

## Calendar No. 628

113TH CONGRESS  
2D SESSION**S. 1317**

To authorize the programs of the National Aeronautics and Space Administration for fiscal years 2014 through 2016 and for other purposes.

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 IN THE SENATE OF THE UNITED STATES

JULY 17, 2013

Mr. NELSON (for himself and Mr. ROCKEFELLER) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

DECEMBER 10, 2014

Reported by Mr. ROCKEFELLER, with an amendment

[Strike out all after the enacting clause and insert the part printed in italic]

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**A BILL**

To authorize the programs of the National Aeronautics and Space Administration for fiscal years 2014 through 2016 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 2013”.~~

- 1 (b) TABLE OF CONTENTS.—The table of contents of  
 2 this Act is as follows:

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

#### TITLE I—AUTHORIZATION OF APPROPRIATIONS

- Sec. 101. Fiscal year 2014.  
 Sec. 102. Fiscal year 2015.  
 Sec. 103. Fiscal year 2016.

#### TITLE II—HUMAN SPACE FLIGHT EXPLORATION AND OPERATIONS

##### Subtitle A—Exploration

- Sec. 201. Missions and destinations.  
 Sec. 202. NASA processing and launch infrastructure.  
 Sec. 203. Naming of the space launch system.  
 Sec. 204. Report; space suit system.

##### Subtitle B—Maximizing ISS Utilization

- Sec. 221. Operation and utilization of the ISS.  
 Sec. 222. Research roles and responsibilities.  
 Sec. 223. ISS national laboratory; property rights in inventions.  
 Sec. 224. Commercial cargo and crew capabilities.

##### Subtitle C—Other Matters

- Sec. 231. Safety and mission assurance in human space flight.  
 Sec. 232. Launch liability provisions.

#### TITLE III—SCIENCE

##### Subtitle A—Earth Science

- Sec. 301. Earth science.

##### Subtitle B—Space Science

- Sec. 321. Human exploration and science collaboration.  
 Sec. 322. Maintaining a balanced space science portfolio.  
 Sec. 323. Science mission extensions.  
 Sec. 324. Planetary science.  
 Sec. 325. Space weather.  
 Sec. 326. James Webb space telescope.  
 Sec. 327. University class science missions.

#### TITLE IV—AERONAUTICS

- Sec. 401. Sense of Congress on NASA aeronautics.

#### TITLE V—SPACE TECHNOLOGY

- Sec. 501. Space technology.

## TITLE VI—EDUCATION

Sec. 601. Education and outreach activities.

## TITLE VII—OTHER MATTERS

Sec. 701. Sense of Congress on NASA's cross agency support.

Sec. 702. Space communications network.

Sec. 703. Astronaut occupational healthcare.

Sec. 704. Helium capture and recovery.

Sec. 705. Information technology governance.

Sec. 706. Improvements to baselines and cost controls breach reporting process.

Sec. 707. Infrastructure.

Sec. 708. Knowledge management.

1 **SEC. 2. FINDINGS.**

2 Congress makes the following findings:

3 (1) A robust and balanced space program en-  
4 hances the United States long-term national and  
5 economic security by—

6 (A) stimulating development of advanced  
7 technologies with widespread applications;

8 (B) increasing the United States techno-  
9 logical competitiveness;

10 (C) enhancing global prosperity and secu-  
11 rity through cooperation in shared interests,  
12 such as advancement of science, understanding  
13 of Earth and the universe, and protection from  
14 space borne threats, such as asteroids;

15 (D) opening the solar system to the full  
16 range of peaceful human activity; and

17 (E) inspiring students to pursue disciplines  
18 in science, technology, engineering, and mathe-  
19 matics.

1           (2) The Nation's space program should in-  
2       clude—

3           (A) national security and civil space activi-  
4       ties;

5           (B) robotic and human exploration;

6           (C) advancement of scientific knowledge  
7       and engagement of the general public;

8           (D) U.S. Government led launch capability  
9       development, including the Space Launch Sys-  
10      tem and the Orion multi-purpose crew vehicle,  
11      and partnerships with commercial and inter-  
12      national entities;

13          (E) advancement of the space frontier and  
14      stimulation of commerce; and

15          (F) searching outward to further our un-  
16      derstanding of the universe and observing  
17      Earth to expand knowledge of our home planet.

18 **SEC. 3. DEFINITIONS.**

19       In this Act:

20           (1) **ADMINISTRATION.**—The term “Administra-  
21      tion” means the National Aeronautics and Space  
22      Administration.

23           (2) **ADMINISTRATOR.**—The term “Adminis-  
24      trator” means the Administrator of the National  
25      Aeronautics and Space Administration.

1           (3) APPROPRIATE COMMITTEES OF CON-  
2           GRESS.—The term “appropriate committees of Con-  
3           gress” means—

4                   (A) the Committee on Commerce, Science,  
5                   and Transportation of the Senate; and

6                   (B) the Committee on Science, Space, and  
7                   Technology of the House of Representatives.

8           (4) ISS.—The term “ISS” means the Inter-  
9           national Space Station.

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

12           (6) ORION.—The term “Orion” means the  
13           multi-purpose crew vehicle described under section  
14           303 of the National Aeronautics and Space Adminis-  
15           tration Authorization Act of 2010 (42 U.S.C.  
16           18323).

17           (7) SPACE LAUNCH SYSTEM.—The term “Space  
18           Launch System” has the meaning given the term  
19           under section 3 of the National Aeronautics and  
20           Space Administration Authorization Act of 2010 (42  
21           U.S.C. 18302).

1       **TITLE I—AUTHORIZATION OF**  
2                   **APPROPRIATIONS**

3       **SEC. 101. FISCAL YEAR 2014.**

4           There are authorized to be appropriated to NASA for  
5 fiscal year 2014, \$18,100,000,000, as follows:

6           (1) For Exploration, \$4,275,000,000, of  
7 which—

8                   (A) \$1,600,000,000 shall be for Space  
9 Launch System;

10                   (B) \$1,200,000,000 shall be for the Orion  
11 multi-purpose crew vehicle;

12                   (C) \$350,000,000 shall be for Exploration  
13 Ground Systems;

14                   (D) \$325,000,000 shall be for Exploration  
15 Research and Development; and

16                   (E) \$800,000,000 shall be for Commercial  
17 Space Flight.

18           (2) For Space Operations, \$3,832,000,000, of  
19 which—

20                   (A) \$3,000,000,000 shall be for the ISS  
21 program; and

22                   (B) \$832,000,000 for Space and Flight  
23 Support.

24           (3) For Science, \$5,154,000,000, of which—

1           (A) \$1,800,000,000 shall be for Earth  
2           Sciences;

3           (B) \$1,400,000,000 shall be for Planetary  
4           Science;

5           (C) \$642,000,000 shall be for Astro-  
6           physics;

7           (D) \$658,000,000 shall be for the James  
8           Webb Space Telescope; and

9           (E) \$654,000,000 shall be for  
10          Heliophysics.

