

**Fatigue: The Flight Attendant Perspective**

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Fatigue experienced by front-line aviation workers is a long-standing concern of investigations into commercial aviation accidents and incidents. These concerns have led to significant research into fatigue experienced by flight deck crew, and, to a lesser extent, maintenance and air traffic control workers. No one questions that pilot and mechanic fatigue is a serious concern, but as a representative of the Association of Flight Attendants-CWA (AFA-CWA) which has over 55,000 flight attendants at 20 different airlines throughout the United States, I am here to tell you that flight attendant fatigue is also a very real and serious concern that poses a potentially dangerous risk to aviation safety.

Multiple studies have shown that reaction time and performance diminishes with extreme fatigue – an unacceptable situation for safety and security sensitive employees. Flight attendants are required to be on board to assist in case an aircraft emergency evacuation is necessary. In addition, they are inflight first responders who are trained to handle smoke and fire incidents, and medical emergencies including CPR and emergency births. Furthermore, since the terrorist attacks of September 11, 2001 flight attendants have assumed increased responsibilities for protecting the safety and security of air travelers during flight. It has become even more important for flight attendants to be constantly vigilant of the situation in the aircraft cabin, notice and monitor unusual passenger behavior, and be aware of their surroundings at all times. Given these increased responsibilities, an inability to function due to fatigue could seriously jeopardize the health, safety and security of the traveling public and other crewmembers.

We have received reports from flight attendants admitting that due to fatigue they had forgotten to arm their evacuation slides, or due to fatigue had forgotten they had unaccompanied minors onboard and allowed them to leave the aircraft by themselves. There are examples of flight attendants falling asleep or nearly falling asleep on their jumpseats during landing. The same jumpseats that are located next to the emergency exit doors which would need to be used in the event of an emergency evacuation.

We also have examples from flight attendants that have said they are too fatigued to drive home, or operate their car, for fear of getting into an accident. We even have reports of members being stopped by law enforcement when driving due to the fact that police believed they were driving under the influence of alcohol because of their erratic driving. Just prior to that they would have, by the FAA's account, been okay to operate the emergency equipment onboard an aircraft in a fatigued fashion. However, as a fatigued driver on the road they are a hazard to others.

All these safety mishaps can have devastating ramifications. Fortunately they have not.

In the last few years the aviation industry has finally begun to study flight attendant fatigue. I want to review some recent and planned flight attendant fatigue studies, as well as some of the operational issues as they relate to flight attendant roles and responsibilities. I will start first with an internal study that my organization did in 2005 so that we could begin to further highlight the problem. But first you need to understand the U.S. regulations that govern the flight attendant's duty and rest requirements.

In the U.S., as in some other countries, the flight deck and flight attendants operate under two different duty time regulations. The flight attendants can be made to work longer hours and have

a different working pattern. While some countries may afford the cabin crew the ability to not continue flying because of fatigue, this is not the case for all countries. In the U.S. we have some operators that allow pilots to be released from their scheduled duty due to fatigue, but a flight attendant is not afforded the same relief without a possible disciplinary action by the operator. Many of the same issues that contribute to pilot fatigue contribute to flight attendant fatigue. Like pilots the timing of work hours, time zone shifts, and any subsequent impact of off-duty sleep quality also contribute to flight attendant fatigue. Another similar area of concern is the length of a continuous wakeful period. However flight attendants are even more susceptible in this area because, unlike pilots, we do not have a regulatory hard limit on actual flying time in a 24 hour period.

