

107TH CONGRESS
2D SESSION

H. R. 4653

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

MAY 2, 2002

Mr. LARSON of Connecticut (for himself, Mr. HALL of Texas, Mr. WELDON of Pennsylvania, Mr. HUNTER, Mr. GORDON, Mr. DICKS, Mr. WEINER, Mr. MORAN of Virginia, Mr. MALONEY of Connecticut, Mr. HONDA, Ms. WOOLSEY, Mr. SIMMONS, Mr. TOWNS, Mr. UDALL of Colorado, Mr. HALL of Ohio, Mr. INSLEE, Mr. BAIRD, Mr. DAVIS of Illinois, Ms. RIVERS, and Mrs. CHRISTENSEN) 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,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Aeronautics Research
3 and Development Revitalization Act of 2002”.

4 **SEC. 2. FINDINGS.**

5 The Congress finds the following:

6 (1) It is in the national interest of the United
7 States to maintain international leadership in aero-
8 nautics and aviation.

9 (2) The United States is in danger of losing its
10 leadership in aeronautics and aviation to inter-
11 national competitors.

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

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

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

24 (6) International competitors have recognized
25 the importance of noise, emissions, fuel consump-
26 tion, and air transportation system congestion in

1 limiting the future growth of aviation and have es-
2 tablished aggressive agendas for addressing each of
3 those concerns.

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

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

14 (B) improving the quality of life for our
15 citizens by drastically reducing the level of noise
16 due to aircraft operations;

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

22 (D) reducing the rate at which fossil fuels
23 are consumed;

1 (E) reducing the rate at which greenhouse
2 gases and other harmful gases and particulates
3 are added to the atmosphere by aircraft; and

4 (F) reinvigorating the human capital need-
5 ed to maintain international leadership in aero-
6 nautics and aviation by providing a set of ex-
7 tremely challenging and socially beneficial goals
8 to the next generation of engineers and sci-
9 entists.

10 (8) Long-term progress in aeronautics and avia-
11 tion will require continued Federal investment in
12 fundamental aeronautical research.

13 (9) Continued research is needed into the flight
14 crew and controller training needed to accommodate
15 new aircraft and air transportation system tech-
16 nologies and procedures.

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

21 (11) Maintenance of United States leadership
22 in aeronautics and aviation will require the produc-
23 tive collaboration of the National Aeronautics and
24 Space Administration, the Federal Aviation Admin-

1 istration, the aviation industry, and the Nation’s
2 universities.

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

7 **SEC. 3. DEFINITIONS.**

8 For purposes of this Act—

9 (1) the term “FAA” means the Federal Avia-
10 tion Administration;

11 (2) the term “FAA Administrator” means the
12 Administrator of the FAA;

13 (3) the term “institution of higher education”
14 has the meaning given that term by section 101 of
15 the Higher Education Act of 1965 (20 U.S.C.
16 1001);

17 (4) the term “NASA” means the National Aer-
18 onautics and Space Administration; and

19 (5) the term “NASA Administrator” means the
20 Administrator of NASA.

21 **TITLE I—NASA AERONAUTICS**
22 **RESEARCH AND DEVELOPMENT**

23 **SEC. 101. OFFICE OF AERONAUTICS.**

24 (a) ESTABLISHMENT.—The NASA Administrator
25 shall establish an Office of Aeronautics, which shall be

1 headed by an Associate Administrator reporting directly
2 to the NASA Administrator.

3 (b) FUNCTIONS.—The Office of Aeronautics shall be
4 responsible for planning, budgeting, and managing all aer-
5 onautics research, development, and demonstration activi-
6 ties undertaken by NASA.

7 **SEC. 102. ENVIRONMENTAL AIRCRAFT RESEARCH AND DE-**
8 **VELOPMENT INITIATIVE.**

9 (a) OBJECTIVE.—The NASA Administrator shall es-
10 tablish an initiative with the objective of developing, and
11 demonstrating in a relevant environment, within 10 years
12 after the date of the enactment of this Act, technologies
13 to enable the following commercial aircraft performance
14 characteristics:

15 (1) NOISE.—Noise levels on takeoff and on air-
16 port approach and landing that do not exceed ambi-
17 ent noise levels in the absence of flight operations in
18 the vicinity of airports from which such commercial
19 aircraft would normally operate.

