

108TH CONGRESS
1ST SESSION

H. R. 586

To enable the United States to maintain its leadership in aeronautics and aviation by instituting an initiative to develop technologies that will enable future aircraft with significantly lower noise, emissions, and fuel consumption; to reinvigorate basic and applied research in aeronautics and aviation, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

FEBRUARY 5, 2003

Mr. LARSON of Connecticut (for himself, Mr. FORBES, Mr. WELDON of Pennsylvania, Ms. ESHOO, Mr. SCHROCK, Mr. HONDA, Mrs. JO ANN DAVIS of Virginia, Mr. McDERMOTT, Mr. SIMMONS, and Ms. WOOLSEY) introduced the following bill; which was referred to the Committee on Science

A BILL

To enable the United States to maintain its leadership in aeronautics and aviation by instituting an initiative to develop technologies that will enable future aircraft with significantly lower noise, emissions, and fuel consumption; to reinvigorate basic and applied research in aeronautics and aviation, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Aeronautics Research
5 and Development Revitalization Act of 2003”.

1 **SEC. 2. FINDINGS.**

2 The Congress finds the following:

3 (1) It is in the national interest of the United
4 States to maintain international leadership in aero-
5 nautics and aviation.

6 (2) The United States is in danger of losing its
7 leadership in aeronautics and aviation to inter-
8 national competitors.

9 (3) Past Federal investments in aeronautics re-
10 search and development have benefited the economy
11 and national security of the United States, and the
12 quality of life of its citizens.

13 (4) Future growth in aviation increasingly will
14 be constrained by concerns related to aircraft noise,
15 emissions, fuel consumption, and air transportation
16 system congestion.

17 (5) Current and projected levels of Federal in-
18 vestment in aeronautics research and development
19 are not sufficient to address concerns related to the
20 growth of aviation.

21 (6) International competitors have recognized
22 the importance of noise, emissions, fuel consump-
23 tion, and air transportation system congestion in
24 limiting the future growth of aviation and have es-
25 tablished aggressive agendas for addressing each of
26 those concerns.

1 (7) An aggressive initiative by the Federal Gov-
2 ernment to develop technologies that would signifi-
3 cantly reduce aircraft noise, harmful emissions, and
4 fuel consumption would benefit the United States
5 by—

6 (A) improving the competitiveness of the
7 United States aviation industry through the de-
8 velopment of new markets for aviation services
9 and the development of superior aircraft for ex-
10 isting markets;

11 (B) improving the quality of life for our
12 citizens by drastically reducing the level of noise
13 due to aircraft operations;

14 (C) reducing the congestion of the air
15 transportation system by allowing departures
16 and arrivals at currently underutilized airports
17 through the use of environmentally compatible
18 aircraft;

19 (D) reducing the rate at which fossil fuels
20 are consumed;

21 (E) reducing the rate at which greenhouse
22 gases and other harmful gases and particulates
23 are added to the atmosphere by aircraft; and

24 (F) reinvigorating the human capital need-
25 ed to maintain international leadership in aero-

1 nautics and aviation by providing a set of ex-
2 tremely challenging and socially beneficial goals
3 to the next generation of engineers and sci-
4 entists.

5 (8) Long-term progress in aeronautics and avia-
6 tion will require continued Federal investment in
7 fundamental aeronautical research.

8 (9) The Commission on the Future of the
9 United States Aerospace Industry has recommended
10 that “the Federal government significantly increase
11 its investment in basic aerospace research, which en-
12 hances U.S. national security, enables breakthrough
13 capabilities, and fosters an efficient, secure, and safe
14 aerospace transportation system”.

15 (10) Continued research is needed into the
16 flight crew and controller training needed to accom-
17 modate new aircraft and air transportation system
18 technologies and procedures.

19 (11) It is in the interest of the United States
20 to maintain a vigorous capability in basic and ap-
21 plied research and development of technologies re-
22 lated to rotorcraft.

23 (12) Maintenance of United States leadership
24 in aeronautics and aviation will require the produc-
25 tive collaboration of the National Aeronautics and

1 Space Administration, the Federal Aviation Admin-
2 istration, the aviation industry, and the Nation’s
3 universities.

4 (13) Improvements to our understanding of
5 convective weather phenomena and of aircraft wake
6 turbulence would significantly improve the perform-
7 ance of the Nation’s air transportation system.

