

AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP

SPONSORED BY THE FEDERAL AVIATION ADMINISTRATION

First Annual
Report of Progress
2006

Research Sponsored by the Federal Aviation Administration

TRANSPORTATION RESEARCH BOARD

WASHINGTON, D.C.

2006

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AIRPORT COOPERATIVE RESEARCH PROGRAM

First Annual Report of Progress

December 31, 2006

BACKGROUND

The Airport Cooperative Research Program (ACRP) conducts applied research on problems important to airport operators. The ACRP was authorized in December 2003 as part of the Vision 100-Century of Aviation Reauthorization Act. The Program is sponsored by the Federal Aviation Administration (FAA) and managed by the National Academies, acting through its Transportation Research Board (TRB), with program oversight provided by an independent governing board (the ACRP Oversight Committee) including representatives of airport operating agencies.

Airports are vital national resources. They serve a key role in transportation of people and goods and in regional, national, and international commerce. They are where the nation's aviation system connects with other modes of transportation and where federal responsibility for managing and regulating air traffic operations intersects with the role of state and local governments that own and operate most airports. Research is necessary to solve common operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the airport industry.

The ACRP carries out applied research on problems that are shared by airport operating agencies and are not being adequately addressed by existing federal research programs. The need for ACRP was identified in *TRB Special Report 272: Airport Research Needs: Cooperative Solutions* in 2003, based on a study sponsored by the FAA. The ACRP undertakes research and other technical activities in a variety of airport subject areas, including design, construction, maintenance, operations, safety, security, policy, planning, human resources, and administration.