The minimum rest requirement for pilots and flight attendants in the U.S. is also similar. According to the U.S. Federal Aviation Regulations (FARs), pilots and flight attendants flying under 14 CFR Part 121 must have a minimum rest period of at least nine hours following any scheduled duty period. Flight attendants can be scheduled up to 14 hours of duty. The nine-hour period can be reduced to as little as eight hours, if the employer schedules a 10-hour rest period following the next duty period. I'd like to make a further clarification at this point. Using the term "rest period" can be misleading because much more must be done during this period of time other than simply sleeping. The "rest period" can begin as soon as fifteen minutes after an aircraft pulls into the gate and continues until one hour prior to their next departure. This "rest period" must also include travel through an airport, waiting time for a shuttle to the layover hotel, travel to the hotel, checking-in, possibly finding time to eat a meal since many of our carriers in an effort to cut costs have removed flight attendant crew meals from the flights, getting prepared for bed, getting dressed in the morning, getting breakfast and prepared for work the next morning, travel back to the airport and last, but certainly not least is sleep time.

As the deep concessions demanded of flight attendants during the recent and ongoing financial turmoil of the airline industry have taken hold it has become clear that airline management hopes to keep our members working longer duty days with greatly reduced time off between duty. The airline industry practice has been to schedule as little as nine hours of rest for flight attendants. They have also been using the reduced rest provision. It is our understanding that the reduced rest period provision was originally meant to accommodate "day of" scheduling when carriers encounter delays out of the carriers' control such as bad weather or air traffic control delays. The U.S. Federal Aviation Administration (FAA) has also discounted flight attendant fatigue. The FAA has chosen to ignore the routine implementation of this provision by airline management and the further erosion of meaningful rest periods for flight attendants. To further highlight the FAA's turning of a blind eye to this practice, an FAA spokesperson, in response to a question from the media on this issue stated, "The FAA rules on flight time and rest for both pilots and flight attendants are fundamentally sound. They serve aviation safety very well." We fundamentally disagree.

To investigate our concerns the AFA-CWA conducted a fatigue study in early August to early September 2005. Two of the objectives of the study were to characterize the flight attendant duty and rest periods and also catalog flight attendant perceptions of their work. Fifty members from 10 airlines participated in the survey. It was a month-long survey that recorded their activities on a daily trip log. We analyzed 58 trips which typically ran 3-4 days duration each. There are

some assumptions relative to the data collected on the 58 trips. All trips begin and end at an airport. Each scheduled and actual duty day is a consecutive block of time with no gaps. Meal breaks at an airport or inflight do not subtract from the duty time. Another assumption was that the scheduled rest runs from the end of one duty day to the start of the next duty day.

The average trip length for the 58 trips evaluated was 52.7 hours. This resulted in scheduled duty time that was about 44 percent of scheduled total trip time which meant that scheduled rest was about 56 percent of scheduled total trip time. However, of the 56 percent of the trip that was scheduled rest time, only 52 percent resulted in actual reported sleep, with preparations before and after sleep, ground travel, eating and miscellaneous non-sleep activities consuming the other 48 percent. Thus, one could reasonably argue that an 8 hour scheduled rest period may result in a flight attendant getting only slightly more than 4 hours of actual sleep. If further evidence confirms this result, we contend that the regulatory policy governing safety sensitive employees that allows 8 hours scheduled rest periods is unacceptable. (See slide reproduction below for further breakdowns.)

Average Trip Length = 52.7 hours

Descriptive Statistics, Averages for 58 Trips

Scheduled duty = 44% of scheduled total trip time

Scheduled rest = 56% of scheduled total trip time

Non-Duty time comparisons

Sleep (actual) = 52% of scheduled rest\*\*

Other/NA (actual) = 25% of scheduled rest

Ground travel (actual) = 5% of scheduled rest

Eating (actual, not on duty) = 5% of scheduled rest

Prep (actual) = 12% of scheduled rest

\*\*Bottom line – on average 8 hours of scheduled rest allows only slightly more than 4 hours of actual sleep

Not only was AFA-CWA concerned with flight attendant fatigue but so was the U.S. Congress. The Omnibus Appropriations for FY '05 contained an appropriation for \$200,000 directing the FAA to conduct a study of flight attendant fatigue. The FAA was to report back to Congress by June 1, 2005 with their findings.