8 (14) The report entitled “The NASA Aero-
9 nautics Blueprint-Toward a Bold New Era of Avia-
10 tion” provides an excellent statement of the prob-
11 lems facing aviation today, and presents an exciting
12 vision of what can be achieved by investments in
13 aeronautics research and technology. It does not,
14 however, provide a program plan to actually achieve
15 the vision, nor does it address the huge mismatch
16 between current National Aeronautics and Space
17 Administration aeronautics funding and what is re-
18 quired to achieve the vision.

19 **SEC. 3. DEFINITIONS.**

20 For purposes of this Act—

21 (1) the term “FAA” means the Federal Avia-
22 tion Administration;

23 (2) the term “FAA Administrator” means the
24 Administrator of the FAA;

1 to enable the following commercial aircraft performance
2 characteristics:

3 (1) NOISE.—Noise levels on takeoff and on air-
4 port approach and landing that do not exceed ambi-
5 ent noise levels in the absence of flight operations in
6 the vicinity of airports from which such commercial
7 aircraft would normally operate.

8 (2) FUEL EFFICIENCY.—Ten percent improve-
9 ment, compared to aircraft in commercial service as
10 of the date of the enactment of this Act, in each of
11 the following:

12 (A) Specific fuel consumption.

13 (B) Lift to drag ratio.

14 (C) Structural weight fraction.

15 (3) EMISSIONS.—Nitrogen oxides at less than
16 five grams per kilogram of fuel burned.

17 (b) IMPLEMENTATION.—Within 180 days after the
18 date of the enactment of this Act, the NASA Adminis-
19 trator shall provide to the Committee on Science of the
20 House of Representatives and the Committee on Com-
21 merce, Science, and Transportation of the Senate a plan
22 for the implementation of the initiative described in sub-
23 section (a). Such implementation plan shall include—

1 (1) technological roadmaps for achieving each
2 of the performance characteristics specified in sub-
3 section (a);

4 (2) an estimate of the ten-year funding profile
5 required to achieve the objective specified in sub-
6 section (a);

7 (3) a plan for carrying out a formal quantifica-
8 tion of the estimated costs and benefits of each tech-
9 nological option selected for development beyond the
10 initial concept definition phase; and

11 (4) a plan for transferring the technologies to
12 industry, including the identification of requirements
13 for prototype demonstrations, as appropriate.

14 (c) REVIEW.—The NASA Administrator shall enter
15 into an arrangement with the National Research Council
16 for the review, within one year after the date of the enact-
17 ment of this Act, of the adequacy of the implementation
18 plan provided under subsection (b) to achieve the objective
19 described in subsection (a). In addition, the NASA Admin-
20 istrator shall enter into an arrangement with the National
21 Research Council for the review, every three years subse-
22 quent to the initial review under this subsection, of
23 NASA’s progress in achieving the objective described in
24 subsection (a), including recommendations for changes to
25 NASA’s research and development program as needed.

1 The results of each review shall be provided to the Com-
2 mittee on Science of the House of Representatives and the
3 Committee on Commerce, Science, and Transportation of
4 the Senate within 30 days after completion of the review.

5 (d) AUTHORIZATION OF APPROPRIATIONS.—Except
6 as provided in section 109(b), there are authorized to be
7 appropriated to the NASA Administrator to carry out this
8 section—

9 (1) \$125,000,000 for fiscal year 2004;

10 (2) \$150,000,000 for fiscal year 2005;

11 (3) \$175,000,000 for fiscal year 2006;

12 (4) \$200,000,000 for fiscal year 2007; and

13 (5) \$225,000,000 for fiscal year 2008.

14 Of these amounts, at least fifty percent of the annual
15 funding shall be for research and development conducted
16 at universities, industrial research entities, and not-for-
17 profit research consortia.

