

110TH CONGRESS
2D SESSION

H. R. 6063

To authorize the programs of the National Aeronautics and Space
Administration, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

MAY 15, 2008

Mr. UDALL of Colorado (for himself, Mr. GORDON of Tennessee, Mr. HALL
of Texas, and Mr. FEENEY) introduced the following bill; which was re-
ferred to the Committee on Science and Technology

A BILL

To authorize the programs of the National Aeronautics and
Space Administration, 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; TABLE OF CONTENTS.**

4 (a) SHORT TITLE.—This Act may be cited as the
5 “National Aeronautics and Space Administration Author-
6 ization Act of 2008”.

7 (b) TABLE OF CONTENTS.—The table of contents for
8 this Act is as follows:

- Sec. 1. Short title; table of contents.
- Sec. 2. Findings.
- Sec. 3. Definitions.

TITLE I—AUTHORIZATION OF APPROPRIATIONS FOR FISCAL
YEAR 2009

Sec. 101. Fiscal year 2009.

TITLE II—EARTH SCIENCE

- Sec. 201. Goal.
- Sec. 202. Governance of United States Earth observations activities.
- Sec. 203. Decadal survey missions.
- Sec. 204. Transitioning experimental research into operational services.
- Sec. 205. Landsat thermal infrared data continuity.
- Sec. 206. Reauthorization of Glory Mission.
- Sec. 207. Plan for disposition of Deep Space Climate Observatory.

TITLE III—AERONAUTICS

- Sec. 301. Environmentally friendly aircraft research and development initiative.
- Sec. 302. Research alignment.
- Sec. 303. Research program to determine perceived impact of sonic booms.
- Sec. 304. External review of NASA's aviation safety-related research programs.
- Sec. 305. Interagency research initiative on the impact of aviation on the climate.
- Sec. 306. Research program on design for certification.
- Sec. 307. Aviation weather research.
- Sec. 308. Joint Aeronautics Research and Development Advisory Committee.
- Sec. 309. Funding for research and development activities in support of other mission directorates.
- Sec. 310. University-based centers for research on aviation training.

TITLE IV—INTERNATIONAL EXPLORATION INITIATIVE

- Sec. 401. Sense of Congress.
- Sec. 402. Stepping stone approach to exploration.
- Sec. 403. Lunar outpost.
- Sec. 404. Exploration technology development.
- Sec. 405. Exploration risk mitigation plan.
- Sec. 406. Exploration crew rescue.
- Sec. 407. Participatory exploration.
- Sec. 408. Science and exploration.

TITLE V—SPACE SCIENCE

- Sec. 501. Technology development.
- Sec. 502. Provision for future servicing of observatory-class scientific spacecraft.
- Sec. 503. Mars exploration.
- Sec. 504. Importance of a balanced science program.
- Sec. 505. Restoration of radioisotope thermoelectric generator material production.
- Sec. 506. Assessment of impediments to interagency cooperation on space and Earth science missions.
- Sec. 507. Assessment of cost growth.

TITLE VI—SPACE OPERATIONS

Subtitle A—International Space Station

- Sec. 601. Utilization.
- Sec. 602. Research management plan.
- Sec. 603. Contingency plan for cargo resupply.

Subtitle B—Space Shuttle

- Sec. 611. Flight manifest.
- Sec. 612. Disposition of shuttle-related assets.
- Sec. 613. Space Shuttle transition liaison office.

Subtitle C—Launch Services

- Sec. 621. Launch services strategy.

TITLE VII—EDUCATION

- Sec. 701. Response to review.
- Sec. 702. External review of Explorer Schools program.

TITLE VIII—NEAR-EARTH OBJECTS

- Sec. 801. In general.
- Sec. 802. Findings.
- Sec. 803. Requests for information.
- Sec. 804. Establishment of policy.
- Sec. 805. Planetary radar capability.
- Sec. 806. Arecibo Observatory.

TITLE IX—COMMERCIAL INITIATIVES

- Sec. 901. Sense of Congress.
- Sec. 902. Commercial crew initiative.

TITLE X—REVITALIZATION OF NASA INSTITUTIONAL
CAPABILITIES

- Sec. 1001. Review of information security controls.
- Sec. 1002. Maintenance and upgrade of Center facilities.
- Sec. 1003. Assessment of NASA laboratory capabilities.

TITLE XI—OTHER PROVISIONS

- Sec. 1101. Space weather.
- Sec. 1102. Space traffic management.
- Sec. 1103. Study of export control policies related to civil and commercial space activities.
- Sec. 1104. Astronaut health care.
- Sec. 1105. National Academies decadal surveys.
- Sec. 1106. Innovation prizes.

1 SEC. 2. FINDINGS.

2 The Congress finds, on this, the 50th anniversary of
3 the establishment of the National Aeronautics and Space
4 Administration, the following:

1 (1) NASA is and should remain a multimission
2 agency with a balanced and robust set of core mis-
3 sions in science, aeronautics, and human space flight
4 and exploration.

5 (2) Investment in NASA's programs will pro-
6 mote innovation through research and development,
7 and will improve the competitiveness of the United
8 States.

9 (3) Investment in NASA's programs, like in-
10 vestments in other Federal science and technology
11 activities, is an investment in our future.

12 (4) Properly structured, NASA's activities can
13 contribute to an improved quality of life, economic
14 vitality, United States leadership in peaceful co-
15 operation with other nations on challenging under-
16 takings in science and technology, national security,
17 and the advancement of knowledge.

18 (5) NASA should assume a leadership role in a
19 cooperative international Earth observations and re-
20 search effort to address key research issues associ-
21 ated with climate change and its impacts on the
22 Earth system.

23 (6) NASA should undertake a program of aero-
24 nautical research, development, and where appro-

1 piate demonstration activities with the overarching
2 goals of—

3 (A) ensuring that the Nation’s future air
4 transportation system can handle up to 3 times
5 the current travel demand and incorporate new
6 vehicle types with no degradation in safety or
7 adverse environmental impact on local commu-
8 nities;

9 (B) protecting the environment;

10 (C) promoting the security of the Nation;

11 and

12 (D) retaining the leadership of the United
13 States in global aviation.

14 (7) Human and robotic exploration of the solar
15 system will be a significant long term undertaking of
16 humanity in the 21st century and beyond, and it is
17 in the national interest that the United States
18 should assume a leadership role in a cooperative
19 international exploration initiative.

20 (8) Developing United States human space
21 flight capabilities to allow independent American ac-
22 cess to the International Space Station, and to ex-
23 plore beyond low Earth orbit, is a strategically im-
24 portant national imperative, and all prudent steps
25 should thus be taken to bring the Orion Crew Explo-

1 ration Vehicle and Ares I Crew Launch Vehicle to
2 full operational capability as soon as practicable.

3 (9) NASA’s scientific research activities have
4 contributed much to the advancement of knowledge,
5 provided societal benefits, and helped train the next
6 generation of scientists and engineers, and those ac-
7 tivities should continue to be an important priority.

8 (10) NASA should make a sustained commit-
9 ment to a robust long-term technology development
10 activity. Such investments represent the critically
11 important “seed corn” on which NASA’s ability to
12 carry out challenging and productive missions in the
13 future will depend.

14 (11) NASA, through its pursuit of challenging
15 and relevant activities, can provide an important
16 stimulus to the next generation to pursue careers in
17 science, technology, engineering, and mathematics.

18 (12) Commercial activities have substantially
19 contributed to the strength of both the United
20 States space program and the national economy, and
21 the development of a healthy and robust United
22 States commercial space sector should continue to be
23 encouraged.

24 (13) It is in the national interest for the United
25 States to have an export control policy that protects

1 the national security while also enabling the United
 2 States aerospace industry to compete effectively in
 3 the global market place and the United States to un-
 4 dertake cooperative programs in science and human
 5 space flight in an effective and efficient manner.

6 **SEC. 3. DEFINITIONS.**

7 In this Act:

8 (1) ADMINISTRATOR.—The term “Adminis-
 9 trator” means the Administrator of NASA.

10 (2) NASA.—The term “NASA” means the Na-
 11 tional Aeronautics and Space Administration.