20 (2) FUEL EFFICIENCY.—Ten percent improve-
21 ment, compared to aircraft in commercial service as
22 of the date of the enactment of this Act, in each of
23 the following:

24 (A) Specific fuel consumption.

25 (B) Lift to drag ratio.

1 (C) Structural weight fraction.

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

4 (b) IMPLEMENTATION.—Within 180 days after the
5 date of the enactment of this Act, the NASA Adminis-
6 trator shall provide to the Committee on Science of the
7 House of Representatives and the Committee on Com-
8 merce, Science, and Transportation of the Senate a plan
9 for the implementation of the initiative described in sub-
10 section (a). Such implementation plan shall include—

11 (1) technological roadmaps for achieving each
12 of the performance characteristics specified in sub-
13 section (a);

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

17 (3) a plan for carrying out a formal quantifica-
18 tion of the estimated costs and benefits of each tech-
19 nological option selected for development beyond the
20 initial concept definition phase; and

21 (4) a plan for transferring the technologies to
22 industry, including the identification of requirements
23 for prototype demonstrations, as appropriate.

24 (c) REVIEW.—The NASA Administrator shall enter
25 into an arrangement with the National Research Council

1 for the review, within one year after the date of the enact-
2 ment of this Act, of the adequacy of the implementation
3 plan provided under subsection (b) to achieve the objective
4 described in subsection (a). In addition, the NASA Admin-
5 istrator shall enter into an arrangement with the National
6 Research Council for the review, every three years subse-
7 quent to the initial review under this subsection, of
8 NASA's progress in achieving the objective described in
9 subsection (a), including recommendations for changes to
10 NASA's research and development program as needed.
11 The results of each review shall be provided to the Com-
12 mittee on Science of the House of Representatives and the
13 Committee on Commerce, Science, and Transportation of
14 the Senate within 30 days after completion of the review.

15 (d) AUTHORIZATION OF APPROPRIATIONS.—Except
16 as provided in section 108(b), there are authorized to be
17 appropriated to the NASA Administrator to carry out this
18 section—

19 (1) \$125,000,000 for fiscal year 2003;

20 (2) \$150,000,000 for fiscal year 2004;

21 (3) \$175,000,000 for fiscal year 2005;

22 (4) \$200,000,000 for fiscal year 2006; and

23 (5) \$225,000,000 for fiscal year 2007.

24 Of these amounts, at least fifty percent of the annual
25 funding shall be for research and development conducted

1 at universities, industrial research entities, and not-for-
2 profit research consortia.

3 **SEC. 103. ROTORCRAFT RESEARCH AND DEVELOPMENT**
4 **INITIATIVE.**

5 (a) OBJECTIVE.—The NASA Administrator shall es-
6 tablish a rotorcraft initiative with the objective of devel-
7 oping, and demonstrating in a relevant environment, with-
8 in ten years after the date of the enactment of this Act,
9 technologies to enable rotorcraft with the following im-
10 provements relative to rotorcraft existing as of the date
11 of the enactment of this Act:

12 (1) 80 percent reduction in noise levels on take-
13 off and on approach and landing as perceived by a
14 human observer.

15 (2) Factor of ten reduction in vibration.

16 (3) 30 percent reduction in empty weight.

17 (4) Predicted accident rate equivalent to that of
18 fixed-wing aircraft in commercial service within 10
19 years after the date of the enactment of this Act.

20 (5) Capability for zero-ceiling, zero-visibility op-
21 erations.

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

1 Commerce, Science, and Transportation of the Senate for
2 the implementation of the initiative described in sub-
3 section (a). The implementation plan shall include—

4 (1) technological roadmaps for achieving each
5 of the improvements specified in subsection (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; and

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

16 (c) AUTHORIZATION OF APPROPRIATIONS.—Except
17 as provided in section 108(b), there are authorized to be
18 appropriated to the NASA Administrator to carry out this
19 section—

20 (1) \$40,000,000 for fiscal year 2003;

21 (2) \$40,000,000 for fiscal year 2004;

22 (3) \$40,000,000 for fiscal year 2005;

23 (4) \$50,000,000 for fiscal year 2006; and

24 (5) \$70,000,000 for fiscal year 2007.

