

## AVIATION MEDICINE RESEARCH

**Question #35:** Please describe 3 recent accomplishments of the FAA's aviation medicine research program. Who were the customers for this research, and what agency outputs were delivered to those customers as a result of this research?

**Answer:**

**1. Cabin Environment (Radiation Exposure of Aircrew and Passengers)**

*External Customers:* Airlines, Worldwide Passengers and Flight Attendants, International Flight Standards, and the Scientific Community.

*Internal Customers:* AAM (Jon Jordan)

***Agency Outputs Delivered from Research:***

The FAA Civil Aeromedical Institute (CAMI) Radiobiology Research Team implemented an updated CARI Computer Program (CARI-5E). The new program allows researchers to estimate the effective dose of galactic cosmic radiation received by aircraft occupants flying between any two airports in the world, taking into account the stage of the solar cycle, changes in the earth's magnetic field, and the flight profile. Doses received on flights between 1958 and the present time can be calculated. CARI-5E is of particular interest to pregnant flight crew members who wish to monitor their occupational exposure to ionizing radiation, and to epidemiologists investigating the possible health effects of long-term occupational exposure to galactic cosmic radiation. The program can be downloaded from the CAMI Website and easily run on a personal computer.

**2. Forensic Toxicology (Enhanced Analytical Methodology)**

*External Customers:* Airlines, Passengers, Flight Crews, Flight Standards, Accident Investigators.

*Internal Customers:* AAI (Brian Poole), AGC (David Wiegand), AAM (Jon Jordan),

***Agency Outputs Delivered from Research:***

The Civil Aeromedical Institute (CAMI) developed and implemented toxicological analysis techniques that employ DNA probes to differentiate blood alcohol due to alcohol intake before death from alcohol produced by the body after death. These techniques will prevent incorrect conclusions being drawn from fatal aircraft accident investigations. Enhanced identification of the exact cause(s) of aircraft mishaps related to substance abuse are now possible. Manuscripts covering these advanced methods have been published in peer-reviewed scientific journals.

**3. Cabin Safety (Occupant Protection Criteria for Side-Facing Seats)**

*External Customers:* Aircraft Manufacturers, Passengers, Airlines.

*Internal Customers:* AAM (Jon Jordan), ANM (Jeff Gardlin/Steve Stoltis), AIR (Hal Jensen), AAR (Gary Frings)

***Agency Outputs Delivered from Research:***

The FAA Civil Aeromedical Institute's Biodynamics Research Laboratory conducted extensive research to assess potential injuries and the means to reduce the likelihood of injury for multi-occupant side-facing sofa installations in business jet aircraft. This work was coordinated with various components of the FAA's Airplane Certification Service and research activities (AIR, ANM, AAR), as well as academic and industry research programs (National Institute for Aviation Research). The results from this program were published in technical papers (SAE and AGARD), and have been a key basis for regulatory actions regarding certification approval of side-facing seats for new aircraft that must comply with 14 CFR 25.562.