11          (4) For Aeronautics, \$570,000,000.

12          (5) For Space Technology, \$635,000,000.

13          (6) For Education, \$136,000,000.

14          (7) For Cross-Agency Support Programs,  
15          \$2,850,000,000.

16          (8) For Construction and Environmental Com-  
17          pliance and Restoration, \$610,000,000.

18          (9) For Inspector General, \$38,000,000.

19   **SEC. 102. FISCAL YEAR 2015.**

20          There are authorized to be appropriated to NASA for  
21   fiscal year 2015, \$18,462,000,000, as follows

22          (1) For Exploration, \$4,522,000,000, of  
23          which—

24                  (A) \$1,725,000,000 shall be for Space  
25          Launch System;

1           (B) \$1,225,000,000 shall be for the Orion  
2 multi-purpose crew vehicle;

3           (C) \$425,000,000 shall be for Exploration  
4 Ground Systems;

5           (D) \$332,000,000 shall be for Exploration  
6 Research and Development; and

7           (E) \$815,000,000 shall be for Commercial  
8 Space Flight.

9           (2) For Space Operations, \$3,948,000,000, of  
10 which—

11           (A) \$3,103,000,000 shall be for the ISS  
12 program; and

13           (B) \$845,000,000 for Space and Flight  
14 Support.

15           (3) For Science, \$5,234,400,000, of which—

16           (A) \$1,836,000,000 shall be for Earth  
17 Sciences;

18           (B) \$1,450,000,000 shall be for Planetary  
19 Science;

20           (C) \$670,000,000 shall be for Astro-  
21 physics;

22           (D) \$645,400,000 shall be for the James  
23 Webb Space Telescope; and

24           (E) \$633,000,000 shall be for  
25 Heliophysics.



1           (4) For Aeronautics, \$581,000,000.

2           (5) For Space Technology, \$650,000,000.

3           (6) For Education, \$139,800,000.

4           (7) For Cross-Agency Support Programs,  
5           \$2,907,000,000.

6           (8) For Construction and Environmental Com-  
7           pliance and Restoration, \$441,000,000.

8           (9) For Inspector General, \$38,800,000.

9   **SEC. 103. FISCAL YEAR 2016.**

10          There are authorized to be appropriated to NASA for  
11   fiscal year 2016, \$18,831,000,000, as follows:

12           (1) For Exploration, \$4,660,000,000, of  
13   which—

14           (A) \$1,800,000,000 shall be for Space  
15   Launch System;

16           (B) \$1,250,000,000 shall be for the Orion  
17   multi-purpose crew vehicle;

18           (C) \$435,000,000 shall be for Exploration  
19   Ground Systems;

20           (D) \$350,000,000 shall be for Exploration  
21   Research and Development; and

22           (E) \$825,000,000 shall be for Commercial  
23   Space Flight.

24           (2) For Space Operations, \$4,010,000,000, of  
25   which—

1           (A) ~~\$3,196,000,000~~ shall be for the ISS  
2 program; and

3           (B) ~~\$814,000,000~~ for Space and Flight  
4 Support.

5       (3) For Science, ~~\$5,315,800,000~~, of which—

6           (A) ~~\$1,872,000,000~~ shall be for Earth  
7 Sciences;

8           (B) ~~\$1,500,000,000~~ shall be for Planetary  
9 Science;

10          (C) ~~\$686,800,000~~ shall be for Astro-  
11 physics;

12          (D) ~~\$620,000,000~~ shall be for the James  
13 Webb Space Telescope; and

14          (E) ~~\$637,000,000~~ shall be for  
15 Heliophysics.

16       (4) For Aeronautics, ~~\$593,000,000~~.

17       (5) For Space Technology, ~~\$665,000,000~~.

18       (6) For Education, ~~\$142,000,000~~.

19       (7) For Cross-Agency Support Programs,  
20 ~~\$2,965,000,000~~.

21       (8) For Construction and Environmental Com-  
22 pliance and Restoration, ~~\$441,000,000~~.

23       (9) For Inspector General, ~~\$39,200,000~~.

1 **TITLE II—HUMAN SPACE FLIGHT**  
2 **EXPLORATION AND OPER-**  
3 **ATIONS**

4 **Subtitle A—Exploration**

5 **SEC. 201. MISSIONS AND DESTINATIONS.**

6 (a) **IN GENERAL.**—Congress reaffirms that the long-  
7 term goal of the human space flight and exploration ef-  
8 forts of NASA shall be to expand permanent human pres-  
9 ence beyond low-Earth orbit and to do so, where practical,  
10 in a manner involving international partners, as stated in  
11 section 202(a) of the National Aeronautics and Space Ad-  
12 ministration Authorization Act of 2010 (42 U.S.C.  
13 18312(a)).

14 (b) **HUMAN EXPLORATION OF MARS.**—Section  
15 202(b) of the National Aeronautics and Space Administra-  
16 tion Authorization Act of 2010 (42 U.S.C. 18312(b)) is  
17 amended—

18 (1) by striking “and” at the end of paragraph  
19 (3);

20 (2) by striking the period at the end of para-  
21 graph (4) and inserting “; and”; and

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

23 “(5) to achieve human exploration of Mars, in-  
24 cluding the establishment of a capability for human  
25 habitation on the surface of Mars.”.

1       (c) DEVELOPMENT OF EXPLORATION STRATEGY.—

2           (1) IN GENERAL.—Not later than 270 days  
3 after the date of enactment of this Act, and bienni-  
4 ally thereafter, the Administrator shall submit to the  
5 appropriate committees of Congress a strategy to  
6 achieve the objective under section 202(b)(5) of the  
7 National Aeronautics and Space Administration Au-  
8 thorization Act of 2010, as amended (42 U.S.C.  
9 18312(b)(5)) through a series of successive, free-  
10 standing, but complementary missions making ro-  
11 bust utilization of eis-lunar space and employing the  
12 Space Launch System, Orion, and other capabilities  
13 provided under titles III, IV, V, and IX of that Act  
14 (42 U.S.C. 18301 et seq.).

