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Greetings,

Welcome to the Aerospace Human Factors Research Division. Our division conducts field and laboratory research in supporting the performance of front-line aviation personnel, including pilots, air traffic controllers, mechanics, dispatchers, avionics (technical operations) technicians, flight attendants, and ramp workers. We have 39 employees comprised of research psychologists, research technicians, statisticians, engineers, and computer specialists. Our research activities include:

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Our research is accomplished within two research laboratories, the Flight Deck Human Factors Research Laboratory and the National Airspace System (NAS) Human Factors Safety Research Laboratory. This brochure highlights our people, facilities, and accomplishments.

Thank you,

Carla Hackworth, Ph.D.
Manager, Aerospace Human Factors Research Division

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| Safety Analysis Branch, AAI-220 | ATO Safety and Technical Training, AJI-0 |
| Flight Standards Service – Air Transportation Division, AFS-200 | FAA Academy, AMA-1 |
| Aircraft Certification Service, ACE-114 | CSTA Human Factors Maintenance, AIR-100 |
| Weather Technology in the Cockpit, ANG-C64 | Technical Training, AJI-2 |
| Transport Airplane Directorate, ANM-111 | Management Services, AJU-0 |

We collaborate with several organizations to accomplish our research:

[Image of logos representing collaborating organizations]
WE ARE A TEAM OF PROFESSIONALS WHO ARE COMMITTED TO AVIATION SAFETY.

We employ experts in human factors and engineering with diverse skills and abilities in optimizing human performance for safety.

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- **Specialized survey assessments**
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- **Air traffic controller selection**
  - Validation of selection tests
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Some of the work groups we participate in are:

- Aerospace Medical Association
- Aerospace Human Factors Association
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**Research Knowledge**

The research knowledge process ensures all research is peer-reviewed, authorized, and accomplishes organizational needs in accordance with ethical guidelines. Our research knowledge products include:

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SAFETY IS OUR PASSION
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As a division within the FAA Aviation Safety organization, AAM-500 conforms to ISO-9001:2008 standards for Quality Management.

All our research must be approved by an Institutional Review Board whose purpose is to ensure human participants are protected from physical or psychological harm.

We comply with the American Psychological Association’s Ethical Principles of Psychologists and Code of Conduct.

Work within the division is accomplished under two processes: involvement in organizational/scientific workgroups and research knowledge.

Involvement in Organizational/Scientific Work Groups
We participate in a variety of functions within scientific and technical organizations or work groups, such as serving in leadership roles, organizing and chairing scientific sessions for meetings, acting as a peer reviewer, serving as a consulting editor for a scientific journal, participating with a group in writing white papers, participating on a committee to accomplish certain activities related to an organization, or acting as chairs of committees or officers in an organization.

Today’s Research Requirements:

- Aviation Safety
  - Advanced automation
  - Synthetic vision
  - Jet upset prevention, detection, recovery
  - Equipment design, evaluation, operational approval guidance
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  - Standardized Scenario Development and Performance Metrics
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Tomorrow’s Challenges:

- FAA Strategic Priorities and Priority Initiatives
  - Risk-based decision making
  - Lay the foundation for the NAS of the future
  - Enhance global leadership
  - Workforce of the future

- Nearer term requirements
  - Unmanned Aircraft Systems (UAS) Human Factors considerations
  - Rotorcraft safety
1960s
Initial CARI report assessed factors predicting longitudinal performance in air traffic control specialists.

Vertigon used to familiarize thousands of pilots with spatial disorientation as part of CAMI’s educational training for pilots.

Multiple Task Performance Battery served as a synthetic work task to assess the effects of various stressors on performance.

1970s
Several studies were initiated to investigate the effects of sonic booms on sleep and startle responses.

Psychologists and physiologists collaborated to assess stress in air traffic control specialists and found that controllers were not uniquely stressed.

1980s
Support for the ATC strike recovery following firing of 11,345 controllers by U.S. President Ronald Reagan.

Development and conduct of the first workforce-wide FAA Employee Attitude Survey to assess job satisfaction and employee burnout.

Aviation Psychology Laboratory acquired separate branch status (from the Aeromedical Research Branch) as the Human Resources Research Branch.

1990s
CAMI-Academy-Air Traffic collaboration to develop and validate the AT-SAT test.

Color vision tests were developed and validated to screen terminal and en route air traffic control applicants.

Development of the Systematic Air Traffic Operations Research Initiative—the capability to analyze the dynamics associated with ATC operational errors and incidents in air route traffic control centers.

Development and integration of a Basic General Aviation Research Simulator and a reconfigurable Advanced General Aviation Research Simulator to support a new program of general aviation human factors research.

2000s
Development of the HFACS taxonomy

The Human Resources Research Branch became the Human Resources Research Division which then became the Aerospace Human Factors Research Division.

Development and implementation of the Air Traffic Control Advanced Research Simulator.

Initiated program of research on Flight Attendant fatigue, which led to extensive survey and field study.

Initiated program of research on civilian unmanned aircraft systems and developed medical certification requirements for Unmanned Aircraft System (UAS) operators.

2010s
The general aviation human factors research program capabilities were expanded in 2012 with the introduction of a very light jet simulator with a sophisticated 225-degree visual system.
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Carla Hackworth, Ph.D.
Acting Division Manager, AAM-500
Aerospace Human Factors Research Division

Katrina Avers, Ph.D.
Acting Branch Manager, AAM-510
Flight Deck Human Factors Research Laboratory

Carol A. Manning, Ph.D.
Branch Manager, AAM-520
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