PAPERWORK REDUCTION ACT SUBMISSION

OMB 83-I Supporting Statement

2009 National Flight Attendant Duty/Rest/Fatigue Field Study

Submission Date: September 17, 2008

A. Justification

1. Explain the circumstances that make the collection of data necessary.

In response to recent concerns by Congress, the Civil Aerospace Medical Institute (CAMI) and the NASA Ames Research Center conducted a preliminary investigation of flight attendant schedules and potential vulnerability to fatigue. In a 2006 report of these studies, NASA concluded that some degree of fatigue-related performance decrements were likely under the current regulations and suggested six areas of research that would facilitate a more complete understanding of flight attendant fatigue and government-industry decision making. Recognizing the potential risks to public safety, Congress directed CAMI to conduct a field study of flight attendant operations to assess the frequency with which fatigue is experienced, the situations in which it occurs, and the impact fatigue has on air carrier safety. Congressional reports of the field study findings are required to be delivered no later than December 31, 2009. To meet this deadline, data collection efforts for the field study must proceed by November 3, 2008. Approval from OMB must be received no later than November 6, 2008 for this project to proceed on the Congressionally mandated schedule.

A review of the fatigue literature indicates that all human performance is vulnerable to sleep loss and daily variations in the physiological processes tied to underlying body-clock mechanisms. There has been little consideration of the human circadian processes of post 9/11 cabin crew members whose duties are critical to the safety and security of national air travel. Operational fatigue is a persistent problem in commercial aviation and has been repeatedly cited by the National Transportation Safety Board (NTSB) as a critical problem requiring additional research and regulatory attention. Flight attendants who have excessive fatigue may not be able to carry out their safety and security duties in a timely, efficient, and effective manner and this could jeopardize the safety of the traveling public. Despite the important role flight attendants play in commercial airline passenger safety and service, very little scientific data exist on the work/rest patterns of flight attendants and potential effects of operational fatigue.

The field study will be the first to provide the evidence necessary to assess and address potential fatigue challenges faced by flight attendants and is critical to developing necessary training and operational mitigations of this potential threat to public safety.

2. Indicate how, by whom, and for what purpose the information is to be used.

In the Omnibus Funding Act of 2008, Congress directed CAMI to conduct studies on six recommendations including a field study of normal flight attendant operations. Congress requested this information to assess the adequacy of current regulations governing flight attendant duty and rest. The FAA is required to analyze these data and make recommendations concerning potential revisions to the regulations. To accomplish the field study element, a call for proposals was posted. In response to this, a grant/cooperative agreement was awarded (June 27, 2008) to the Institutes for Behavior Resources (IBR), a non-profit institution specializing in human performance data acquisition research. They developed and submitted on September 11, 2008, a detailed research protocol for a comprehensive analysis of fatigue in flight attendants across a range of operational conditions. The specific goals of this project are to systematically assess activity patterns, fatigue, and performance on- and off-duty in flight attendants of various levels of seniority from US-based network, low-cost, and regional carriers embarking on domestic and extended international flights.

3. Describe any consideration of the use of improved information technology...to reduce burden.

Thorough use of automation has been pursued throughout the proposed study to reduce burden on participants. Participants will be issued a portable digital assistant (PDA) device appropriately programmed to deliver tasks routinely used in operational fatigue research, including the 5-minute Psychomotor Vigilance Task (PVT) for assessing attention/reaction time, the Profile of Mood States (POMS) for assessing mood, Visual Analog Scale (VAS) assessments of subjective sleepiness and alertness, the NASA Task Load Index (TLX) for assessing perceived workload, and voice recording software for detecting physical signatures of fatigue. Completion of the PVT, POMS, VAS, TLX, and voice recording assessments typically takes no more than 8 minutes. The Archinoetics SleepBand (a wrist-watch actigraph device requiring no interaction with the subject), will be worn on subjects' non-dominant wrist continuously throughout the duration of the study to document sleep/wake cycles and activity levels of the volunteers. A commercially available pedometer will also be used while on-duty to assess physical activity levels and provide an estimate of workload levels.

The PVT, POMS, VAS, and voice recording assessments will be made after waking and immediately before bed every day throughout the study period. In addition, during duty days, the PVT, POMS, VAS, and voice recording tasks will be performed one hour before each duty period and again along with the TLX within 15 min after each duty period. On duty days, if the pre-duty or post-duty test occurs within two hours of the tests associated with waking or sleeping, then the second of the two redundant tests would be skipped. Subjects will be instructed to perform all assessments on the PDA in a relatively isolated space with minimal distractions, but never during active duty or while engaged in other activities where performing these tasks could compromise safety (e.g., driving). In addition to the above quantitative assessments, all participants will also use the PDA to log their sleep/wake schedules throughout the entire protocol. On duty days, participants will continue using the log to record sleep/wake cycles, as well as time spent commuting, time spent on-duty, time spent in-flight, time spent in on-duty breaks, and time spent in off-duty personal activities. Subjects will be instructed to log these data preferably as soon as the information is available, but at least on the day they occur, and never during active duty or while engaged in other activities where diverted attention could compromise safety.