1 **SEC. 104. CIVIL SUPERSONIC TRANSPORT RESEARCH AND**
2 **DEVELOPMENT INITIATIVE.**

3 (a) OBJECTIVE.—The NASA Administrator shall es-
4 tablish an initiative with the objective of developing, and
5 demonstrating in a relevant environment, within twenty
6 years after the date of the enactment of this Act, tech-
7 nologies to enable overland flight of supersonic civil trans-
8 port aircraft with at least the following performance char-
9 acteristics:

10 (1) Mach number of at least 1.6.

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

12 (3) Payload of at least 150 passengers.

13 (4) Lift to drag ratio of at least 9.0.

14 (5) Noise levels on takeoff and on airport ap-
15 proach and landing that meet community noise
16 standards in place at airports from which such com-
17 mercial supersonic aircraft would normally operate
18 at the time the aircraft would enter commercial serv-
19 ice.

20 (6) Shaped signature sonic boom overpressure
21 of less than 1.0 pounds per square foot.

22 (7) Nitrogen oxide emissions of less than 15
23 grams per kilogram of fuel burned.

24 (8) Water vapor emissions for stratospheric
25 flight of no greater than 1400 grams per kilogram
26 of fuel burned.

1 (b) IMPLEMENTATION.—Within 180 days after the
2 date of the enactment of this Act, the NASA Adminis-
3 trator shall provide to the Committee on Science of the
4 House of Representatives and to the Committee on Com-
5 merce, Science, and Transportation of the Senate a plan
6 for the implementation of the initiative described in sub-
7 section (a). Such implementation plan shall include—

8 (1) technological roadmaps for achieving each
9 of the performance characteristics specified in sub-
10 section (a);

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

14 (3) a plan for carrying out a formal quantifica-
15 tion of the estimated costs and benefits of each tech-
16 nological option selected for development beyond the
17 initial concept definition phase;

18 (4) a plan for transferring the technologies to
19 industry, including the identification of requirements
20 for prototype demonstrations, as appropriate;

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

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

5 (c) AUTHORIZATION OF APPROPRIATIONS.—Except
6 as provided in section 108(b), there are authorized to be
7 appropriated to the NASA Administrator to carry out this
8 section—

- 9 (1) \$15,000,000 for fiscal year 2003;
10 (2) \$20,000,000 for fiscal year 2004;
11 (3) \$30,000,000 for fiscal year 2005;
12 (4) \$30,000,000 for fiscal year 2006; and
13 (5) \$30,000,000 for fiscal year 2007.

14 **SEC. 105. UNIVERSITY-BASED CENTERS FOR RESEARCH ON**
15 **AVIATION TRAINING.**

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

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

1 (c) APPLICATION.—An institution of higher edu-
2 cation (or a consortium of such institutions) seeking fund-
3 ing under this section shall submit an application to the
4 NASA Administrator at such time, in such manner, and
5 containing such information as the NASA Administrator
6 may require, including, at a minimum, a five-year research
7 plan.

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

11 (1) satisfactory performance in meeting the
12 goals of the research plan proposed by the Center in
13 its application under subsection (c); and

14 (2) other requirements as specified by the Ad-
15 ministrator.

16 (e) AUTHORIZATION OF APPROPRIATIONS.—Except
17 as provided in section 108(b), there are authorized to be
18 appropriated to the NASA Administrator to carry out this
19 section—

20 (1) \$5,000,000 for fiscal year 2003;

21 (2) \$5,000,000 for fiscal year 2004;

22 (3) \$5,000,000 for fiscal year 2005;

23 (4) \$5,000,000 for fiscal year 2006; and

24 (5) \$5,000,000 for fiscal year 2007.

1 **SEC. 106. NASA AERONAUTICS SCHOLARSHIPS.**

2 (a) OBJECTIVE.—The NASA Administrator shall es-
3 tablish a program of scholarships for full-time graduate
4 students who are United States citizens and are enrolled
5 in, or have been accepted by and have indicated their in-
6 tention to enroll in, accredited Masters degree programs
7 in aeronautical engineering at institutions of higher edu-
8 cation. Each such scholarship shall cover the costs of
9 room, board, tuition, and fees, and may be provided for
10 a maximum of two years.

11 (b) IMPLEMENTATION.—Within 180 days after the
12 date of the enactment of this Act, the NASA Adminis-
13 trator shall publish regulations governing the scholarship
14 program.