18 **SEC. 103. ROTORCRAFT RESEARCH AND DEVELOPMENT**

19 **INITIATIVE.**

20 (a) OBJECTIVE.—The NASA Administrator shall es-
21 tablish a rotorcraft initiative with the objective of devel-
22 oping, and demonstrating in a relevant environment, with-
23 in ten years after the date of the enactment of this Act,
24 technologies to enable rotorcraft with the following im-

1 improvements relative to rotorcraft existing as of the date
2 of the enactment of this Act:

3 (1) 60 percent reduction in noise levels on take-
4 off and on approach and landing as perceived by a
5 human observer.

6 (2) Factor of ten reduction in maximum vibra-
7 tion.

8 (3) 30 percent reduction in empty weight.

9 (4) 90 percent reduction in rotorcraft accident
10 rate compared to 2002.

11 (5) Capability for full all-weather operations,
12 including zero-ceiling, zero-visibility operations and
13 routine flight in icing conditions.

14 (6) Double the density altitude envelope, rel-
15 ative to 2002 capabilities, for rotorcraft operations.

16 (b) IMPLEMENTATION.—Within 180 days after the
17 date of the enactment of this Act, the NASA Adminis-
18 trator shall provide a plan to the Committee on Science
19 of the House of Representatives and to the Committee on
20 Commerce, Science, and Transportation of the Senate for
21 the implementation of the initiative described in sub-
22 section (a). The implementation plan shall include—

23 (1) technological roadmaps for achieving each
24 of the improvements specified in subsection (a);

1 (2) an estimate of the ten-year funding profile
2 required to achieve the objective specified in sub-
3 section (a);

4 (3) a plan for carrying out a formal quantifica-
5 tion of the estimated costs and benefits of each tech-
6 nological option selected for development beyond the
7 initial concept definition phase; and

8 (4) a plan for transferring the technologies to
9 industry, including the identification of requirements
10 for prototype demonstrations, as appropriate.

11 (c) AUTHORIZATION OF APPROPRIATIONS.—Except
12 as provided in section 109(b), there are authorized to be
13 appropriated to the NASA Administrator to carry out this
14 section—

15 (1) \$40,000,000 for fiscal year 2004;

16 (2) \$40,000,000 for fiscal year 2005;

17 (3) \$40,000,000 for fiscal year 2006;

18 (4) \$50,000,000 for fiscal year 2007; and

19 (5) \$70,000,000 for fiscal year 2008.

20 **SEC. 104. CIVIL SUPERSONIC TRANSPORT RESEARCH AND**
21 **DEVELOPMENT INITIATIVE.**

22 (a) OBJECTIVE.—The NASA Administrator shall es-
23 tablish an initiative with the objective of developing, and
24 demonstrating in a relevant environment, within twenty
25 years after the date of the enactment of this Act, tech-

1 nologies to enable overland flight of supersonic civil trans-
2 port aircraft with at least the following performance char-
3 acteristics:

4 (1) Mach number of at least 1.6.

5 (2) Range of at least 4,000 nautical miles.

6 (3) Payload of at least 150 passengers.

7 (4) Noise levels on takeoff and on airport ap-
8 proach and landing that meet community noise
9 standards in place at airports from which such com-
10 mercial supersonic aircraft would normally operate
11 at the time the aircraft would enter commercial serv-
12 ice.

13 (5) Shaped signature sonic boom overpressure
14 sufficiently low enough to permit overland flight over
15 populated areas.

16 (6) Nitrogen oxide emissions of less than 15
17 grams per kilogram of fuel burned.

18 (7) Water vapor emissions for stratospheric
19 flight of no greater than 1400 grams per kilogram
20 of fuel burned.

21 (b) IMPLEMENTATION.—Within 180 days after the
22 date of the enactment of this Act, the NASA Adminis-
23 trator shall provide to the Committee on Science of the
24 House of Representatives and to the Committee on Com-
25 merce, Science, and Transportation of the Senate a plan

1 for the implementation of the initiative described in sub-
2 section (a). Such implementation plan shall include—

3 (1) technological roadmaps for achieving each
4 of the performance characteristics specified in sub-
5 section (a);

6 (2) an estimate of the ten-year funding profile
7 required to achieve the objective specified in sub-
8 section (a);

9 (3) a plan for carrying out a formal quantifica-
10 tion of the estimated costs and benefits of each tech-
11 nological option selected for development beyond the
12 initial concept definition phase;

13 (4) a plan for transferring the technologies to
14 industry, including the identification of requirements
15 for prototype demonstrations, as appropriate;

16 (5) a plan for research to quantify, within 3
17 years after the date of the enactment of this Act, the
18 limits on sonic boom parameters, such as over-
19 pressure and rise time, that would be acceptable to
20 the general public; and

21 (6) a plan for adjusting the noise reduction re-
22 search and development activities as needed to ac-
23 commodate changes in community noise standards
24 that may occur over the lifetime of the initiative.