12 (3) NOAA.—The term “NOAA” means the Na-
 13 tional Oceanic and Atmospheric Administration.

14 (4) OSTP.—The term “OSTP” means the Of-
 15 fice of Science and Technology Policy.

16 **TITLE I—AUTHORIZATION OF**
 17 **APPROPRIATIONS FOR FIS-**
 18 **CAL YEAR 2009**

19 **SEC. 101. FISCAL YEAR 2009.**

20 (a) BASELINE AUTHORIZATION.—There are author-
 21 ized to be appropriated to NASA for fiscal year 2009
 22 \$19,210,000,000, as follows:

23 (1) For Science, \$4,932,200,000, of which—

24 (A) \$1,518,000,000 shall be for Earth
 25 Science, including \$29,200,000 for Suborbital

1 activities and \$2,500,000 for carrying out sec-
2 tion 313 of the National Aeronautics and Space
3 Administration Authorization Act of 2005
4 (Public Law 109–155);

5 (B) \$1,483,000,000 shall be for Planetary
6 Science, including \$486,500,000 for the Mars
7 Exploration program, \$2,000,000 to continue
8 planetary radar operations at the Arecibo Ob-
9 servatory in support of the Near-Earth Object
10 program, and \$5,000,000 for radioisotope ma-
11 terial production, to remain available until ex-
12 pended;

13 (C) \$1,290,400,000 shall be for Astro-
14 physics, including \$27,300,000 for Suborbital
15 activities;

16 (D) \$640,800,000 shall be for
17 Heliophysics, including \$50,000,000 for Sub-
18 orbital activities; and

19 (E) \$75,000,000 shall be for Cross-Science
20 Mission Directorate Technology Development,
21 to be taken on a proportional basis from the
22 funding subtotals under subparagraphs (A),
23 (B), (C), and (D).

1 (2) For Aeronautics, \$853,400,000, of which
2 \$406,900,000 shall be for system-level research, de-
3 velopment, and demonstration activities related to—

4 (A) aviation safety;

5 (B) environmental impact mitigation, in-
6 cluding noise, energy efficiency, and emissions;

7 (C) support of the Next Generation Air
8 Transportation System initiative; and

9 (D) investigation of new vehicle concepts
10 and flight regimes.

11 (3) For Exploration, \$3,886,000,000, of which
12 \$100,000,000 shall be for the activities under sec-
13 tions 902(b) and 902(d); and \$737,800,000 shall be
14 for Advanced Capabilities, including \$106,300,000
15 for the Lunar Precursor Robotic Program,
16 \$276,500,000 for International Space Station-re-
17 lated research and development activities, and
18 \$355,000,000 for research and development activi-
19 ties not related to the International Space Station.

20 (4) For Education, \$128,300,000.

21 (5) For Space Operations, \$6,074,700,000, of
22 which—

23 (A) \$150,000,000 shall be for an addi-
24 tional Space Shuttle flight to deliver the Alpha

1 Magnetic Spectrometer to the International
2 Space Station;

3 (B) \$100,000,000 shall be to augment
4 funding for International Space Station Cargo
5 Services to enhance research utilization of the
6 International Space Station, to remain available
7 until expended; and

8 (C) \$50,000,000 shall be to augment fund-
9 ing for Space Operations Mission Directorate
10 reserves and Shuttle Transition and Retirement
11 activities.

12 (6) For Cross-Agency Support Programs,
13 \$3,299,900,000.

14 (7) For Inspector General, \$35,500,000.

15 (b) ADDITIONAL AUTHORIZATION TO ADDRESS
16 HUMAN SPACE FLIGHT GAP.—In addition to the sums
17 authorized by subsection (a), there are authorized to be
18 appropriated for the purposes described in subsection
19 (a)(3) \$1,000,000,000 for fiscal year 2009, to be used to
20 accelerate the initial operational capability of the Orion
21 Crew Exploration Vehicle and the Ares I Crew Launch
22 Vehicle and associated ground support systems, to remain
23 available until expended.

1 **TITLE II—EARTH SCIENCE**

2 **SEC. 201. GOAL.**

3 The goal for NASA’s Earth Science program shall
4 be to pursue a program of Earth observations, research,
5 and applications activities to better understand the Earth,
6 how it supports life, and how human activities affect its
7 ability to do so in the future. In pursuit of this goal,
8 NASA’s Earth Science program shall ensure that securing
9 practical benefits for society will be an important measure
10 of its success in addition to securing new knowledge about
11 the Earth system and climate change. In further pursuit
12 of this goal, NASA shall assume a leadership role in devel-
13 oping and carrying out a cooperative international Earth
14 observations-based research and applications program.

15 **SEC. 202. GOVERNANCE OF UNITED STATES EARTH OBSER-** 16 **VATIONS ACTIVITIES.**

17 (a) STUDY.—The Director of the OSTP shall enter
18 into an arrangement with the National Academies for a
19 study to determine the most appropriate governance struc-
20 ture for United States Earth Observations programs in
21 order to meet evolving United States Earth information
22 needs and facilitate United States participation in global
23 Earth Observations initiatives.

24 (b) REPORT.—The Director shall transmit the study
25 to the Committee on Science and Technology of the House

1 of Representatives and the Committee on Commerce,
2 Science, and Transportation of the Senate not later than
3 18 months after the date of enactment of this Act, and
4 shall provide OSTP’s plan for implementing the study’s
5 recommendations not later than 24 months after the date
6 of enactment of this Act.

7 **SEC. 203. DECADAL SURVEY MISSIONS.**

8 (a) IN GENERAL.—The missions recommended in the
9 National Academies’ decadal survey “Earth Science and
10 Applications from Space” provide the basis for a compel-
11 ling and relevant program of research and applications,
12 and the Administrator should work to establish an inter-
13 national cooperative effort to pursue those missions.

14 (b) PLAN.—The Administrator shall prepare a plan
15 for submission to Congress not later than 270 days after
16 the date of enactment of this Act that shall describe how
17 NASA intends to implement the missions recommended
18 as described in subsection (a), whether by means of dedi-
19 cated NASA missions, multi-agency missions, inter-
20 national cooperative missions, data sharing, or commercial
21 data buys, or by means of long-term technology develop-
22 ment to determine whether specific missions would be exe-
23 cutable at a reasonable cost and within a reasonable
24 schedule.

1 **SEC. 204. TRANSITIONING EXPERIMENTAL RESEARCH INTO**
2 **OPERATIONAL SERVICES.**

3 (a) SENSE OF CONGRESS.—It is the sense of the Con-
4 gress that experimental NASA sensors and missions that
5 have the potential to benefit society if transitioned into
6 operational monitoring systems be transitioned into oper-
7 ational status whenever possible.

8 (b) INTERAGENCY PROCESS.—The Director of
9 OSTP, in consultation with the Administrator and the Ad-
10 ministrator of NOAA, shall develop a process for Federal
11 agencies to transition, when appropriate, NASA Earth
12 science and space weather missions or sensors into oper-
13 ational status. The process shall include coordination of
14 annual agency budget requests as required to execute the
15 transitions.

16 (c) RESPONSIBLE AGENCY OFFICIAL.—The Adminis-
17 trator and the Administrator of NOAA shall each des-
18 ignate an agency official who shall have the responsibility
19 for and authority to lead NASA's and NOAA's transition
20 activities and interagency coordination.

21 (d) PLAN.—For each mission or sensor that is deter-
22 mined to be appropriate for transition under subsection
23 (b), NASA and NOAA shall transmit to Congress a joint
24 plan for conducting the transition. The plan shall include
25 the strategy, milestones, and budget required to execute
26 the transition. The transition plan shall be transmitted to

1 Congress not later than 60 days after the successful com-
2 pletion of the mission or sensor critical design review.

3 **SEC. 205. LANDSAT THERMAL INFRARED DATA CON-**
4 **TINUITY.**

5 (a) PLAN.—In view of the importance of Landsat
6 thermal infrared data for both scientific research and
7 water management applications, the Administrator shall
8 prepare a plan for ensuring the continuity of Landsat
9 thermal infrared data or its equivalent, including alloca-
10 tion of costs and responsibility for the collection and dis-
11 tribution of the data, and a budget plan. As part of the
12 plan, the Administrator shall provide an option for devel-
13 oping a thermal infrared sensor at minimum cost to be
14 flown on the Landsat Data Continuity Mission with min-
15 imum delay to the schedule of the Landsat Data Con-
16 tinuity Mission.

