

Issue: Senate Appropriations Committee requests that DOT "...identify all human-centered systems research that is ongoing at DOT within each modal administration and interagency programs. What amount of funding was appropriated for these programs in FY2000 and 2001 and what amount is requested in FY2002? What are the specific accomplishments resulting from this activity?"

Response:

- FAA Human-Centered Activities
 - Aviation: FY2000 \$21.9 million
 - Aviation: FY2001 \$24.0 million
 - Aviation: FY2002 \$25.9 million (OMB mark)
 - Aviation: FY2003 \$26.8 million (target)

- In 2000, the FAA human factors program focused on the following:

Human-Centered Automation: Research on the role of the operator and the cognitive and behavioral effects of using automation to assist him/her in accomplishing tasks. Initiatives focus on the implications of computer-based technology in the design, evaluation, and certification of controls, displays, and advanced systems. Specific examples include: developing a certification job aid for flight deck displays, design of Airway Facility alerting systems, designing air traffic controller decision-support automation tools, and design of enhanced vision systems in the tower.

Selection and Training: Research to understand the relationship between human abilities and task performance. Initiatives focus on: enhancing methods for predicting job performance; establishing a scientific basis for the design of training programs; defining criteria for assessing future training requirements; and identifying new ways to select aviation system personnel. Specific examples include: a proficiency-based Model Advanced Qualification Program for pilot training; reconfigurable flight scenarios for simulator training; realistic radio communication and motion requirements in simulator training; general aviation CD-ROM training programs for personal performance; error avoidance strategies in aviation maintenance; and enhanced tools to screen applicants for Airway Facilities positions.

Human Performance Assessment: Research to identify cognitive and decision-making factors for individuals and teams which determine how well they are able to perform aviation tasks. Initiatives characterize the impact of environmental and individual factors on human performance while improving and standardizing methods for measuring human performance. Specific examples include: job task analysis for aviation maintenance technicians; the Automated Performance Measurement System data collection and analysis tool; a Congressionally-mandated study of ATC shift work and fatigue; and human factors booklets for controllers to enhance job performance and help prevent runway incursions.

Information Management and Display: Research addresses presentation and transfer of information among components in the National Airspace System. Initiatives focus on:

identifying the most efficient and reliable ways to display and exchange information; determining how to best display and transfer information to system components; designing a system to reduce the frequency of information transfer errors and misinterpretations; and minimizing the impact when such errors do occur. Specific examples include: human factors design for Electronic Flight Bags, assessment of head-up displays, guidelines on the use of color in ATC displays, and visual symbology design guidance.

Bioaeronautics: Research involves the bioengineering, biomedicine, and biochemistry associated with performance and safety with a focus on crew and passenger protection, health, and physiological performance. Initiatives include: human protection and survival, medical and toxicological factors in accident/incident investigation, and support for aeromedical certification and in-flight aeromedical services. Specific examples include: child passenger restraints, crew protective breathing equipment, and wide-body exit evaluation; the Congressionally-mandated FAA/National Institute for Occupational Safety and Health study of cabin air quality and flight attendant reproduction issues; and evaluating use of external defibrillators.