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

22 (d) AUTHORIZATION OF APPROPRIATIONS.—Except
23 as provided in section 108(b), there are authorized to be
24 appropriated to the NASA Administrator to carry out this
25 section—

26 (1) \$500,000 for fiscal year 2003;

- 1 (2) \$750,000 for fiscal year 2004;
- 2 (3) \$1,000,000 for fiscal year 2005;
- 3 (4) \$1,000,000 for fiscal year 2006; and
- 4 (5) \$1,000,000 for fiscal year 2007.

5 **SEC. 107. AVIATION WEATHER RESEARCH.**

6 There are authorized to be appropriated to the NASA
7 Administrator \$10,000,000 for each of the fiscal years
8 2003 through 2007 for collaborative research with the Na-
9 tional Oceanic and Atmospheric Administration on convec-
10 tive weather events, with the goal of improving the reli-
11 ability of two to six hour aviation weather forecasts to a
12 level of at least 0.75.

13 **SEC. 108. AUTHORIZATION OF APPROPRIATIONS.**

14 (a) TOTAL AUTHORIZATION.—The total amounts au-
15 thorized to be appropriated for aeronautics research, de-
16 velopment, and demonstration activities at NASA, includ-
17 ing the amounts authorized by sections 102 through 108
18 of this Act, are—

- 19 (1) \$675,000,000 for fiscal year 2003;
- 20 (2) \$750,000,000 for fiscal year 2004;
- 21 (3) \$900,000,000 for fiscal year 2005;
- 22 (4) \$1,050,000,000 for fiscal year 2006; and
- 23 (5) \$1,150,000,000 for fiscal year 2007.

24 (b) LIMITATION.—All amounts authorized to be ap-
25 propriated by this title are for research and development

1 activities and do not include amounts required to support
2 the labor, travel, research operations support, environ-
3 mental compliance, and nonprogrammatic construction of
4 facilities activities of the Office of Aeronautics.

5 **TITLE II—FEDERAL AVIATION**
6 **ADMINISTRATION RESEARCH**
7 **AND DEVELOPMENT**

8 **SEC. 201. AUTHORIZATION OF APPROPRIATIONS.**

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

11 (1) by striking “and” at the end of paragraph
12 (7);

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

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

16 “(9) for fiscal year 2003, \$366,100,000,
17 including—

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

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

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

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

1 “(10) for fiscal year 2004, \$410,000,000,
2 including—

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

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

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

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

11 “(11) for fiscal year 2005, \$462,000,000,
12 including—

13 “(A) \$37,000,000 for weather projects and
14 activities;

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

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

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

21 “(12) for fiscal year 2006, \$520,000,000: and

22 “(13) for fiscal year 2007, \$550,000,000.”.

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

1 “(4) Of the amount authorized under subsection
2 (a)(9)—

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

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

7 “(5) Of the amount authorized under subsection
8 (a)(10)—

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

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

13 “(6) Of the amount authorized under subsection
14 (a)(11)—

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

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

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

TITLE III—STUDIES

2 SEC. 301. STUDY OF AIR TRAFFIC MANAGEMENT SYSTEM 3 ARCHITECTURES.

4 (a) OBJECTIVE.—The NASA Administrator and the
5 FAA Administrator, in consultation with other Federal
6 agencies as appropriate, shall undertake a joint study that
7 identifies and assesses national air traffic management
8 system architectures that would be enabled by commercial
9 aircraft with the performance characteristics specified in
10 section 102(a).

11 (b) IMPLEMENTATION.—In carrying out subsection
12 (a), the NASA Administrator and FAA Administrator
13 shall seek comments from industry and academia during
14 the study, and shall enter into an arrangement to have
15 the results of the study reviewed by the National Research
16 Council.

17 (c) REPORT.—A report containing the results of the
18 study and the results of the review conducted by the Na-
19 tional Research Council shall be provided to the Com-
20 mittee on Science of the House of Representatives and to
21 the Committee on Commerce, Science, and Transportation
22 of the Senate within two years after the date of the enact-
23 ment of this Act.

1 (d) AUTHORIZATION OF APPROPRIATIONS.—There
2 are authorized to be appropriated for fiscal year 2003 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 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 2003 to carry out this sec-
12 tion.

○