

AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP

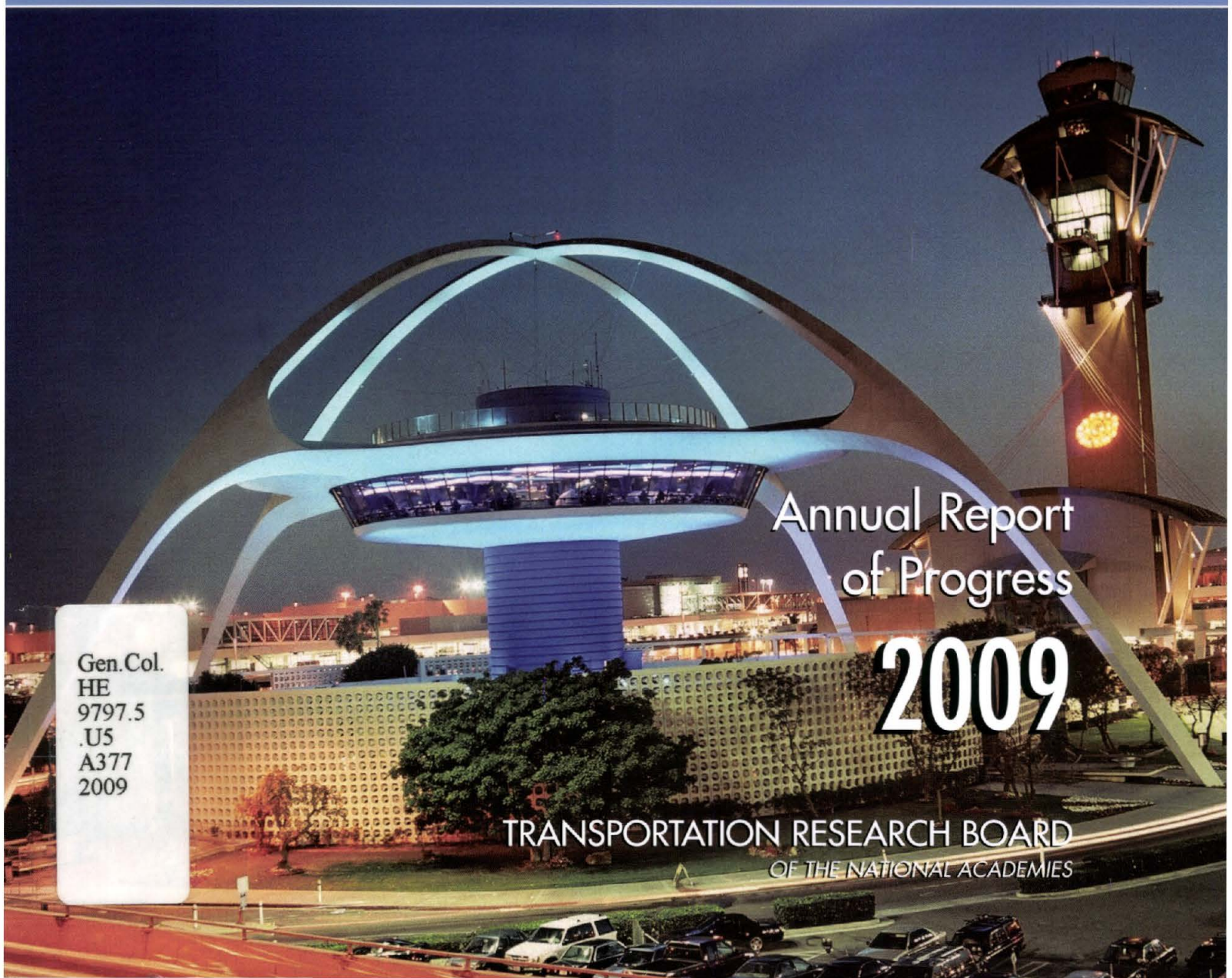
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AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP

Annual Report
of Progress
2009

Research sponsored by the Federal Aviation Administration

TRANSPORTATION RESEARCH BOARD

WASHINGTON, D.C.

2009

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AIRPORT COOPERATIVE RESEARCH PROGRAM

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 Airport Cooperative Research Program (ACRP) serves as one of the principal means by which the airport industry can develop innovative near-term solutions to meet demands placed on it.

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 Federal Aviation Administration (FAA). 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. It is modeled after the successful National Cooperative Highway Research Program and Transit Cooperative Research Program. 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. The ACRP provides a forum where airport operators can cooperatively address common operational problems.

The ACRP was authorized in December 2003 as part of the Vision 100-Century of Aviation Reauthorization Act. 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. In October 2005, the FAA executed a contract with the National Academies formally initiating the program.

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. 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.

Once selected, each ACRP project is assigned to an expert panel, appointed by the TRB. 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 project statements (requests for proposals), select contractors, and provide technical guidance and counsel throughout the life of the project. The process for developing research problem statements and selecting research agencies has been used by TRB in managing cooperative research programs since 1962. As in other TRB activities, ACRP project panels serve voluntarily without compensation.

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 produces 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.

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Cover photo of Los Angeles International Airport courtesy of Los Angeles World Airports.

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The **National Academy of Sciences** is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. On the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Ralph J. Cicerone is president of the National Academy of Sciences.

The **National Academy of Engineering** was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. Charles M. Vest is president of the National Academy of Engineering.

The **Institute of Medicine** was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, on its own initiative, to identify issues of medical care, research, and education. Dr. Harvey V. Fineberg is president of the Institute of Medicine.

The **National Research Council** was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both the Academies and the Institute of Medicine. Dr. Ralph J. Cicerone and Dr. Charles M. Vest are chair and vice chair, respectively, of the National Research Council.

The **Transportation Research Board** is one of six major divisions of the National Research Council. The mission of the Transportation Research Board is to provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal. The Board's varied activities annually engage about 7,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation. www.TRB.org

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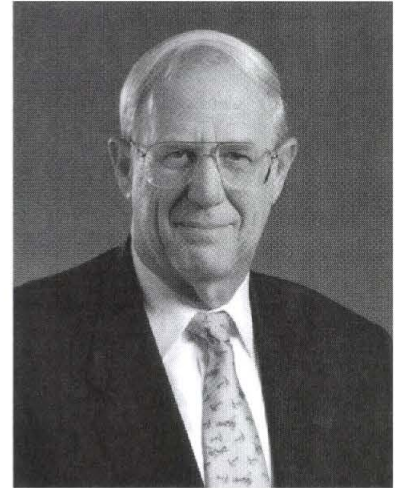
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Roy N. Mesler

Letter From the AOC Chair

I am pleased to share with you the 2009 Annual Report of the Airport Cooperative Research Program (ACRP). As we begin our fifth program year, we are seeing many of the deeper, broader research projects from our first few years out in publication, adding even greater value beyond what we have already provided to the airport industry.

You will find that this past year was another stimulating and productive year for ACRP, despite the economic decline that is having an adverse impact on our industry. Responding to such economic and operational challenges is the impetus for the ACRP Oversight Committee and TRB staff to provide airports with relevant, quality, high-value research publications, tailored to airport needs. A total of 169 projects have been authorized for the ACRP since its inception. In 2009, we released 37 of the 64 total publications to date. There will be many more to come.



Thus far, the response from airport industry practitioners has been positive and encouraging. If the level of funding is an indication and confirmation of the quality of ACRP results, we can claim success. In the first three program years since January 2006, the ACRP Oversight Committee received \$33 million to fund high-priority research projects. ACRP received another \$15 million in 2009 alone; that funding level continues into 2010, and we hope beyond.

The initial success of ACRP can be directly correlated to the high degree of participation from hundreds of airport industry practitioners submitting research ideas and getting involved on project panels and research teams. We also have a strong commitment of experienced and knowledgeable airport professionals on the ACRP Oversight Committee; the support and active participation of our colleagues at the FAA; and the hard work of the TRB staff pulling it all together.

ACRP has a unique opportunity to move quickly and adapt to the changing needs of the airport industry. Leading during this turbulent time means making difficult decisions and envisioning and publishing high-value research that will enable airports to meet challenges in coming years.

We hope you use what we have published to date and continue to support and participate with ACRP in years to come.

Sincerely yours,


James Wilding

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AIRPORT COOPERATIVE RESEARCH PROGRAM
Fourth Annual Report of Progress
December 31, 2009

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.

