Science, Space, and Technology] of the House of Representatives and to the Committee on Commerce, Science, and Transportation of the Senate for the implementation of the initiative described in subsection (a).''

SPECIALTY METALS CONSORTIUM

Pub. L. 106–181, title VII, § 742, Apr. 5, 2000, 114 Stat. 175, provided that:

''(a) IN GENERAL.—The Administrator [of the Federal Aviation Administration] may work with a consortium of domestic metal producers and aircraft engine manufacturers to improve the quality of turbine engine materials and to address melting technology enhancements.

''(b) REPORT.—Not later than 6 months after entering into an agreement with a consortium described in subsection (a), the Administrator shall transmit to Congress a report on the goals and efforts of the consortium.''

§ 44505. Systems, procedures, facilities, and devices

(a) GENERAL REQUIREMENTS.—(1) The Administrator of the Federal Aviation Administration shall—

(A) develop, alter, test, and evaluate systems, procedures, facilities, and devices, and define their performance characteristics, to meet the needs for safe and efficient navigation and traffic control of civil and military aviation, except for needs of the armed forces that are peculiar to air warfare and primarily of military concern; and

(B) select systems, procedures, facilities, and devices that will best serve those needs and promote maximum coordination of air traffic control and air defense systems.

(2) The Administrator may make contracts to carry out this subsection without regard to section 3324(a) and (b) of title 31.

(3) When a substantial question exists under paragraph (1) of this subsection about whether a matter is of primary concern to the armed forces, the Administrator shall decide whether the Administrator or the Secretary of the appropriate military department has responsibility. The Administrator shall be given technical information related to each research and development project of the armed forces that potentially applies to, or potentially conflicts with, the common system to ensure that potential application to the common system is considered properly and that potential conflicts with the system are eliminated.

(b) RESEARCH ON HUMAN FACTORS AND SIMULATION MODELS.—The Administrator shall conduct or supervise research—

(1) to develop a better understanding of the relationship between human factors and aviation accidents and between human factors and air safety;

(2) to enhance air traffic controller, mechanic, and flight crew performance;

(3) to develop a human-factor analysis of the hazards associated with new technologies to be used by air traffic controllers, mechanics, and flight crews;

(4) to identify innovative and effective corrective measures for human errors that adversely affect air safety;

(5) to develop dynamic simulation models of the air traffic control system and airport design and operating procedures that will provide analytical technology—

(A) to predict airport and air traffic control safety and capacity problems;

(B) to evaluate planned research projects; and

(C) to test proposed revisions in airport and air traffic control operations programs;

(6) to develop a better understanding of the relationship between human factors and unmanned aircraft system safety; and

(7) to develop dynamic simulation models for integrating all classes of unmanned aircraft systems into the national airspace system without any degradation of existing levels of safety for all national airspace system users.

(c) RESEARCH ON DEVELOPING AND MAINTAINING A SAFE AND EFFICIENT SYSTEM.—The Administrator shall conduct or supervise research on—

(1) airspace and airport planning and design;

(2) airport capacity enhancement techniques;

(3) human performance in the air transportation environment;

(4) aviation safety and security;

(5) the supply of trained air transportation personnel, including pilots and mechanics; and

(6) other aviation issues related to developing and maintaining a safe and efficient air transportation system.

(d) RESEARCH ON DESIGN FOR CERTIFICATION.—

(1) RESEARCH.—Not later than 1 year after the date of enactment of the FAA Modernization and Reform Act of 2012, the Administrator shall conduct research on methods and procedures to improve both confidence in and the timeliness of certification of new technologies for their introduction into the national airspace system.

(2) RESEARCH PLAN.—Not later than 6 months after the date of enactment of the FAA Modernization and Reform Act of 2012, the Administrator shall develop a plan for the research under paragraph (1) that contains objectives, proposed tasks, milestones, and a 5-year budgetary profile.

(3) REVIEW.—The Administrator shall enter into an arrangement with the National Research Council to conduct an independent review of the plan developed under paragraph (2) and shall provide the results of that review to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 18 months after the date of enactment of the FAA Modernization and Reform Act of 2012.

(e) COOPERATIVE AGREEMENTS.—The Administrator may enter into cooperative agreements on a cost-shared basis with Federal and non-Federal entities that the Administrator may select in order to conduct, encourage, and promote aviation research, engineering, and development, including the development of prototypes and demonstration models.

(Pub. L. 103–272, § 1(e), July 5, 1994, 108 Stat. 1177; Pub. L. 103–305, title III, § 307, Aug. 23, 1994, 108 Stat. 1593; Pub. L. 112–95, title IX, §§ 903(b), 905, Feb. 14, 2012, 126 Stat. 138, 139.)