17 (b) DEADLINE.—The plan shall be provided to Con-
18 gress not later than 60 days after the date of enactment
19 of this Act.

20 **SEC. 206. REAUTHORIZATION OF GLORY MISSION.**

21 (a) REAUTHORIZATION.—Congress reauthorizes
22 NASA to continue with development of the Glory Mission,
23 which will examine how aerosols and solar energy affect
24 the Earth's climate.

1 (b) BASELINE REPORT.—Pursuant to the National
2 Aeronautics and Space Administration Authorization Act
3 of 2005 (Public Law 109–155), not later than 90 days
4 after the date of enactment of this Act, the Administrator
5 shall transmit a new baseline report consistent with sec-
6 tion 103(b)(2) of such Act. The report shall include an
7 analysis of the factors contributing to cost growth and the
8 steps taken to address them.

9 **SEC. 207. PLAN FOR DISPOSITION OF DEEP SPACE CLIMATE**
10 **OBSERVATORY.**

11 (a) PLAN.—NASA shall develop a plan for the Deep
12 Space Climate Observatory (DSCOVR), including such
13 options as using the parts of the spacecraft in the develop-
14 ment and assembly of other science missions, transferring
15 the spacecraft to another agency, reconfiguring the space-
16 craft for another Earth science mission, establishing a
17 public-private partnership for the mission, and entering
18 into an international cooperative partnership to use the
19 spacecraft for its primary or other purposes. The plan
20 shall include an estimate of budgetary resources and
21 schedules required to implement each of the options.

22 (b) CONSULTATION.—NASA shall consult, as nec-
23 essary, with other Federal agencies, industry, academic in-
24 stitutions, and international space agencies in developing
25 the plan.

1 (c) REPORT.—The Administrator shall transmit the
2 plan required under subsection (a) to the Committee on
3 Science and Technology of the House of Representatives
4 and the Committee on Commerce, Science, and Transpor-
5 tation of the Senate not later than 180 days after the date
6 of enactment of this Act.

7 **TITLE III—AERONAUTICS**

8 **SEC. 301. ENVIRONMENTALLY FRIENDLY AIRCRAFT RE-** 9 **SEARCH AND DEVELOPMENT INITIATIVE.**

10 The Administrator shall establish an initiative of re-
11 search, development, and demonstration, in a relevant en-
12 vironment, of technologies to enable the following commer-
13 cial aircraft performance characteristics:

14 (1) Noise levels on takeoff and on airport ap-
15 proach and landing that do not exceed ambient noise
16 levels in the absence of flight operations in the vicin-
17 ity of airports from which such commercial aircraft
18 would normally operate, without increasing energy
19 consumption or nitrogen oxide emissions compared
20 to aircraft in commercial service as of the date of
21 enactment of this Act.

22 (2) Significant reductions in greenhouse gas
23 emissions compared to aircraft in commercial serv-
24 ices as of the date of enactment of this Act.

1 **SEC. 302. RESEARCH ALIGNMENT.**

2 In addition to pursuing the research and development
3 initiative described in section 301, the Administrator shall,
4 to the maximum extent practicable within available fund-
5 ing, align the fundamental aeronautics research program
6 to address high priority technology challenges of the Na-
7 tional Academies' Decadal Survey of Civil Aeronautics.

8 **SEC. 303. RESEARCH PROGRAM TO DETERMINE PERCEIVED**
9 **IMPACT OF SONIC BOOMS.**

10 (a) IN GENERAL.—The ability to fly commercial air-
11 craft over land at supersonic speeds without adverse im-
12 pacts on the environment or on local communities would
13 open new markets and enable new transportation capabili-
14 ties. In order to have the basis for establishing an appro-
15 priate sonic boom standard for such flight operations, a
16 research program is needed to assess the impact in a rel-
17 evant environment of commercial supersonic flight oper-
18 ations.

19 (b) ESTABLISHMENT.—The Administrator shall es-
20 tablish a cooperative research program with industry, in-
21 cluding the conduct of flight demonstrations in a relevant
22 environment, to collect data on the perceived impact of
23 sonic booms that would enable the promulgation of a
24 standard that would have to be met for overland commer-
25 cial supersonic flight operations.

1 **SEC. 304. EXTERNAL REVIEW OF NASA'S AVIATION SAFETY-**
2 **RELATED RESEARCH PROGRAMS.**

3 (a) REVIEW.—The Administrator shall enter into an
4 arrangement with the National Research Council for an
5 independent review of NASA's aviation safety-related re-
6 search programs. The review shall assess whether—

7 (1) the programs have well-defined, prioritized,
8 and appropriate research objectives;

9 (2) the programs are properly coordinated with
10 the safety research programs of the Federal Aviation
11 Administration and other relevant Federal agencies;

12 (3) the programs have allocated appropriate re-
13 sources to each of the research objectives; and

14 (4) suitable mechanisms exist for transitioning
15 the research results from the programs into oper-
16 ational technologies and procedures and certification
17 activities in a timely manner.

18 (b) REPORT.—Not later than 14 months after the
19 date of enactment of this Act, the Administrator shall sub-
20 mit to the Committee on Science and Technology of the
21 House of Representatives and the Committee on Com-
22 merce, Science, and Transportation of the Senate a report
23 on the results of the review.

1 **SEC. 305. INTERAGENCY RESEARCH INITIATIVE ON THE IM-**
2 **PACT OF AVIATION ON THE CLIMATE.**

3 (a) IN GENERAL.—The Administrator, in coordina-
4 tion with the United States Climate Change Science Pro-
5 gram and other appropriate agencies, shall establish a re-
6 search initiative to assess the impact of aviation on the
7 climate and, if warranted, to evaluate approaches to miti-
8 gate that impact.

9 (b) RESEARCH PLAN.—Not later than 1 year after
10 the date of enactment of this Act, the participating Fed-
11 eral entities shall jointly develop a plan for the research
12 initiative that contains objectives, proposed tasks, mile-
13 stones, and a 5-year budgetary profile.

14 (c) REVIEW.—The Administrator shall enter into an
15 arrangement with the National Research Council for con-
16 ducting an independent review of the interagency research
17 program plan, and shall provide the results of that review
18 to the Committee on Science and Technology of the House
19 of Representatives and the Committee on Commerce,
20 Science, and Transportation of the Senate not later than
21 2 years after the date of enactment of this Act.

22 **SEC. 306. RESEARCH PROGRAM ON DESIGN FOR CERTIFI-**
23 **CATION.**

24 (a) PROGRAM.—Not later than 6 months after the
25 date of enactment of this Act, NASA, in consultation with
26 other appropriate agencies, shall establish a research pro-

1 gram on methods to improve both confidence in and the
2 timeliness of certification of new technologies for their in-
3 troduction into the national airspace system.

4 (b) RESEARCH PLAN.—Not later than 1 year after
5 the date of enactment of this Act, as part of the activity
6 described in subsection (a), NASA shall develop a plan
7 for the research program that contains objectives, pro-
8 posed tasks, milestones, and a 5-year budgetary profile.

9 (c) REVIEW.—The Administrator shall enter into an
10 arrangement with the National Research Council for con-
11 ducting an independent review of the research program
12 plan, and shall provide the results of that review to the
13 Committee on Science and Technology of the House of
14 Representatives and the Committee on Commerce,
15 Science, and Transportation of the Senate not later than
16 2 years after the date of enactment of this Act.

17 **SEC. 307. AVIATION WEATHER RESEARCH.**

18 The Administrator shall establish a program of col-
19 laborative research with NOAA on convective weather
20 events, with the goal of significantly improving the reli-
21 ability of 2-hour to 6-hour aviation weather forecasts.

22 **SEC. 308. JOINT AERONAUTICS RESEARCH AND DEVELOP-**
23 **MENT ADVISORY COMMITTEE.**

24 (a) ESTABLISHMENT.—A joint Aeronautics Research
25 and Development Advisory Committee (in this section re-

1 ferred to as the “Advisory Committee”) shall be estab-
2 lished.