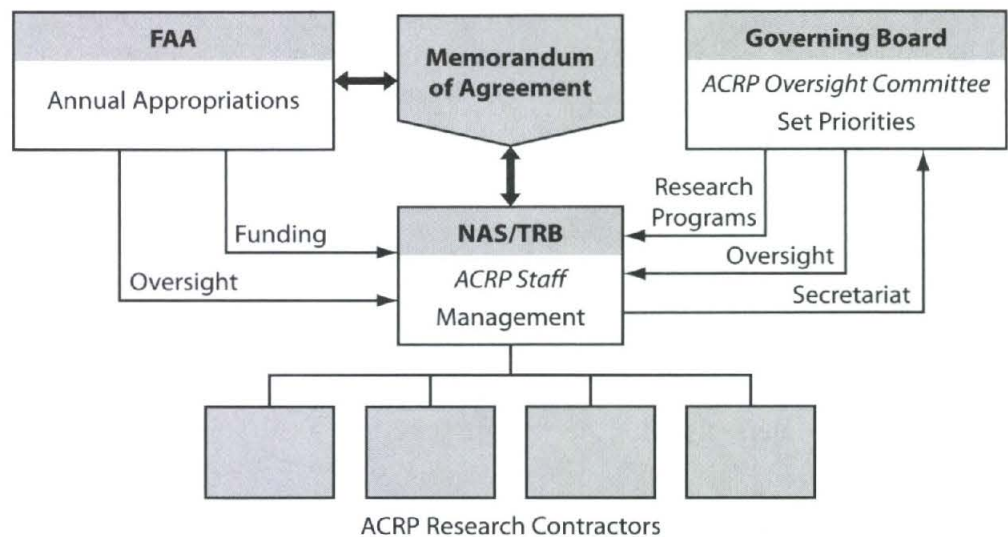
PROGRAM PARTICIPANTS

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. ACRP 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 45 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 2008. 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 was appropriated for FY 2005. In FY 2006, FY 2007, and FY 2008, \$10 million was appropriated for each. In FY 2009, funding for the program was increased to \$15 million. An additional \$15 million is anticipated for FY 2010. Funding for FY 2010 and beyond, however, will be contingent

upon the reauthorization of the Vision 100 legislation, which is under consideration as of this writing.

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 115 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, and on January 31, 2007, to select FY 2007 research projects.

During the first half of 2007, an additional 139 potential research topics, totaling over \$45 million in research needs, were received in response to an industry-wide solicitation of the airport community. The ACRP governing board met on July 22 and 23, 2007, and selected the FY 2008 research program from among the topics received.

In 2008, 147 potential research topics were received for consideration totaling over \$53 million. The ACRP governing board met on July 20 and 21, 2008, to select the FY 2009 research program from among these topics.

In 2009, a solicitation of research ideas from the airport industry yielded 219 potential topics totaling over \$77 million. The ACRP governing board met on July 19 and 20, 2009, to select the FY 2010 research program from among the topics received.

A total of 169 projects have been authorized to date in the ACRP (106 regular projects, 25 syntheses, 20 legal research projects, and 18 “quick-response” studies). See the section on ACRP Project Status.

Eleven research fields are used to classify ACRP research.

- Administration
- Environment
- Policy and Planning
- Safety
- Security
- Human Resources
- Design
- Construction
- Maintenance
- Operations
- Special Projects

The distribution of all projects and syntheses through December 2009 is shown in Table 1.

Table 1. Distribution of Projects and Syntheses by Research Field Through December 31, 2008

Research Fields	Number of Projects	Number of Syntheses
1. Administration	18	2
2. Environment	29	5
3. Policy and Planning	23	5
4. Safety	11	3
5. Security	1	1
6. Human Resources	2	1
7. Design	7	0
8. Construction	1	1
9. Maintenance	1	2
10. Operations	10	5

Table 2 shows the origin of potential research topics (i.e., problem statements) submitted through the FY 2010 cycle. In addition, this table identifies the sources of the problem statements that have been selected by the ACRP governing board.

Table 2. Origin of Problem Statements

Organization	FY 2005/ 2006		FY2007/ 2008		FY 2009		FY 2010		Selected To Date (Thru FY 2010)	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
Airport Operator	23	20.0	25	12.1	29	19.7	27	12.3	20	19.2
State DOT	13	11.3	13	6.2	4	2.7	4	1.8	3	2.9
FAA	0	0.0	8	3.9	8	5.4	23	10.5	18	17.3
Industry Associations Staff/Committee	13	11.3	13	6.3	13	8.8	18	8.2	21	20.2
TRB Committee	1	0.9	6	2.9	6	4.1	9	4.1	6	5.8
Industry	1	0.9	29	14.0	19	12.9	9	4.1	5	4.8
University	30	26.1	37	17.9	30	20.4	47	21.5	8	7.7
Consultant	29	25.2	56	27.1	37	25.2	80	36.5	18	17.3
Other	5	4.3	20	9.6	1	0.8	2	1.0	5	4.8
Totals	115	100	207	100	147	100	219	100	104	100

Table 3 displays project panel composition by affiliation, race, and gender through the FY 2009 research program (FY 2010 project panels have not yet been formed as of this writing). Over 425 individuals from the airport industry are volunteering their time and effort to participate in the ACRP. This industry participation helps to ensure that the research products are useful to airport industry practitioners.

Table 3. Panel Composition of Active Projects
(68 Project Panels, 428 Members)

Demographics	No.	%
Affiliation		
Airport Operator	162	37.6
State Gov't	32	7.5
Local Gov't/MPO	17	4.0
Federal Gov't	12	2.8
Industry/Consultants/Private Sector	155	36.2
University	30	7.0
Association	20	4.9
Race		
	Members/Chairs	Members/Chairs
White	309/60	85.8/88.2
Minorities	51/8	14.2/11.8
Gender		
	Members/Chairs	Members/Chairs
Male	282/49	78.3/72.1
Female	78/19	21.7/27.9

During 2009, 37 ACRP publications were released. These publications include 16 in the ACRP Report series, 5 in the Synthesis of Practice series, 4 in the Legal Research Digest series, 4 in the Research Results Digest series, and 8 in the Web-Only Document series. Table 4 provides a listing of all currently available ACRP publications as of December 31, 2009.

The following ACRP activities of particular interest were completed during 2009. Table 5 provides a summary of all ACRP research projects selected, along with their status as of December 31, 2009.

Airport Safety

ACRP Report 1: Safety Management Systems for Airports, Volume 2: Guidebook provides a comprehensive reference that will help the user understand what constitutes an airport safety management system (SMS) and its components and their interactions; and offers guidance in the planning, implementation, and operation of an airport SMS. It also provides detailed information on how to carry out each of the necessary SMS processes. A key component of an SMS is safety risk management that is used to classify potential airport risks according to their probabilities of occurrence and severity of consequences, to prioritize those risks according to their classification, and to define risk mitigating actions that are continuously monitored. This guidebook supplements *ACRP Report 1: Volume 1*, which provides an overview of SMS and explains how a systems approach to safety management can benefit both the safety and business aspects of airports.

ACRP Report 12: An Airport Guide for Regional Emergency Planning for CBRNE Events addresses the details airports should cover in their hazard and threat assessments and in their Airport Emergency Plans (AEPs) and Annexes so that responses to significant incidents can be more thoroughly and accurately planned. It also discusses special issues involving terrorist use of chemical, biological, radiological, nuclear or explosive (CBRNE) materials targeted to airports, and the mutual aid that would be drawn from beyond the immediate locale. The results of an airport survey on preparedness and the highlights from selected AEPs are presented for consideration by other airports. Also, federal emergency preparedness standards are compared to the provisions of AEPs in general, with suggestions on priorities for upgrading AEPs to meet those standards.

ACRP Report 29: Developing Improved Civil Aircraft Arresting Systems evaluates alternative materials/concepts that could be used for an engineered material arresting system (EMAS). There are many airports today that are land constrained and therefore are unable to comply with FAA design standards to ensure that there is adequate room at runway ends for overruns. There can be many reasons why an airport does not have the space or would wish to pursue an alternative. EMAS is one such alternative. Currently, there is only one EMAS manufacturer that has been approved by the FAA. This report considers

alternative materials/concepts as well as an alternative method in gaining FAA approval for those types of systems that are similar to the already approved system. The report evaluates four concepts: glass foam arrestor, aggregate foam arrestor, engineered aggregate arrestor, and main-gear engagement active arrestor. Information is provided relating each concept to FAA design parameters and the currently approved EMAS system. Airport operators will find the cost information and performance considerations useful; airport planning firms will be aided by evaluating future options with respect to runway dimensions and land requirements; and manufacturers of alternative products will be encouraged to see the performance characteristics of other materials and the process by which they can gain FAA approval.

ACRP Synthesis 15: Identification of the Requirements and Training to Obtain Driving Privileges on Airfields provides airport operators with information on the requirements and training necessary to obtain driving privileges on airport airfields, and the differences and similarities that exist among the various airports throughout the country. It also describes the types of training programs available to airport employees based on where the employees are authorized to drive. Such airfield driver training programs are necessary to help prevent and reduce runway incursions that may be caused by vehicle drivers on the movement areas (taxiways and runways) of an airport.