HISTORICAL AND REVISION NOTES

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
44505(a)(1) ..	49 App.:1353(c) (1st sentence).	Aug. 23, 1958, Pub. L. 85–726, §312(c) (1st, 5th–last sentences), 72 Stat. 752.
	49 App.:1655(c)(1).	Oct. 15, 1966, Pub. L. 89–670, §6(c)(1), 80 Stat. 938; Jan. 12, 1983, Pub. L. 97–449, §7(b), 96 Stat. 2444.
44505(a)(2) ..	49 App.:1353(c) (5th sentence).	
	49 App.:1655(c)(1).	
44505(a)(3) ..	49 App.:1353(c) (6th, last sentences).	
	49 App.:1655(c)(1).	
44505(b)	49 App.:1353(c) (2d, 3d sentences).	Aug. 23, 1958, Pub. L. 85–726, 72 Stat. 731, §312(c) (2d, 3d sentences); added Nov. 3, 1988, Pub. L. 100–591, §3, 102 Stat. 3011.
44505(c)	49 App.:1353(c) (4th sentence).	Aug. 23, 1958, Pub. L. 85–726, 72 Stat. 731, §312(c) (4th sentence); added Nov. 5, 1990, Pub. L. 101–508, §9209(c), 104 Stat. 1388–378.

In this section, the word ''Administrator'' in section 312(c) of the Federal Aviation Act of 1958 (Public Law 85–726, 72 Stat. 752) is retained on authority of 49:106(g).

In subsection (a)(1) and (3), the words ''the armed forces'' are substituted for ''military agencies'' and ''the military'' because of the definition of ''armed forces'' in 10:101.

In subsection (a)(3), the words ''military department'' are substituted for ''military agency'' because of the definition of ''military department'' in 10:101. The words ''the needs of'' and ''to the maximum extent necessary'' are omitted as surplus.

REFERENCES IN TEXT

The date of enactment of the FAA Modernization and Reform Act of 2012, referred to in subsec. (d), is the date of enactment of Pub. L. 112–95, which was approved Feb. 14, 2012.

AMENDMENTS

2012—Subsec. (b)(6), (7). Pub. L. 112–95, §903(b), added pars. (6) and (7).

Subsecs. (d), (e). Pub. L. 112–95, §905, added subsec. (d) and redesignated former subsec. (d) as (e).

1994—Subsec. (d). Pub. L. 103–305 added subsec. (d).

AIRCRAFT DEPARTURE QUEUE MANAGEMENT PILOT PROGRAM

Pub. L. 112–95, title V, §507, Feb. 14, 2012, 126 Stat. 106, provided that:

''(a) IN GENERAL.—The Secretary of Transportation shall carry out a pilot program at not more than 5 public-use airports under which the Federal Aviation Administration shall use funds made available under section 48101(a) [probably means section 48101(a) of title 49, United States Code] to test air traffic flow management tools, methodologies, and procedures that will allow air traffic controllers of the Administration to better manage the flow of aircraft on the ground and reduce the length of ground holds and idling time for aircraft.

''(b) SELECTION CRITERIA.—In selecting from among airports at which to conduct the pilot program, the Secretary shall give priority consideration to airports at which improvements in ground control efficiencies are likely to achieve the greatest fuel savings or air quality or other environmental benefits, as measured by the amount of reduced fuel, reduced emissions, or other environmental benefits per dollar of funds expended under the pilot program.

''(c) MAXIMUM AMOUNT.—Not more than a total of $2,500,000 may be expended under the pilot program at any single public-use airport.''

RESEARCH PROGRAM ON RUNWAYS

Pub. L. 112–95, title IX, §904, Feb. 14, 2012, 126 Stat. 139, provided that: ''Using amounts made available under section 48102(a) of title 49, United States Code, the Administrator [of the Federal Aviation Administration] shall continue to carry out a research program under which the Administrator may make grants to and enter into cooperative agreements with institutions of higher education and pavement research organizations for research and technology demonstrations related to—

''(1) the design, construction, rehabilitation, and repair of airfield pavements to aid in the development of safer, more cost effective, and more durable airfield pavements; and

''(2) engineered material restraining systems for runways at both general aviation airports and airports with commercial air carrier operations.''