3 (b) DUTIES.—The Advisory Committee shall—

4 (1) assess, and make recommendations regard-
5 ing, the coordination of research and development
6 activities of NASA and the Federal Aviation Admin-
7 istration;

8 (2) assess, and make recommendations regard-
9 ing, the status of the activities of NASA and the
10 Federal Aviation Administration’s research and de-
11 velopment programs as they relate to the rec-
12 ommendations contained in the National Research
13 Council’s 2006 report entitled “Decadal Survey of
14 Civil Aeronautics”, and the recommendations con-
15 tained in subsequent National Research Council re-
16 ports of a similar nature; and

17 (3) not later than March 15 of each year,
18 transmit a report to the Administrator, the Adminis-
19 trator of the Federal Aviation Administration, the
20 Committee on Science and Technology of the House
21 of Representatives, and the Committee on Com-
22 merce, Science, and Transportation of the Senate on
23 the Advisory Committee’s findings and recommenda-
24 tions under paragraphs (1) and (2).

1 (c) MEMBERSHIP.—The Advisory Committee shall
2 consist of 10 members, none of whom shall be a Federal
3 employee, including—

4 (1) 5 members selected by the Administrator;
5 and

6 (2) 5 members selected by the Chair of the
7 Federal Aviation Administration’s Research, Engi-
8 neering, and Development Advisory Committee
9 (REDACTED).

10 (d) SELECTION PROCESS.—Initial selections under
11 subsection (c) shall be made within 3 months after the
12 date of enactment of this Act. Vacancies shall be filled
13 in the same manner as provided in subsection (c).

14 (e) CHAIRPERSON.—The Advisory Committee shall
15 select a chairperson from among its members.

16 (f) COORDINATION.—The Advisory Committee shall
17 coordinate with the advisory bodies of other Federal agen-
18 cies, which may engage in related research activities.

19 (g) COMPENSATION.—The members of the Advisory
20 Committee shall serve without compensation, but shall re-
21 ceive travel expenses, including per diem in lieu of subsist-
22 ence, in accordance with sections 5702 and 5703 of title
23 5, United States Code.

1 (h) MEETINGS.—The Advisory Committee shall con-
 2 vene, in person or by electronic means, at least 4 times
 3 per year.

4 (i) QUORUM.—A majority of the members serving on
 5 the Advisory Committee shall constitute a quorum for pur-
 6 poses of conducting the business of the Advisory Com-
 7 mittee.

8 (j) DURATION.—Section 14 of the Federal Advisory
 9 Committee Act shall not apply to the Advisory Committee.

10 **SEC. 309. FUNDING FOR RESEARCH AND DEVELOPMENT**

11 **ACTIVITIES IN SUPPORT OF OTHER MISSION**

12 **DIRECTORATES.**

13 Research and development activities performed by the
 14 Aeronautics Research Mission Directorate with the pri-
 15 mary objective of assisting in the development of a flight
 16 project in another Mission Directorate shall be funded by
 17 the Mission Directorate seeking assistance.

18 **SEC. 310. UNIVERSITY-BASED CENTERS FOR RESEARCH ON**

19 **AVIATION TRAINING.**

20 Section 427(a) of the National Aeronautics and
 21 Space Administration Authorization Act of 2005 (Public
 22 Law 109–155) is amended by striking “may” and insert-
 23 ing “shall”.

1 **TITLE IV—INTERNATIONAL**
2 **EXPLORATION INITIATIVE**

3 **SEC. 401. SENSE OF CONGRESS.**

4 It is the sense of Congress that the President of the
5 United States should invite America’s friends and allies
6 to participate in a long-term international initiative under
7 the leadership of the United States to expand human and
8 robotic presence into the solar system, including the explo-
9 ration and utilization of the Moon, near Earth asteroids,
10 Lagrangian points, and eventually Mars and its moons,
11 among other exploration and utilization goals.

12 **SEC. 402. STEPPING STONE APPROACH TO EXPLORATION.**

13 In order to maximize the cost-effectiveness of the
14 long-term exploration and utilization activities of the
15 United States, the Administrator shall take all necessary
16 steps to ensure that activities in its lunar exploration pro-
17 gram shall be designed and implemented in a manner that
18 gives strong consideration to how those activities might
19 also help meet the requirements of future exploration and
20 utilization activities beyond the Moon. The timetable of
21 the lunar phase of the long-term international exploration
22 initiative shall be determined by the availability of funding
23 and agreement on an international cooperative framework
24 for the conduct of the international exploration initiative.
25 However, once an exploration-related project enters its de-

1 velopment phase, the Administrator shall seek, to the max-
2 imum extent practicable, to complete that project without
3 undue delays.

4 **SEC. 403. LUNAR OUTPOST.**

5 (a) ESTABLISHMENT.—As NASA works toward the
6 establishment of a lunar outpost, NASA shall make no
7 plans that would require a lunar outpost to be occupied
8 to maintain its viability. Any such outpost shall be oper-
9 able as a human-tended facility capable of remote or au-
10 tonomous operation for extended periods.

11 (b) DESIGNATION.—The United States portion of the
12 first human-tended outpost established on the surface of
13 the Moon shall be designated the “Neil A. Armstrong
14 Lunar Outpost”.

15 (c) CONGRESSIONAL INTENT.—It is the intent of
16 Congress that NASA shall make use of commercial serv-
17 ices to the maximum extent practicable in support of its
18 lunar outpost activities.

19 **SEC. 404. EXPLORATION TECHNOLOGY DEVELOPMENT.**

20 (a) IN GENERAL.—A robust program of long-term
21 exploration-related technology research and development
22 will be essential for the success and sustainability of any
23 enduring initiative of human and robotic exploration of the
24 solar system.

1 (b) ESTABLISHMENT.—The Administrator shall es-
2 tablish and maintain a program of long-term exploration-
3 related technology research and development that is not
4 tied to specific flight projects and that has a funding goal
5 of at least 10 percent of the total budget of the Explo-
6 ration Systems Mission Directorate.

7 (c) GOALS.—The long-term technology program shall
8 have the goal of having at least 50 percent of the funding
9 allocated to external grants and contracts with univer-
10 sities, research institutions, and industry.

11 **SEC. 405. EXPLORATION RISK MITIGATION PLAN.**

12 (a) PLAN.—The Administrator shall prepare a plan
13 that identifies and prioritizes the scientific and technical
14 risks that will need to be addressed in carrying out human
15 exploration beyond low Earth orbit and the research and
16 development activities required to address those risks. The
17 plan shall address the role of the International Space Sta-
18 tion in exploration risk mitigation and include a detailed
19 description of the specific steps being taken to utilize the
20 International Space Station for that purpose.

21 (b) REPORT.—The Administrator shall transmit to
22 the Committee on Science and Technology of the House
23 of Representatives and the Committee on Commerce,
24 Science, and Transportation of the Senate the plan de-

1 scribed in subsection (a) not later than one year after the
2 date of enactment of this Act.

3 **SEC. 406. EXPLORATION CREW RESCUE.**

4 In order to maximize the ability to rescue astronauts
5 whose space vehicles have become disabled, the Adminis-
6 trator shall enter into discussions with the appropriate
7 representatives of spacefaring nations who have or plan
8 to have crew transportation systems capable of orbital
9 flight or flight beyond low Earth orbit for the purpose of
10 agreeing on a common docking system standard.

11 **SEC. 407. PARTICIPATORY EXPLORATION.**

12 (a) IN GENERAL.—The Administrator shall develop
13 a technology plan to enable dissemination of information
14 to the public to allow the public to experience missions
15 to the Moon, Mars, or other bodies within our solar system
16 by leveraging advanced exploration technologies. The plan
17 shall identify opportunities to leverage technologies in
18 NASA’s Constellation systems that deliver a rich, multi-
19 media experience to the public, and that facilitate partici-
20 pation by the public, the private sector, and international
21 partners. Technologies for collecting high-definition video,
22 3-dimensional images, and scientific data, along with the
23 means to rapidly deliver this content through extended
24 high bandwidth communications networks shall be consid-
25 ered as part of this plan. It shall include a review of high

1 bandwidth radio and laser communications, high-defini-
2 tion video, stereo imagery, 3-dimensional scene cameras,
3 and Internet routers in space, from orbit, and on the lunar
4 surface. The plan shall also consider secondary cargo ca-
5 pability for technology validation and science mission op-
6 portunities. In addition, the plan shall identify opportuni-
7 ties to develop and demonstrate these technologies on the
8 International Space Station and robotic missions to the
9 Moon.