1 (c) AUTHORIZATION OF APPROPRIATIONS.—Except
2 as provided in section 109(b), there are authorized to be
3 appropriated to the NASA Administrator to carry out this
4 section—

5 (1) \$15,000,000 for fiscal year 2004;

6 (2) \$20,000,000 for fiscal year 2005;

7 (3) \$30,000,000 for fiscal year 2006;

8 (4) \$30,000,000 for fiscal year 2007; and

9 (5) \$30,000,000 for fiscal year 2008.

10 **SEC. 105. UNIVERSITY-BASED CENTERS FOR RESEARCH ON**
11 **AVIATION TRAINING.**

12 (a) IN GENERAL.—The NASA Administrator shall
13 award grants to institutions of higher education (or con-
14 sortia thereof) to establish one or more Centers for Re-
15 search on Aviation Training.

16 (b) PURPOSE.—The purpose of the Centers shall be
17 to investigate the impact of new technologies and proce-
18 dures, particularly those related to the aircraft flight deck
19 and to the air traffic management functions, on training
20 requirements for pilots and air traffic controllers.

21 (c) APPLICATION.—An institution of higher edu-
22 cation (or a consortium of such institutions) seeking fund-
23 ing under this section shall submit an application to the
24 NASA Administrator at such time, in such manner, and
25 containing such information as the NASA Administrator

1 may require, including, at a minimum, a five-year research
2 plan.

3 (d) AWARD DURATION.—An award made by the
4 NASA Administrator under this section shall be for a pe-
5 riod of five years and may be renewed on the basis of—

6 (1) satisfactory performance in meeting the
7 goals of the research plan proposed by the Center in
8 its application under subsection (c); and

9 (2) other requirements as specified by the Ad-
10 ministrator.

11 (e) AUTHORIZATION OF APPROPRIATIONS.—Except
12 as provided in section 109(b), there are authorized to be
13 appropriated to the NASA Administrator to carry out this
14 section—

15 (1) \$5,000,000 for fiscal year 2004;

16 (2) \$5,000,000 for fiscal year 2005;

17 (3) \$5,000,000 for fiscal year 2006;

18 (4) \$5,000,000 for fiscal year 2007; and

19 (5) \$5,000,000 for fiscal year 2008.

20 **SEC. 106. NASA AERONAUTICS SCHOLARSHIPS.**

21 (a) OBJECTIVE.—The NASA Administrator shall es-
22 tablish a program of scholarships for full-time graduate
23 students who are United States citizens and are enrolled
24 in, or have been accepted by and have indicated their in-
25 tention to enroll in, accredited Masters degree programs

1 in aeronautical engineering at institutions of higher edu-
2 cation. Each such scholarship shall cover the costs of
3 room, board, tuition, and fees, and may be provided for
4 a maximum of two years.

5 (b) IMPLEMENTATION.—Within 180 days after the
6 date of the enactment of this Act, the NASA Adminis-
7 trator shall publish regulations governing the scholarship
8 program.

9 (c) COOPERATIVE TRAINING OPPORTUNITIES.—Stu-
10 dents who have been awarded a scholarship under this sec-
11 tion shall have the opportunity for paid employment at
12 one of the NASA Centers engaged in aeronautics research
13 and development during the summer prior to the first year
14 of the student's Masters program, and between the first
15 and second year, if applicable.

16 (d) AUTHORIZATION OF APPROPRIATIONS.—Except
17 as provided in section 109(b), there are authorized to be
18 appropriated to the NASA Administrator to carry out this
19 section—

- 20 (1) \$500,000 for fiscal year 2004;
- 21 (2) \$750,000 for fiscal year 2005;
- 22 (3) \$1,000,000 for fiscal year 2006;
- 23 (4) \$1,000,000 for fiscal year 2007; and
- 24 (5) \$1,000,000 for fiscal year 2008.

