 1986



NTSB

NTSB Safety Recommendations: Fatigue

- 40 years ago: May 10, 1972
- “Revise FAR 135 to provide adequate flight and duty time limitations.” (A-72-55)
- Classified “Closed-Unacceptable”





Home > Transportation Safety > Most Wanted List

SHARE   

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



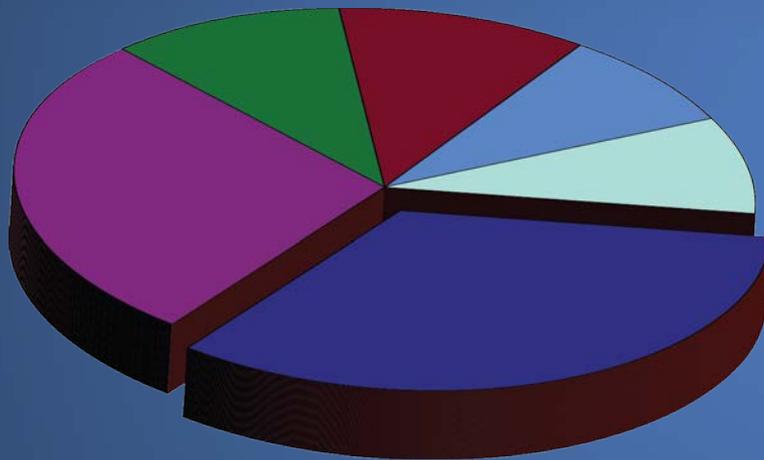
NTSB Recommendations

- MOST WANTED 1990 -2012
- ~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: 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



Scheduling Policies and Practices

Victoria, Texas, January 2, 2008



Victoria, Texas Fire Department

- Day sleep, night drive, ~ 4 am WOCL



NTSB

NTSB Fatigue Recommendations: Hours of Service / Scheduling

- Science-based hours of service
- Allow for at least 8 hours of uninterrupted sleep
- Fatigue mitigation strategies in the hours-of-service regulations for passenger-carrying drivers who operate during the nighttime window of circadian low
- Reduce schedule irregularity and unpredictability



New Hours of Service Regulations In 2011: Rail, Aviation, and Trucking

brisbane
times

Train drain: new rules fight driver fatigue

February 8, 2012

**The Dallas
Morning News**

FAA issues rules to ensure that pilots get enough rest

22 December 2011

THE
HUFFINGTON
POST

**FMCSA Sets New Rules To Encourage Truck
Drivers To Get Enough Rest**

01/20/12



NTSB

Air Cargo Operations Excluded in New 2011 Pilot Rules

FOR IMMEDIATE RELEASE

Date: December 21, 2011

FAA Issues Final Rule on Pilot Fatigue

WASHINGTON, D.C. –

“Covering cargo operators under the new rule would be too costly compared to the benefits generated in this portion of the industry.”

Chicago Tribune

Breaking News, Since 1847

FAA's new pilot fatigue rules aim to put concerns to rest

Safeguards, including minimum rest periods, will be phased in, don't apply to cargo pilots



NTSB

Sleep Apnea

Mexican Hat, UT, January 6, 2008



- 360 rollover, 50/53 ejected, 9 fatalities, OSA (-CPAP)



NTSB

NTSB Fatigue Recommendations: Sleep Apnea/Health Related

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



Owatonna, MN (July 31, 2008)



8 fatalities



NTSB

Owatonna, MN (July 31, 2008): Safety Recommendations

7. Revise regulations and policies to permit appropriate use of prescription sleep medications by pilots under medical supervision for insomnia.
9. Review the policy standards for all common sleep-related conditions, including insomnia, and revise them in accordance with current scientific evidence to establish standards under which pilots can be effectively treated for common sleep disorders while retaining their medical certification.