ACRP Research Results Digest 6: Guidance for Identifying and Mitigating Approach Lighting System Hazards, provides tools to assist with defining response procedures to mitigate or reduce the hazards associated with aircraft and approach lighting system accidents. The digest is intended to be used by airport operations, emergency response, and FAA personnel. It includes a checklist of suggested efforts to reduce the identified hazards. While the digest was prepared specifically to address the hazards associated with approach lighting systems, the procedures suggested may also be useful in mitigating hazards with other airport lighting systems, such as runway end identifier lights, visual approach slope indicator lights, runway edge lights, runway centerline, and taxiway lights. The contractor's final report for this project has been published as *ACRP Web-Only Document 4*.

Airport Environmental Challenges

ACRP Report 11: Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories provides a framework for identifying and quantifying specific components of airport contributions to greenhouse gas emissions (GHG). This guidebook can be used by airport operators and others to prepare an airport-specific inventory of greenhouse gas emissions. It identifies calculation methods that can be applied consistently, improving comparability among airports and enhancing understanding of relative contributions of greenhouse gases to local environments. The inventory methods presented focus on the six primary greenhouse gases: carbon dioxide (CO₂), methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons. As part of the methodology, the guidebook provides

instructions on how to calculate emissions from specific sources and how to create CO₂ equivalencies.

ACRP Report 14: Deicing Planning Guidelines and Practices for Stormwater Management Systems represents one of the first references on deicing operations. This document provides practical technical guidance to airports; aircraft operators; consultants and designers; and local, state, and federal regulators. The guidelines address a wide array of practices for the practical, cost-effective control of runoff from aircraft and airfield deicing and anti-icing operations. Overviews of the full range of available practices are described in a collection of fact sheets accompanying the report. These fact sheets cover collection/containment practices, including centralized deicing facilities, glycol collection vehicles, and deicer-laden snow management. Descriptions of treatment and recycling alternatives cover options from discharge to a publically owned treatment plant to natural treatment systems and glycol recovery. System component fact sheets describe different storage options, diversion controls, and monitoring technologies. Each fact sheet describes the nature and operating principles of each practice, factors that should be taken into account when considering its applicability at a particular facility, and capital and operating and maintenance costs.

ACRP Report 15: Aircraft Noise: A Toolkit for Managing Community Expectations provides guidance on how best to improve communications with the public about issues related to aircraft noise exposure. Specifically, the guidebook presents best practices that characterize an effective communications program and provides basic information about noise and its abatement to assist in responding to public inquiries. It also suggests tools useful to initiate a new or upgrade an existing program of communication with public and private stakeholders about noise issues. An accompanying CD-ROM contains a toolkit with examples of material that have been successfully used to communicate information about noise, as well as numerous guidance documents about noise and communications that have seldom been brought together in the same resource.

ACRP Synthesis 16: Compilation of Noise Programs in Areas Outside DNL 65 summarizes alternative actions currently used by airports to address noise outside the DNL (Day-Night Average Noise Level) 65 contour. Federal policy identifies DNL 65 as the level of cumulative aircraft noise considered “significant.” Based on a survey of airports, this synthesis identifies the reasons for addressing noise outside DNL 65, and the wide range of noise abatement, mitigation, and communication techniques used to address noise outside DNL 65 that extend beyond sound insulation.

ACRP Synthesis 17: Approaches to Integrating Airport Development and Federal Environmental Review Processes identifies practices used by airports and the FAA to integrate environmental review and airport project

development processes. It provides information on the techniques used to effectively integrate development planning and environmental activities throughout the airport project development process and identifies time- and cost-effective practices, approaches, and techniques.

Airport Planning/Project Delivery

ACRP Report 17: Airports and the Newest Generation of General Aviation Aircraft is available in a 2-volume set. Volume 1 provides a forecast of anticipated fleet activity associated with the newest generation of general aviation (GA) aircraft. It will be of interest to airport operators currently serving GA aircraft, as well as those that are considering the potential impact of incorporating commercial service that may be provided by very light jets (VLJs) and other advanced small GA aircraft at their airports. Using 2007 as the baseline, the forecast provides 5- and 10-year fleet size projections for the newest generation of GA aircraft and highlights a variety of fleets and their manufacturers. Both traditional GA uses as well as commercial air taxi uses are considered. In addition to fleet estimates, operational activity projections by VLJs used in commercial air taxi services are provided for over 1,800 U.S. airports.

Volume 2 offers a guidebook in a user-friendly format that helps airport operators assess the practical requirements and innovative approaches that may be needed to accommodate these new aircraft. This guidebook can be used to assess both the practical requirements and the innovative options for accommodating these new types of GA aircraft and provides detailed information for assessing whether airports of various types can currently accommodate advanced new generation aircraft. Airport planners can use this guidebook as a basis for upgrading existing and creating new airport facilities, along with the required services needed. Service providers and industry stakeholders focused on GA activity can use this guidebook in seeking new business opportunities in the foreseeable future.

ACRP Report 21: A Guidebook for Selecting Airport Capital Project Delivery Methods describes various project delivery methods for major airport capital projects. It also evaluates the impacts, advantages, and disadvantages of various project delivery systems. The project delivery methods discussed are design-bid-build (DBB), construction manager at risk (CMR), design-build (DB), and design-build-operate-maintain (DBOM). The guidebook offers a two-tiered project delivery selection framework that may be used by owners of airport projects to evaluate the pros and cons of each delivery method and select the most appropriate method for their project. Tier 1 is an analytical delivery decision approach that is designed to help the user understand the attributes of each project delivery method and whether the delivery method is appropriate for their specific circumstance. Tier 2 uses a weighted matrix delivery decision approach that allows the user to prioritize their objectives and, based on the prioritized objectives, select the delivery method that is best suited. The report will be helpful to airport agencies determining the most

appropriate project delivery systems (e.g., design-bid-build, design/build, construction manager-at-risk) for various types of airport capital projects. A companion publication to this report, *ACRP Web-Only Document 6: Evaluation and Selection of Airport Capital Project Delivery Methods*, reviews pertinent literature and research findings related to various project delivery methods for airport projects. It contains definitions of project delivery methods and discusses the existing selection approaches commonly used by airports.

ACRP Report 23: Airport Passenger-Related Processing Rates Guidebook provides user-friendly guidance on how to best collect accurate passenger-related processing data for evaluating facility requirements to promote efficient and cost-effective airport terminal design. Often, significant amounts of data are required in accurate planning and design of airport terminal facilities. Furthermore, the dynamic nature of the airport industry necessitates an understanding of how rapidly changing passenger characteristics, processing technologies, and security protocols impact terminal development. This guidebook will be of assistance and value to airport operators, planners, designers, and other stakeholders in planning these and future airport terminal facilities.

ACRP Report 24: Guidebook for Evaluating Airport Parking Strategies and Supporting Technologies presents various parking strategies and technologies that are employed at or that have potential applications at airports in the United States. The guidebook will assist airport operators in (1) determining their specific goals as it relates to parking and their customer needs; (2) gaining an understanding of the parking strategies and technologies that correspond to their goals; and (3) evaluating benefits, costs, and implementation. The guidebook will be useful to airport parking owners and operators to better accommodate the needs of their customers, improve customer service, increase operational efficiency and enhance net revenues.

ACRP Report 26: Guidebook for Conducting Airport User Surveys provides guidance to help airports and survey sponsors plan, design, conduct, and analyze surveys of airport users. The guidebook covers all aspects of conducting surveys, including planning; surveying and sampling methods; questionnaire design; testing; interviewer selection and training; survey logistics; and analysis. It describes the requirements of the survey planning and implementation teams, and use of internal, external and contract staff. Use of latest technology such as electronic data collection devices is discussed. Guidance is provided for surveys of airport passengers, employees, and tenants; area businesses and residents; and cargo operations. The guidebook indicates that no single approach is best for each type of survey, but that the survey method and sampling plan to be adopted will depend on the target group of users, the types of information being collected, airport related factors, the experience of the survey team, and budgetary considerations. Guidance is provided to allow the survey sponsor and planning team to select the appropriate approach.

ACRP Report 27: Enhancing Airport Land Use Compatibility provides information and tools to protect airports and local governments from potential incompatible land uses that could impair current and future airport and aircraft operations and safety and constrain airport development. The report defines compatible land uses and provides suggested techniques to address land use issues around airports. It defines the roles and responsibilities of various stakeholders and summarizes various federal legislation and regulations related to compatible land uses. A discussion on economic impacts associated with incompatible land uses is also provided.

For the purposes of this research, incompatible land uses are defined by criteria pertaining to aircraft noise exposure and safety concerns; height restrictions; FAA engine-out regulations; FAA airport design standards; wildlife attractants; and distractions such as smoke, lighting, glare, and electronic interference. Tools include sample airport land use compatibility model state legislation and a model local zoning ordinance, a sample aviation and noise easement, and sample disclosure statement to real estate buyers, among others. In addition, fifteen case studies are provided that target a wide range of airports and land-use issues.

ACRP Synthesis 13: Effective Practices for Preparing Airport Improvement Program Benefit-Cost Analysis describes successful assessment techniques that can be used by airports in performing benefit-cost analyses (BCAs) for hard to quantify benefits from projects needing more than \$5 million in airport improvement program (AIP) discretionary funding—the level at which BCAs are required. The synthesis includes a summary of relevant literature, descriptions of various techniques currently used to prepare BCAs, and six case studies from specific airports.