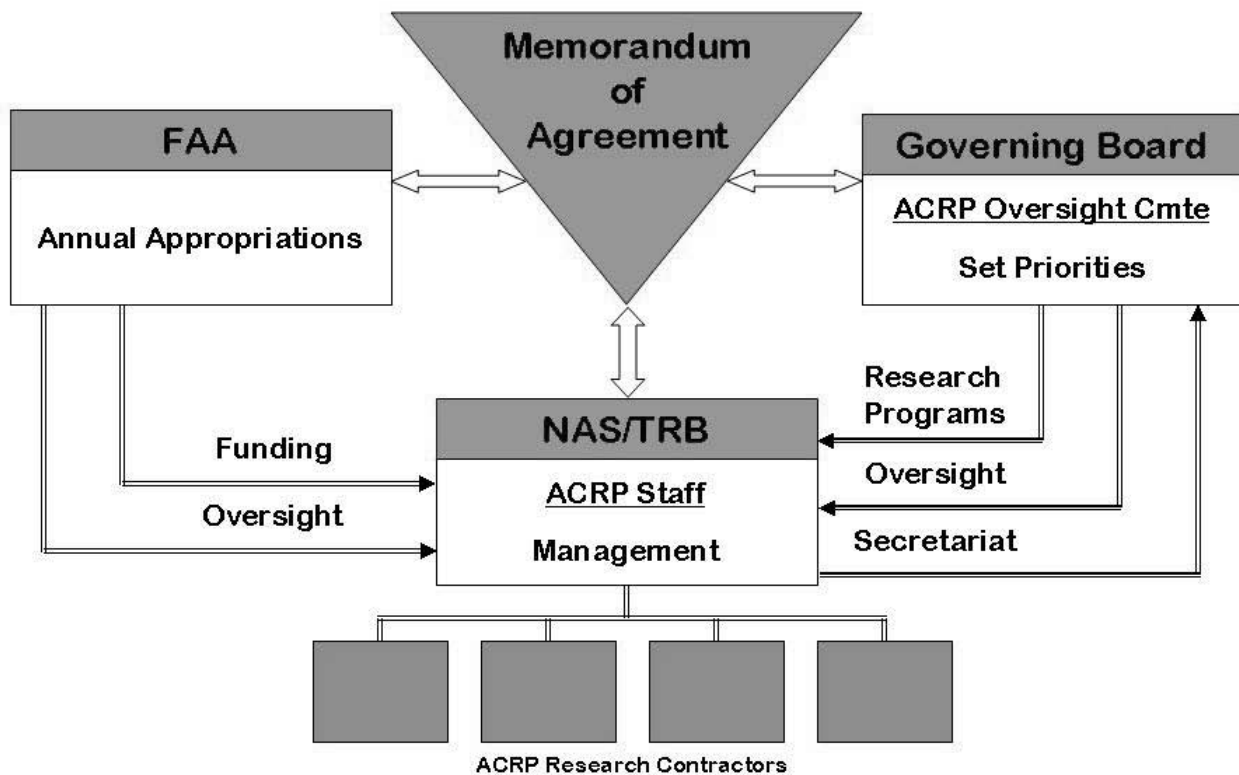
PROGRAM PARTICIPANTS

The primary participants in the ACRP are (1) an independent governing board, the ACRP Oversight Committee (AOC), appointed by the Secretary of the U.S. Department of Transportation with representation from airport operating agencies, other stakeholders, and relevant industry organizations such as the Airports Council International-North America (ACI-NA), the American Association of Airport Executives (AAAE), the National Association of State Aviation Officials (NASAO), and the Air Transport Association (ATA) as vital

links to the airport community; (2) the TRB as program manager and secretariat for the governing board; and (3) the FAA as program sponsor. Figure 1 illustrates the ACRP organizational structure.

The ACRP benefits from the cooperation and participation of airport professionals, air carriers, shippers, state and local government officials, equipment and service suppliers, other airport users, and research organizations. Each of these participants has different interests and responsibilities, and each is an integral part of this cooperative research effort.

Figure 1
Airport Cooperative Research Program
Organizational Structure



SELECTION OF RESEARCH

Research problem statements for the ACRP are solicited periodically but may be submitted to the TRB by anyone at any time. It is the responsibility of the AOC to formulate the research program by identifying the highest priority projects and defining funding levels and expected products.

PROGRAM MANAGEMENT

The ACRP is managed by the TRB using procedures modeled after those used in managing the National Cooperative Highway Research Program and the Transit Cooperative Research Program. Day-to-day program management includes the following tasks:

1. Assisting the AOC in identifying and prioritizing research needs;
2. Appointing and coordinating expert technical panels to guide research projects;
3. Developing and distributing Requests for Proposals;
4. Processing and evaluating proposals to select the best-qualified research agencies;
5. Executing contracts with the selected researchers;
6. Guiding the research;
7. Reviewing research reports;
8. Publishing and disseminating research reports; and
9. Promoting the application of research results.

PROJECT PANELS

Each ACRP project is assigned to a panel, appointed by the TRB; the panel provides technical guidance and counsel throughout the life of the project. Panels include experienced practitioners and research specialists; heavy emphasis is placed on including airport professionals, the intended users of the research products. The panels prepare Requests for Proposals and select contractors based on evaluation of the proposals received; the panels also guide the projects and review the reports. As in other TRB activities, ACRP project panel members serve voluntarily without compensation.

SELECTION OF CONTRACTORS

The process for selecting ACRP researchers has been used by the TRB in managing cooperative research programs for more than 40 years. This open process allows all potential research agencies to compete on the basis of technical merit and ensures that all proposers are treated fairly and that the program has access to the best talent available for each project. Proposals from potential research contractors are evaluated by the project panels. The evaluation considers the following: (1) the proposer's demonstrated understanding of the problem; (2) the merit of the proposed research approach and experiment design; (3) the experience, qualifications, and objectivity of the research team in the same or closely related areas; (4) the plan for promoting application of results; (5) the proposer's plan for involvement of disadvantaged business enterprises; and (6) the adequacy of the facilities.