10 (b) REPORT.—Not later than 270 days after the date
11 of enactment of this Act, the Administrator shall submit
12 the plan to the Committee on Science and Technology of
13 the House of Representatives and the Committee on Com-
14 merce, Science, and Transportation of the Senate.

15 **SEC. 408. SCIENCE AND EXPLORATION.**

16 It is the sense of Congress that NASA’s scientific and
17 human exploration activities are synergistic, i.e. science
18 enables exploration and human exploration enables
19 science. The Congress encourages the Administrator to co-
20 ordinate, where practical, NASA’s science and exploration
21 activities with the goal of maximizing the success of
22 human exploration initiatives and furthering our under-
23 standing of the Universe that we explore.

TITLE V—SPACE SCIENCE

SEC. 501. TECHNOLOGY DEVELOPMENT.

The Administrator shall establish a cross-Directorate long-term technology development program for space and Earth science within the Science Mission Directorate for the development of new technology. The program shall be independent of the flight projects under development. NASA shall have a goal of funding the cross-Directorate technology development program at a level of 5 percent of the total Science Mission Directorate annual budget. The program shall be structured to include competitively awarded grants and contracts.

SEC. 502. PROVISION FOR FUTURE SERVICING OF OBSERVATORY-CLASS SCIENTIFIC SPACECRAFT.

The Administrator shall take all necessary steps to ensure that provision is made in the design and construction of all future observatory-class scientific spacecraft intended to be deployed in Earth orbit or at a Lagrangian point in space for robotic or human servicing and repair.

SEC. 503. MARS EXPLORATION.

Congress reaffirms its support for a systematic, integrated program of exploration of the Martian surface to examine the planet whose surface is most like Earth's, to search for evidence of past or present life, and to examine

1 Mars for future habitability and as a long-term goal for
2 future human exploration.

3 **SEC. 504. IMPORTANCE OF A BALANCED SCIENCE PRO-**
4 **GRAM.**

5 It is the sense of Congress that a balanced and ade-
6 quately funded set of activities, consisting of NASA's re-
7 search and analysis grants programs, technology develop-
8 ment, small, medium-sized, and large space science mis-
9 sions, and suborbital research activities, contributes to a
10 robust and productive science program and serves as a
11 catalyst for innovation. It is further the sense of Congress
12 that suborbital flight activities, including the use of sound-
13 ing rockets, aircraft, and high-altitude balloons, offer valu-
14 able opportunities to advance science, train the next gen-
15 eration of scientists and engineers, and provide opportuni-
16 ties for participants in the programs to acquire skills in
17 systems engineering and systems integration that are crit-
18 ical to maintaining the Nation's leadership in space pro-
19 grams. The Congress believes that it is in the national in-
20 terest to expand the size of NASA's suborbital research
21 program.

1 **SEC. 505. RESTORATION OF RADIOISOTOPE THERMO-**
2 **ELECTRIC GENERATOR MATERIAL PRODUC-**
3 **TION.**

4 (a) PLAN.—The Director of OSTP shall develop a
5 plan for restarting and sustaining the domestic production
6 of radioisotope thermoelectric generator material for deep
7 space and other space science missions.

8 (b) REPORT.—The plan developed under subsection
9 (a) shall be transmitted to Congress not later than 270
10 days after the date of enactment of this Act.

11 **SEC. 506. ASSESSMENT OF IMPEDIMENTS TO INTERAGENCY**
12 **COOPERATION ON SPACE AND EARTH**
13 **SCIENCE MISSIONS.**

14 (a) ASSESSMENT.—The Administrator shall enter
15 into an arrangement with the National Academies to as-
16 sess impediments to the successful conduct of interagency
17 cooperation on space and Earth science missions, to pro-
18 vide lessons learned and best practices, and to recommend
19 steps to help facilitate successful interagency collabora-
20 tions on space and Earth science missions.

21 (b) REPORT.—The report of the assessment carried
22 out under subsection (a) shall be transmitted to the Com-
23 mittee on Science and Technology of the House of Rep-
24 resentatives and the Committee on Commerce, Science,
25 and Transportation of the Senate not later than 15
26 months after the date of enactment of this Act.

1 **SEC. 507. ASSESSMENT OF COST GROWTH.**

2 (a) STUDY.—The Administrator shall enter into an
3 arrangement for an independent external assessment to
4 identify the primary causes of cost growth in the large,
5 medium-sized, and small space and Earth science space-
6 craft mission classes, and make recommendations as to
7 what changes, if any, should be made to contain costs and
8 ensure frequent mission opportunities in NASA’s science
9 spacecraft mission programs.

10 (b) REPORT.—The report of the assessment con-
11 ducted under subsection (a) shall be submitted to Con-
12 gress not later than 15 months after the date of enactment
13 of this Act.

14 **TITLE VI—SPACE OPERATIONS**
15 **Subtitle A—International Space**
16 **Station**

17 **SEC. 601. UTILIZATION.**

18 The Administrator shall take all necessary steps to
19 ensure that the International Space Station remains a via-
20 ble and productive facility capable of potential United
21 States utilization through at least 2020 and shall take no
22 steps that would preclude its continued operation and uti-
23 lization by the United States after 2016.

24 **SEC. 602. RESEARCH MANAGEMENT PLAN.**

25 (a) RESEARCH MANAGEMENT PLAN.—The Adminis-
26 trator shall develop a research management plan for the

1 International Space Station. The plan shall include a proc-
2 ess for selecting and prioritizing research activities (in-
3 cluding fundamental, applied, commercial, and other re-
4 search) for flight on the International Space Station. This
5 plan shall be used to prioritize resources such as crew
6 time, racks and equipment, and United States access to
7 international research facilities and equipment. The plan
8 shall also identify the organization to be responsible for
9 managing United States research on the International
10 Space Station, including a description of the relationship
11 of the management institution with NASA (e.g., internal
12 NASA office, contract, cooperative agreement, or grant),
13 the estimated length of time for the arrangement, and the
14 budget required to support the management institution.
15 The plan shall be developed in consultation with other
16 Federal agencies, academia, industry, and other relevant
17 stakeholders. The plan shall be transmitted to Congress
18 not later than 12 months after the date of enactment of
19 this Act.

20 (b) ACCESS TO NATIONAL LABORATORY.—The Ad-
21 ministrator shall—

22 (1) establish a process by which to support
23 International Space Station National Laboratory
24 users in identifying their requirements for transpor-
25 tation of research supplies to and from the Inter-

1 national Space Station, and for communicating those
2 requirements to NASA and International Space Sta-
3 tion transportation services providers; and

4 (2) develop an estimate of the transportation
5 requirements needed to support users of the Inter-
6 national Space Station National Laboratory and de-
7 velop a plan for satisfying those requirements by
8 dedicating a portion of volume on NASA supply mis-
9 sions to the International Space Station and mis-
10 sions returning from the International Space Station
11 to Earth.

12 (c) ASSESSMENT.—The Administrator shall—

13 (1) identify existing research equipment and
14 racks and support equipment that are manifested for
15 flight; and

16 (2) provide a detailed description of the status
17 of research equipment and facilities that were com-
18 pleted or in development prior to being cancelled,
19 and provide the budget and milestones for com-
20 pleting and preparing the equipment for flight on
21 the International Space Station.

22 (d) ADVISORY COMMITTEE.—Not later than 1 year
23 after the date of enactment of this Act, the Administrator
24 shall establish an advisory panel under the Federal Advi-
25 sory Committee Act to monitor the activities and manage-

1 ment of the International Space Station National Labora-
2 tory.