ACRP Synthesis 14: Airport System Planning Practices documents the results of surveys of state aviation agencies and regional planning organizations to determine the extent to which they are involved in airport system planning, the types of studies they perform, and how successful their efforts have been in meeting the process objectives.

Small Airports

ACRP Report 16: Guidebook for Managing Small Airports introduces to airport practitioners the myriad issues facing small airports in the United States. Generally, these practitioners—owners, operators, managers, and policy makers of small airports—are typically responsible for a wide range of activities, often unrelated to the management responsibilities of the airport. This report presents the critically important issues that these practitioners will frequently encounter while wearing the airport manager’s hat. The guidebook has the added benefit of presenting a broad array of relevant material in a way

that will help new airport managers and other important airport stakeholders understand small airport management. Moreover, it presents numerous resources and references that are relevant to these issues and will help guide readers to solutions, regardless of their level of airport experience or role at the airport.

ACRP Report 18: Passenger Air Service Development Techniques provides information on the air service development (ASD) tools and programs that smaller communities have used, including minimum revenue guarantees, guaranteed ticket purchases (i.e., travel banks), cost subsidies, marketing and advertising, and non-financial (i.e., in-kind) contributions, among others. The report is organized into two major sections. The first section discusses the context for ASD, particularly the financial condition of the U.S. aviation industry and the basic underlying competitive challenges that small communities face in retaining or enhancing their commercial air service. The second section discusses how communities can address those challenges, and describes the basic components and tools of an ASD program. The report is intended to help small communities develop and execute an ASD program.

Airport Human Resources

ACRP Report 22: Helping Airport and Air Carrier Employees Cope with Traumatic Events offers a resource manual that provides valuable insight and practical guidance to address the difficult emotional and psychological implications in response and exposure to traumatic events. These traumatic events can be the result of human-made accidents, acts of terrorism, or natural disasters that have occurred at, in the vicinity of, or resulting from the operation of an air carrier at an airport. This resource manual will be of assistance and value to airport management and administrative staff responsible for the well-being of their employees. For those airport and air carrier staff with first-hand experience in preparing for, responding to, and managing human-made or natural disaster events, this resource manual will be helpful in their advance planning for and mitigating of the emotional impacts before, during, and after such traumatic events. It will serve as a guide to help understand and recognize the symptoms and signs for directing help to those impacted and how they may develop the resiliency to overcome the trauma. It will also be of help to representatives of agencies and other notable national, regional, or local entities directly involved with the psychological impact of similar events.

Legal Aspects of Airport Programs

ACRP Project 11-01: Legal Aspects of Airport Programs provides authoritatively researched, specific, limited-scope studies of legal issues and problems of national significance and application to airports. During 2009, the results of four research topics were published:

- *ACRP Legal Research Digest 5: Responsibility for Implementation and Enforcement of Airport Land-Use Zoning Restrictions* discusses federal, state, and local laws and regulations pertaining to aviation land-use and zoning and identifies the primary responsibilities of each relevant legal body and how this responsibility is communicated and enforced.
- *ACRP Legal Research Digest 6: The Impact of Airline Bankruptcies on Airports* examines legal issues presented by the filing of airline bankruptcies that are relevant to airports, and explores how airport lawyers and courts have responded to those issues. The digest is intended to provide a solid understanding of the basics of bankruptcy theory and law relevant to airport operating agreements with airlines, and to identify issues such as lease recharacterization and payment of stub period rent that particularly affect airports dealing with airlines in bankruptcy.
- *ACRP Legal Research Digest 7: Airport Governance and Ownership* addresses the issue of essential powers to operate an airport; defines what airport governance includes; describes the advantages and disadvantages of the various governance structures; identifies and analyzes a number of projects where airports were transferred from one form of governance to another; and determines the legal problems encountered during these transfers.
- *ACRP Legal Research Digest 8: The Right to Self-Fuel* identifies standards and procedures used in compliance with self-fueling. This report synthesizes federal and local guidelines pertaining to self-fueling and defines and clarifies the meaning of aviation terms, such as *self-fueling*—which generally means using fuel obtained by the aircraft owner from the source of his/her preference.

Table 4**Publications of the Airport Cooperative Research Program**

REPORTS		
No.	Proj. No.	Title, Pages, Publication Year
1	11-02	Safety Management Systems for Airports, Vol. 1: Overview, 30 p. (2007)
1	04-05	Safety Management Systems for Airports, Vol. 2: Guidebook, 164 p. (2009)
2	11-02	Evaluation and Mitigation of Aircraft Slide Evacuation Injuries, 77 p. (2008)
3	04-01	Analysis of Aircraft Overruns and Undershoots for Runway Safety Areas, 50 p. (2008)
4	11-02	Ground Access to Major Airports by Public Transportation, 210 p. (2008)
5	11-02	Quarantine Facilities for Arriving Air Travelers: Identification of Planning Needs and Costs, 34 p. (2008)
6	02-04	Research Needs Associated with Particulate Emissions at Airports, 60 p. (2008)
7	02-03	Aircraft and Airport-Related Hazardous Air Pollutants: Research Needs and Analysis, 55 p. (2008)
8	04-02	Lightning-Warning Systems for Use by Airports, 72 p. (2008)
9	02-04A	Summarizing and Interpreting Aircraft Gaseous and Particulate Emissions Data, 90 p. (2008)
10	07-01	Innovations for Airport Terminal Facilities, 70 p. (2008)
11	02-06	Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories, 62 p. (2009)
12	05-01	An Airport Guide for Regional Emergency Planning for CBRNE Events, 52 p. (2009)
13	01-03	Integrating Airport Information Systems, 40 p. (2009)
14	02-02	Deicing Planning Guidelines and Practices for Stormwater Management Systems, 208 p. (2009)
15	02-05	Aircraft Noise: A Toolkit for Managing Community Expectations (+ CRP-CD-ROM 70), 162 p. (2009)
16	01-05	Guidebook for Managing Small Airports, 136 p. (2009)
17	10-04	Airports and the Newest Generation of General Aviation Aircraft, Vol. 1: Forecast, 36 p. (2009)
17	10-04	Airports and the Newest Generation of General Aviation Aircraft, Vol. 2: Guidebook, 122 p. (2009)
18	03-08	Passenger Air Service Development Techniques, 168 p. (2009)
19	01-06	Airport Performance Measurement, pending
20	03-09	Strategic Planning in the Airport Industry, 200 p. (2009)
21	01-05	A Guidebook for Selecting Airport Capital Project Delivery Methods, 100 p. (2009)
22	06-01	Helping Airport and Air Carrier Employees Cope with Traumatic Events, 82 p. (2009)
23	03-02	Airport Passenger-Related Processing Rates Guidebook, 125 p. (2009)
24	10-03	Guidebook for Evaluating Airport Parking Strategies and Supporting Technologies, 162 p. (2009)
25	07-04/ 07-05	Airport Passenger Terminal Planning and Design, Vol. 1: Guidebook and Vol. 2: Spreadsheet Models and User's Guide, in production for 2010
26	03-04	Guidebook for Conducting Airport Users Surveys, 256 p. (2009)
27	03-03	Enhancing Airport Land Use Compatibility, 500 p. (2009)

Table 4

RESEARCH RESULTS DIGESTS		
No.	Proj. No.	Title, Pages, Publication Year
1	11-03	Synthesis of Information Related to Airport Practices, 4 p. (2007)
2	11-02	Model for Improving Energy Use in U.S. Airport Facilities, 20 p. (2007)
3	11-03	Synthesis of Information Related to Airport Practices, 4 p. (2007)
4	11-03	Synthesis of Information Related to Airport Practices, 4 p. (2009)
5	11-02/ Task 7	Current and Emerging Issues Facing the Airport Industry, 32 p. (2009)
6	04-03	Guidance for Identifying and Mitigating Approach Lighting System Hazards, 16 p. (2009)
7	11-02/ Task 11	A Summary of How Proposed Firefighting Standards Would Impact Airports, 20 p. (2009)
LEGAL RESEARCH DIGESTS (PROJECT 11-01)		
No.	Topic No.	Title, Pages, Publication Year
1	1-03	Compilation of Airport Law Resources, 38 p. (2008)
2	1-02	Theory and Law of Airport Revenue Diversion, 29 p. (2008)
3	1-04	Survey of Laws and Regulations of Airport Commercial Ground Transportation, 195 p. (2008)
4	1-01	Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters Through December 31, 2007, stand-alone <i>CRP-CD-68</i> , 3,000 pp (10/08)
5	1-05	Responsibility for Implementation and Enforcement of Airport Land-Use Zoning Restrictions, 68 p. (2009)
6	1-07	The Impact of Airline Bankruptcies on Airports, 62 p. (2009)
7	1-08	Airport Governance and Ownership, 72 p. (2009)
8	1-06	The Right to Self-Fuel, 82 p. (2009)
SYNTHESES (PROJECT 11-03)		
No.	Topic No.	Title, Pages, Publication Year
1	1-01	Innovative Finance and Alternative Sources of Revenue for Airports, 43 p. (2007)
2	3-01	Airport Aviation Activity Forecasting, 32 p. (2007)
3	4-01	General Aviation Safety and Security Practices, 44 p. (2007)
4	10-01	Counting Aircraft Operations at Non-Towered Airports, 33 p. (2007)
5	3-02	Airport Ground Access Mode Choice Models, 104 p. (2008)
6	10-03	Impact of Airport Pavement Deicing Products on Aircraft and Airfield Infrastructure, 58 p. (2008)
7	3-03	Airport Economic Impact Methods and Models, 67 p. (2008)
8	10-02	Common Use Facilities and Equipment at Airports, 121 p. (2008)
9	2-01	Effects of Aircraft Noise: Research Update on Selected Topics, 98 p. (2008)