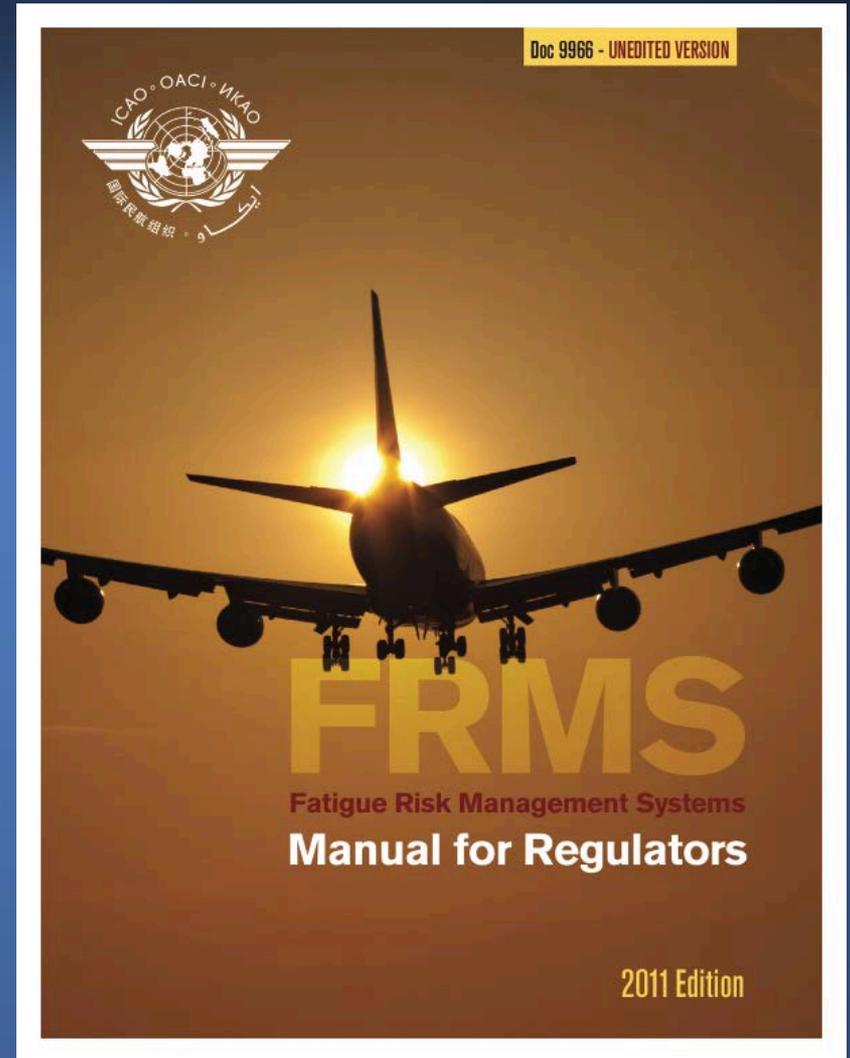
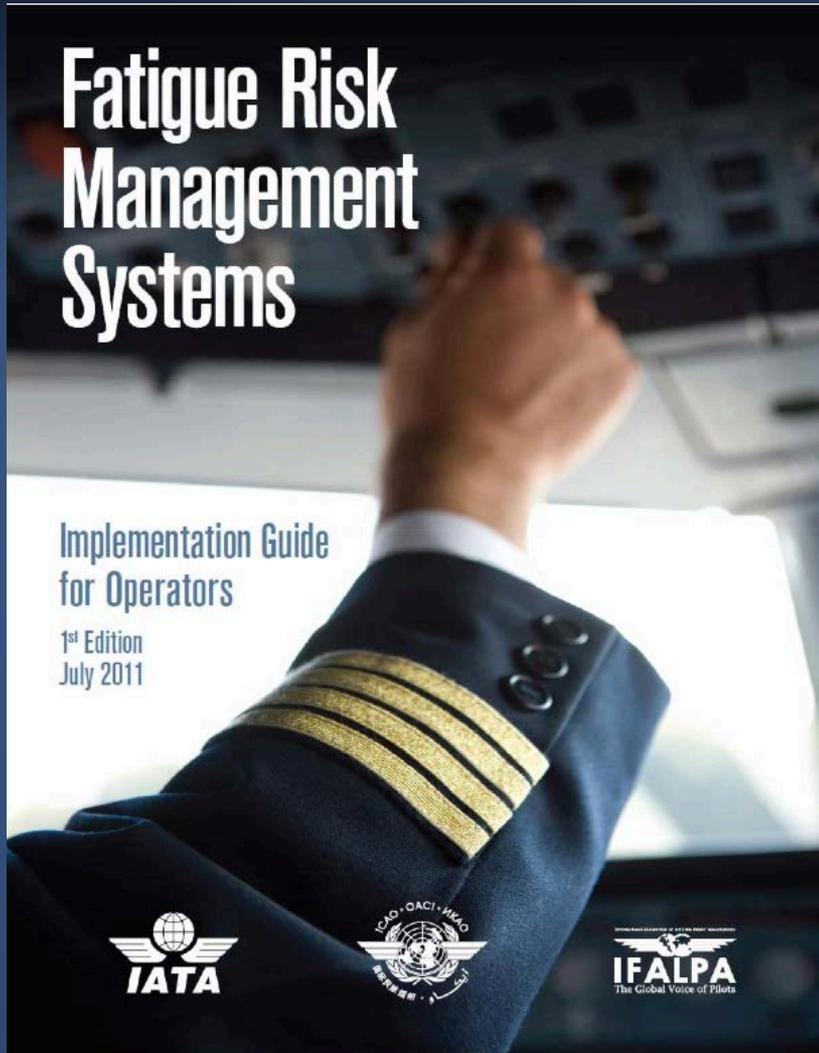


NTSB Fatigue Recommendations: Fatigue Management Systems

- 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



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NTSB Safety Recommendations: Fatigue Status (May, 2012)

- Total: 194
- Open: 48
- Closed: 146
- CUN*: 26

CUN = closed unacceptable



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NTSB Fatigue Recommendations: Education/Strategies

- Include information on use of strategies: naps, caffeine, etc.
- No recommendations on specific personal strategies



Example: NASA Planned Rest Study



Manage Fatigue = Enhance Safety

- Culture change
- Get educated
- Acknowledge risk
- Take action!



Good sleep, safe travels.



NTSB



National Transportation Safety Board