The data collection phase of the project is scheduled to take place from December 2008 through April 2009. No individual volunteer subject will be asked to participate in the study for more than 30 consecutive days.

4. Describe efforts to identify duplication.

No existing information of the type required for these studies exists in any other data repository.

5. If the collection of information involves small business, describe methods to minimize burden.

This effort involves individual flight attendants, not small business entities.

6. Describe consequences to Federal program if collection were conducted less frequently.

This is a one-time data collection effort to meet the Congressional directive. Failure to collect and report results of this study would violate the requiring legislation.

7. Explain any special circumstances that would cause the information collection to be

conducted:

a. More often than quarterly. No participant will be asked to provide information more often than quarterly. Participation will be a one-time event.

b. Response in less than 30 days. No participant will be required to give a response in less than 30 days.

c. More than original. No participant will be asked to provide more than the data collection instruments described in this document.

d. Using records for more than three years. No participant will be asked to retain records associated with this study.

e. In connection with an invalid statistical survey. No invalid statistical survey is anticipated.

f. Requiring unapproved data classification. No unapproved data classification activities are anticipated.

g. Includes unsupported pledge of confidentiality. All data will be stored anonymously.

h. Requires trade secret of confidential information. No trade secrets or items of similar confidential information will be requested.

8. If applicable, identify date and page number of publication in Federal Register of agency notice required by 5 CFR 1320.8 and provide summary of comments and agency responses. Describe any efforts to consult with persons outside the agency.

As required in our grant/cooperative agreement, coordination and information exchange has occurred with Air Transport Association (ATA), Regional Airline Association (RAA), Coalition of Flight Attendants (AFA, APFA, TWU, IAM, & USW) and non-unionized airlines for focused assistance in accomplishing the Field Study-Modeling Validation recommendations. The FAA is a regulatory agency and routinely communicates with these organizations in the course of ensuring the safety of the traveling public.

This emergency ICR was originally submitted to OMB on September 30, 2008, with approval requested by October 8, 2008. Following multiple meetings between FAA and OMB regarding details of the collection as OMB reviewed the ICR, OMB made the decision to require that FAA publish a 30 day notice for public comments on the collection. The OMB Desk Officer withdrew that original ICR on October 20, 2008 to allow for the publication of the notice, with the request that FAA recreate and resubmit the ICR again after the 30 day comment period, addressing any comments received during that period. OMB would then approve the collection, after review of any comments received and FAA's addressing of them within the ICR. A 30-day notice for public comments was published on October 28, 2008, vol. 73, no. 209, page 64006. No comments were received. This ICR remains identical to the previously-submitted ICR.

9. Explain decision to provide payment to respondents.

Since volunteer participants are serving as subject matter experts in the normal course of on/off duty periods, it is necessary to recognize their contribution with a token of appreciation for their time and cooperation. Participants will receive no less than $400 US as a token of appreciation from IBR for

completing the entire course of the project ($11.66 per day x 30 days + $50 study completion bonus). As described in the Consent From, all participants are free to withdraw from the study at any time and for any reason. Individual participants may also be removed from the study by the project research staff for safety reasons, compromised ability to perform regular work duties, changes in health status, changes in legal status, disruptive or inappropriate behavior, or non-compliance with the research protocol. Individuals who choose to withdraw or are removed from the study before completing the final duty cycle of their respective 30-day study period will receive no less than $11.66 US per day from IBR for each day of participation.

In a previous study conducted earlier this year by Delta Airlines, data were collected from flight attendants during long range intercontinental flights. Data was collected from individuals for both outbound and return flight segments, including layover off-duty time. The average data collection period was 72 hours, for which Delta gave the participants a token of appreciation of approximately $400. The protocol for data collected was essentially the same as that which is being collected in the current study, in both type and effort required on the part of the flight attendants.

In previous studies conducted by IBR examining truck driving fatigue, similar compensation was provided. For example, participants were compensated $218 for a nine day study, and in another study participants were compensated $235 for a 16 day study. Therefore we believe that the current study amount to be gifted by IBR to flight attendants for 1 month of data collection to be more than fair.