FUNDING

The Vision 100-Century of Aviation Reauthorization Act authorized \$10 million per year for the ACRP in Fiscal Years (FY) 2004 through 2007. Given the timing of the approval of the Act vis-a-vis the FY 2004 appropriation process, no funds were appropriated for the program in FY 2004. ACRP funding of \$3 million and \$10 million were appropriated for FY 2005 and FY 2006, respectively. An additional \$10 million is anticipated for FY 2007 as of this writing. Funding beyond FY 2007 will be contingent upon the reauthorization of the Vision 100 legislation.

PRODUCTS

Primary emphasis is placed on disseminating ACRP results to the intended end-users of the research: airport operating agencies, service providers, and suppliers. The ACRP will produce a series of research reports for use by airport operators, local agencies, the FAA, and other interested parties, and industry associations may arrange for workshops, training aids, field visits, and other activities to ensure that results are implemented by airport-industry practitioners.

STATUS

The ACRP officially started in October 2005. A Memorandum of Agreement was executed by the FAA and the TRB, and the ACRP governing board was appointed by the Secretary of the U.S. Department of Transportation, according to the terms of the Memorandum of Agreement. Some 118 statements of research need were assembled for consideration in formulating the ACRP agenda for Fiscal Years 2005 and 2006, and the governing board met on January 30 and 31, 2006, to establish operating procedures for the ACRP and to select FY 2005/2006 research projects. An additional 68 statements of research needs were received in the first half of 2006.

The governing board met again on July 30 and 31, 2006, to select FY 2007 research projects. Table 1 provides a summary of all ACRP research projects selected to date, along with their status as of December 31, 2006.

AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP
Project Status

TABLE 1 SUMMARY OF PROJECT STATUS THROUGH DECEMBER 31, 2006

| No. | Title | Allocation | Contract Amount | Contractor | Start Date | End Date | Status | FAA Liaison(s) | Staff Officer |
|--------------------------|--|------------|-----------------|--------------------------------------|------------|------------|----------------------|---------------------------|---------------|
| 1: Administration | | | | | | | | | |
| 01-01 | Guidebook for Managing Small Airports | \$400,000 | \$397,230 | University of Minnesota | 9/19/2006 | 6/19/2008 | Research in Progress | P. Friedman S. Glasgow | M. Salamone |
| 01-02 | Contract Award and Management-Best Practices for Airport Operators | \$300,000 | | | | | In development | C. Erhard | M. Salamone |
| 01-03 | Software Solutions for Airport Management Budget and Reconciliation Tools | \$300,000 | | | | | In development | D. Suomi | M. Salamone |
| 2: Environment | | | | | | | | | |
| 02-01 | Alternative Aircraft and Airfield Deicing and Anti-Icing Formulations with Reduced Aquatic Toxicity and Biological Oxygen Demand | \$600,000 | \$600,000 | University of South Carolina | 11/1/2006 | 10/31/2008 | Research in Progress | G. Legarreta | E. Harrigan |
| 02-02 | Managing Runoff from Aircraft and Airfield Deicing and Anti-Icing Operations | \$300,000 | \$265,000 | CH2M Hill | 10/9/2006 | 11/8/2007 | Research in Progress | G. Legarreta | M. Salamone |
| 02-03 | Aircraft and Airport-Related Hazardous Air Pollutants Research Needs and Analysis | \$600,000 | \$100,000 | Aerodyne Research, Inc. | 12/1/2006 | 12/2/2007 | Research in Progress | M. Gupta | C. Gerencher |
| 02-04 | Research Needs Associated with Particulate Emissions at Airports | \$100,000 | \$100,000 | Environmental Consulting Group, Inc. | 12/1/2006 | 1/2/2008 | Research in Progress | C. Ma | C. Gerencher |
| 02-04A | Summarizing and Interpreting Aircraft Gaseous and Particulate Emissions Data | \$350,000 | | | | | In development | C. Ma | C. Gerencher |
| 02-05 | Primer for Airport Managers on Community Attitudes to Aircraft Noise | \$500,000 | | | | | In development | M. Marson J. Plante | M. Salamone |

