

Airport Technology

The fundamental mission of the Federal Aviation Administration is to foster a safe and efficient National Air Transportation System.

Our air transportation system has over 17,000 landing facilities, 226,000 registered aircraft, 700,000 pilots, 8000 tower controllers, a multitude of terminal buildings and access roads, and 500 million passenger enplanements each year. In the coming years, each component of the air transportation system is forecast to have substantial growth.

The goal of the Airport Technology Research Program is to accommodate the projected traffic growth and to establish an operational environment that is free of accidents and fatalities. We will achieve this goal by continuously improving the system and maximizing the use of existing facilities by developing new standards, criteria, and guidelines to plan, design, construct, operate, and maintain the Nation's airports and heliports.

Airport Safety Technology Program

Runway Surface Technology

Runway surface condition is a critical safety concern at airports. Snow, ice, water, and rubber deposits can lead to slippery surfaces, causing aircraft loss of control during braking as well as making surface movements hazardous. The goal of this program area is to eliminate slippery runway surfaces as a cause of accidents and to develop technologies to safely stop all aircraft within the extent of the runway.



Visual Guidance

Safe and efficient airport ground operations, especially at night and under low visibility conditions, require that pilots and vehicle operators receive conspicuous and unambiguous information from lights, signs, and pavement markings. Improvements in these visual aids will help to eliminate runway incursions. The goal of this program area is to eliminate deficiencies in visual guidance systems and procedures that may contribute to surface collision accidents.

Rescue and Firefighting Research

Analysis of aircraft accidents involving external fuel fires has shown that, although external fires can be effectively extinguished, secondary fires within the fuselage are difficult to control with existing equipment and procedures. Large amounts of smoke, toxic gases, and high-temperature levels in the passenger cabin can cause delay in evacuation and pose severe safety hazards. The goal of this program area is to increase passenger survival rates in postcrash fires through research and testing to develop firefighting systems that can effectively be used to control both external and internal cabin fires.



Birds and Wildlife Program

Wildlife presence at or near airports poses a potential threat to movement of aircraft and other ground vehicles. In spite of various control devices in use to keep birds away, over a thousand bird strike incidents are reported every year. The goal of this program area is to increase airport safety and decrease damage to aircraft by reducing bird strikes and other wildlife hazards. It is envisioned that a real-time national bird strike potential advisory system will progressively be deployed over the next few years.

Airport Pavement Program

Durable, long-life pavements are important in controlling the costs of operating the National Aviation System. In addition to annual expenditures of approximately two billion dollars on pavements—a significant portion coming from the Aviation Trust Fund—pavement outages and downtime for maintenance and rehabilitation contribute to the costs associated with aviation system delays. It is therefore reasonable for the Government to protect its investment.

Airport pavement research and development (R&D) has been able to lean on the much larger field of highway pavement research for many years and to some extent, still does. Until recently, the FAA has also profited from Department of Defense (DoD) research supporting military aircraft. At the present time, however, the largest aircraft planned are civilian aircraft with weights exceeding military aircraft and, of course, exceeding highway vehicles by an order of magnitude. There is still ample opportunity for the FAA to share and benefit from pavement R&D, but in the field of design and evaluation, the FAA must take on new leadership responsibilities.

In April 1993, the FAA published an essential Airport Pavement Research and Development plan, Airport Pavements—Solutions for Tomorrow's Aircraft, to deal with the increasing needs of civil aviation industries. The plan will introduce modern design and evaluation procedures that concentrate on long-life airport pavements for existing as well as new and heavier aircraft. The structured approach to introducing these procedures is based on sound theoretical principles and full-scale validation tests. This approach will take advantage of today's enhanced computer computational abilities and will provide the flexibility to deal with new, complex landing gear configurations that were never visualized or contemplated when the current design procedures were developed. Executing the plan will reaffirm the FAA's leadership responsibilities as a key player in the aerospace industry.

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