

NASA Ames Fatigue Countermeasures Laboratory and AA FRMS – A Working Relationship

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American Airlines and NASA Ames Research Center have a long-standing partnership to conduct human factors fatigue research in airline operations. Since 2016, using a mechanism known as a Space Act Agreement, NASA Ames' Fatigue Countermeasures Laboratory has worked with the American's Fatigue Risk Management team to gather sleep and alertness data from volunteer flight crew members. Operations studied include long-range transpacific flights, timing of inflight rest breaks during augmented flights, and rates of acclimation related to flights making theater changes. This mutually beneficial collaborative working arrangement allows American to conduct operations of specific interest under the FAA's Alternative Means of Compliance process and provides NASA with a means to gather and analyze data that can be used to inform operational safety-related decisions.

Earlier this year, results from the study of inflight rest breaks was published in the journal *Aerospace Medicine and Human Performance*. A total of 500 American pilots responded to a survey with landing crew reporting more and better-quality sleep during break 2 than break 3. Subsequent ratings of sleepiness and alertness at TOD were significantly better for crew who used break 2. Findings from this study were reported to the FAA leading to an inflight fatigue mitigation capability for many pilots in the industry.

An upcoming study is to evaluate workload and alertness levels during Caribbean Turn (DFW-SJO-DFW) operations. For this study, the FRMS team and NASA will ask volunteers to collect data on sleep, workload, performance, and alertness using scientifically valid methods. The information gained in this study will help inform how workload and fatigue interact with duty duration during short-haul, daytime operations.

In summary, the data collected by the FRMS team in conjunction with NASA helps to inform safety both at American Airlines and across the industry. American Airlines plans to continue to collaborate with the Fatigue Countermeasures Laboratory at NASA in order to continue this important work. If you would like more information about this partnership or to learn more about the Caribbean Turn (DFW-SJO-DFW) study, please contact the FRMS team at frms@aa.com.