3 **SEC. 603. CONTINGENCY PLAN FOR CARGO RESUPPLY.**

4 (a) IN GENERAL.—The International Space Station
5 represents a significant investment of national resources,
6 and it is a facility that embodies a cooperative inter-
7 national approach to the exploration and utilization of
8 space. As such, it is important that its continued viability
9 and productivity be ensured, to the maximum extent pos-
10 sible, after the Space Shuttle is retired.

11 (b) CONTINGENCY PLAN.—The Administrator shall
12 develop a contingency plan and arrangements, including
13 use of International Space Station international partner
14 cargo resupply capabilities, to ensure the continued viabil-
15 ity and productivity of the International Space Station in
16 the event that United States commercial cargo resupply
17 services are not available during any extended period after
18 the date that the Space Shuttle is retired. The plan shall
19 be delivered to the Committee on Science and Technology
20 of the House of Representatives and the Committee on
21 Commerce, Science, and Transportation of the Senate not
22 later than one year after the date of enactment of this
23 Act.

1 **Subtitle B—Space Shuttle**

2 **SEC. 611. FLIGHT MANIFEST.**

3 (a) BASELINE MANIFEST.—In addition to the Space
4 Shuttle flights listed as part of the baseline flight manifest
5 as of January 1, 2008, the Utilization flights ULF–4 and
6 ULF–5 shall be considered part of the Space Shuttle base-
7 line flight manifest and shall be flown prior to the retire-
8 ment of the Space Shuttle.

9 (b) ADDITIONAL FLIGHT TO DELIVER THE ALPHA
10 MAGNETIC SPECTROMETER TO THE INTERNATIONAL
11 SPACE STATION.—In addition to the flying of the baseline
12 manifest as described in subsection (a), the Administrator
13 shall take all necessary steps to fly one additional Space
14 Shuttle flight to deliver the Alpha Magnetic Spectrometer
15 to the International Space Station prior to the retirement
16 of the Space Shuttle.

17 (c) SPACE SHUTTLE RETIREMENT DATE.—The
18 Space Shuttle shall be retired following the completion of
19 the baseline flight manifest and the flight of the additional
20 flight specified in subsection (b), events that are antici-
21 pated to occur in 2010.

22 **SEC. 612. DISPOSITION OF SHUTTLE-RELATED ASSETS.**

23 Not later than 90 days after the date of enactment
24 of this Act, the Administrator shall provide a plan to Con-
25 gress for the disposition of the remaining Space Shuttle

1 orbiters and other Space Shuttle program-related hard-
 2 ware and facilities after the retirement of the Space Shut-
 3 tle fleet. The plan shall include a process by which edu-
 4 cational institutions and science museums and other ap-
 5 propriate organizations may acquire, through loan or dis-
 6 posal by the Federal Government, Space Shuttle program-
 7 related hardware. The Administrator shall not dispose of
 8 any Space Shuttle-related hardware prior to the comple-
 9 tion of the plan.

10 **SEC. 613. SPACE SHUTTLE TRANSITION LIAISON OFFICE.**

11 (a) ESTABLISHMENT.—The Administrator shall es-
 12 tablish an office within NASA’s Office of Human Capital
 13 Management that shall assist local communities affected
 14 by the termination of the Space Shuttle program. The of-
 15 fice shall offer technical assistance and serve as a clearing-
 16 house to assist communities in identifying services avail-
 17 able from other Federal agencies.

18 (b) SUNSET.—The Office established under sub-
 19 section (a) shall cease operations 24 months after the last
 20 Space Shuttle flight.

21 **Subtitle C—Launch Services**

22 **SEC. 621. LAUNCH SERVICES STRATEGY.**

23 (a) IN GENERAL.—In preparation for the award of
 24 contracts to follow up on the current NASA Launch Serv-
 25 ices (NLS) contracts, the Administrator shall develop a

1 strategy for providing domestic commercial launch services
2 in support of NASA's small and medium-sized Science,
3 Space Operations, and Exploration missions, consistent
4 with current law and policy.

5 (b) REPORT.—The Administrator shall transmit a re-
6 port to the Committee on Science and Technology of the
7 House of Representatives and the Committee on Com-
8 merce, Science, and Transportation of the Senate describ-
9 ing the strategy developed under subsection (a) not later
10 than 90 days after the date of enactment of this Act. The
11 report shall provide, at a minimum—

12 (1) the results of the Request for Information
13 on small to medium-sized launch services released on
14 April 22, 2008;

15 (2) an analysis of possible alternatives to main-
16 tain small and medium-sized lift capabilities after
17 June 30, 2010, including the use of the Department
18 of Defense's Evolved Expendable Launch Vehicle
19 (EELV);

20 (3) the recommended alternatives, and associ-
21 ated 5-year budget plans starting in October 2010
22 that would enable their implementation; and

23 (4) a contingency plan in the event the rec-
24 ommended alternatives described in paragraph (3)
25 are not available when needed.

1 **TITLE VII—EDUCATION**

2 **SEC. 701. RESPONSE TO REVIEW.**

3 (a) **PLAN.**—The Administrator shall prepare a plan
4 identifying actions taken or planned in response to the rec-
5 ommendations of the National Academies report,
6 “NASA’s Elementary and Secondary Education Program:
7 Review and Critique”. For those actions that have not
8 been implemented, the plan shall include a schedule and
9 budget required to support the actions.

10 (b) **REPORT.**—The plan prepared under subsection
11 (a) shall be transmitted to the Committee on Science and
12 Technology of the House of Representatives and the Com-
13 mittee on Commerce, Science, and Transportation of the
14 Senate not later than 1 year after the date of enactment
15 of this Act.

16 **SEC. 702. EXTERNAL REVIEW OF EXPLORER SCHOOLS PRO-**
17 **GRAM.**

18 (a) **REVIEW.**—The Administrator shall make ar-
19 rangements for an independent external review of the Ex-
20 plorer Schools program to evaluate its goals, status, plans,
21 and accomplishments.

22 (b) **REPORT.**—The report of the independent external
23 review shall be transmitted to the Committee on Science
24 and Technology of the House of Representatives and the
25 Committee on Commerce, Science, and Transportation of

1 the Senate not later than 1 year after the date of enact-
2 ment of this Act.

3 **TITLE VIII—NEAR-EARTH** 4 **OBJECTS**

5 **SEC. 801. IN GENERAL.**

6 The Congress reaffirms the policy direction estab-
7 lished in the National Aeronautics and Space Administra-
8 tion Authorization Act of 2005 (Public Law 109–155) for
9 NASA to detect, track, catalogue, and characterize the
10 physical characteristics of near-Earth objects equal to or
11 greater than 140 meters in diameter. NASA’s Near-Earth
12 Object program activities will also provide benefits to
13 NASA’s scientific and exploration activities.

14 **SEC. 802. FINDINGS.**

15 Congress makes the following findings:

16 (1) Near-Earth objects pose a serious and cred-
17 ible threat to humankind, as many scientists believe
18 that a major asteroid or comet was responsible for
19 the mass extinction of the majority of the Earth’s
20 species, including the dinosaurs, nearly 65,000,000
21 years ago.

22 (2) Several such near-Earth objects have only
23 been discovered within days of the objects’ closest
24 approach to Earth and recent discoveries of such

1 large objects indicate that many large near-Earth
2 objects remain undiscovered.

3 (3) Asteroid and comet collisions rank as one of
4 the most costly natural disasters that can occur.

5 (4) The time needed to eliminate or mitigate
6 the threat of a collision of a potentially hazardous
7 near-Earth object with Earth is measured in dec-
8 ades.

9 (5) Unlike earthquakes and hurricanes, aster-
10 oids and comets can provide adequate collision infor-
11 mation, enabling the United States to include both
12 asteroid-collision and comet-collision disaster recov-
13 ery and disaster avoidance in its public-safety struc-
14 ture.

15 (6) Basic information is needed for technical
16 and policy decisionmaking for the United States to
17 create a comprehensive program in order to be ready
18 to eliminate and mitigate the serious and credible
19 threats to humankind posed by potentially hazardous
20 near-Earth asteroids and comets.

21 (7) As a first step to eliminate and to mitigate
22 the risk of such collisions, situation and decision
23 analysis processes, as well as procedures and system
24 resources, must be in place well before a collision
25 threat becomes known.