1 **SEC. 107. AVIATION WEATHER RESEARCH.**

2 There are authorized to be appropriated to the NASA
3 Administrator \$10,000,000 for each of the fiscal years
4 2004 through 2008 for collaborative research with the Na-
5 tional Oceanic and Atmospheric Administration on convec-
6 tive weather events, with the goal of improving the reli-
7 ability of two to six hour aviation weather forecasts to a
8 level of at least 0.75.

9 **SEC. 108. AIR TRAFFIC MANAGEMENT SYSTEM RESEARCH.**

10 There are authorized to be appropriated to the NASA
11 Administrator \$40,000,000 for each of the fiscal years
12 2004 through 2008 to carry out collaborative research
13 with the FAA and with other Federal agencies as appro-
14 priate in accordance with the research plan developed
15 under section 301(b).

16 **SEC. 109. AUTHORIZATION OF APPROPRIATIONS.**

17 (a) TOTAL AUTHORIZATION.—The total amounts au-
18 thorized to be appropriated for aeronautics research, de-
19 velopment, and demonstration activities at NASA, includ-
20 ing the amounts authorized by this Act, are—

- 21 (1) \$675,000,000 for fiscal year 2004;
22 (2) \$750,000,000 for fiscal year 2005;
23 (3) \$900,000,000 for fiscal year 2006;
24 (4) \$1,050,000,000 for fiscal year 2007; and
25 (5) \$1,150,000,000 for fiscal year 2008.

1 (b) LIMITATION.—All amounts authorized to be ap-
2 propriated by this title are for research and development
3 activities and do not include amounts required to support
4 the labor, travel, research operations support, environ-
5 mental compliance, and nonprogrammatic construction of
6 facilities activities of the Office of Aeronautics.

7 **TITLE II—FEDERAL AVIATION**
8 **ADMINISTRATION RESEARCH**
9 **AND DEVELOPMENT**

10 **SEC. 201. AUTHORIZATION OF APPROPRIATIONS.**

11 (a) AMOUNTS AUTHORIZED.—Section 48102(a) of
12 title 49, United States Code, is amended—

13 (1) by striking “and” at the end of paragraph
14 (7);

15 (2) by striking the period at the end of para-
16 graph (8) and inserting a semicolon; and

17 (3) by adding at the end the following:

18 “(9) for fiscal year 2004, \$366,100,000, includ-
19 ing—

20 “(A) \$25,500,000 for weather projects and
21 activities;

22 “(B) \$81,600,000 for aircraft safety tech-
23 nology projects and activities;

24 “(C) \$27,300,000 for human factors and
25 aviation medicine projects and activities;

1 “(D) \$30,000,000 for environment and en-
2 ergy projects and activities; and

3 “(E) \$35,000,000 to carry out collabo-
4 rative research with the National Aeronautics
5 and Space Administration and with other Fed-
6 eral agencies as appropriate in accordance with
7 the research plan developed under section
8 301(b) of the Aeronautics Research and Devel-
9 opment Revitalization Act of 2003;

10 “(10) for fiscal year 2005, \$410,000,000, in-
11 cluding—

12 “(A) \$30,600,000 for weather projects and
13 activities;

14 “(B) \$90,100,000 for aircraft safety tech-
15 nology projects and activities;

16 “(C) \$30,200,000 for human factors and
17 aviation medicine projects and activities;

18 “(D) \$37,500,000 for environment and en-
19 ergy projects and activities; and

20 “(E) \$35,000,000 to carry out collabo-
21 rative research with the National Aeronautics
22 and Space Administration and with other Fed-
23 eral agencies as appropriate in accordance with
24 the research plan developed under section

1 301(b) of the Aeronautics Research and Devel-
2 opment Revitalization Act of 2003;

3 “(11) for fiscal year 2006, \$462,000,000, in-
4 cluding—

5 “(A) \$37,000,000 for weather projects and
6 activities;

7 “(B) \$99,800,000 for aircraft safety tech-
8 nology projects and activities;

9 “(C) \$33,500,000 for human factors and
10 aviation medicine projects and activities;