Table 4

SYNTHESES (PROJECT 11-03)		
No.	Topic No.	Title, Pages, Publication Year
10	02-02	Airport Sustainability Practices, 120 p. (2008)
11	09-01	Impact of Airport Rubber Removal Techniques on Runways, 111 p. (2008)
12	04-02	Preventing Aircraft–Vehicle Incidents during Weather Operations and Periods of Low Visibility, 70 p. (2008)
13	03-05	Effective Practices for Preparing Airport Improvement Program Benefit-Cost Analysis, 74 p. (2009)
14	03-04	Airport System Planning Practices, 80 p. (2009)
15	04-03	Identification of the Requirements and Training to Obtain Driving Privileges on Airfields, 52 p. (2009)
16	02-03	Compilation of Noise Programs in Areas Outside DNL 65, 112 p. (2009)
17	02-04	Approaches to Integrating Airport Development and Federal Environmental Review Process, 44 p. (2009)
WEB-ONLY DOCUMENTS		
No.	Proj. No.	Title, Pages, Publication Year
1	01-03	Analysis and Recommendations for Developing Integrated Airport Information Systems, 80 p. (2009)
2	02-06	Appendices to ACRP Report 11: Guidebook on Preparing Airport GHG Emissions Inventories, 87 p. (2009)
3	02-01	Formulations for Aircraft and Airfield Deicing and Anti-Icing: Aquatic Toxicity and Biochemical Oxygen Demand, 121 p. (2009)
4	04-03	Guidance for Identifying and Mitigating Approach Lighting System Hazards, 88 p. (2009)
5	01-01	Development of a Guidebook for Managing Small Airports, 124 p. (2009)
6	01-05	Evaluation and Selection of Airport Capital Project Delivery Methods, 213 p. (2009)
7	11-02/ Task 11	How Proposed ARFF Standards Would Impact Airports, 115 p. (2009)
8		Pending
9	11-02/ Task 8	Enhanced Modeling of Aircraft Taxiway Noise—Scoping, 153 p. (2009)
ACRP CD-ROM		
No.	Proj. No.	Title, Publication Year
CRP-CD-68	11-01	Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters Through December 31, 2007 (2008)
CRP-CD-70	02-05	ACRP Report 15 Toolkit (2009)
CRP-CD-73	03-09	Workbook for ACRP Report 20: Strategic Planning in the Airport Industry (2009)

Table 4

TRB CONFERENCE PROCEEDING		
No.	Proj. No.	Title, Publication Year
41	11-02	Interagency–Aviation Industry Collaboration on Planning for Pandemic Outbreaks (2008)

TABLE 5 SUMMARY OF PROJECT STATUS THROUGH DECEMBER 31, 2009

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(06)	\$397,230	University of Minnesota	1/24/2007	3/31/2009	Completed - Published as Report 16 and Web-Only Document 5		
01-02	Guidebook for Developing and Managing Airport Contracts	\$400,000(07)	\$315,000	HNTB	4/24/2007	11/30/2009	Completed - Publication Pending	K. Willis	T. Schatz
01-03	Integrating Airport Information Systems	\$300,000(07)	\$300,000	Aero Tech Consulting	8/10/2007	11/22/2008	Completed - Published as Report 13 and Web-Only Document 1		
01-04	Marketing Techniques for Small Airports	\$200,000(07)	\$200,000	Eclat Consulting	10/26/2007	9/30/2009	Completed - Publication Pending	S. Glasgow	M. Greenberger
01-05	Guidebook for Airport Capital Project Delivery Systems	\$100,000(07) \$25,000 (08) \$70,000 (10)	\$124,994	Northeastern University	4/4/2007	4/30/2009	Completed - Published as Report 21 and Web-Only Document 6		
01-06	A Guidebook for Developing an Airport Performance Measurement System	\$400,000(08)	\$400,000	Infrastructure Management Group	5/6/2008	11/30/2009	Completed - Publication Pending	D. Fish	M. Salamone
01-07	Airport/Airline Agreements and Rate Methodologies - Practices and Characteristics	\$400,000(08)	\$393,005	Ricondo & Associates	5/30/2008	12/15/2009	Completed - Publication Pending	A. Toney	M. Salamone
01-08	Guidebook on Best Management Practices for Leasing and Developing Airport Property	\$400,000(08)	\$350,000	R.W. Armstrong and Associates	6/24/2008	2/28/2010	Research in progress	K. Willis	J. Navarrete
01-09	Airport Performance Indicators	\$400,000(09)	\$400,000	Oliver Wyman, Inc.	5/8/2009	8/7/2010	Research in progress	E. Novak	M. Salamone
01-10	A Handbook for Developing, Implementing and Overseeing Airport Capital Plans	\$400,000(09)	\$399,955	HNTB Corp.	7/10/2009	3/10/2011	Research in progress	G. Vazquez	M. Greenberger

TABLE 5 (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
01-11	Understanding Airport In-Terminal Concession Programs	\$350,000(09)	\$350,000	Jacobs Consultancy	6/17/2009	12/16/2010	Research in progress	A. Jan	T. Schatz
01-12	A Primer for Information Technology Systems at Airports	\$350,000(09)	\$348,843	Faith Group, LLC	7/7/2009	9/6/2010	Research in progress	P. Friedman	M. Salamone
01-13	Compilation and Analysis of FAA Economic and Operational Data for Airport Benchmarking Purposes	\$500,000(09A)					In Development		M. Salamone
01-14	Considering and Evaluating Airport Privatization	\$500,000(09A)					In Development		T. Schatz
01-15	Alternative Revenue Strategies for Airports	\$400,000(10)					In Development		L. Goldstein
01-16	Asset Management for Airports	\$400,000(10)					In Development		M. Greenberger
01-17	Business Planning for General Aviation Airports	\$400,000(10)					In Development		M. Greenberger
01-18	Enterprise Risk Management and Risk-Based Decision Making for Airports	\$350,000(10)					In Development		M. Greenberger
2: Environment									
02-01	Alternative Aircraft and Airfield Deicing and Anti-Icing Formulations with Reduced Aquatic Toxicity and Biological Oxygen Demand	\$600,000(06)	\$600,000	University of South Carolina	11/1/2006	2/28/2010	Research in progress; Interim report published as Web-Only Document 3	G. Legarreta P. Friedman	E. Harrigan
02-02	Deicing Planning Guidelines and Practices for Stormwater Management Systems	\$300,000(06)	\$300,000	CH2M Hill	10/9/2006	9/12/2008	Completed - Published as Report 14 and Deicing Practices 1-41		
02-03	Aircraft and Airport-Related Hazardous Air Pollutants: Research Needs and Analysis	\$100,000(06)	\$100,000	Aerodyne Research, Inc.	12/19/2006	12/18/2007	Completed - Published as Report 7		

TABLE 5 (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
02-03A	Measurement of Gaseous HAP Emissions from Idling Aircraft as a Function of Engine and Ambient Conditions	\$500,000(06)	\$499,741	Aerodyne Research, Inc.	1/12/2009	1/12/2011	Research in progress	M. Gupta	L. Goldstein
02-04	Research Needs Associated with Particulate Emissions at Airports	\$100,000(06)	\$99,897	Environmental Consulting Group, Inc.	1/2/2007	3/1/2008	Completed - Published as Report 6		
02-04A	Summarizing and Interpreting Aircraft Gaseous and Particulate Emissions Data	\$350,000(07)	\$349,470	University of Missouri-Rolla	4/12/2007	7/11/2008	Completed - Published as Report 9		
02-05	Aircraft Noise: A Toolkit for Managing Community Expectations	\$500,000(07)	\$399,982	Landrum & Brown	4/20/2007	3/31/2009	Published as Report 15		
02-06	Guidebook on Preparing Airport Greenhouse Gas (GHG) Emissions Inventories	\$200,000(07)	\$199,403	Wyle Laboratories	10/9/2007	9/8/2008	Completed - Published as Report 11 and Web-Only Document 2		
02-07	Handbook for Analyzing the Costs and Benefits of Alternative Turbine Engine Fuels at Airports	\$500,000(07)	\$499,960	CSSI, Inc.	10/22/2007	2/1/2010	Research in progress	L. Maurice	L. Goldstein
02-08	Quantifying Contributions to Local Air Quality Impacts from Airport-Related Emissions	\$600,000(08)	\$599,970	Wyle Laboratories, Inc.	6/4/2008	6/3/2010	Research in progress	M. Gupta	L. Goldstein
02-09	Developing a Comprehensive Work Plan for a Multimodal Noise and Emissions Model	\$200,000(08)	\$199,630	Wyle Laboratories, Inc.	7/7/2008	2/26/2010	Research in progress	L. Maurice	L. Goldstein
02-10	Practical Greenhouse Gas Emission Reduction Strategies for Airports	\$500,000(09)	\$499,921	CDM Federal Programs Corp	6/9/2009	6/9/2011	Research in progress	N. Brown J. Unland	T. Schatz
02-11	A Handbook for Addressing Water Resources Issues Affecting Airport Capacity Enhancement Planning	\$150,000(09)	\$150,000	Gresham, Smith and Partners	5/11/2009	6/10/2010	Research in progress	E. Melisky M. Washington	L. Goldstein