1 **SEC. 803. REQUESTS FOR INFORMATION.**

2 The Administrator shall issue requests for informa-
3 tion on—

4 (1) a low-cost space mission with the purpose of
5 rendezvousing with and characterizing the Apophis
6 asteroid, which scientists estimate will in 2029 pass
7 at a distance from Earth that is closer than geo-
8 stationary satellites; and

9 (2) a medium-sized space mission with the pur-
10 pose of detecting near-Earth objects equal to or
11 greater than 140 meters in diameter.

12 **SEC. 804. ESTABLISHMENT OF POLICY.**

13 The Director of OSTP shall—

14 (1) develop a policy for notifying Federal agen-
15 cies and relevant emergency response institutions of
16 an impending near-Earth object threat, if near term
17 public safety is at stake; and

18 (2) recommend a Federal agency or agencies to
19 be responsible for protecting the Nation from a
20 near-Earth object that is anticipated to collide with
21 Earth and implementing a deflection campaign, in
22 consultation with international bodies, should one be
23 required.

24 **SEC. 805. PLANETARY RADAR CAPABILITY.**

25 The Administrator shall maintain a planetary radar
26 that is, at minimum, comparable to the capability provided

1 through the NASA Deep Space Network Goldstone facil-
2 ity.

3 **SEC. 806. ARECIBO OBSERVATORY.**

4 Congress reiterates its support for the use of the Are-
5 cibo Observatory for NASA-funded near-Earth object-re-
6 lated activities. The Administrator shall ensure the avail-
7 ability of the Arecibo Observatory's planetary radar to
8 support these activities until the National Academies' re-
9 view of NASA's approach for the survey and deflection
10 of near-Earth objects, including a determination of the
11 role of Arecibo, that was directed to be undertaken by the
12 Fiscal Year 2008 Omnibus Appropriations Act, is com-
13 pleted.

14 **TITLE IX—COMMERCIAL**
15 **INITIATIVES**

16 **SEC. 901. SENSE OF CONGRESS.**

17 It is the sense of Congress that a healthy and robust
18 commercial sector can make significant contributions to
19 the successful conduct of NASA's space exploration pro-
20 gram. While some activities are inherently governmental
21 in nature, there are many other activities, such as routine
22 supply of water, fuel, and other consumables to low Earth
23 orbit or to destinations beyond low Earth orbit, and provi-
24 sion of power or communications services to lunar out-
25 posts, that potentially could be carried out effectively and

1 efficiently by the commercial sector at some point in the
2 future. Congress encourages NASA to look for such serv-
3 ice opportunities and, to the maximum extent practicable,
4 make use of the commercial sector to provide those serv-
5 ices.

6 **SEC. 902. COMMERCIAL CREW INITIATIVE.**

7 (a) IN GENERAL.—In order to stimulate commercial
8 use of space, help maximize the utility and productivity
9 of the International Space Station, and enable a commer-
10 cial means of providing crew transfer and crew rescue
11 services for the International Space Station, NASA
12 shall—

13 (1) make use of United States commercially
14 provided International Space Station crew transfer
15 and crew rescue services to the maximum extent
16 practicable, if those commercial services have dem-
17 onstrated the capability to meet NASA-specified as-
18 cent, entry, and International Space Station prox-
19 imity operations safety requirements;

20 (2) limit, to the maximum extent practicable,
21 the use of the Crew Exploration Vehicle to missions
22 carrying astronauts beyond low Earth orbit once
23 commercial crew transfer and crew rescue services
24 that meet safety requirements become operational;

1 (3) facilitate, to the maximum extent prac-
2 ticable, the transfer of NASA-developed technologies
3 to potential United States commercial crew transfer
4 and rescue service providers, consistent with United
5 States law; and

6 (4) issue a notice of intent, not later than 180
7 days after the date of enactment of this Act, to
8 enter into a funded, competitively awarded Space
9 Act Agreement with two or more commercial entities
10 for a Phase 1 Commercial Orbital Transportation
11 Services (COTS) crewed vehicle demonstration pro-
12 gram.

13 (b) COTS AUTHORIZATION OF APPROPRIATIONS.—
14 There are authorized to be appropriated to NASA for the
15 program described in subsection (a)(4) \$50,000,000 for
16 fiscal year 2009, to remain available until expended.

17 (c) CONGRESSIONAL INTENT.—It is the intent of
18 Congress that funding for the program described in sub-
19 section (a)(4) shall not come at the expense of full funding
20 for Orion Crew Exploration Vehicle development, Ares I
21 Crew Launch Vehicle development, or International Space
22 Station cargo delivery.

23 (d) ADDITIONAL TECHNOLOGIES AUTHORIZATION OF
24 APPROPRIATIONS.—There are authorized to be appro-
25 priated to NASA for the provision of International Space

1 Station-compatible docking adaptors and other relevant
 2 technologies to be made available to the commercial crew
 3 providers selected to service the International Space Sta-
 4 tion \$50,000,000, to remain available until expended.

5 (e) CREW TRANSFER AND CREW RESCUE SERVICES
 6 CONTRACT.—If a commercial provider demonstrates the
 7 capability to provide International Space Station crew
 8 transfer and crew rescue services and to satisfy NASA as-
 9 cent, entry, and International Space Station proximity op-
 10 erations safety requirements, NASA shall enter into an
 11 International Space Station crew transfer and crew rescue
 12 services contract with that commercial provider for a por-
 13 tion of NASA’s anticipated International Space Station
 14 crew transfer and crew rescue requirements from the time
 15 the commercial provider commences operations under con-
 16 tract with NASA through calendar year 2016, with an op-
 17 tion to extend the period of performance through calendar
 18 year 2020.

19 **TITLE X—REVITALIZATION OF** 20 **NASA INSTITUTIONAL CAPA-** 21 **BILITIES**

22 **SEC. 1001. REVIEW OF INFORMATION SECURITY CONTROLS.**

23 (a) REPORT ON CONTROLS.—Not later than one year
 24 after the date of enactment of this Act, the Comptroller
 25 General shall transmit to the Committee on Science and

1 Technology of the House of Representatives and the Com-
2 mittee on Commerce, Science, and Transportation of the
3 Senate a review of information security controls that pro-
4 tect NASA's information technology resources and infor-
5 mation from inadvertent or deliberate misuse, fraudulent
6 use, disclosure, modification, or destruction. The review
7 shall focus on networks servicing NASA's mission direc-
8 torates. In assessing these controls, the review shall evalu-
9 ate—

10 (1) the network's ability to limit, detect, and
11 monitor access to resources and information, thereby
12 safeguarding and protecting them from unauthorized
13 access;

14 (2) the physical access to network resources;
15 and

16 (3) the extent to which sensitive research and
17 mission data is encrypted.

18 (b) RESTRICTED REPORT ON INTRUSIONS.—Not
19 later than one year after the date of enactment of this
20 Act, and in conjunction with the report described in sub-
21 section (a), the Comptroller General shall transmit to the
22 Committee on Science and Technology of the House of
23 Representatives and the Committee on Commerce,
24 Science, and Transportation of the Senate a restricted re-
25 port detailing results of vulnerability assessments con-

1 ducted by the Government Accountability Office on
2 NASA's network resources. Intrusion attempts during
3 such vulnerability assessments shall be divulged to NASA
4 senior management prior to their application. The report
5 shall put vulnerability assessment results in the context
6 of unauthorized accesses or attempts during the prior two
7 years and the corrective actions, recent or ongoing, that
8 NASA has implemented in conjunction with other Federal
9 authorities to prevent such intrusions.

10 **SEC. 1002. MAINTENANCE AND UPGRADE OF CENTER FA-**
11 **CILITIES.**

12 (a) IN GENERAL.—In order to sustain healthy Cen-
13 ters that are capable of carrying out NASA's missions,
14 the Administrator shall ensure that adequate maintenance
15 and upgrading of those Center facilities is performed on
16 a regular basis.

17 (b) REVIEW.—The Administrator shall determine
18 and prioritize the maintenance and upgrade backlog at
19 each of NASA's Centers and associated facilities, and shall
20 develop a strategy and budget plan to reduce that mainte-
21 nance and upgrade backlog by 50 percent over the next
22 five years.

