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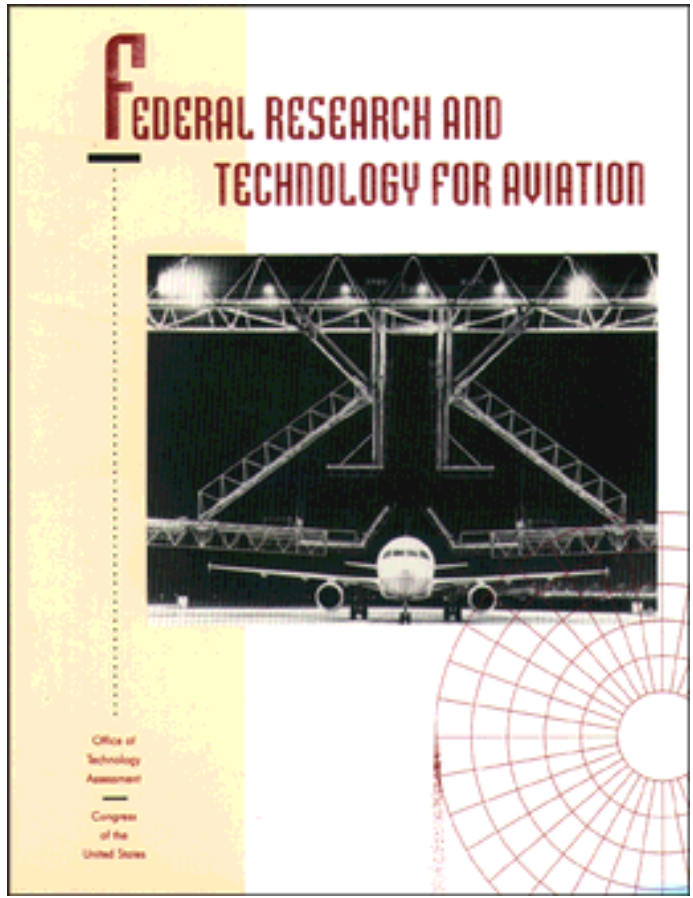

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Foreword

Within the United States, only the federal government has the resources to support large-scale, applied research and development programs for aviation safety and infrastructure. Federally sponsored aviation research has received considerable congressional attention in the last decade due to the need to modernize and expand the U.S. airspace system, address aircraft safety and environmental issues, and respond to terrorism threats against air travelers. The House Committee on Science, Space, and Technology and its Subcommittee on Competitiveness and Technology (now the Subcommittee on Technology, Environment and Aviation) asked the Office of Technolog y Assessment to take a comprehensive look at the federal R&D that underpins the Federal Aviation Administration's technology and regulatory development programs. Long-term research efforts and airline economics were special concerns. The study was also endorsed by the House Subcommittee on Aviation of the Committee on Public Works and Transportation, and the House Subcommittee on Government Activities and Transportation of the Committee on Government Operations.

This report focuses on research and technology policy issues for aviation operations: safety, security, environmental protection, and the air traffic system. Achievements in science and technology have helped make the U.S. air transportation system the safest and most efficient in the world, but the system could be improved further. However, operational success in the complex aviation system depends on more than technological advances. If technological solutions are to be more timely and useful, federal aviation R&D programs will need more effective approaches to priority setting and analysis, and more active participation by operational" experts. This is crucial for the air traffic system, where technology decisions have not always meshed with operational requirements. In this report, OTA identifies various initiatives that Congress and federal agencies could consider in setting the national aviation R&D agenda, restructuring the management process for air traffic system R&D, and clarifying FAA's role in long-term research and in international standards development for an increasingly global aviation system.

OTA appreciates the invaluable advice and assistance of the many people who contributed to this project, including the advisory panel, contractors, and reviewers.

ROGER C. HERDMAN
Director

Advisory Panel

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Chairman
Safair International

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Executive Vice President, Operations
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Jonathan Howe
Attorney
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Chairperson, National Air Safety Committee
Association of Flight Attendants

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T. Al lan McArtor
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Clinton V. Oster, Jr.
Professor
School of Public and Environmental Affairs
Indiana University

Willard G. Plentl, Jr.
Director
Division of Aviation for North Carolina

Robert W. Simpson
Director
Flight Transportation Laboratory
Massachusetts Institute of Technology

Richard Swauger
Air Traffic Consultant

Patricia F. Wailer
Director
Transportation Research Institute
University of Michigan

Note: OTA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by the advisory panel members. The panel does not, however, necessarily approve, disapprove, or endorse this report. OTA assumes fuII responsibility for the report and the accuracy of its contents.

Project Staff

Peter Blair[1]
Assistant Director
Industry, Commerce, and International Security Division

John Andelin[2]
Assistant Director
Science, Information, and Natural Resources Division

Emilia L. Govan
Program Director
Energy, Transportation, and Infrastructure

PRINCIPAL STAFF

KEVIN DOPART
Project Director

Kelley Scott
Principal Analyst

Daniel Cohen
Analyst

Gregory Wallace
Research Analyst

CONTRIBUTING STAFF

Elizabeth Sheley
In-House Contractor

Jeanne Olivier
Detailee, Port Authority of New York and New Jersey

ADMINISTRATIVE STAFF

Marsha Fenn
Editor

Lillian Chapman
Division Administrator

Gay Jackson
PC Specialist

Tina Aikens
Administrative Secretary

Tamara Kowalski
Secretary

CONTRACTORS

Dale Atkinson
Consultant

Andrew Pickens
AVCOMM, Inc.

Richard Golaszewski
Gellman Research Associates. Inc.

Global Aviation Associates, Ltd.

J. Lynn Helms
International Consultants, Ltd.

Michael J. Prather
Department of Geosciences
University of California, Irvine

John Rhea
Consultant

Robert W. Simpson
Flight Transportation Laboratory
Massachusetts Institute of Technology

Rokaya A. A1-Ayat
Institute of Transportation Studies
University of California, Berkeley

[1] After August 1993.
[2] Through August1993.

Reviewers

Thomas Accardi
Federal Aviation Administration

Jim Bryson
U.S. Environmental Protection Agency

Frank J. Colson
Department of Defense

William B. Cotton
United Airlines, Inc.

James L. Crook
Air Traffic Control Association

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The Mitre Corp.

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Congressional Research Service

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Gellman Research Associates, Inc.

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ATC Market Report

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Mark Hofmann
Federal Aviation Administration

Herbert Jasper
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Mary Ann Kruslicky
U.S. General Accounting Office

Paul Larson
Federal Aviation Administration

Alfred W. Lindsey
U.S. Environmental Protection Agency

David Lockwood
Global Aviation Associates, Ltd.

John McLucas
Aerospace Consultant

David Morrissey
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Air Line Pilots Association

Paul Polski
Federal Aviation Administration

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Constantine Sarkos
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Wright-Patterson Air Force Base

Stein Weissenberger
Lawrence Livermore National Laboratory

Robert Whitehead
National Aeronautics and Space Administration

Carlton Wine
Federal Aviation Administration