TABLE 1 (continued)

| No. | Title | Allocation | Contract Amount | Contractor | Start Date | End Date | Status | FAA Liaison(s) | Staff Officer |
|-------------------------------|--|------------|-----------------|-----------------------------------|------------|------------|----------------------|--|---------------|
| 3: Policy and Planning | | | | | | | | | |
| 03-01 | Light Detection and Ranging (LIDAR) Deployment for Airport Obstructions Surveys | \$350,000 | \$350,000 | University of Mississippi | 12/1/2006 | 11/30/2008 | Research in Progress | E. Hunnicutt | A. Lemer |
| 03-02 | U.S. Airport Passenger-Related Processing Rates | \$200,000 | \$200,000 | HNTB | 9/19/2006 | 9/19/2007 | Research in Progress | E. Novak | M. Salamone |
| 03-03 | Enhancing Airport Land Use Compatibility | \$500,000 | \$500,000 | Mead & Hunt, Inc. | 12/15/2006 | 12/15/2008 | Research in Progress | P. Friesenhahn A. Jan L. Lehnerd | M. Salamone |
| 03-04 | Guidebook for Airport-User Survey Methodology | \$250,000 | \$249,350 | Jacobs Consultancy | 12/15/2006 | 2/15/2008 | Research in Progress | L. Lehnerd | M. Salamone |
| 03-05 | Airport Passenger Movement and Queuing Behavior Analysis | \$400,000 | | | | | In development | E. Novak | R. David |
| 03-06 | Guidebook for Planning Automated People Mover Systems at Airports | \$500,000 | | | | | In development | G. Neumann A. Jan | D. Schwager |
| 03-07 | Performance Measures for Automated People Mover Systems at Airports | \$300,000 | | | | | In development | G. Neumann A. Jan | D. Schwager |
| 03-08 | Use of Incentives, Guarantees, and Subsidies for Air Carrier Service at Small Airports | \$300,000 | | | | | In development | S. Glasgow | M. Salamone |
| 03-09 | Guide for Developing Airport Strategic Plans and a Portfolio of Strategic Plans for U.S. Airport Operators for an Uncertain Future | \$425,000 | | | | | In development | C. Everett B. Rakoff | M. Salamone |
| 4: Safety | | | | | | | | | |
| 04-01 | Aircraft Overrun and Undershoot Analysis for Runway Safety Areas | \$250,000 | \$249,986 | Applied Research Associates, Inc. | 10/18/2006 | 10/18/2007 | Research in Progress | K. Jacobs | M. Salamone |

TABLE 1 (continued)

| No. | Title | Allocation | Contract Amount | Contractor | Start Date | End Date | Status | FAA Liaison(s) | Staff Officer |
|--------------------|---|------------|-----------------|-------------------------|------------|------------|----------------------|---------------------------------|---------------|
| 04-02 | Lighting-Warning Systems for Use by Airports | \$200,000 | \$200,000 | MDA Federal, Inc. | 10/2/2006 | 11/30/2007 | Research in Progress | T. Mai | C. Niessner |
| 04-03 | Runway End Approach Lighting Structure Hazard Mitigation Analysis | \$300,000 | | | | | In development | H. Cyrus D. Evans DeMaria | R. David |
| 04-04 | Simulation-Based Training and Exercise of Civil Aviation Emergency Response Personnel | \$500,000 | | | | | In development | M. Tonnacliff | S. Parker |
| 04-05 | A Guidebook for Developing Airport Safety Management Systems | \$300,000 | | | | | In development | D. Adams | R. David |
| 5: Security | | | | | | | | | |
| 05-01 | Guidance for Developing Regionally Coordinated Airport Emergency Plans for CBRNE Events | \$250,000 | \$250,000 | System Planning Corp. | 11/15/2006 | 3/14/2008 | Research in Progress | P. Friedman | S. Parker |
| 7: Design | | | | | | | | | |
| 07-01 | New Concepts for Airport Terminal Landside Facilities | \$400,000 | \$400,000 | Corgan Associates, Inc. | 12/15/2006 | 6/15/2008 | Research in Progress | P. Sullivan | M. Salamone |
| 07-02 | Airport Curbside and Terminal-Area Roadway Operations | \$400,000 | \$400,000 | Jacobs Consultancy | 11/15/2006 | 5/15/2008 | Research in Progress | P. Sullivan | R. Derr |
| 07-03 | Developing Improved Civil Aircraft Arresting Systems | \$500,000 | | | | | In development | M. Hovan R. King | R. David |
| 07-04 | Use of Computer Tools for Airport Terminal Design | \$400,000 | | | | | In development | T. Wade E. Novak | R. David |
| 07-05 | Updated Terminal Design Guidelines | \$400,000 | | | | | In development | K. Hudson E. Novak | R. David |