15           (2) STRATEGY REQUIREMENTS.—In developing  
16 the strategy under paragraph (1), the Administrator  
17 shall include—

18           (A) the utility of an expanded human pres-  
19 ence in eis-lunar space toward enabling mis-  
20 sions to various lunar orbits, the lunar surface,  
21 asteroids, the Mars system, and other destina-  
22 tions of interest for future human exploration  
23 and development;

1           (B) the utility of an expanded human pres-  
2           ence in eis-lunar space for economic, scientific,  
3           and technological advances;

4           (C) the opportunities for collaboration  
5           with—

6                   (i) international partners;

7                   (ii) private industry; and

8                   (iii) other Federal agencies, including  
9                   missions relevant to national security or  
10                  scientific needs;

11           (D) the opportunities specifically afforded  
12           by the ISS to support high priority scientific  
13           and technological developments useful in ex-  
14           panding and sustaining a human presence in  
15           eis-lunar space and beyond;

16           (E) a range of exploration mission archi-  
17           tectures and approaches for the missions identi-  
18           fied under paragraph (1); and

19           (F) standards for ensuring crew health  
20           and safety, including limits regarding radiation  
21           exposure and countermeasures necessary to  
22           meet those limits; means and methods for ad-  
23           dressing urgent medical conditions or injuries;  
24           and other such safety, health, and medical

1 issues that can be anticipated in the conduct of  
2 the missions identified under paragraph (1).

3 ~~(3)~~ COMPARISON OF MISSION ARCHITECTURES  
4 AND APPROACHES.—

5 (A) IN GENERAL.—The strategy shall in-  
6 clude a comparison of mission architectures and  
7 approaches identified under paragraph ~~(2)~~(E)  
8 with a primary objective of identifying the ar-  
9 chitectures and approaches that—

10 (i) best support the long-term goal  
11 under section 202(a) of the National Aero-  
12 nautics and Space Administration Author-  
13 ization Act of 2010 (42 U.S.C. 18312(a));  
14 and

15 (ii) are enabled by the Space Launch  
16 System, Orion, and other transportation  
17 capabilities and technologies provided  
18 under titles III, IV, V, and IX of the Na-  
19 tional Aeronautics and Space Administra-  
20 tion Authorization Act of 2010 (42 U.S.C.  
21 18301 et seq.) and by other capabilities  
22 that may be available commercially or  
23 internationally.

24 (B) FACTORS.—The comparison of mission  
25 architectures and approaches under subpara-

1 graph (A) shall include options that assess cost,  
2 schedule, safety, sustainability, opportunities  
3 for international collaboration, the enabling of  
4 new markets and opportunities for U.S. private  
5 industry, compelling scientific opportunities or  
6 national security considerations and require-  
7 ments, the flexibility of the architecture to ad-  
8 just to evolving technologies, leadership, and  
9 priorities, and contributions made to U.S. tech-  
10 nological excellence, competitiveness, and lead-  
11 ership.

12 (C) NATIONAL SECURITY COLLABORA-  
13 TION.—In identifying opportunities for collabo-  
14 ration under paragraph (2)(C)(iii), the Admin-  
15 istrator, in collaboration with the Secretary of  
16 Defense and Director of National Intelligence,  
17 shall include a discussion of the work, cost, and  
18 schedule required to enable and utilize a cargo  
19 variant of the Space Launch System, including  
20 the 70-, 105-, and 130-metric ton configura-  
21 tions, with both a 5-meter or 8-meter faring.

22 (4) ADDITIONAL REQUIREMENTS.—The strat-  
23 egy shall include—

1           (A) technical information as needed to  
2           identify interest from the scientific and national  
3           security communities; and

4           (B) an assessment of the Space Launch  
5           System to enable and sustain near-Earth object  
6           surveillance of potentially Earth-threatening ob-  
7           jects for the purpose of planetary protection.

8 **SEC. 202. NASA PROCESSING AND LAUNCH INFRASTRUC-**  
9           **TURE.**

10       (a) **POLICY.**—It is the policy of the United States  
11       that the Exploration Ground Systems to process and  
12       launch the Space Launch System, Orion, and related ex-  
13       ploration elements, and the 21st Century Space Launch  
14       Complex to enable and facilitate civil, defense, and private  
15       launches are complementary efforts to modernize infra-  
16       structure, reduce costs, and maintain capabilities for cur-  
17       rent and future missions.

18       (b) **DEVELOPMENT OF THE PROCESSING AND**  
19       **LAUNCH SUPPORT INFRASTRUCTURE.**—In executing the  
20       programs described under subsection (a), the Adminis-  
21       trator, to the extent practicable—

22           (1) may not exclude the ability of Exploration  
23       Ground Systems to support efforts under section  
24       305(b) of the National Aeronautics and Space Ad-



1       ministration Authorization Act of 2010 (42 U.S.C.  
2       18325(b));

3           (2) shall allow for cost-sharing opportunities by  
4       providing multi-use systems and capabilities to cur-  
5       rent and future users of the 21st Century Space  
6       Launch Complex through modernization, refurbish-  
7       ment, or development of infrastructure; and

8           (3) shall pursue, in collaboration with local,  
9       State, or Federal agencies, or private industry, capa-  
10      bilities and investments that support multiple enti-  
11      ties to advance NASA's current and future missions  
12      and benefit NASA by creating new partnerships.

13   **SEC. 203. NAMING OF THE SPACE LAUNCH SYSTEM.**

14      (a) **FINDINGS.**—Congress finds that education and  
15      outreach to encourage the next generation of scientists  
16      and engineers to become involved in science and space ex-  
17      ploration is one of the Administration's most important  
18      missions.

19      (b) **REPORT.**—Not later than 30 days after the date  
20      of enactment of this Act, the Administration shall submit  
21      to the appropriate committees of Congress a plan to en-  
22      gage the public, including science students in elementary  
23      and secondary education programs, throughout the United  
24      States in naming the Space Launch System.

1 **SEC. 204. REPORT; SPACE SUIT SYSTEM.**

2 Not later than 90 days after the date of enactment  
3 of this Act, the Administration shall submit to the appro-  
4 priate committees of Congress a report updating Congress  
5 on the Constellation Space Suit System. The report shall  
6 include justification as to whether another competition to  
7 award contracts for the design, development, certification,  
8 production, and sustaining engineering of this space suit  
9 system is required to meet the needs of NASA's human  
10 exploration program.

11 **Subtitle B—Maximizing ISS**  
12 **Utilization**

13 **SEC. 221. OPERATION AND UTILIZATION OF THE ISS.**

14 (a) SENSE OF CONGRESS.—It is the sense of Con-  
15 gress that—

16 (1) maximum utilization of partnerships, sci-  
17 entific research, commercial applications, and explo-  
18 ration test bed capabilities of the ISS is essential to  
19 ensuring the greatest return on investments made by  
20 the United States and its international partners in  
21 the development, assembly, and operations of that  
22 unique facility; and

23 (2) every effort should be made to ensure that  
24 decisions regarding the service life of the ISS are  
25 made on the basis of its projected capability to con-

1       tinue providing effective and productive research and  
2       exploration test bed capabilities.

3       (b) CONTINUATION OF THE INTERNATIONAL SPACE  
4 STATION.—Congress reaffirms the policy stated in section  
5 501(a) of the National Aeronautics and Space Administra-  
6 tion Authorization Act of 2010 (42 U.S.C. 18351(a)) that  
7 it shall be the policy of the United States, in consultation  
8 with its international partners in the ISS program, to sup-  
9 port full and complete utilization of the ISS through at  
10 least 2020.