WAKE TURBULENCE, VOLCANIC ASH, AND WEATHER RESEARCH

Pub. L. 112–95, title IX, §915, Feb. 14, 2012, 126 Stat. 144, provided that: ''Not later than 60 days after the date of enactment of this Act [Feb. 14, 2012], the Administrator [of the Federal Aviation Administration] shall—

''(1) initiate an evaluation of proposals related to research on the nature of wake vortexes that would increase national airspace system capacity by reducing existing spacing requirements between aircraft of all sizes;

''(2) begin implementation of a system to improve volcanic ash avoidance options for aircraft, including the development of a volcanic ash warning and notification system for aviation; and

''(3) coordinate with NOAA [National Oceanic and Atmospheric Administration], NASA [National Aeronautics and Space Administration], and other appropriate Federal agencies to conduct research to reduce the hazards presented to commercial aviation related to—

''(A) ground de-icing and anti-icing, ice pellets, and freezing drizzle;

''(B) oceanic weather, including convective weather;

''(C) en route turbulence prediction and detection; and

''(D) all hazards during oceanic operations, where commercial traffic is high and only rudimentary satellite sensing is available.''

ASSESSMENT OF WAKE TURBULENCE RESEARCH AND DEVELOPMENT PROGRAM

Pub. L. 108–176, title V, §505, Dec. 12, 2003, 117 Stat. 2559, required the Administrator of the Federal Aviation Administration to enter into an arrangement with the National Research Council for an assessment of the Federal Aviation Administration's proposed wake turbulence research and development program and required that a report on the assessment be provided to Committees of Congress not later than 1 year after Dec. 12, 2003.

ENSURING APPROPRIATE STANDARDS FOR AIRFIELD PAVEMENTS

Pub. L. 108–176, title VII, §705, Dec. 12, 2003, 117 Stat. 2581, provided that:

''(a) IN GENERAL.—The Administrator of the Federal Aviation Administration shall review and determine whether the Federal Aviation Administration's standards used to determine the appropriate thickness for asphalt and concrete airfield pavements are in accordance with the Federal Aviation Administration's standard 20-year-life requirement using the most up-to-date available information on the life of airfield pavements. If the Administrator determines that such standards are not in accordance with that requirement, the Administrator shall make appropriate adjustments to the Federal Aviation Administration's standards for airfield pavements.

''(b) REPORT.—Within 1 year after the date of enactment of this Act [Dec. 12, 2003], the Administrator shall

report the results of the review conducted under subsection (a) and the adjustments, if any, made on the basis of that review to the Senate Committee on Commerce, Science, and Transportation and the House of Representatives Committee on Transportation and Infrastructure and Committee on Science [now Committee on Science, Space, and Technology].''

USE OF RECYCLED MATERIALS

Pub. L. 106–181, title I, § 157, Apr. 5, 2000, 114 Stat. 89, provided that:

''(a) STUDY.—The Administrator [of the Federal Aviation Administration] shall conduct a study of the use of recycled materials (including recycled pavements, waste materials, and byproducts) in pavement used for runways, taxiways, and aprons and the specification standards in tests necessary for the use of recycled materials in such pavement. The primary focus of the study shall be on the long-term physical performance, safety implications, and environmental benefits of using recycled materials in aviation pavement.

''(b) CONTRACTING.—The Administrator may carry out the study by entering into a contract with a university of higher education with expertise necessary to carry out the study.

''(c) REPORT.—Not later than 1 year after the date of the enactment of this Act [Apr. 5, 2000], the Administrator shall transmit to Congress a report on the results of the study, together with recommendations concerning the use of recycled materials in aviation pavement.

''(d) FUNDING.—Of the amounts appropriated pursuant to section 106(k) of title 49, United States Code, not to exceed $1,500,000 may be used to carry out this section.''

AIRFIELD PAVEMENT CONDITIONS

Pub. L. 106–181, title I, § 160, Apr. 5, 2000, 114 Stat. 90, provided that:

''(a) EVALUATION OF OPTIONS.—The Administrator [of the Federal Aviation Administration] shall evaluate options for improving the quality of information available to the Federal Aviation Administration on airfield pavement conditions for airports that are part of the national air transportation system, including—

''(1) improving the existing runway condition information contained in the airport safety data program by reviewing and revising rating criteria and providing increased training for inspectors;

''(2) requiring such airports to submit pavement condition index information as part of their airport master plan or as support in applications for airport improvement grants; and

''(3) requiring all such airports to submit pavement condition index information on a regular basis and using this information to create a pavement condition database that could be used in evaluating the cost-effectiveness of project applications and forecasting anticipated pavement needs.

''(b) REPORT TO CONGRESS.—Not later than 12 months after the date of the enactment of this Act [Apr. 5, 2000], the Administrator shall transmit a report containing an evaluation of the options described in subsection (a) to the Senate Committee on Commerce, Science, and Transportation and the House of Representatives Committee on Transportation and Infrastructure.''

