

STATEMENT OF DR. ROBERT DILLE, CHIEF, FEDERAL AVIATION  
ADMINISTRATION CIVIL AEROMEDICAL INSTITUTE, BEFORE THE  
HOUSE COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION,  
SUBCOMMITTEE ON INVESTIGATIONS AND REVIEW, FEBRUARY 4,  
1976 ON AIRCRAFT CABIN SAFETY.

Mr. Chairman and Members of the Subcommittee:

I am Dr. Robert Dille, Chief of the Federal Aviation Administration (FAA) Civil Aeromedical Institute (CAMI). CAMI was established in December 1965 to consolidate for improved management efficiency the FAA programs in civil aviation medical certification, research and education, as well as employee health care. We are located at the Aeronautical Center in Oklahoma City, Oklahoma. Responsibility for the medical reports from aircraft accident investigation was moved to us from FAA Headquarters in 1973. CAMI responsibilities includes medical certification of airmen; improving aviation safety through identifying, studying, and reporting accident and injury causes; educating flight instructors, pilots, Aviation Medical Examiners (AMEs), and industry in order to reduce accidents and improving accident survival; and providing health services and consultations to the agency, industry, and the public. The Institute is organized into Aeromedical Certification, Research, Education, and Clinical Branches.

The Aeromedical Certification Branch of CAMI manages a system for the medical examination and certification of U. S. civil airmen, applying medical standards and policies established by the Federal Air Surgeon,

the chief medical officer of the FAA. Dr. H. L. Rieghard, the Federal Air Surgeon, will I understand appear later before this Subcommittee. The examinations are performed by approximately 6,750 designated AMEs in the U. S., 520 in other countries and 550 military units with flight surgeons assigned. (Regional Flight Surgeons designate civiliam AMEs in the U. S.; this Branch designates international examiners and military units.) Of the 763,793 active airmen at the end of 1975, 43,480 held First Class Medical Certificates and were examined every 6 months, 225,980 were examined annually for their Second Class Medical Certificates, and 494,333 private and student pilots had been examined within the past 2 years and held Third Class Medical Certificates. During 1975, 530,200 applications for medical certificates were processed. This Branch also maintains repositories for airline transport pilot electrocardiograms, Air Traffic Controller Health Program medical records, and medical reports of aircraft accident investigations. Numerous questions about diagnostic procedures and the effects on airman performance of medical conditions, obesity, age, drugs, and alcohol arise from this program. Analyses of the data base can determine accident experience and estimate the accident rate for various medical conditions. This Branch has a staff of 72 including three physicians and an annual budget of approximately \$1,000,000.

The Aeromedical Education Branch conducts training programs on aviation medicine and human factors aspects of aviation safety for pilots and physicians. Efforts to reach pilots on problems of spatial disorientation, visual illusions,

hypoxia, hyperventilation, stress, fatigue, drugs, alcohol, noise, physical condition, psychological factors, and toxicity are made through a "Medical Handbook for Pilots" which was placed on sale last year by the Government Printing Office; nine brochures, ten films, three exhibits, lectures to Flight Instructor Refresher Courses and Accident Prevention Program safety clinics; physiological training courses at CAMI, the NASA LBJ Spacecraft Center, and approximately 40 Department of Defense (DOD) physiological training units; an inexpensive, portable (42 pounds), yet effective, rotating chair and hood to demonstrate spatial disorientation; and courses, including survival training, for FAA pilots and safety specialists.

Lectures in aircraft, motor carrier, and railroad accident investigation, transportation of hazardous materials and aviation security courses at the DOT Transportation Safety Institute are given regularly.

Hypobaric ("altitude") and hyperbaric chamber operations and expert medical illustration services for all of CAMI are provided by this Branch.

The Directory of Aviation Medical Examiners (approximately 48 percent of whom are current or former pilots, 16 percent are former military flight surgeons, 78 percent have volunteered to participate in aircraft accident investigation and many participate in pilot safety education programs), the Federal Air Surgeon's Newsletter, and other lecture material (slides, transparencies, tapes) are also provided by this Branch.

Findings of value in the research program are frequently disseminated almost immediately through the activities of the Aeromedical Education Branch and problems are fed back through pilot contacts.

This Branch has a staff of 17 and an annual budget of approximately \$540,000, \$150,000 of which is travel money.

The Aeromedical Clinical Branch treats FAA employees and students with on-job injuries and illnesses, performs required physical examinations, interprets airman electrocardiograms, and provides industrial hygiene services, training, and consultations to the Aeromedical Center and seven FAA Regions. Noise, radiation, and stress questions have been identified by this unit for further study.

The Clinical Branch has a staff of 12 and an annual budget of about \$300,000.

The Aeromedical Research Branch of CAMI has a staff of 99 including 28 principal investigators (2 physicians, 17 PH.D.s, 1 veterinarian, 1 optometrist, and 7 investigators with master's degrees) who conduct an average of about 42 research tasks at any one time in at least 25 different disciplines. The number of technicians assigned to each investigator range up to three. We are seeking additional personnel for programs where our responsibilities are increasing.

The current year's research budget is approximately \$2,300,000, 84 percent of which goes for personnel costs and benefits leaving less than \$400,000 for equipment, supplies, contractual services (equipment maintenance, subjects, data analysis, etc.), and travel.

Research problem areas are identified in an agency order (9950.3A); an annual program guidance (priority) statement from the Federal Air Surgeon; requests from other FAA offices and services, other federal agencies and user groups; and by the CAMI staff through accident investigation, data analysis, and gaps in the scientific literature.

All research task protocols are written by the principal investigator, evaluated by a panel of five scientists from the FAA Office of Aviation Medicine, also reviewed by other FAA offices and services and by outside consultants if indicated, and approved by the Federal Air Surgeon.

Monthly, quarterly, annual, and final reports are prepared. The final reports are summarized in a completion task protocol and the full report may appear as a memorandum report, an Office of Aviation Medicine Report, or a paper in the open scientific literature. Presentation of results at scientific meetings is frequent. Copies of all presentations and publications are sent to other FAA offices with expected interest.

The Research Branch is organized into Physiology, Psychology, Toxicology, and Protection and Survival Laboratories.

The Physiology Laboratory conducts studies on such topics as cardiovascular and pulmonary disease detection and evaluation, vision problems, decompression, circadian rhythms, and stress in pilot and air traffic control activities, the latter related to facility, duties, workload, shift rotation pattern, and automation.

The Psychology Laboratory conducts studies on air traffic controller selection, training, motivation, and attrition; drug, alcohol, and heat effects on complex performance; spatial disorientation, noise, communication, color vision, and cockpit visibility including glide slope and approach light configuration effects.

Dr. Paul W. Smith, Chief of the Toxicology Laboratory, is with me today and will discuss his toxicity of burning cabin materials study. In addition, his Laboratory conducts studies on fatal aircraft accident toxicology and pathology, and radiation, drug, and pesticide effects on the body.

Mr. Richard F. Chandler, Chief of the Protection and Survival Laboratory is also present and available to discuss his laboratory's programs.

I would like to conclude Mr. Chairman, by expressing appreciation of the CAMI Staff to the staff members of your Subcommittee who have spent a great deal of time and effort at our facility.

I understand that you have an interest in a variety of programs currently underway relative to cabin safety. Before asking Dr. Smith to discuss his program on toxicity, I would like Mr. Constantine Sarkos, from the FAA's National Aviation Facilities Experimental Center (NAFEC) in Atlantic City to present a complementary study being performed there on combustion of aircraft interior materials.

After his, and Dr. Smith's presentation we will be happy to answer any questions you or the Subcommittee may have.