10. Describe any assurance of confidentiality provided to respondents.

All participants will be assured the rights and protections under TITLE 45, PUBLIC WELFARE, DEPARTMENT OF HEALTH AND HUMAN SERVICES, PART 46, PROTECTION OF HUMAN SUBJECTS (http://www.hhs.gov/ohrp/humansubjects/guidance/45cfr46.htm).
Prospective participants who have volunteered for participation and are selected by the research team will be contacted and briefed in real-time by a member of the research staff, who will thoroughly explain the purpose of the project, the procedures involved, and the potential risks and benefits of participation. If the individual still wishes to participate, a member of the research staff will furnish a copy of the Informed Consent form, explain it to the volunteer, and answer any additional questions before asking him/her to sign the form. In the Informed Consent Form, each respondent will be given an assurance of anonymity:

> "I understand that my records and data from this study will be kept anonymous, and that I will not be individually identifiable by name or description in any reports or publications related to this study."

11. Provide justification for questions of a sensitive nature.

No questions of a sensitive nature relating to sexual behavior or religious attitudes will be used. Potentially sensitive questions will be asked regarding specific medical conditions that are known to influence the type and degree of fatigue experienced. All questions used in the information collection efforts will relate to flight attendant demographics, rest and duty time, and fatigue.

12. Provide estimates of burden to respondents.

We estimate that it will take approximately 0.75 hour per day to complete data collection for each participant. Each participant will be asked to participate for 30 days. According to the Bureau of Labor Statistics, the median hourly wage for a flight attendant is $25/hour. The cost burden to the participant is therefore calculated to be approximately $560 for one month of data collection.

In recognition for participation, volunteer participants will receive no less than $400 US from IBR as a token of appreciation for completing the entire course of the project ($11.66 per day x 30 days + $50 study completion bonus). Therefore, the total cost burden for each participant is approximately $160.

13. Estimate total annual cost burden to respondents.

210 participants X (0.75 X $25) X 30 = $118,125.00
Token of appreciation 210 X $400 = $84,000.00
Net burden: $34,125.00

14. Provide estimates of annualized cost to Federal government and to respondents.

The cost of the grant/cooperative agreement provided by Congress is $498,111.00. Government furnished equipment costs are $11,150.00.

15. Explain reasons for any program changes or adjustments.

No changes or adjustments are requested to the proposed Field Study. The Field Study is a new submission.

16. For collections whose results will be published, outline plans for tabulation, analysis, and publication.

The purpose of this study is to accomplish scientific inquiry and evaluation in response to the Congressional requirement to understand issues associated with flight attendant fatigue. IBR will deliver summary data reports using key variables of interest (e.g., airline type (network, regional, low-cost), seniority classifications of flight attendants (bottom 1/3, middle 1/3, and top 1/3)).

Data from the PDAs will be analyzed via mixed-factorial analyses of variance (ANOVAs) for Carrier Group (network, low-cost, or regional), Seniority (senior, mid, or junior), Time (pre-duty and post-duty), and Day (1-30). Separate analyses will also be conducted within the network carrier group to assess the effects of Flight Length (short/domestic versus long/international). Sleep, Activity, Fatigue, and Task Effectiveness Model (SAFTE™)-based fatigue risk data from the SleepBands will be analyzed for carrier group (network, low-cost, regional) and day (1-30). In addition, since the SleepBands calculate average sleep quality and quantity measures for the duration over which they are worn, these data will be analyzed in a between-groups ANOVA (across the three types of carrier groups). These analyses will indicate whether or not cognitive skills, mood and task effectiveness (as determined by voice parameters) deteriorate to a statistically-significant degree across consecutive duty periods, whether fatigue-related risk levels increase significantly across duty periods, and the degree to which observed changes are attributable to sleep restriction or sleep disruptions as opposed to time-on-duty. These variables will also be examined in relation to workload estimates as extracted by the pedometer data. In addition, the analyses will determine whether there are differences in the difficulties experienced by cabin crew operating domestic flights versus international flights (< 8hrs).

Subsequent to the analyses described above, the duty schedule information stored via the electronic log-book application on the PDA will be used as input to the FAST. Each selected crewmember's data then will be processed through the FAST to determine (at a minimum) average day-to-day fatigue risk, amount of duty time below the established fatigue criterion level, and day-to-day effectiveness levels. These data will be analyzed via ANOVA as outlined for the cell phone and SleepBand data. These analyses will determine the impact of crew type and duty schedule on

predicted performance and the correlation between predicted and measured performance. In addition, the SleepBand risk calculations (based on actual collected sleep data) will be compared to the FAST risk calculations (based on FAST-Autosleep predicted sleep data) to determine the extent to which future fatigue-mitigation work should entail the collection of actigraphy data in addition to FAST data.

CAMI will develop an overall data summary report incorporating the results of this field study, to be submitted to Congress.

17. If seeking approval to not display expiration date of OMB approval, explain why.

Not applicable.

18. Explain each exception to certification statement identified in Item 19 of OMB Form 83-1.

There are no exceptions to the certification statement.