11       (c) NASA ACTIONS.—In furtherance of the policy  
12 under subsection (b), the Administrator shall ensure, to  
13 the extent practicable, that the ISS, as a designated na-  
14 tional laboratory—

15             (1) remains viable as an element of overall ex-  
16 ploration and partnership strategies and approaches;  
17       and

18             (2) remains an effective, functional vehicle pro-  
19 viding research and test bed capabilities for the  
20 United States through 2020, up to 2028, and pos-  
21 sibly beyond.

22       (d) REPORT.—The Administrator, in consultation  
23 with the Office of Science and Technology Policy, shall  
24 determine, through analyses and discussions with ISS  
25 partners, the feasible and preferred service life of the ISS

1 as a unique scientific, commercial, and exploration-related  
2 facility. Not later than 120 days after the date of enact-  
3 ment of this Act, and triennially thereafter, the Adminis-  
4 trator shall submit to the appropriate committees of Con-  
5 gress a report that, at a minimum, includes—

6           (1) an assessment of whether ISS operations  
7 can be extended to at least 2028, including—

8                   (A) a description of any activities that  
9 would be required of the international partner-  
10 ship to ensure that safety requirements are  
11 met;

12                   (B) a general discussion of international  
13 partner capabilities and interest in extension, to  
14 include the potential for participation by addi-  
15 tional countries;

16                   (C) a review of essential systems or equip-  
17 ment upgrades that would be necessary for ISS  
18 extension and utilization to at least 2028;

19                   (D) an evaluation of the cost and schedule  
20 requirements associated with the development  
21 and delivery of essential systems or equipment  
22 upgrades identified under subparagraph (C);  
23 and

24                   (E) an identification of possible partner  
25 contributions and program transitions to pro-

1           vide the upgrades identified under subpara-  
2           graph (C);

3           ~~(2)~~ an evaluation of the potential for expanding  
4           the use of ISS facilities to accommodate the needs  
5           of researchers and other users, including changes to  
6           policies, regulations, and laws that would stimulate  
7           greater private and public involvement on the ISS;  
8           and

9           ~~(3)~~ such other information as may be necessary  
10          to fully describe the justification for and feasibility  
11          of extending the service life of the ISS, including the  
12          potential scientific or technological benefits to the  
13          Federal Government or public, or to academic or  
14          commercial entities that, within the United States-  
15          owned modules of the ISS or in partner-owned facili-  
16          ties of the ISS allocated for United States utilization  
17          by international agreement, are or may become en-  
18          gaged in research and testing activities sponsored,  
19          conducted, and managed by the Administration or  
20          by the ISS management entity.

21          (c) DEFINITION OF ISS MANAGEMENT ENTITY.—In  
22          this section, the term “ISS management entity” means  
23          the organization with which the Administrator enters into  
24          a cooperative agreement under section 504(a) of the Na-

1 tional Aeronautics and Space Administration Authoriza-  
 2 tion Act of 2010 (42 U.S.C. 18354(a)).

3 **SEC. 222. RESEARCH ROLES AND RESPONSIBILITIES.**

4 (a) SENSE OF CONGRESS.—It is the sense of Con-  
 5 gress that—

6 (1) expansion of the non-NASA utilization of  
 7 the ISS is critical to maximizing the research poten-  
 8 tial of the ISS national laboratory and to facilitating  
 9 expanded commercial activity in low-Earth orbit;  
 10 and

11 (2) in order to expand the non-NASA scientific  
 12 utilization of ISS research capabilities and facilities,  
 13 it is essential to clarify the roles and responsibilities  
 14 of the entities managing research within the U.S.  
 15 Segment of the ISS.

16 (b) MANAGEMENT OF THE ISS NATIONAL LABORA-  
 17 TORY.—Section 504 of the National Aeronautics and  
 18 Space Administration Authorization Act of 2010 (42  
 19 U.S.C. 18354) is amended—

20 (1) in subsection (b), by adding at the end the  
 21 following:

22 “(3) CONFLICTS OF INTEREST.—The Adminis-  
 23 trator shall ensure that the liaison function under  
 24 this subsection is implemented in a manner that pre-  
 25 cludes any conflict of interest between the objectives

1 and activities of the entities identified under sub-  
 2 section (e).”;

3 (2) in subsection (d)(2)—

4 (A) by inserting “(A) IN GENERAL.—” be-  
 5 fore “If any NASA research plan” and adjust-  
 6 ing the text accordingly;

7 (B) by inserting “and subject to subpara-  
 8 graph (B)” after “Until September 30, 2020”  
 9 in subparagraph (A), as redesignated; and

10 (C) by adding at the end the following:

11 “(B) MUTUAL AGREEMENT.—An exception  
 12 under subparagraph (A) may only be granted if  
 13 there is mutual agreement between the entities  
 14 identified under subsection (e).”;

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

16 “(e) CLARIFICATION OF ROLES.—The organization  
 17 with which the Administrator enters into a cooperative  
 18 agreement under subsection (a) for management of the  
 19 ISS national laboratory shall be considered a separate and  
 20 equal partner of any NASA organizational entity respon-  
 21 sible for management of the NASA research plan onboard  
 22 the ISS.”.

23 (e) REPORT.—

24 (1) IN GENERAL.—Not later than 180 days  
 25 after the date of enactment of this Act, the Adminis-

1       trator shall submit to the appropriate committees of  
2       Congress a report on the following:

3               (A) Options for expanding the Administra-  
4               tion's collaboration with its ISS partners, in-  
5               cluding—

6                       (i) providing U.S. personnel expanded  
7                       access to international partner research fa-  
8                       cilities; and

9                       (ii) coordinating research efforts to  
10                      minimize the duplication of effort, unless  
11                      duplication is a justified element of the sci-  
12                      entific process or essential for backup or  
13                      redundant capability.

14              (B) The potential for increasing ISS crew  
15              size to maximize utilization and applications.

16              (C) Efforts undertaken by the Administra-  
17              tion and the ISS management entity—

18                      (i) to enhance collaborative research  
19                      between the Administration and other Fed-  
20                      eral science agencies, such as the National  
21                      Institutes of Health and the National  
22                      Science Foundation; and

23                      (ii) to expand the use of the ISS na-  
24                      tional laboratory capabilities by Federal  
25                      science agencies.



1           (2) DEFINITION OF ISS MANAGEMENT ENTI-  
 2           TY.—In this subsection, the term “ISS management  
 3           entity” means the organization with which the Ad-  
 4           ministrator enters into a cooperative agreement  
 5           under section 504(a) of the National Aeronautics  
 6           and Space Administration Authorization Act of 2010  
 7           (42 U.S.C. 18354(a)).

