



NTSB National Transportation Safety Board

Office of Highway Safety

**Human
Performance**
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Topics

- Driver background
- Driver schedule
- Role of fatigue
- Solutions to fatigue risk

Driver Background

- Valid license and endorsements
- Current medical card (valid for 1 year)
- AWG driver for 17 years
- Worked same shift since 1997

Driver Schedule

June 2009

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Driver Schedule

- Shift generally started between 2 a.m. and 3 a.m.
- Normal duty time 9-13 hours
- June 21: 6 hours (5 a.m. to 11 a.m.)
- June 26: about 12 hours (3 a.m. to 2:45 p.m.)

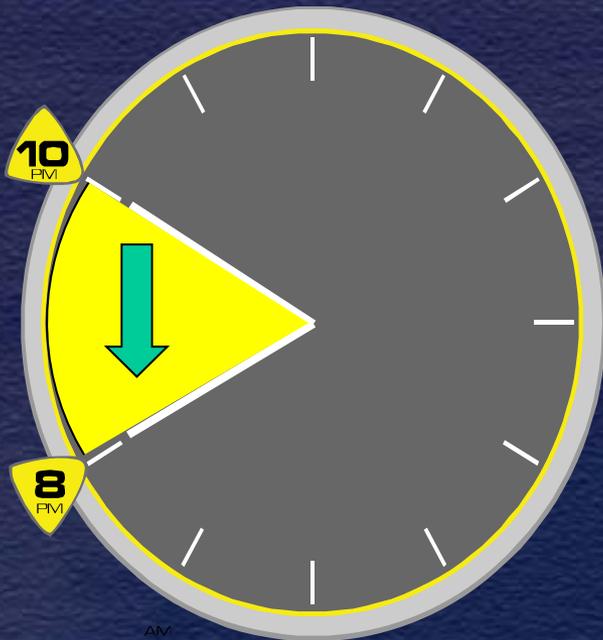
Driver Fatigue

- Acute sleep loss
- Circadian disruption
 - Phase advance
 - Shift work
- Mild obstructive sleep apnea

Acute Sleep Loss

- Driver needed 8-9 hours sleep
- Driver potentially had 5 hours rest time prior to accident

Phase Advance



- Slept at 10 p.m. when off work
- Tried to sleep at 8 p.m. prior to shift
- Sleep disturbance common during phase advance

Shift Work

On day of accident

- Circadian rhythms fully diurnal
- Circadian rhythms not in synch with shift work schedule
- Accident occurred during a circadian dip in performance

Obstructive Sleep Apnea (OSA)

- Self report of excessive daytime tiredness and loud snoring at night
- Postaccident diagnosis of mild sleep apnea
- Apnea associated with increased risk for crashes

Driver Actions Prior to Accident

- Driver made a lane change prior to accident
- Driver did not brake or steer to avoid traffic queue

AWG Fatigue Prevention Training

1996 “Alert Driver” video

- References outdated hours-of-service information
- Lacks health maintenance information
- Lacks risk factors for OSA

Fatigue Management Components

- Corporate change process
- Education
- Sleep disorder treatment
- Scheduling and dispatch
- Technology utilization

Fatigue Management Program

- Collaboration between FMCSA, Transport Canada, and others
- Pilot Studies
 - Improved sleep-wake behavior
 - Less absenteeism
 - Fewer critical events
- Expected completion within 2 years
- Scalable to all sizes of motor carrier

Fatigue Management Program

- 13-31% of commercial motor vehicle (CMV) crashes due to fatigue
- Voluntary use of North American Fatigue Management Program (NAFMP) would limit its effect
- Aviation and rail moving to mandate fatigue management programs

Summary

- FMCSA
 - Update and disseminate fatigue risk awareness materials
 - Require carriers to implement a fatigue management program based on NAFMP
- AWG
 - Adopt a fatigue management program and periodically update



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