11 “(D) \$47,000,000 for environment and en-
12 ergy projects and activities; and

13 “(E) \$35,000,000 to carry out collabo-
14 rative research with the National Aeronautics
15 and Space Administration and with other Fed-
16 eral agencies as appropriate in accordance with
17 the research plan developed under section
18 301(b) of the Aeronautics Research and Devel-
19 opment Revitalization Act of 2003;

20 “(12) for fiscal year 2007, \$520,000,000, in-
21 cluding \$35,000,000 to carry out collaborative re-
22 search with the National Aeronautics and Space Ad-
23 ministration and with other Federal agencies as ap-
24 propriate in accordance with the research plan devel-
25 oped under section 301(b) of the Aeronautics Re-

1 search and Development Revitalization Act of 2003;
2 and

3 “(13) for fiscal year 2008, \$550,000,000, in-
4 cluding \$35,000,000 to carry out collaborative re-
5 search with the National Aeronautics and Space Ad-
6 ministration and with other Federal agencies as ap-
7 propriate in accordance with the research plan devel-
8 oped under section 301(b) of the Aeronautics Re-
9 search and Development Revitalization Act of
10 2003.”.

11 (b) RESEARCH PRIORITIES.—Section 48102(b) of
12 title 49, United States Code, is amended by adding at the
13 end the following new paragraphs:

14 “(4) Of the amount authorized under subsection
15 (a)(9)—

16 “(A) \$2,000,000 shall be made available for
17 wake turbulence research; and

18 “(B) \$10,000,000 shall be made available for
19 information security research.

20 “(5) Of the amount authorized under subsection
21 (a)(10)—

22 “(A) \$3,000,000 shall be made available for
23 wake turbulence research; and

24 “(B) \$12,000,000 shall be made available for
25 information security research.

1 “(6) Of the amount authorized under subsection
2 (a)(11)—

3 “(A) \$4,000,000 shall be made available for
4 wake turbulence research; and

5 “(B) \$13,200,000 shall be made available for
6 information security research.

7 “(7) The Administrator is authorized to use amounts
8 authorized under subsection (a), regardless of the appro-
9 priations account through which the amounts may be pro-
10 vided, for making grant awards for support of research
11 and development activities.”

12 **TITLE III—STUDIES**

13 **SEC. 301. STUDY OF AIR TRAFFIC MANAGEMENT SYSTEM** 14 **ARCHITECTURES AND RESEARCH PLAN.**

15 (a) STUDY.—(1) The NASA Administrator and the
16 FAA Administrator, in consultation with other Federal
17 agencies as appropriate, shall undertake a joint study to
18 identify and assess the most promising national air traffic
19 management system architecture that would result in an
20 automated and integrated air transportation capability
21 that would triple the capacity of the existing air traffic
22 management system by 2025. In identifying and assessing
23 possible national air traffic management system architec-
24 tures, the study shall take into account the presence of

1 commercial aircraft with the performance characteristics
2 specified in section 102(a).

3 (2) In carrying out this subsection, the NASA Ad-
4 ministrator and FAA Administrator shall seek comments
5 from industry and academia during the study, and shall
6 enter into an arrangement to have the results of the study
7 reviewed by the National Research Council.

8 (b) RESEARCH PLAN AND REPORT.—(1) Based on
9 the study under subsection (a), the NASA Administrator
10 and the FAA Administrator, in consultation with other
11 Federal agencies as appropriate, shall develop a research
12 plan to advance the key technologies that would be re-
13 quired to implement the air traffic management system
14 architecture identified. The plan shall specify the research
15 goals, the responsibilities of the agencies that would be
16 involved in carrying it out, the time period anticipated to
17 achieve the research goals, and the resources required.

18 (2) A report containing the results of the study under
19 subsection (a), the results of the review conducted by the
20 National Research Council under subsection (a)(2), and
21 the research plan under paragraph (1) of this subsection
22 shall be provided to the Committee on Science of the
23 House of Representatives and to the Committee on Com-
24 merce, Science, and Transportation of the Senate within
25 two years after the date of the enactment of this Act.