TABLE 5 (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
02-12	Environmental Optimization of Aircraft Departures: Fuel Burn, Emissions, and Noise	\$300,000(09)	\$300,000	Wyle Laboratories, Inc.	4/20/2009	10/19/2010	Research in progress	R. Cointin	L. Goldstein
02-13	A Guidebook for Improving Environmental Performance at Small Airports	\$200,000(09) \$ 75,000(08)	\$200,000	Gresham, Smith and Partners	6/16/2009	6/16/2010	Research in progress	D. Perkins	M. Greenberger
02-14	Evaluating Methods for Monitoring of Stormwater Containing Deicing Materials	\$200,000(09A)					In Development		J. Navarrete
02-15	Improving and Facilitating Recycling of Materials from Aircraft	\$300,000(09A)					In Development		G. Staba
02-16	Strategies to Reduce Surface Emissions and Survey (Inventory) of Ground-Based Airport/Airline Equipment at Airports	\$600,000(09A)					In Development		T. Schatz
02-17	Measuring PM Emissions from Ground Support Equipment, Auxiliary Power Units, and Tires and Brakes	\$500,000(09A)					In Development		J. Navarrete
02-18	Evaluating Requirements Associated with Locating Alternative Fuel Production Facilities on or Adjacent to Airports	\$250,000(09A)					In Development		T. Schatz
02-19	Evaluation of Stormwater System Design Conditions for Deicing Management	\$300,000(09A)					In Development		M. Greenberger
02-20	Assessing the Role of Airports and Airlines in the Spread of Vector-Borne Diseases	\$250,000(10)					In Development		J. Navarrete
02-21	Evaluation of Aviation Growth Capacity Within State Implementation Plans	\$500,000(10)					In Development		G. Staba

TABLE 5 (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
02-22	Evaluating "Green" Engineering and Construction Practices at Airports	\$300,000(09A)					In Development		M. Greenberger
02-23	Alternative Fuels as a Means to Reduce PM2.5 Emissions at Airports	\$500,000(10)					In Development		J. Navarrete
02-24	Guidance for Residential Sound Insulation Adjacent to Airports	\$200,000(10)					In Development		T. Schatz
02-25	Reducing Emissions and Noise Through Bridge-Based Systems	\$200,000(10)					In Development		M. Greenberger
02-26	Evaluating the Impact of Aviation Noise on Learning	\$450,000(10)					In Development		L. Goldstein
02-27	Aircraft Taxi Noise Database for INM and AEDT	\$150,000(10)					In Development		L. Goldstein
3: Policy and Planning									
03-01	Light Detection and Ranging (LIDAR) Deployment for Airport Obstructions Surveys	\$350,000(06)	\$350,000	University of Mississippi	1/30/2007	12/31/2009	Completed - Publication Pending	E. Hunnicutt	A. Lemer
03-02	Airport Passenger-Related Processing Rates Guidebook	\$200,000(06)	\$200,000	HNTB	1/16/2007	6/30/2009	Completed - Published as Report 23		
03-03	Enhancing Airport Land Use Compatibility	\$500,000(06)	\$500,000	Mead & Hunt, Inc.	12/28/2006	9/15/2009	Completed - Published as Report 27		
03-04	Guidebook for Airport-User Survey Methodology	\$250,000(06)	\$249,350	Jacobs Consultancy	1/16/2007	8/31/2009	Completed - Published as Report 26		
03-05	Passenger Space Allocation Guidelines for Planning and Design of Airport Terminals	\$400,000(07)	\$399,928	TransSolutions	6/28/2007	3/1/2010	Research in progress	E. Novak	L. Goldstein

TABLE 5 (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
03-06	Guidebook for Planning and Implementing Automated People Mover Systems at Airports	\$500,000(07)	\$395,341	Lea & Elliott	6/12/2007	2/26/2010	Research in progress	G. Neumann A. Jan	L. Goldstein
03-07	A Guidebook for Measuring Performance of People Mover Systems at Airports	\$300,000(07)	\$300,000	Lea & Elliott	6/13/2007	12/18/2009	Completed - Publication Pending	G. Neumann A. Jan	L. Goldstein
03-08	Passenger Air-Service Development Techniques	\$300,000(07)	\$300,000	InterVISTAS-ga2 Consulting	6/21/2007	5/15/2009	Completed - Published as Report 18		
03-09	Guidebook for Strategic Planning in the Airport Industry	\$425,000(07)	\$321,049	Ricondo & Associates	6/27/2007	6/15/2009	Completed - Published as Report 20		
03-10	Innovative Approaches to Addressing Aviation Capacity Issues in Coastal Mega-Regions	\$300,000(07)	\$300,000	Resource Systems Group, Inc.	2/6/2008	9/30/2009	Completed - Publication Pending	P. Devoti	T. Schatz
03-11	Preservation of Public-Use Airports	\$600,000(08)	\$522,430	L. Robert Kimball & Associates	6/23/2008	4/30/2010	Research in progress	S. Glasgow	L. Goldstein
03-12	Guidebook for Preparing Peak Period and Operational Profiles to Improve Airport Facility Planning and Environmental Analyses	\$350,000(08)	\$347,044	HNTB Corporation	8/13/2008	8/12/2010	Research in progress	T. Diana	L. Goldstein
03-13	Understanding Airspace Analysis Tools for Airport Planning	\$200,000(08)	\$199,938	Jacobs Consultancy	7/11/2008	1/31/2010	Research in progress	E.C. Hunnicut	J. Navarrete
03-14	Airport Passenger Conveyance System Usage/Throughput	\$300,000(08)	\$300,000	Trans Solutions, LLC	8/26/2008	3/26/2010	Research in progress	G. Neumann	L. Goldstein
03-15	Impact of Jet Fuel Price Uncertainty on Airport Planning and Development	\$400,000(09)	\$399,970	GRA, Inc.	3/4/2009	5/11/2010	Research in progress	C. Burleson J. Weibert C. Lang	L. Goldstein
03-16	Guidebook for Estimating the Economic Impact of Air Cargo at Airports	\$500,000(09)	\$499,860	Battelle Memorial Institute	6/5/2009	2/4/2011	Research in progress	J. Herbert R. Samis	L. Goldstein
03-17	Evaluating Airfield Capacity	\$525,000(09)	\$525,000	Jacobs Consultancy	6/29/2009	6/28/2011	Research in progress	A. McCormick	T. Schatz

TABLE 5 (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
03-18	Business and Operational Continuity and Recovery Planning for Airports	\$350,000(10)					In Development		T. Schatz
03-19	Evaluating the Use of Passenger Air Travel for Capital Investment Planning and Benefit-Cost Analyses	\$350,000(10)					In Development		L. Goldstein
03-20	Defining and Measuring Aircraft and Airfield Delay	\$250,000(10)					In Development		J. Navarrete
03-21	Building Support for Major New Airport Capacity	\$300,000(10)					In Development		J. Navarrete
03-22	Incorporating Uncertainty and Risk Into Airport Air Traffic Forecasting	\$350,000(10)					In Development		L. Goldstein
03-23	Integrating Aviation Into Passenger Rail Systems Planning in Congested Corridors	\$400,000(10)					In Development		T. Schatz
4: Safety									
04-01	Analysis of Aircraft Overruns and Undershoots for Runway Safety Areas	\$250,000(06)	\$249,986	Applied Research Associates, Inc.	9/19/2006	1/31/2008	Completed - Published as Report 3		
04-02	Lightning-Warning Systems for Use by Airports	\$200,000(06)	\$199,937	MDA Federal, Inc.	11/7/2006	11/7/2008	Completed - Published as Report 8		
04-03	Guidance for Identifying and Mitigating Approach Lighting System Hazards	\$300,000(07)	\$300,000	Virginia Tech	10/3/2007	2/2/2009	Completed - Published as Research Results Digest 6 and Web-Only Document 4		
04-04	Simulation-Based Training and Exercise of Civil Aviation Emergency Response Personnel	\$500,000(07)	\$399,067	Applied Research Associates	9/12/2007	12/11/2009	Completed - Publication Pending	M. Tonnacliff	S. Parker