TABLE 1 (continued)

| No. | Title | Allocation | Contract Amount | Contractor | Start Date | End Date | Status | FAA Liaison(s) | Staff Officer |
|-----------------------------|--|--------------------------------|-----------------|-----------------------------------|------------|------------|-------------------------------------|-----------------------------|---------------|
| 9: Maintenance | | | | | | | | | |
| 09-01 | Guidelines for the Collection and Use of Geospatially Referenced Data for Airfield Pavement Management | \$350,000 | \$150,000 | Applied Research Associates, Inc. | 11/6/2006 | 4/5/2008 | Research in Progress | R. Joel | A. Hanna |
| 10: Operations | | | | | | | | | |
| 10-01 | Optimizing the Use of Aircraft Deicing and Anti-Icing Fluids | \$300,000 | | | | | In development - Being Re-procured | P. Friedman G. Legarreta | E. Harrigan |
| 10-02 | Planning Guide for Offsite Terminals | \$350,000 | \$350,000 | MarketSense | 11/15/2006 | 11/15/2007 | Research in Progress | P. Friedman | M. Salamone |
| 10-03 | Guide to Evaluating Parking Concepts and Technologies at Airports | \$300,000 | | | | | In development | P. Friedman | M. Salamone |
| 10-04 | Potential Impacts of Very Light Jets on U.S. Airports | \$250,000 | | | | | In development | L. Lehnerd P. LeBoff | M. Salamone |
| 11: Special Projects | | | | | | | | | |
| 11-01 | Legal Aspects of Airport Programs | \$200,000(06) \$200,000(07) | | Transportation Research Board | 2/1/2006 | | Continuing Project: See 11-01 Table | B. Molar | G. Chisholm |
| 11-02 | Quick Response for Special Needs | \$590,000(06) \$350,000(07) | | Various | 2/1/2006 | | Continuing Project: See 11-02 Table | P. Friedman | C. Jenks |
| 11-03 | Synthesis of Information Related to Airport Practices | \$500,000(06) \$500,000(07) | | Transportation Research Board | 2/1/2006 | | Continuing Project: See 11-03 Table | M. O'Harra | R. David |

TABLE 1 (continued)

**ACRP PROJECT 11-01
Legal Aspects of Airport Programs**

| No. | Title | Consultant | Start Date | Estimated Completion Date | Staff Officer |
|-------|--|---------------------|---------------|---------------------------|---------------|
| 01-01 | Compilation of Digest of Parts 13, 16 Determinations and Related Documents, and FAA Chief Counsel and DOT General Counsel Opinions Related to Airports | Spiegel & McDiarmid | December 2006 | August 2007 | J. McDaniel |
| 01-02 | Theory and Law of Airport Revenue Diversion | | | In development | J. McDaniel |
| 01-03 | Compilation/List of Airport Law Resources | | | In development | J. McDaniel |
| 01-04 | Survey of Airport Laws and Regulation of Commercial Ground Transportation | | | In development | J. McDaniel |
| 01-05 | Responsibilities for Implementation and Enforcement of Airport Land-Use Zoning Restrictions | | | In development | J. McDaniel |
| 01-06 | Who is the Owner or Operator for Purposes of the Right to Self-Fuel? | | | In development | J. McDaniel |
| 01-07 | The Impact of Airline Bankruptcies on Airports | | | In development | J. McDaniel |
| 01-08 | The Law and Regulation of Airport Ownership | | | In development | J. McDaniel |
| 01-09 | Survey of Elements of Disparity Studies for Airport Disadvantaged Business Enterprise Programs | | | In development | J. McDaniel |