8   **SEC. 223. ISS NATIONAL LABORATORY; PROPERTY RIGHTS**  
 9                                   **IN INVENTIONS.**

10          Section 20135 of title 51, United States Code, is  
 11          amended—

12                 (1) in subsection (g), by striking “Each such  
 13                 waiver” and inserting “Except as provided under  
 14                 subsection (1), each such waiver”; and

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

16                 “(1) WAIVER OF RIGHTS TO INVENTIONS; COMMER-  
 17                 CIAL MICROGRAVITY RESEARCH.—

18                         “(1) IN GENERAL.—With respect to any inven-  
 19                         tion or class of inventions made or which may be  
 20                         made by any person or class of persons in the per-  
 21                         formance of any non-NASA scientific utilization of  
 22                         the ISS national laboratory, the Administrator may  
 23                         waive the license reserved by the Administrator  
 24                         under subsection (g), in whole or in part and accord-  
 25                         ing to negotiated terms and conditions, including the

1 terms and conditions under paragraphs (1), (2), (3),  
2 and (5) of section 202(e) of title 35, if the Adminis-  
3 trator finds that the reservation of the license by the  
4 Administrator would substantially inhibit the com-  
5 mercialization of an invention.

6 “(2) CONSTRUCTION.—Nothing in this sub-  
7 section shall be construed to affect the rights of the  
8 Federal Government under any other procurement  
9 contract, grant, understanding, arrangement, agree-  
10 ment, or transaction.”

11 **SEC. 224. COMMERCIAL CARGO AND CREW CAPABILITIES.**

12 (a) FINDINGS.—Congress finds that—

13 (1) NASA’s Commercial Orbital Transportation  
14 Services, Cargo Resupply Services, and Commercial  
15 Crew Program demonstrate the potential for pro-  
16 curing routine, commercially provided access to the  
17 ISS and to low-Earth orbit using innovative and  
18 cost-effective development and procurement strate-  
19 gies;

20 (2) Federal investments in the U.S. private  
21 space industry have the ability to provide for lower  
22 cost access to space for researchers and for commer-  
23 cial ventures;

24 (3) commercially provided space transportation  
25 is critical to maximizing utilization of the ISS;

1           (4) encouraging competition among launch serv-  
2           ice providers and maintaining multiple space trans-  
3           portation options helps to reduce long-term costs to  
4           the Federal Government and to induce continual im-  
5           provement in available private-sector services; and

6           (5) consistent with section 201(b) of the Na-  
7           tional Aeronautics and Space Administration Au-  
8           thorization Act of 2010 (42 U.S.C. 18311(b)), main-  
9           taining multiple launch service providers helps en-  
10          sure uninterrupted access to the space environment  
11          should a particular provider's services become un-  
12          available.

13          (b) SENSE OF CONGRESS.—It is the sense of Con-  
14          gress that the Administration—

15               (1) should continue to support the development  
16               of safe, reliable, and cost effective commercial  
17               launch capabilities for the primary purpose of secur-  
18               ing domestic access to the ISS as quickly and safely  
19               as possible; and

20               (2) should encourage a viable commercial mar-  
21               ket for the capabilities under paragraph (1).

22          (c) UNITED STATES POLICY.—It is the policy of the  
23          United States that, to foster the competitive development,  
24          operation, and improvement of private space transpor-  
25          tation services, services for Federal Government access to

1 and return from the ISS, whenever feasible, shall be pro-  
2 cured via fair and open competition for well-defined, mile-  
3 stone-based, Federal Acquisition Regulation-based con-  
4 tracts under section 201(a) of the National Aeronautics  
5 and Space Administration Authorization Act of 2010 (42  
6 U.S.C. 18311(a)).

7 (d) ~~SELECTION OF COMMERCIAL PROVIDERS.—~~In  
8 evaluating commercial space transportation service pro-  
9 viders, the Administrator—

10 (1) shall aim to minimize the life-cycle costs of  
11 obtaining transportation services;

12 (2) shall assure compliance with all safety and  
13 mission assurance requirements;

14 (3) shall consider contractor financial invest-  
15 ment into the development of transportation capa-  
16 bilities; and

17 (4) for commercial crew transport services—

18 (A) shall consider flexibility in design, in-  
19 cluding sample return capabilities; and

20 (B) shall provide a written notification and  
21 justification to the appropriate committees of  
22 Congress if the price per seat exceeds the cost  
23 negotiated by NASA for crew transport in April  
24 2013.

1           (5) STRATEGY FOR PROCURING COMMERCIAL  
2 SERVICES.—In implementing the policy under sub-  
3 section (e), the Administrator shall submit to the ap-  
4 propriate committees of Congress, not later than  
5 120 days after the date of enactment of this Act, a  
6 strategy for transitioning from Space Act Agree-  
7 ments to Federal Acquisition Regulation-based con-  
8 tracts for the procurement of crew transportation  
9 services to and from the ISS. The strategy shall in-  
10 clude—

11                   (A) a comparison of potential procurement  
12 strategies based on—

13                           (i) maximizing safety and mission as-  
14 surance;

15                           (ii) the total projected costs to the  
16 Federal Government through 2020, given  
17 multiple projections of Government de-  
18 mand for launch services;

19                           (iii) the feasibility of the procurement  
20 strategy and timeline, given projected  
21 funding availabilities;

22                           (iv) the potential for supporting the  
23 research and exploration test bed needs of  
24 the Federal Government and of the inde-  
25 pendent entity responsible for ISS national

1 laboratory activities for the purposes de-  
2 scribed under section 504(d) of the Na-  
3 tional Aeronautics and Space Administra-  
4 tion Authorization Act of 2010 (42 U.S.C.  
5 18354(d)); and

6 (v) the projected impacts on devel-  
7 oping a viable market for commercial  
8 launch services;

9 (B) an evaluation of the costs and benefits  
10 of ensuring the availability of at least 2 U.S.-  
11 based launch service providers, considering—

12 (i) the potential need for diversified  
13 cargo and sample return capabilities, in-  
14 cluding a soft-landing capability as de-  
15 scribed under section 404 of the National  
16 Aeronautics and Space Administration Au-  
17 thorization Act of 2010 (124 Stat. 2822);  
18 and

19 (ii) the ability of multiple cargo or  
20 crew launch service providers to meet pri-  
21 vate or non-NASA Government mission re-  
22 quirements and the subsequent benefit to  
23 the United States of such ability;

24 (C) justification for the procurement strat-  
25 egy selected from among those considered; and

1           (D) for the selected procurement strategy,  
2           identification of additional or modified authori-  
3           ties, regulations, or guidelines that are nec-  
4           essary for successful implementation.

## 5           **Subtitle C—Other Matters**

### 6   **SEC. 231. SAFETY AND MISSION ASSURANCE IN HUMAN** 7           **SPACE FLIGHT.**

8           (a) FINDINGS.—Congress makes the following find-  
9           ings:

10           (1) In the early part of the space race, the  
11           United States took over 3 years from the launch of  
12           the first American satellite, Explorer I, to the launch  
13           of the first American to space, Alan B. Shepard, Jr.