TABLE 5 (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
04-05	A Guidebook for Airport Safety Management Systems	\$300,000(07)	\$300,000	Applied Research Associates	5/24/2007	5/15/2009	Completed - Published as Report 17, Volume 2		
04-06	A Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports	\$300,000(08)	\$299,905	Biozone	6/2/2008	12/2/2009	Completed - Publication Pending	M. Hovan	M. Greenberger
04-07	Comparison of Airport Apron Management and Control Programs With and Without Regulatory Oversight	\$300,000(08)	\$300,000	Ricondo & Associates	5/8/2009	8/7/2010	Research in progress	E. Jarvis R. Moseng	M. Salamone
04-07A	Best Practices for Managing the Use of Towbarless Tractors at Airports	\$300,000(08)	\$38,795	Ricondo & Associates	4/20/2009	7/19/2010	Research in progress	E. Jarvis R. Moseng	M. Salamone
04-08	Improved Models for Risk Assessment of Runway Safety Areas (RSA)	\$400,000(09)	\$400,000	Applied Research Associates	6/8/2009	12/7/2010	Research in progress	M. Hoven	T. Schatz
04-09	Risk Assessment Method to Support Modification of Airfield Separation Standards	\$250,000(09)	\$250,000	Applied Research Associates	6/10/2009	12/9/2010	Research in progress	J. Dermody	M. Greenberger
04-10	Evaluation of Existing Regional Mutual Assistance Groups and Guidance to Establish Similar Groups	\$300,000(09A)					In development		M. Greenberger
5: Security									
05-01	An Airport Guide for Regional Emergency Planning for CBRNE Events	\$250,000(06)	\$248,464	System Planning Corp.	11/15/2006	10/31/2008	Completed - Published as Report 12		
6: Human Resources									
06-01	Helping Airport and Air Carrier Employees Cope with Traumatic Events	\$300,000(07)	\$299,416	University of North Dakota	12/5/2007	5/31/2009	Completed - Published as Report 22		

TABLE 5 (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
06-02	Airport Leadership Development Program	\$100,000(10)					In development		M. Salamone
7: Design									
07-01	Innovations for Airport Terminal Facilities	\$400,000(06)	\$400,000	Corgan Associates, Inc.	12/8/2006	7/8/2008	Completed -Published as Report 10		
07-02	Airport Curbside and Terminal-Area Roadway Operations	\$400,000(06) \$150,000(09)	\$400,000	Jacobs Consultancy	11/15/2006	12/9/2009	Completed - Publication Pending	P. Sullivan	R. Derr
07-03	Developing Improved Civil Aircraft Arresting Systems	\$500,000(07)	\$499,455	Protection Engineering Consultants	5/23/2007	10/31/2009	Completed - Publication Pending	M. Hovan R. King	M. Greenberger
07-04	Spreadsheet Models for Airport Terminal Planning and Design	\$400,000(07)	\$400,000	Landrum and Brown	6/6/2007	10/31/2009	Completed - Publication Pending	T. Wade E. Novak	T. Schatz
07-05	Airport Passenger Terminal Planning Guidebook	\$400,000(07)	\$400,000	Landrum and Brown	6/28/2007	10/31/2009	Completed - Publication Pending	K. Hudson E. Novak	T. Schatz
07-06	Airport Signage and Wayfinding Information Guidelines	\$250,000(08)	\$250,000	Gresham, Smith and Partners	8/21/2008	2/21/2010	Research in progress	E. Novak	M. Greenberger
07-07	Evaluating Terminal Facility Renewal and Replacement Options	\$400,000(10)					In development		T. Schatz
8: Construction									
08-01	Sustainable Airport Construction Practices	\$150,000(09)	\$150,000	Ricondo & Associates, Inc.	6/1/2009	5/30/2010	Research in progress	A. Jan F. Lanzetta	M. Greenberger
9: Maintenance									
09-01	Guidelines for the Collection and Use of Geospatially Referenced Data for Airfield Pavement Management	\$350,000(06)	\$224,818	Applied Research Associates, Inc.	11/6/2006	2/28/2010	Research in progress	R. Joel	A. Hanna

TABLE 5 (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
10: Operations									
10-01	Optimizing the Use of Aircraft Deicing and Anti-Icing Fluids	\$300,000(06) \$ 50,000(08) \$100,000(08)	\$349,030	APS Aviation, Inc.	3/20/2007	2/28/2010	Research in progress	G. Legarreta	E. Harrigan
10-02	Planning Guide for Offsite Terminals	\$350,000(06)	\$350,000	MarketSense	12/18/2006	9/1/2009	Completed -Publication Pending	P. Friedman	M. Salamone
10-03	Evaluating Airport Parking Strategies and Supporting Technologies	\$300,000(07)	\$300,000	Jacobs Consultancy	9/14/2007	9/1/2009	Completed -Published as Report 24		
10-04	Airports and the Newest Generation of General Aviation Aircraft	\$500,000(07)	\$496,390	GRA, Inc.	6/27/2007	5/31/2009	Completed - Published as Report 17, Volumes 1 and 2		
10-05	Understanding Common-Use Approaches at Airports	\$500,000(08)	\$399,981	Barich, Inc.	5/30/2008	9/29/2009	Completed - Publication Pending	G. Neumann	M. Greenberger
10-06	A Handbook to Assess Impacts of Constrained Airport Parking	\$400,000(08)	\$398,563	Ricondo & Associates	6/16/2008	2/26/2010	Research in progress	P. Sullivan	M. Greenberger
10-07	Current Status and Future Implications of Passenger Self-Tagging	\$350,000(09)	\$350,000	Barich, Inc.	6/16/2009	6/16/2010	Research in progress	R. Henry	M. Greenberger
10-08	Applying Intelligent Transportation Systems to Improve Airport Traveler Access Information	\$350,000(09)	\$350,000	Gresham, Smith and Partners	4/13/2009	12/12/2010	Research in progress	R. Nicosia-Rusin	L. Goldstein
10-09	Elimination of Baggage Recheck for Arriving International Passengers	\$400,000(09)	\$400,000	InterVISTAS-ga2 Consulting	7/22/2009	1/21/2011	Research in progress	P. Lo	T. Schatz
10-10	IROPS Planning, Procedures, and Developing Coordinated Contingency Plans for Tarmac Delays	\$600,000(10)					In development		T. Schatz

TABLE 5 (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
11: Special Projects									
11-01	Legal Aspects of Airport Programs	\$200,000(06) \$475,000(07) \$300,000(08) \$600,000(09) \$500,000(10)		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) \$467,000(07) \$1,000,000(08) \$25,000(09) \$250,000(10)		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) \$700,000(07) \$500,000(08) \$500,000(09) \$900,000(10)		Transportation Research Board	2/1/2006		Continuing Project: See 11-03 Table	L. Pagnanelli	M. Salamone
11-04	Graduate Research Award Program on Public - Sector Aviation Issues	\$100,000(08) \$100,000(09) \$100,000(10)					Continuing Project	J. Wharff	L. Goldstein
11-05	Dissemination of ACRP Research Results	\$600,000(10)					In development		M. Salamone
11-06	Evaluating ACRP Processes	\$250,000(10)					In development		M. Salamone

TABLE 5 (continued)

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

No.	Title	Consultant	Start Date	Estimated Completion Date	Staff Officer
01-01	Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters through December 31, 2007	Spiegel & McDiarmid	December 2006	Completed - Published as Legal Research Digest 4 (CD ROM 68)	
01-02	Theory and Law of Airport Revenue Diversion	Paul Dempsey	January 2007	Completed - Published as Legal Research Digest 2	
01-03	Compilation/List of Airport Law Resources	McGill University	January 2007	Completed - Published as Legal Research Digest 1	
01-04	Survey of Airport Laws and Regulation of Commercial Ground Transportation	Smith Armundsen	April 2007	Completed - Published as Legal Research Digest 3	
01-05	Responsibility for Implementation and Enforcement of Airport Land-Use Zoning Restrictions	William V. Cheek & Associates	April 2007	Completed - Published as Legal Research Digest 5	
01-06	Who is the Owner or Operator for Purposes of the Right to Self-Fuel?	C. Daniel Prather Ph.D.	January 2008	Completed - Published as Legal Research Digest 8	
01-07	The Impact of Airline Bankruptcies on Airports	Jocelyn Waite	October 2007	Completed - Published as Legal Research Digest 6	
01-08	Airport Governance and Ownership	Daniel S. Reimer	February 2008	Completed - Published as Legal Research Digest 7	
01-09	Survey of Elements of Disparity Studies for Airport Disadvantaged Business Enterprise Programs			Terminated	
02-01	Obstructions Affecting Navigatable Airspace	Cheek & Associates	July 2008	Completed - Publication Pending	J. McDaniel
02-02	Use and Success of Avigation Easement and Other Tools for Airport - Compatible Land Use and Development of Model Language	Lemongrass Consulting	June 2008	January 2010	J. McDaniel
02-03	Case Studies on Community Challenges to Airport Development	Jaye Pershing Johnson	October 2008	January 2010	J. McDaniel
02-04	Analysis of Federal Law, Regulations, and Case Law Regarding Airport Proprietary Rights	Jodi Howich, Esq.	October 2008	Completed - Publication Pending	J. McDaniel

