Human factors scientists conduct research to enhance the safety and efficiency of the NAS through improved performance of air carrier crews, general aviation pilots, aviation maintenance technicians, air traffic controllers, and NAS system maintenance technicians. Aeromedical research is conducted with a focus on improving the health, safety, and survivability of aircraft passengers. Aviation medicine research continues to support the five-year National Institute for Occupational Safety and Health cabin environment study directed by Congress. Research is also being conducted to address the FAA's goal for an equivalent level of safety for all aircraft occupants with targeted areas including seats/restraints for infants and small children, and side-facing seats in corporate aircraft. Researchers are investigating the nature of in-flight medical emergencies and the use of defibrillators on commercial flights. During the past year, the air carrier training program conducted Line Oriented Safety Audits to collect data on antecedents to crew error, errors (including errors made in automation usage), and responses to error. Air carriers use the results to understand crew performance, develop training programs, and analyze accidents and incidents. The model used in this program is an integral part of the Aviation Safety Analysis Program, a confidential reporting system that flight crews use to report incidents to their carriers. The air carrier training program is also conducting research to collect and analyze data regarding the relationship between simulator platform motion and its impact on training effectiveness. The general aviation research program produced two CD-ROMs that focus on pre-flight and in-flight decision-making. Taken together, these training tools help to make pilots aware of methods to improve their judgment by developing personal strategies to control risk. Aviation maintenance research designed and delivered to air carriers a job aid providing human factors best practices for the design, production, and use of technical information with recommended incorporation of simplified English. Air Traffic Control/Airway Facilities research is, through collaboration with NASA and Volpe, assessing the impact of shared separation procedures in a Free Flight environment on pilot and controller performance, workload, and situation awareness. New research has been initiated to adapt the military's Human Factors Analysis and Classification System to assess aviation incidents and accidents. This project is integrated with EUROCONTROL's research on human error. Research is also addressing human factors issues in runway incursions and completing a Congressionally-directed review of the effect of fatigue and shift patterns in the ATC workforce. A new booklet entitled *Human Factors for Air Traffic Control Specialists: A User's Manual for Your Brain* provides helpful information on memory, pilot/controller communication, and threats to performance.