

“Effects of Fatigue on Operational Performance”

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Abstract

This presentation will provide information on four topics relevant to understanding the effects of fatigue on operational performance. First, a short overview of the scheduling factors primarily responsible for fatigue-related problems in long-haul, short-haul, and regional operations will be presented. Second, the general symptoms of fatigue, with a focus on in-flight sleep lapses, will be reviewed. Data from pilot surveys and in-flight observations will highlight the extent of the problem and specific situations in which the risk of involuntary on-the-job sleep is greatest. Third, the effects of fatigue on basic piloting capabilities will be outlined, and illustrative examples from a recent flight-simulation study will be shown. The data will show the extent to which one night of sleep loss severely degrades complex cognitive performance, subjective mood states, and fundamental piloting skill. Furthermore, a breakout of simulator flight performance data will underscore the fact that group averages mask the full extent of individual fatigue-related decrements. Fourth and last, the impact of fatigue on operational safety will be discussed. Several mishaps will be cited along with recent fatigue reports from NASA’s Aviation Safety Reporting System and data from one airline’s flight safety awareness program (FSAP).

Main Points

- Scheduling factors are at the heart of fatigue-related problems in flight operations.
- Fatigue degrades a wide array of performance capabilities and ultimately leads to involuntary sleep episodes in flight.
- Controlled simulation studies show that one night of sleep loss degrades cognition, mood, and fundamental piloting skill.
- NASA’s Aviation Safety Reporting System and airline FSAP reports routinely document the negative impact of fatigue on operational safety.

A copy of Dr. John A. Caldwell’s biographical information and presentation slides are provided in Appendix B.