14           (2) It was known then, as it is now, that the  
15           exploration of space by humans is an inherently dan-  
16           gerous endeavor.

17           (3) Access to space requires complex propulsion  
18           systems, such as the now retired Space Shuttle,  
19           which generated over 7,000,000 pounds of thrust.

20           (4) Adding humans to the complex systems re-  
21           quired to reach space requires additional safeguards,  
22           life support systems, and other measures to protect  
23           from the harsh environment of space in order to  
24           minimize risk to human life.

1 (b) SENSE OF CONGRESS.—It is the sense of Con-  
2 gress that—

3 (1) meticulousness and attention to detail helps  
4 ensure that all humans are safe and protected to the  
5 best of the abilities of all those involved in helping  
6 achieve the reaches of space;

7 (2) those who strive to send humans into space  
8 should make every effort to ensure the success of  
9 missions and programs through independent safety  
10 and mission assurance analyses;

11 (3) diligent oversight efforts ensure adherence  
12 to safety, reliability, and quality assurance policies  
13 and procedures for missions and programs; and

14 (4) lessons learned from mishaps and near  
15 misses should be implemented into designs, deci-  
16 sions, policy, and procedures to reduce the risk of  
17 future incidents that could jeopardize crew safety or  
18 mission success.

19 **SEC. 232. LAUNCH LIABILITY PROVISIONS.**

20 (a) LIABILITY EXTENSION.—Section 50915(f) of title  
21 51, United States Code, is amended by striking “Decem-  
22 ber 31, 2013” and inserting “December 31, 2016”.

23 (b) PROTECTION FOR LAUNCH ACTIVITIES.—Sub-  
24 chapter III of chapter 201 of title 51, United States Code  
25 is amended by inserting after section 20147 the following:



1 **“§ 20148. Indemnification; NASA launch services**

2       “(a) IN GENERAL.—Under such regulations in con-  
 3 formity with this section as the Administrator shall pre-  
 4 scribe taking into account the availability, cost, and terms  
 5 of liability insurance, any contract between the Adminis-  
 6 tration and a provider may provide that the United States  
 7 will indemnify a provider against claims (including reason-  
 8 able expenses of litigation or settlement) by third parties  
 9 for death, bodily injury, or loss of or damage to property  
 10 resulting from activities that the contract defines as un-  
 11 usually hazardous or nuclear in nature, but—

12               “(1) only to the extent that such claims are not  
 13 compensated by liability insurance of the provider;  
 14 and

15               “(2) only to the extent that such claims arise  
 16 out of the direct performance of the contract.

17       “(b) LIMITATION.—Indemnification under subsection  
 18 (a) may be limited to claims resulting from other than the  
 19 actual negligence or willful misconduct of the provider.

20       “(c) TERMS OF INDEMNIFICATION.—A contract  
 21 made under subsection (a) that provides indemnification  
 22 shall also provide for—

23               “(1) notice to the United States of any claim or  
 24 suit against the provider for death, bodily injury, or  
 25 loss of or damage to property; and

1           ~~“(2) control of or assistance in the defense by~~  
2           ~~the United States, at its election, of that suit or~~  
3           ~~claim.~~

4           ~~“(d) LIABILITY INSURANCE OF THE PROVIDER.—~~  
5           ~~Each provider that is a party to a contract made under~~  
6           ~~subsection (a) shall have and maintain liability insurance~~  
7           ~~in such amounts as the Administrator shall require to~~  
8           ~~cover liability to third parties and loss of or damage to~~  
9           ~~property.~~

10          ~~“(e) NO INDEMNIFICATION WITHOUT CROSS-WAIV-~~  
11          ~~ER.—Notwithstanding subsection (a), the Administrator~~  
12          ~~may not indemnify a provider under this section unless~~  
13          ~~there is a cross-waiver between the Administration and the~~  
14          ~~provider as described in subsection (f).~~

15          ~~“(f) CROSS-WAIVERS.—The Administrator, on behalf~~  
16          ~~of the United States, and its departments, agencies, and~~  
17          ~~instrumentalities, may reciprocally waive claims with a~~  
18          ~~provider under which each party to the waiver agrees to~~  
19          ~~be responsible, and agrees to ensure that its own related~~  
20          ~~entities are responsible, for damage or loss to its property~~  
21          ~~for which it is responsible, or for losses resulting from any~~  
22          ~~injury or death sustained by its own employees or agents,~~  
23          ~~as a result of activities connected to the contract.~~

24          ~~“(g) CERTIFICATION OF JUST AND REASONABLE~~  
25          ~~AMOUNT.—No payment may be made under subsection~~

1 (a) unless the Administrator or the Administrator's des-  
 2 ignee certifies that the amount is just and reasonable.

3       “(h) PAYMENTS.—Upon the approval by the Admin-  
 4 istrator, payments under subsection (a) may be made, at  
 5 the Administrator's election, either from—

6           “(1) funds obligated for the performance of the  
 7 agreement concerned;

8           “(2) funds available for research and develop-  
 9 ment not otherwise obligated; or

10          “(3) funds appropriated for such payments.

11       “(i) RELATIONSHIP TO OTHER LAWS.—The Admin-  
 12 istrator may not provide indemnification under this sec-  
 13 tion for an activity that requires a license or permit under  
 14 chapter 509.

15       “(j) CONSTRUCTION.—The authority to indemnify  
 16 under this section shall not create any rights in third per-  
 17 sons that would not otherwise exist by law.

18       “(k) DEFINITIONS.—In this section:

19           “(1) LAUNCH SERVICES.—The term ‘launch  
 20 services’ has the meaning given the term in section  
 21 50902.

22           “(2) PROVIDER.—The term ‘provider’ means a  
 23 person that provides domestic launch services in sup-  
 24 port of any space activity the Government carries  
 25 out for the Government.”.

1 (e) CONFORMING AMENDMENT.—The table of con-  
 2 tents for subchapter III of chapter 201 of title 51, United  
 3 States Code, is amended by inserting after the item relat-  
 4 ing to section 20147 the following:

“20148. Indemnification; NASA launch services.”.

## 5 TITLE III—SCIENCE

### 6 Subtitle A—Earth Science

#### 7 SEC. 301. EARTH SCIENCE.

8 (a) FINDINGS.—Congress finds that—

9 (1) continuous, long-term Earth observation  
 10 data supports the preparation for and management  
 11 of natural and human-induced disasters, benefits re-  
 12 source management and agricultural forecasting, im-  
 13 proves our understanding of climate, and encourages  
 14 environmental and economic sustainability;

15 (2) due to the scope of activities required,  
 16 Earth science research and Earth observation are  
 17 multi-agency endeavors requiring significant co-  
 18 operation and information sharing among govern-  
 19 ment, international, and scientific community part-  
 20 ners;

21 (3) in developing Earth observation tech-  
 22 nologies, conducting Earth science satellite missions,  
 23 and providing research products to the scientific  
 24 community, NASA plays a crucial role in advancing  
 25 Earth science; and

1           (4) the loss of observational capabilities in  
 2           Earth science, as predicted by the National Research  
 3           Council's midterm update to its Earth Science  
 4           Decadal Survey, risks reversing gains in weather  
 5           forecast accuracy, reducing disaster response capa-  
 6           bilities, and creating an irreversible gap in Earth  
 7           science data.