1 (c) AUTHORIZATION OF APPROPRIATIONS.—There
2 are authorized to be appropriated for fiscal year 2004 for
3 carrying out this section—

4 (1) to the NASA Administrator, \$1,500,000;
5 and

6 (2) to the FAA Administrator, \$1,500,000.

7 **SEC. 302. STUDY OF MARKETS ENABLED BY ENVIRON-**
8 **MENTAL TECHNOLOGIES FOR FUTURE AIR-**
9 **CRAFT.**

10 (a) OBJECTIVE.—The NASA Administrator shall
11 conduct a study to identify and quantify new markets that
12 would be created, as well as existing markets that would
13 be expanded, by the incorporation of the technologies de-
14 veloped pursuant to section 102 into future commercial
15 aircraft. As part of the study, the NASA Administrator
16 shall identify whether any of the performance characteris-
17 ties specified in section 102(a) would need to be made
18 more stringent in order to create new markets or expand
19 existing markets. The NASA Administrator shall seek
20 input from at least the aircraft manufacturing industry,
21 academia, and the airlines in carrying out the study.

22 (b) REPORT.—A report containing the results of the
23 study shall be provided to the Committee on Science of
24 the House of Representatives and to the Committee on
25 Commerce, Science, and Transportation of the Senate

1 within eighteen months after the date of the enactment
2 of this Act.

3 (c) AUTHORIZATION OF APPROPRIATIONS.—There
4 are authorized to be appropriated to the NASA Adminis-
5 trator \$500,000 for carrying out this section.

6 **SEC. 303. ASSESSMENT OF WAKE TURBULENCE RESEARCH**
7 **AND DEVELOPMENT PROGRAM.**

8 (a) ASSESSMENT.—The FAA Administrator shall
9 enter into an arrangement with the National Research
10 Council for an assessment of the FAA’s proposed wake
11 turbulence research and development program. The as-
12 sessment shall address at least the following questions:

13 (1) Are the research and development goals and
14 objectives well defined?

15 (2) Are there any research and development ob-
16 jectives that are not part of FAA’s proposed pro-
17 gram that should be?

18 (3) Will the proposed research and development
19 program enable the achievement of the goals and ob-
20 jectives of the FAA, and of the National Research
21 Council, on schedule and for the proposed level of
22 resources? If not, what adjustments would need to
23 be made?

24 (4) What roles should be played by other Fed-
25 eral agencies, such as NASA and the National Oce-

1 anic and Atmospheric Administration, in wake tur-
2 bulence research and development, and how should
3 those efforts be coordinated with FAA's program?

4 (b) REPORT.—A report containing the results of the
5 assessment shall be provided to the Committee on Science
6 of the House of Representatives and to the Committee on
7 Commerce, Science, and Transportation of the Senate
8 within one year after the date of the enactment of this
9 Act.

10 (c) AUTHORIZATION OF APPROPRIATIONS.—There
11 are authorized to be appropriated to the FAA Adminis-
12 trator for fiscal year 2004 \$500,000 to carry out this sec-
13 tion.

14 **SEC. 304. ASSESSMENT OF FUNDAMENTAL AERONAUTICS**
15 **RESEARCH CAPABILITIES.**

16 (a) ASSESSMENT.—In order to ensure that the Na-
17 tion retains needed capabilities in fundamental aero-
18 dynamics and other areas of fundamental aeronautics re-
19 search, the NASA Administrator shall enter into an ar-
20 rangement with the National Research Council for an as-
21 sessment of the Nation's future requirements for funda-
22 mental aeronautics research and whether the Nation will
23 have a skilled research workforce and research facilities
24 commensurate with those requirements. The assessment
25 shall include an identification of any projected gaps, and

1 recommendations for what steps should be taken by the
2 Federal Government to eliminate those gaps.

3 (b) REPORT.—The NASA Administrator shall trans-
4 mit the assessment, along with NASA’s response to the
5 assessment, to the Committee on Science of the House of
6 Representatives and to the Committee on Commerce,
7 Science, and Transportation of the Senate within 2 years
8 after the date of the enactment of this Act.

9 (c) AUTHORIZATION OF APPROPRIATIONS.—There
10 are authorized to be appropriated to the NASA Adminis-
11 trator \$500,000 for fiscal year 2004 to carry out this sec-
12 tion.

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