PILOT PROGRAM TO PERMIT COST-SHARING OF AIR TRAFFIC MODERNIZATION PROJECTS

Pub. L. 106–181, title III, § 304, Apr. 5, 2000, 114 Stat. 122, provided that:

''(a) PURPOSE.—It is the purpose of this section to improve aviation safety and enhance mobility of the Nation's air transportation system by encouraging non-Federal investment on a pilot program basis in critical air traffic control facilities and equipment.

''(b) IN GENERAL.—Subject to the requirements of this section, the Secretary [of Transportation] shall carry out a pilot program under which the Secretary may make grants to project sponsors for not more than 10 eligible projects.

''(c) FEDERAL SHARE.—The Federal share of the cost of an eligible project carried out under the program shall not exceed 33 percent. The non-Federal share of the cost of an eligible project shall be provided from non-Federal sources, including revenues collected pursuant to section 40117 of title 49, United States Code.

''(d) LIMITATION ON GRANT AMOUNTS.—No eligible project may receive more than $15,000,000 under the program.

''(e) FUNDING.—The Secretary shall use amounts appropriated under section 48101(a) of title 49, United States Code, for fiscal years 2001 through 2003 to carry out the program.

''(f) DEFINITIONS.—In this section, the following definitions apply:

''(1) ELIGIBLE PROJECT.—The term 'eligible project' means a project relating to the Nation's air traffic control system that is certified or approved by the Administrator [of the Federal Aviation Administration] and that promotes safety, efficiency, or mobility. Such projects may include—

''(A) airport-specific air traffic facilities and equipment, including local area augmentation systems, instrument landings systems, weather and wind shear detection equipment, lighting improvements, and control towers;

''(B) automation tools to effect improvements in airport capacity, including passive final approach spacing tools and traffic management advisory equipment; and

''(C) facilities and equipment that enhance airspace control procedures, including consolidation of terminal radar control facilities and equipment, or assist in en route surveillance, including oceanic and offshore flight tracking.

''(2) PROJECT SPONSOR.—The term 'project sponsor' means a public-use airport or a joint venture between a public-use airport and one or more air carriers.

''(g) TRANSFERS OF EQUIPMENT.—Notwithstanding any other provision of law, project sponsors may transfer, without consideration, to the Federal Aviation Administration, facilities, equipment, and automation tools, the purchase of which was assisted by a grant made under this section. The Administration shall accept such facilities, equipment, and automation tools, which shall thereafter be operated and maintained by the Administration in accordance with criteria of the Administration.

''(h) GUIDELINES.—Not later than 90 days after the date of the enactment of this Act [Apr. 5, 2000], the Administrator shall issue advisory guidelines on the implementation of the program.''

AIRCRAFT DISPATCHERS

Pub. L. 106–181, title V, § 516, Apr. 5, 2000, 114 Stat. 145, provided that:

''(a) STUDY.—The Administrator [of the Federal Aviation Administration] shall conduct a study of the role of aircraft dispatchers in enhancing aviation safety.

''(b) CONTENTS.—The study shall include an assessment of whether or not aircraft dispatchers should be required for those operations not presently requiring aircraft dispatcher assistance, operational control issues related to the aircraft dispatching functions, and whether or not designation of positions within the Federal Aviation Administration for oversight of dispatchers would enhance aviation safety.

''(c) REPORT.—Not later than 1 year after the date of the enactment of this Act [Apr. 5, 2000], the Administrator shall transmit to Congress a report on the results of the study conducted under this section.''

OCCUPATIONAL INJURIES OF AIRPORT WORKERS

Pub. L. 106–181, title V, § 520, Apr. 5, 2000, 114 Stat. 149, provided that:

''(a) STUDY.—The Administrator [of the Federal Aviation Administration] shall conduct a study to deter-

mine the number of persons working at airports who are injured or killed as a result of being struck by a moving vehicle while on an airport tarmac, the seriousness of the injuries to such persons, and whether or not reflective safety vests or other actions should be required to enhance the safety of such workers.

''(b) REPORT.—Not later than 1 year after the date of the enactment of this Act [Apr. 5, 2000], the Administrator shall transmit to Congress a report on the results of the study conducted under this section.''

ALKALI SILICA REACTIVITY DISTRESS

Pub. L. 106–181, title VII, §743, Apr. 5, 2000, 114 Stat. 175, provided that:

''(a) IN GENERAL.—The Administrator [of the Federal Aviation Administration] may conduct a study on the impact of alkali silica reactivity distress on airport runways and taxiways and the use of lithium salts and other alternatives for mitigation and prevention of such distress. The study shall include a determination based on in-the-field inspections followed by petrographic analysis or other similar techniques.