8           (b) SENSE OF CONGRESS.—It is the sense of Con-  
 9           gress that—

10           (1) given the importance of Earth science and  
 11           Earth observation data, NASA Earth science ef-  
 12           forts—

13                   (A) should be conducted in coordination  
 14                   with other Federal agencies; and

15                   (B) should be cognizant of international ef-  
 16                   forts and the needs of the scientific and busi-  
 17                   nesses communities; and

18           (2) whenever feasible, NASA and other Federal  
 19           agencies should consider the potential for reducing  
 20           costs by purchasing commercially available Earth  
 21           science data and services.

22           (c) MISSION PRIORITIZATION.—

23                   (1) NATIONAL STRATEGY FOR EARTH OBSERVA-  
 24                   TION.—The Office of Science and Technology Policy,  
 25                   in implementing its National Strategy for Earth Ob-

1       servation and in developing a National Plan for Civil  
2       Earth Observations, shall prioritize Federal Earth  
3       science and observation investments based on—

4               (A) its assessment of Earth science and  
5       observation data requirements;

6               (B) the capability requirements as identi-  
7       fied by the National Academies decadal surveys;

8               (C) the projected costs of Earth science  
9       missions and data gathering activities; and

10              (D) the projected and available budgets.

11       (2) NATIONAL PLAN FOR CIVIL EARTH OBSER-  
12       VATIONS.—The Administration, in prioritizing future  
13       Earth science and Earth observation missions and  
14       technology development under the National Plan for  
15       Civil Earth Observations and chapter 201 of title  
16       51, United States Code, shall consider potential  
17       cost-reduction opportunities, including—

18              (A) if feasible, co-locating Earth science  
19       sensors on other satellites; and

20              (B) purchasing commercially available  
21       Earth science data and services, including  
22       launch access to orbital and sub-orbital space.

1                   **Subtitle B—Space Science**

2   **SEC. 321. HUMAN EXPLORATION AND SCIENCE COLLABO-**  
3                   **RATION.**

4           The Administrator shall ensure that the Science Mis-  
5 sion Directorate and the Human Exploration and Oper-  
6 ations Mission Directorate coordinate in researching and  
7 reducing the risks that space exploration beyond low-  
8 Earth orbit pose to astronaut health. Not later than 90  
9 days after the date of enactment of this Act, the Adminis-  
10 trator shall provide to the appropriate committees of Con-  
11 gress a report detailing the results of previous research  
12 in this area and identifying opportunities for future  
13 science missions to contribute to the understanding of  
14 these risks.

15   **SEC. 322. MAINTAINING A BALANCED SPACE SCIENCE**  
16                   **PORTFOLIO.**

17           (a) **IN GENERAL.**—Section 803 of the National Aero-  
18 nautics and Space Administration Authorization Act of  
19 2010 (124 Stat. 2832) is amended to read as follows:

20   **“SEC. 803. OVERALL SCIENCE PORTFOLIO; SENSE OF CON-**  
21                   **GRESS.**

22           “Congress reaffirms its sense that a balanced and  
23 adequately funded set of activities, consisting of research  
24 and analysis grants programs, technology development,  
25 small, medium, and large space missions, and suborbital

1 research activities, contributes to a robust and productive  
 2 science program and serves as a catalysis for innovation  
 3 and discovery. The Administrator should set science prior-  
 4 ities by following the guidance provided by the scientific  
 5 community through the National Academies' decadal sur-  
 6 veys.”.

7 (b) CONFORMING AMENDMENT.—The item relating  
 8 to section 803 in the table of contents in section 1(b) of  
 9 the National Aeronautics and Space Administration Au-  
 10 thorization Act of 2010 (124 Stat. 2806) is amended by  
 11 striking “Overall science portfolio-sense of the Congress”  
 12 and inserting “Overall science portfolio; sense of Con-  
 13 gress”.

14 **SEC. 323. SCIENCE MISSION EXTENSIONS.**

15 Section 30504 of title 51, United States Code is  
 16 amended to read as follows:

17 **“§ 30504. Assessment of science mission extensions**

18 “(a) ASSESSMENT.—The Administrator shall carry  
 19 out biennial reviews within each of the Science divisions  
 20 to assess the cost and benefits of extending the date of  
 21 the termination of data collection for those missions that  
 22 have exceeded their planned mission lifetime. In con-  
 23 ducting these assessments, the Administrator shall con-  
 24 sider—



1           “(1) the potential continued benefit of instru-  
2           ments on missions that are beyond their planned  
3           mission lifetime; and

4           “(2) the cost and schedule impacts, if any, of  
5           mission extension on other NASA activities and  
6           science missions.

7           “(b) CONSULTATION REQUIREMENT.—When decid-  
8           ing whether to extend science missions with an operational  
9           component, the Administrator shall consult with the Na-  
10          tional Oceanic and Atmospheric Administration and any  
11          other affected Federal agency.”.

12   **SEC. 324. PLANETARY SCIENCE.**

13          (a) FINDINGS.—Congress finds that—

14               (1) Administration support for planetary  
15               science is critical to enabling greater understanding  
16               of the solar system and its origin;

17               (2) the United States leads the world in plan-  
18               etary science and can augment its success with ap-  
19               propriate international partnerships;

20               (3) a mix of small-, medium-, and large-plan-  
21               etary science missions is required to sustain a steady  
22               cadence of planetary exploration; and

23               (4) robotic planetary exploration is a key com-  
24               ponent of preparing for future human exploration.

1           (b) **MISSION PRIORITIES.**—In accordance with the  
2 priorities established in the most recent decadal survey for  
3 planetary science, the Administrator shall ensure, to the  
4 greatest extent practicable, the completion of a balanced  
5 set of Discovery, New Frontiers, and flagship missions.  
6 The Administrator may seek, if necessary, adjustments to  
7 mission priorities, schedule, and scope in light of changing  
8 budget projections.

9           (c) **INSTRUMENTATION.**—To support its science mis-  
10 sion priorities, the Administration shall invest in a sus-  
11 tained program to develop or mature scientific instrument  
12 capabilities, as delineated in the NASA Science Instru-  
13 ments, Observatories, and Sensor Systems Roadmap.