TABLE 1 (continued)

**ACRP PROJECT 11-02
Quick Response for Special Needs**

| No. | Title | Contractor | Start Date | End Date | Status | Staff Officer |
|---------|--|-------------------------------------|------------|-----------|----------------------|---------------|
| Task 01 | Model for Improving Energy Use in U.S. Airport Facilities | Texas A&M Energy Systems Laboratory | 10/13/2006 | 4/12/2007 | Research in Progress | M. Salamone |
| Task 02 | Airport Ground Access: Updating and Building Upon the Work of TCRP Reports 62 and 83 | Matthew Coogan | 7/1/2006 | 2/1/2007 | Research in Progress | D. Schwager |
| Task 03 | Improving Stabilization and Use of Aircraft Evacuation Slides at Airports | George Washington University | 10/9/2006 | 10/8/2007 | Research in Progress | C. Gerencer |
| Task 04 | Overview of Airport Safety Management Systems- Definition and Status | | | | In development | R. David |
| Task 05 | Quarantine Facilities for Arriving Air Travelers: Identification of Planning Needs and Costs | System Planning Corp. | 11/15/2006 | 5/15/2007 | Research in Progress | S. Parker |

TABLE 1 (continued)

ACRP PROJECT 11-03

Synthesis of Information Related to Airport Practices

| No. | Title | Topic Consultant | Start Date | Status | FAA Liaisons | Staff Officer |
|-------------------------------|--|---------------------------------|---------------|---|-------------------------|---------------|
| 1: Administration | | | | | | |
| S01-01 | Innovative Finance and Alternative Sources of Revenue for Airports | Jacobs Consultancy | July 2006 | March 2007 | L. Lehnerd | G. Staba |
| 2: Environment | | | | | | |
| S02-01 | Effects of Aircraft Noise | | | In development | TBD | G. Staba |
| S02-02 | Sustainable Facilities and Practices | | | In development | TBD | G. Staba |
| 3: Policy and Planning | | | | | | |
| S03-01 | Aviation Forecasting Methodologies | GRA, Inc. | August 2006 | March 2007 | L. Lehnerd | G. Staba |
| S03-02 | Airport Ground Access Mode Choice Models | Aviation Systems Consulting | October 2006 | August 2007 | P. Sullivan | G. Staba |
| S03-03 | Airport Economic Impact Methods and Models | | | In development | TBD | G. Staba |
| 4: Safety | | | | | | |
| S04-01 | Safety Management and Security Practices for Small and General Aviation Airports | Reynolds, Smith and Hills, Inc. | October 2006 | August 2007 | B. Landry | G. Staba |
| 9: Maintenance | | | | | | |
| S09-01 | Rubber Removal Techniques to Minimize Damage on Grooved Runways | | | In development pending additional funding | TBD | G. Staba |
| 10: Operations | | | | | | |
| S10-01 | Counting Aircraft Traffic Operations at Small and Non-Towered Airports | Aerofinity | November 2006 | September 2007 | L. Lehnerd G. Leboff | G. Staba |
| S10-02 | Common-Use Facilities and Equipment at Airports | | | In development | TBD | G. Staba |
| S10-03 | Use and Impact of Pavement Deicing Products | | | In development | TBD | G. Staba |

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