The FAA delayed release of the report for over one year, even though the study itself was completed. The FAA repeatedly ignored requests from AFA-CWA and members of Congress to release the report and explain the delay in reviewing the study by the Administrator's office. Finally, after AFA-CWA staged an all night "sleep-in" by flight attendants in front of the FAA headquarters in order to draw attention to the issue, the FAA released the report.

In order to complete the required study, representatives of the FAA from the Civil Aerospace Medical Institute (CAMI) initiated an agreement with NASA Ames Research Center to perform an evaluation of the flight attendant fatigue issue. Due to the short internal deadline for

conducting the report, the researchers were unable to conduct a thorough and comprehensive study of flight attendant fatigue. It primarily consisted of a review of existing literature on the issue, an evaluation of flight attendant duty schedules and a comparison of those schedules to the current regulations regarding rest. Based just on this limited research, the report concluded that flight attendants are “experiencing fatigue and tiredness and as such, [it] is a salient issue warranting further evaluation.” They also stated that “not all the information needed could be acquired to gain a complete understanding of the phenomenon/problem of flight attendant fatigue.”

The report listed a number of recommendations for further study. They were:

- 1) A scientifically based, randomly selected **survey of flight attendants** as they work. Such a study would assess the frequency with which fatigue is experienced, the situations in which it appears, and the consequences that follow.
- 2) A **focused study of aviation incident reports** in order to determine what role fatigue played in already reported safety incidents.
- 3) The need for **field research on the effects of fatigue**. This research would explore the impact that rest schedules, circadian factors and sleep loss have on flight attendants' ability to perform their duties.
- 4) The determination and **validation of fatigue models** for assessing how fatigued a flight attendant will become. Developing a reliable fatigue modeling system would be an important tool for the aviation industry in helping to determine when rest periods should be scheduled.
- 5) A **study of International policies and practices** to see how other countries address these issues.
- 6) **Development of training material** to reduce the level of fatigue that may be experienced by flight crews and to avoid factors that may increase fatigue levels.

The second, more comprehensive study based on the recommendations from the 2005 study (see recommendations above) is now being conducted by the FAA. Two of the main components required to be conducted are; 1) the survey of field operations, and 2) the field study. The Survey of Field Operations is the larger of the two projects. The survey will solicit input from approximately 22,000 U.S. flight attendants. The survey looks at: general demographics; flight operations; sleeping at home; duty days (including scheduling practices); fatigue (including perceptions of fatigue, fatigue factors, and fatigue effects); and work environment (including corporate attitudes, safety, training, and management quality). The collection of these surveys is currently ongoing and will end March 31, 2009.

The Field Study is a smaller sampling group. It will include approximately 200 flight attendants. They will be asked to report and monitor their duty periods, sleep and activities over the course of a single month of flying using personal digital assistants (PDAs), wrist activity monitors and pedometers. Data collection for the field study will begin prior to a trip, continue throughout the trip, and for a few days after returning home to assess recovery. The field study will begin in a couple months.

The issue of flight attendant fatigue is also more relevant now with the advent of aircraft being able to fly longer distances. Airlines are expanding their operations to include longer flight

segments, some of which can have block times exceeding 16 hours. These Ultra Long Range (ULR) Operations require careful study to determine appropriate fatigue mitigation strategies for all crew members, including flight attendants.

We believe that the issues of operational requirements, training, crew staffing levels and duty cycles must be considered if flight attendants are to participate in ULR operations. The regulatory authorities must first establish firm regulatory rest requirements for ULR operations, with no allowance provided for discretionary reductions of these requirements by the operator or their personnel.