TABLE 5 (continued)

No.	Title	Consultant	Start Date	Estimated Completion Date	Staff Officer
03-01	Fair Disclosure of Airport Impacts in Real Estate Transfers	Larry Thomas, Esq.	July 2009	July 2010	J. McDaniel
03-02	Compilation of State Aviation Authorizing Legislation	Jodi Howick, Esq.	August 2009	August 2010	J. McDaniel
03-03	Survey of Minimum Standards for Airport Commercial Operations	Daniel Reimer, Esq.	July 2009	July 2010	J. McDaniel
03-04	Airport Rates and Charges: Law and Policy	Pablo Nuesch, Esq.	November 2009	November 2010	J. McDaniel
03-05	Analyses of State and Federal Regulations that May Impede State Initiatives to Reduce an Airport's Carbon Footprint	John Putnam, Esq.	November 2009	November 2010	J. McDaniel
03-06	An Index and Digest of Decisions in LRD 1			In development	J. McDaniel
04-01	Airport Liability for Wildlife Management			In development	J. McDaniel
04-02	Legal Issues Related to Developing SMS and SMRD Documents Which May be Available to the Public			In development	J. McDaniel
04-03	Analysis of Federal Laws, Regulations, Case Law, and Survey of Existing Airport NPDES Permits Regarding Tenant-Operator Responsibilities Under NPDES and Storm Water Management BMP's Under Owner/Airport's Operating Permits			In development	J. McDaniel
04-04	Buy America Requirements for Federally Funded Airports			In development	J. McDaniel
04-05	Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters, through December 2009			In development	J. McDaniel
04-06	Legal Requirements for Purpose and Need			In development	J. McDaniel
04-07	Airport Contracting Survey of Federal and State Standards			In development	J. McDaniel

TABLE 5 (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	7/31/2007	Completed - Published as Research Results Digest 2	
Task 02	Ground Access to Major Airports by Public Transportation	Matthew Coogan	8/16/2006	9/30/2007	Completed - Published as Report 4	
Task 03	Evaluation and Mitigation of Aircraft Slide Evacuation Injuries	George Washington University	10/9/2006	12/15/2007	Completed - Published as Report 2	
Task 04	Airport Safety Management Systems for Airports: Overview	MITRE Corporation	1/2/2007	11/2/2007	Completed - Published as Report 1, Volume 1	
Task 05	Quarantine Facilities for Arriving Air Travelers: Identification of Planning Needs and Costs	System Planning Corp.	3/28/2007	11/3/2007	Completed - Published as Report 5	
Task 06	Interagency-Industry Collaboration on Pandemic Planning for Aviation: A Workshop	TRB Technical Activities Division	2/15/2007	9/15/2007	Completed - Workshop Held - Results Published as TRB Conference Proceedings 41	
Task 07	Current and Emerging Issues Facing the Airport Industry	TRB Staff	8/1/2007	1/31/2009	Completed - Published as Research Results Digest 5	
Task 08	Enhanced Modeling of Aircraft Taxiway Noise - Scoping	Wyle Laboratories	2/14/2008	8/31/2009	Completed - Published as Web-Only Document 9	
Task 09	Visibility of Airfield Signs and Markings from Aircraft and Ground Vehicles				Cancelled	
Task 10	Estimate of National Use of Aircraft and Airfield Deicing Materials	CH2M Hill	10/16/2007	6/15/2008	Completed - Results to ACI-NA, AAIE, ATA	
Task 11	A Summary of How Proposed Firefighting Standards Would Impact Airports	GRA	12/23/2008	6/15/2009	Completed - Published as Web Document 7 and Research Results Digest 7	
Task 12	Ramp Incident Data from Selected Large and Medium Hub Airports	Ricondo & Associates	4/17/2009	7/16/2010	Research in Progress	M. Salamone
Task 13	Symposium on the Transmission of Disease in Airports and Aircraft				Symposium Held - Publication Pending	C. Gerencher

TABLE 5 (continued)

No.	Title	Contractor	Start Date	End Date	Status	Staff Officer
Task 14	Background Information on the Data Protection Standard PCI DSS, and its Applicability to the Airport Environment to Help Ensure that Airport Business Systems Meet this Commercial Standard	Barich, Inc.	10/15/2009	5/15/2010	Research in Progress	T. Schatz
Task 15	Aviation Industry Familiarization and Training for Part-Time Airport Policymakers				In development	M. Salamone
Task 16	Analysis, Scoping, and Prioritizing ACRP Deicing Problem Statements				In development	M. Salamone
Task 17	Risk Assessment of Proposed ARFF Standards				In development	M. Greenberger
Task 18	Overview of Carbon Management Policies at Airports				In development	J. Navarrete

TABLE 5 (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	Completed - Published as Synthesis 1		
S01-02	Airport Economic Development Opportunities and Incentives	Lois Kramer, Kramer Aerotek	March 2009	Research in progress		G. Staba
2: Environment						
S02-01	Effects of Airport Noise: Research Update on Selected Topics	Mestre Greve Associates	March 2007	Completed - Published as Synthesis 9		
S02-02	Airport Sustainability Practices	Arup	March 2007	Completed - Published as Synthesis 10		
S02-03	Compilation of Noise Programs in Areas Outside DNL 65	HMMH	April 2008	Completed - Published as Synthesis 16		
S02-04	Approaches to Integrating Airport Development and Federal Environmental Review Processes	RS & H / Synergy	April 2008	Completed - Published as Synthesis 17		
S02-05	Funding Opportunities for Airport Environmental Projects			In development		G. Staba
3: Policy and Planning						
S03-01	Aviation Forecasting Methodologies	GRA, Inc.	August 2006	Completed - Published as Synthesis 2		
S03-02	Airport Ground Access Mode Choice Models	Aviation Systems Consulting	October 2006	Completed - Published as Synthesis 5		
S03-03	Airport Economic Impact Methods and Models	Hoyle Tanner & Associates	March 2007	Completed - Published as Synthesis 7		
S03-04	Airport System Planning Practices	Wilbur Smith Associates	April 2008	Completed - Published as Synthesis 14		
S03-05	Effective Practices for Preparing Airport Improvement Program Benefit Cost Analysis	EDRG	April 2008	Completed - Published as Synthesis 13		

TABLE 5 (continued)

No.	Title	Topic Consultant	Start Date	Status	FAA Liaisons	Staff Officer
4: Safety						
S04-01	General Aviation Safety and Security Practices	Reynolds, Smith and Hills, Inc.	October 2006	Completed - Published as Synthesis 3		
S04-02	Preventing Aircraft-Vehicle Incidents During Winter Operations and Periods of Low Visibility	Bowling Green State University	June 2007	Completed - Published as Synthesis 12		
S04-03	Identification of the Requirements and Training to Obtain Driving Privileges on Airfields	Airport Safety Consultants	May 2008	Completed - Published as Synthesis 15		
5: Security						
S05-01	Intelligent Transportation System (ITS) Sensor Technology for General Aviation			CANCELLED		
6: Human Resources						
S06-01	Aviation Workforce Development Practices	International Aviation Management Group	March 2009	Research in progress		G. Staba
8: Construction						
S08-01	Airport Infrastructure and Facility Activation Techniques	Arup	March 2009	Research in progress		G. Staba
9: Maintenance						
S09-01	Impact of Rubber Removal Techniques on Runways	University of Oklahoma	June 2007	Completed - Published as Synthesis 11		
S09-02	Common Airport Pavement Maintenance Practices	Applied Research Associates	March 2009	Research in progress		G. Staba
10: Operations						
S10-01	Counting Aircraft Operations at Non-Towered Airports	Aerofinity	October 2006	Completed - Published as Synthesis 4		
S10-02	Common-Use Facilities and Equipment at Airports	Barich, Inc.	March 2007	Completed - Published as Synthesis 8		

TABLE 5 (continued)

No.	Title	Topic Consultant	Start Date	Status	FAA Liaisons	Staff Officer
S10-03	Impact of Airport Deicing Products on Aircraft and Airfield Infrastructure	Montana State University, Western Transportation Institute	March 2007	Completed - Published as Synthesis 6		
S10-04	Airport Energy Efficiency and Cost Reduction	Miller Dunwiddie Architecture	March 2009	Research in progress		G. Staba
S10-05	Ground Handling Training and Practices			In development		G. Staba

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