23 (c) REPORT.—The Administrator shall deliver a re-
24 port to Congress on the results of the activities undertaken

1 in subsection (b) concurrently with the delivery of the fis-
2 cal year 2011 budget request.

3 **SEC. 1003. ASSESSMENT OF NASA LABORATORY CAPABILI-**
4 **TIES.**

5 (a) IN GENERAL.—NASA’s laboratories are a critical
6 component of NASA’s research capabilities, and the Ad-
7 ministrator shall ensure that those laboratories remain
8 productive.

9 (b) REVIEW.—The Administrator shall enter into an
10 arrangement for an independent external review of
11 NASA’s laboratories, including laboratory equipment, fa-
12 cilities, and support services, to determine whether they
13 are equipped and maintained at a level adequate to sup-
14 port NASA’s research activities. The assessment shall also
15 include an assessment of the relative quality of NASA’s
16 in-house laboratory equipment and facilities compared to
17 comparable laboratories elsewhere.

18 **TITLE XI—OTHER PROVISIONS**

19 **SEC. 1101. SPACE WEATHER.**

20 (a) PLAN FOR REPLACEMENT OF ADVANCED COM-
21 POSITION EXPLORER AT L-1 LAGRANGIAN POINT.—

22 (1) PLAN.—The Director of OSTP shall de-
23 velop a plan for sustaining space-based measure-
24 ments of solar wind from the L-1 Lagrangian point
25 in space and for the dissemination of the data for

1 operational purposes. OSTP shall consult with
2 NASA, NOAA, and other Federal agencies, and with
3 industry, in developing the plan.

4 (2) REPORT.—The Director shall transmit the
5 plan to Congress not later than 1 year after the date
6 of enactment of this Act.

7 (b) RESEARCH PROGRAM ON SPACE WEATHER AND
8 AVIATION.—

9 (1) ESTABLISHMENT.—The Administrator
10 shall, in coordination with the National Science
11 Foundation, NOAA, and other relevant agencies, ini-
12 tiate a research program to—

13 (A) conduct or supervise research projects
14 on impacts of space weather to aviation, includ-
15 ing impacts on communication, navigation,
16 avionic systems, and airline passengers and per-
17 sonnel; and

18 (B) facilitate the transfer of technology
19 from space weather research programs to Fed-
20 eral agencies with operational responsibilities
21 and to the private sector.

22 (2) USE OF GRANTS OR COOPERATIVE AGREE-
23 MENTS.—The Administrator may use grants or co-
24 operative agreements in carrying out this subsection.

1 (c) ASSESSMENT OF THE IMPACT OF SPACE WEATH-
2 ER ON AVIATION.—

3 (1) STUDY.—The Administrator shall enter into
4 an arrangement with the National Research Council
5 for a study of the impacts of space weather on the
6 current and future United States aviation industry,
7 and in particular to examine the risks for Over-The-
8 Pole (OTP) and Ultra-Long-Range (ULR) oper-
9 ations. The study shall—

10 (A) examine space weather impacts on at
11 least communications, navigation, avionics, and
12 human health in flight;

13 (B) assess the benefits of space weather in-
14 formation and services to reduce aviation costs
15 and maintain safety;

16 (C) provide recommendations on how
17 NASA, NOAA, and the National Science Foun-
18 dation can most effectively carry out research
19 and monitoring activities related to space
20 weather and aviation; and

21 (D) provide recommendations on how to
22 integrate space weather information into the
23 Next Generation Air Transportation System.

24 (2) REPORT.—A report containing the results
25 of the study shall be provided to the Committee on

1 Science and Technology of the House of Representa-
2 tives and the Committee on Commerce, Science, and
3 Transportation of the Senate not later than 1 year
4 after the date of enactment of this Act.

5 **SEC. 1102. SPACE TRAFFIC MANAGEMENT.**

6 (a) IN GENERAL.—As more nations acquire the capa-
7 bilities for launching payloads into outer space, there is
8 an increasing need for a framework under which informa-
9 tion intended to promote safe access into outer space, op-
10 erations in outer space, and return from outer space to
11 Earth free from physical or radio-frequency interference
12 can be shared among those nations.

13 (b) DISCUSSIONS.—The Administrator, in consulta-
14 tion with other appropriate agencies of the Federal Gov-
15 ernment, shall initiate discussions with the appropriate
16 representatives of other spacefaring nations with the goal
17 of determining an appropriate framework under which in-
18 formation intended to promote safe access into outer
19 space, operations in outer space, and return from outer
20 space to Earth free from physical or radio-frequency inter-
21 ference can be shared among those nations.

1 **SEC. 1103. STUDY OF EXPORT CONTROL POLICIES RE-**
2 **LATED TO CIVIL AND COMMERCIAL SPACE**
3 **ACTIVITIES.**

4 (a) REVIEW.—The Director of OSTP shall carry out
5 a study of the impact of current export control policies
6 and implementation directives on the United States aero-
7 space industry and its competitiveness in global markets,
8 and on the ability of United States Government agencies
9 to carry out cooperative activities in science and tech-
10 nology and human space flight, including the impact on
11 research carried out under the sponsorship of those agen-
12 cies.

13 (b) CONSULTATION.—In carrying out the study, the
14 Director shall seek input from industry, academia, rep-
15 resentatives of the science community, all affected United
16 States Government agencies, and any other appropriate
17 organizations and individuals.

18 (c) REPORT.—The Director shall provide a report de-
19 tailing the findings and recommendations of the study to
20 the Committee on Science and Technology of the House
21 of Representatives and the Committee on Commerce,
22 Science, and Transportation of the Senate not later than
23 9 months after the date of enactment of this Act.

24 **SEC. 1104. ASTRONAUT HEALTH CARE.**

25 (a) SURVEY.—The Administrator shall administer an
26 anonymous survey of astronauts and flight surgeons to

1 evaluate communication, relationships, and the effective-
2 ness of policies. The survey questions and the analysis of
3 results shall be evaluated by experts independent of
4 NASA. The survey shall be administered on at least a bi-
5 ennial basis.

6 (b) REPORT.—The Administrator shall transmit a re-
7 port of the results of the survey to Congress not later than
8 90 days following completion of the survey.

9 **SEC. 1105. NATIONAL ACADEMIES DECADAL SURVEYS.**

10 (a) IN GENERAL.—The Administrator shall enter
11 into agreements on a periodic basis with the National
12 Academies for independent assessments, also known as
13 decadal surveys, to take stock of the status and opportuni-
14 ties for Earth and space science discipline fields and Aero-
15 nautics research and to recommend priorities for research
16 and programmatic areas over the next decade.

17 (b) INDEPENDENT COST ESTIMATES.—The agree-
18 ments described in subsection(a) shall include independent
19 estimates of the life cycle costs and technical readiness
20 of missions assessed in the decadal surveys whenever pos-
21 sible.

22 (c) REEXAMINATION.—The Administrator shall re-
23 quest that each National Academies decadal survey com-
24 mittee identify any conditions or events, such as signifi-
25 cant cost growth or scientific or technological advances,

1 that would warrant NASA asking the National Academies
2 to reexamine the priorities that the decadal survey had
3 established.

4 **SEC. 1106. INNOVATION PRIZES.**

5 (a) IN GENERAL.—Prizes can play a useful role in
6 encouraging innovation in the development of technologies
7 and products that can assist NASA in its aeronautics and
8 space activities, and the use of such prizes by NASA
9 should be encouraged.

10 (b) AMENDMENTS.—Section 314 of the National Aer-
11 onautics and Space Act of 1958 is amended—

12 (1) by amending subsection (b) to read as fol-
13 lows:

14 “(b) TOPICS.—In selecting topics for prize competi-
15 tions, the Administrator shall consult widely both within
16 and outside the Federal Government, and may empanel
17 advisory committees. The Administrator shall give consid-
18 eration to prize goals such as the demonstration of the
19 ability to provide energy to the lunar surface from space-
20 based solar power systems, demonstration of innovative
21 near-Earth object survey and deflection strategies, and in-
22 novative approaches to improving the safety and efficiency
23 of aviation systems.”; and

- 1 (2) in subsection (i)(4) by striking
- 2 “\$10,000,000” and inserting “\$50,000,000”.

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