Recently the FAA began to address the issue of ULR operations and create standards that would help combat fatigue for both pilots and flight attendants. The FAA, recognizing that a flight of 16 hours in duration or longer was not addressed in the U.S. regulations, reached agreement with one operator on an operations specification that regulates many of the duty and rest concerns specific to their ULR operation. Around the same time, two other U.S. airlines began considering their own ULR operations. The FAA, to ensure a level playing field, began a process that led to a template operations specification for the industry. Initially the FAA presented the two U.S. airlines seeking to start ULR operations with the proposed document. The FAA later allowed other aviation industry stakeholders the ability to review and comment on the document.

Although the FAA followed a relatively transparent process in developing the ULR operations specification, and in spite of the overwhelming evidence generated over the years regarding fatigue, the ULR operations specification has not been accepted by the majority of U.S. airlines that may conduct such operations. In fact, seven U.S. airline operators are now suing the Federal Aviation Administration for implementing the ULR operations specifications. The lawsuit states that the new ULR operations specification apply new regulatory requirements to operators that will impose substantial burdens and costs on operators. The lawsuit also contends that the ULR operations specification constitutes a rule of general applicability and under U.S. law a public notice and comment period was required, and that by not following the rulemaking process, stakeholders with expertise on the underlying safety issues were not given the opportunity to participate in the public comment process.

Nineteen U.S. airlines, through their trade and service organization the Air Transport Association of America, Inc. (ATA), filed comments opposing the current and ongoing FAA flight attendant fatigue survey of field operations and the field study that was referenced earlier in this paper. Their opposition to the fatigue research for flight attendants was based on three considerations: 1) the proposed survey will not add practical information to existing knowledge, 2) extensive information already exists on fatigue in aviation and 3) the Federal Register notice does not adequately describe the FAA proposal.

One of the items that was missing from the FAA ULR Operations Specifications template was a mandatory requirement for bunk facilities for flight attendants. As a flight attendant this was an unacceptable and unsafe option. An onboard crew bunk attempts to replicate an environment that is conducive to sleep, that is one that is comfortable, dark and quiet. Design of such environments should also consider the ventilation, temperature/humidity control as well as the

necessary communication systems and emergency equipment needs. Previous studies on pilot sleep in onboard bunks have been conducted. Past study conclusions have stated that in-flight sleep in a crew bunk is inferior to sleep an individual gets in their home environment or at their layover location. Other studies have concluded that rest in a bunk, even with its limitations, is superior to rest in a passenger seat in the cabin of the aircraft.

The U.S. National Transportation Safety Board (NTSB) itself has recognized the danger posed by fatigue in the transportation industry and has recommended setting working hour limits for transportation operators based on fatigue research, circadian rhythms, and sleep and rest requirements. In fact human fatigue has been on the NTSB's "Most Wanted" list since 1990. So this discussion is nothing new in that sense. The one problem with the NTSB recommendation is that it does not include the need to address flight attendant fatigue.

I believe that it is abundantly clear that flight attendant fatigue is real, it is a problem and that it is growing. Some may argue, and indeed have argued, that an error caused by flight attendant fatigue is not as serious as an error caused by pilot fatigue or maintenance fatigue because the flight attendant error does not cause the aircraft to crash. These same people would also claim that flight attendant fatigue does not warrant inclusion on the "most wanted" list. This argument is short sighted. An error caused due to flight attendant fatigue can lead to a tragic loss of life in the event of an inflight emergency or during an evacuation.

We know that there have been incidents over the years where flight attendant fatigue was an issue. For example, on July 9, 1995, an ATR72 operated by Simmons Airlines, as American Eagle Flight 4127, experienced the loss of the rear cabin entry door during the takeoff climb. The flight crew was able to circle around and land successfully. The aircraft received minor damage and one flight attendant received minor injuries. The flightdeck crew, the other flight attendant and the 61 passengers reported no injuries.

The probable cause of the incident was the flight attendant inadvertently opening the door inflight due in part to flight attendant fatigue from a lack of sleep and the long duty day. The flight attendant estimated that she had approximately 5 hours of sleep the night before the incident flight. Also, contributing to the incident was a change in the design of the door locking mechanism.

