

ANALYSIS OF INCIDENT REPORTS

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Introduction. Voluntary safety reporting is one method by which aviation personnel can report safety issues to their airline and the Federal Aviation Administration. The Aviation Safety Reporting System (ASRS) is a program managed by the National Aeronautics & Space Administration (NASA) Ames Research Center. This study reviewed flight attendant reports from the ASRS database to identify the frequency of fatigue reports and the conditions under which fatigue occurred. **Methods.** During June 2008, 2,628 cabin crew reports were downloaded from the NASA ASRS Website for reports made between January 1990 and December 2007. Each report was analyzed for fatigue, crew coordination, injury, as well as passenger misconduct. **Results.** Of these reports, 2.4% specifically mentioned fatigue terms. The number of fatigue-related reports has markedly increased in the last 3 years, compared to the other years. Scheduling and/or duty time concerns were identified in approximately 50% of the fatigue-related reports. Passenger misconduct was reported in over one-third of all the cabin crew reports and provides evidence of one way flight attendants' workload is affected. Crew coordination issues were reported in a little more than 6% of the overall reports. **Conclusions.** Although the number of flight attendant fatigue reports is limited, there may be reason for concern, given the recent substantial increase in reports of fatigue. This increase could be due to operational changes following 9/11 and the subsequent economic recession. The primary issues that appear to be associated with fatigue are duty time and scheduling. Using this voluntary data allows regulators and operators to discover potential problems in the aviation industry before they result in a mishap. The results of this review indicate that flight attendant fatigue may be occurring more frequently and therefore warrants more attention.

COMPARATIVE STUDY OF INTERNATIONAL FLIGHT ATTENDANT FATIGUE REGULATIONS AND COLLECTIVE BARGAINING AGREEMENTS

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Introduction: The National Transportation Safety Board recommends the Federal Aviation Administration (FAA) reduce aviation accidents/incidents caused by human fatigue by setting working hour limits based on fatigue research, circadian rhythms, and sleep and rest requirements. Internationally, fatigue risk is managed almost solely through prescriptive rules based on the maximum hours of work and minimum hours of rest. Prescriptive rules directly affect crew scheduling and are critical to operator viability; however, due to the current economic recession, operators now routinely schedule up to the regulation limits, which could increase the likelihood of fatigue and fatigue-related mishaps. **Methods:** We obtained regulations (n=38) and collective

bargaining agreements (CBA) (n=13) from International Civil Aviation Organization (ICAO) member states using several resources: Civil Aviation Authority websites, an international cabin safety symposium, web-based ICAO information exchange, and contact with FAA international area offices and Aviation Safety Inspectors. **Results:** We analyzed the regulations and CBAs to identify duty time and rest rules (n=35) related to working hour limits (n=17), sleep and rest requirements (n=13), circadian rhythms (n=2), and other factors (n=3). **Discussion:** Prescriptive rules are easily applied to daytime operations; however, they are limited in scope when applied to round-the-clock operations, often excluding fatigue-contributing factors such as time-zone transitions, layover and recovery, time of day, and circadian rhythms. The ICAO is currently requiring operators, in conjunction with or as an alternative to scientifically-based prescriptive fatigue rules, use a fatigue risk management system (FRMS). Transport Canada, the European Union, and New Zealand are currently developing a FRMS, in addition to prescriptive rules. **Recommendation:** Establish a sanctioned fatigue workgroup of subject matter experts, aviation stakeholders, medical and research scientists, and aviation SMS experts to evaluate current U.S. regulations and develop an adaptive fatigue mitigation safety system combining scientific principles and knowledge with operational support.