''(b) AUTHORITY TO MAKE GRANTS.—The Administrator may carry out the study by making a grant to, or entering into a cooperative agreement with, a nonprofit organization for the conduct of all or a part of the study.

''(c) REPORT.—Not later than 18 months after the date of initiation of the study under subsection (a), the Administrator shall transmit to Congress a report on the results of the study.''

RESEARCH PROGRAM TO IMPROVE AIRFIELD PAVEMENTS

Pub. L. 108–176, title VII, §704, Dec. 12, 2003, 117 Stat. 2581, provided that:

''(a) CONTINUATION OF PROGRAM.—The Administrator of the Federal Aviation Administration shall continue the program to consider awards to nonprofit concrete and asphalt pavement research foundations to improve the design, construction, rehabilitation, and repair of airfield pavements to aid in the development of safer, more cost effective, and more durable airfield pavements.

''(b) USE OF GRANTS OR COOPERATIVE AGREEMENTS.—The Administrator may use grants or cooperative agreements in carrying out this section.

''(c) STATUTORY CONSTRUCTION.—Nothing in this section requires the Administrator to prioritize an airfield pavement research program above safety, security, Flight 21, environment, or energy research programs.''

Pub. L. 106–181, title IX, §905, Apr. 5, 2000, 114 Stat. 196, provided that: ''The Administrator [of the Federal Aviation Administration] shall consider awards to nonprofit concrete pavement research foundations to improve the design, construction, rehabilitation, and repair of rigid concrete airfield pavements to aid in the development of safer, more cost-effective, and durable airfield pavements. The Administrator may use a grant or cooperative agreement for this purpose. Nothing in this section shall require the Administrator to prioritize an airfield pavement research program above safety, security, Flight 21, environment, or energy research programs.''

§ 44506. Air traffic controllers

(a) RESEARCH ON EFFECT OF AUTOMATION ON PERFORMANCE.—To develop the means necessary to establish appropriate selection criteria and training methodologies for the next generation of air traffic controllers, the Administrator of the Federal Aviation Administration shall conduct research to study the effect of automation on the performance of the next generation of air traffic controllers and the air traffic control system. The research shall include investigating—

(1) methods for improving and accelerating future air traffic controller training through the application of advanced training techniques, including the use of simulation technology;

(2) the role of automation in the air traffic control system and its physical and psychological effects on air traffic controllers;

(3) the attributes and aptitudes needed to function well in a highly automated air traffic control system and the development of appropriate testing methods for identifying individuals with those attributes and aptitudes;

(4) innovative methods for training potential air traffic controllers to enhance the benefits of automation and maximize the effectiveness of the air traffic control system; and

(5) new technologies and procedures for exploiting automated communication systems, including Mode S Transponders, to improve information transfers between air traffic controllers and aircraft pilots.

(b) RESEARCH ON HUMAN FACTOR ASPECTS OF AUTOMATION.—The Administrators of the Federal Aviation Administration and National Aeronautics and Space Administration may make an agreement for the use of the National Aeronautics and Space Administration's unique human factor facilities and expertise in conducting research activities to study the human factor aspects of the highly automated environment for the next generation of air traffic controllers. The research activities shall include investigating—

(1) human perceptual capabilities and the effect of computer-aided decision making on the workload and performance of air traffic controllers;

(2) information management techniques for advanced air traffic control display systems; and

(3) air traffic controller workload and performance measures, including the development of predictive models.

(c) COLLEGIATE TRAINING INITIATIVE.—(1) The Administrator of the Federal Aviation Administration may maintain the Collegiate Training Initiative program by making new agreements and continuing existing agreements with institutions of higher education (as defined by the Administrator) under which the institutions prepare students for the position of air traffic controller with the Department of Transportation (as defined in section 2109 of title 5). The Administrator may establish standards for the entry of institutions into the program and for their continued participation.

(2)(A) The Administrator of the Federal Aviation Administration may appoint an individual who has successfully completed a course of training in a program described in paragraph (1) of this subsection to the position of air traffic controller noncompetitively in the excepted service (as defined in section 2103 of title 5). An individual appointed under this paragraph serves at the pleasure of the Administrator, subject to section 7511 of title 5. However, an appointment under this paragraph may be converted from one in the excepted service to a career conditional or career appointment in the competitive civil service (as defined in section 2102 of title 5) when the individual achieves full