If we add the human factors issue of fatigue - impaired judgment - and then add the human factors design issue - the re-design of the door - we have a perfect human factor interaction error in the Simmons incident. Industry is continually working to build aircraft that alleviate the human factor design issue, so why would we say the human factor issue of fatigue in the cabin isn't a concern? We should work to address the fatigue factor just as well.

Take another example of an emergency. On August 2, 2005, an Air France Airbus A340-313 aircraft overran the end of the runway and came to a rest in a ravine just outside the perimeter of Toronto's Lester B. Pearson International Airport. The flight had 12 crew members and 297 passengers on board.

After the aircraft stopped, flight attendants observed a fire outside the aircraft and ordered an evacuation. The flight attendants facilitated a fast evacuation from the emergency exits while an intensifying fuel-fed fire was engulfing the aircraft. Only four of the eight emergency exits equipped with slides were usable for evacuation, due to one slide failure and fire around the vicinity of the other slides. Amazingly only two crew members and ten passengers were seriously injured. The aircraft fuselage was eventually consumed by fire.

If the flight attendants on Air France Flight 358 had been fatigued the outcome of this evacuation could have been very different. What if they had pulled the quick release handle on one of the remaining four useable slides instead of the inflation handle? If that had happened, the crew would have then been down to only three exits for the evacuation. This could have very likely happened as we know that flight attendants make mistakes due to fatigue as we saw in the Simmons incident

Fortunately, flight attendant mistakes are often not as obvious because of the current extraordinarily low number of accidents. But the potential for a serious incident is there.

To ensure safety of the entire transportation industry as a whole we must look at all workers that could have an affect on the survival rate of passengers, not just the pilot who operates the aircraft or the maintenance personnel who fix broken equipment. We are, after all, operating the equipment that fights fires, provides medical first response, and helps with a safe and speedy evacuation. To say that flight attendant fatigue should not be a concern, or is not as important because we are not the sole factor that could cause an accident, or that we don't operate a moving vehicle, is to perpetuate an unspoken assumption that saving passenger lives doesn't matter.

Flight attendant fatigue must be addressed. I offer the following suggestions to help create a better understanding of flight attendant specific fatigue and some fatigue management strategies.

- 1) Flight attendant fatigue data needs to be collected from actual operating environments. While some international airlines have been conducting studies with their flight attendants the U.S. airlines have been inexcusably resistant to data collection of this type.
- 2) There needs to be a crew reporting mechanism with associated feedback. This reporting procedure must first allow a flight attendant to "call in fatigued" similar to a pilot without discipline (non-punitive approach to safety).
- 3) There must be a process for investigating fatigue reports or incidents and implementing corrections or new procedures that might solve or reduce the recurrence of the problem.
- 4) Management must support scheduling practices, operational practices, rest environments and attendance policies that support reducing fatigue in their operations.
- 5) Education and awareness training programs should be conducted for all employees (crewmembers, schedulers, dispatchers, etc.) having a responsibility for ensuring an airline operation that does not promote fatigue.
- 6) For ultra-long range operations on-board rest facilities should be required.

While there is a place for science to assist it should be in addition to and complement mandatory maximum duty and minimum rest requirements. As you have seen in this paper, some airlines

have been less than supportive of true fatigue mitigation strategies. It would be a shame if airlines could use science to inappropriately ensure their operational needs were totally satisfied to the detriment of fatigue management. It is therefore important to realize that while the industry appears to be heading to a less prescriptive approach to fatigue management there is still a place for traditional regulations that limit the number of hours worked versus the new thoughts of “comprehensive plans” that help identify fatigue and mitigate risks.

We can all agree that it is possible that a flight attendant error, due to fatigue, could possibly result in the death or serious injury to some of our passengers. Therefore, it is crucial that we be just as concerned with flight attendant fatigue as pilot and mechanic fatigue if we hope to achieve the aviation goal of preventing accidents and saving lives.