14 **SEC. 325. SPACE WEATHER.**

15           (a) **OSTP ROADMAP.**—In coordination with NASA,  
16 the National Oceanic and Atmospheric Administration,  
17 and other relevant Federal agencies, the Director of the  
18 Office of Science and Technology Policy, not later than  
19 24 months after the date of enactment of this Act, shall  
20 deliver to the appropriate committees of Congress a road-  
21 map for developing and deploying space weather fore-  
22 casting technologies. The roadmap shall, at a minimum—

23                   (1) aim to relieve capability gaps identified by  
24 the National Space Weather Program Council review  
25 of space weather observing systems, as requested by

1 the National Aeronautics and Space Administration  
2 Authorization Act of 2010 (42 U.S.C. 18301 et  
3 seq.); and

4 (2) consider ongoing and future requirements  
5 for space weather modeling, monitoring, and pre-  
6 diction.

7 (b) NASA TECHNOLOGY ROADMAPS.—The Adminis-  
8 tration shall update and further develop its technology  
9 roadmaps as required to address mitigating a wide range  
10 of space weather effects on both satellites and spacecraft.

11 (c) ALERT PROTOCOL.—The Director of the Office  
12 of Science and Technology Policy shall coordinate relevant  
13 Federal agencies to propose protocols for communicating  
14 and responding to space weather forecasts. Protocol as-  
15 sessment shall consider the needs of both government and  
16 private sector entities. The Director of the Office of  
17 Science and Technology Policy shall deliver a report on  
18 proposed protocols to Congress not later than 24 months  
19 after the date of enactment of this Act.

20 **SEC. 326. JAMES WEBB SPACE TELESCOPE.**

21 It is the sense of Congress that—

22 (1) the James Webb Space Telescope will sig-  
23 nificantly advance our understanding of star and  
24 planet formation, improve our knowledge of the early

1 universe, and support U.S. leadership in astro-  
2 physics;

3 (2) significant progress has been made with re-  
4 gard to overcoming the James Webb Space Tele-  
5 scope's technical challenges and in improving NASA  
6 management oversight;

7 (3) the on-time and on-budget completion of the  
8 James Webb Space Telescope should remain a top  
9 NASA priority; and

10 (4) consistent with annual Government Ac-  
11 countability Office reviews of the James Webb Space  
12 Telescope program, the Administrator should con-  
13 tinue to improve the James Webb Space Telescope's  
14 cost and schedule estimates and oversight proce-  
15 dures in order to enhance NASA's ability to success-  
16 fully deliver the James Webb Space Telescope on  
17 time and on budget.

18 **SEC. 327. UNIVERSITY CLASS SCIENCE MISSIONS.**

19 (a) SENSE OF CONGRESS.—It is the sense of Con-  
20 gress that principal investigator-led small orbital science  
21 missions, including CubeSat, University Explorer  
22 (UNEX), Small Explorer (SMEX), and Venture class mis-  
23 sions, offer valuable, lower-cost opportunities to advance  
24 science, train the next generation of scientists and engi-  
25 neers, and provide opportunities for program participants

1 to acquire skills in systems engineering and systems inte-  
2 gration that are critical to maintaining the Nation's lead-  
3 ership in space.

4 (b) REVIEW OF PRINCIPAL INVESTIGATOR LED  
5 SMALL ORBITAL SCIENCE MISSIONS.—

6 (1) IN GENERAL.—Not later than 120 days  
7 after the date of enactment of this Act, the Adminis-  
8 trator shall enter into an arrangement with the Na-  
9 tional Academy of Sciences to conduct a review of  
10 the small orbital science missions described under  
11 subsection (a).

12 (2) REQUIREMENTS.—The review under para-  
13 graph (1) shall include the following:

14 (A) The status, capability, and availability  
15 of existing small orbital science mission pro-  
16 grams in which the missions are led by prin-  
17 cipal investigators and enable significant par-  
18 ticipation by university scientists and students.

19 (B) The opportunities that the small or-  
20 bital science missions described under sub-  
21 section (a) provide for scientific research, train-  
22 ing, and education, including scientific and en-  
23 gineering workforce development.

24 (C) The use of commercial applications,  
25 such as hosted payloads, free flyers, and data

1           buys, as vehicles to further the goals of small  
2           orbital science missions, while preserving the  
3           principle of independent peer review as the  
4           basis for mission selection.

5       (e) REPORT.—

6           (1) IN GENERAL.—Not later than 15 months  
7           after the date of enactment of this Act, the Adminis-  
8           trator shall submit to the appropriate committees of  
9           Congress a report on the review required by this sec-  
10          tion.

11          (2) CONTENTS.—The report shall include—

12               (A) a summary of the review under sub-  
13               section (b);

14               (B) the findings of the Administrator with  
15               respect to that review; and

16               (C) recommendations regarding principal  
17               investigator led small orbital science missions  
18               conducted by the Administration.

## 19           **TITLE IV—AERONAUTICS**

### 20       **SEC. 401. SENSE OF CONGRESS ON NASA AERONAUTICS.**

21       (a) FINDINGS.—Congress finds that—

22           (1) aviation is vital to the United States econ-  
23           omy, with the industry supporting nearly 1,000,000  
24           jobs, conducting nearly 10,000,000 commercial  
25           flights per year within the United States alone, and

1 contributing to the aerospace industry's positive  
2 trade balance in 2012;

3       (2) in helping test and mature new technologies  
4 for quiet and efficient air transportation; NASA's  
5 Aeronautics Research Mission Directorate addresses  
6 major aviation trends, such as the rapid growth in  
7 passengers, increasing fuel costs, and the demand  
8 for faster vehicles;

9       (3) the Directorate works closely with industry  
10 and academia to address long-term challenges to the  
11 air transportation system that require improving  
12 aviation safety; increasing the capacity of the in-  
13 creasingly crowded national airspace system; and re-  
14 ducing environmental impacts;

15       (4) through its Aeronautics Test Program, the  
16 Directorate manages the flight operations and test  
17 infrastructure at 4 NASA centers, providing both  
18 NASA and its industry partners with access to crit-  
19 ical facilities;

20       (5) NASA's contribution to aeronautics is evi-  
21 denced in the use of its technologies in almost every  
22 modern aircraft; and

23       (6) the Directorate has identified otherwise un-  
24 known safety issues and helped optimize aircraft

1 routes, yielding millions of dollars in potential sav-  
2 ings to airlines and benefitting passengers.

3 (b) SENSE OF CONGRESS.—It is the sense of Con-  
4 gress that—

5 (1) the Aeronautics Research Mission Direc-  
6 torate builds on the successful legacy of NASA's  
7 predecessor, the National Advisory Committee for  
8 Aeronautics, which worked closely with industry  
9 partners to advance both military and civil aviation  
10 until its dissolution in 1958;

11 (2) NASA aeronautics research, development,  
12 and test activities, including investments into com-  
13 posite structures, new fuels, and innovative aircraft  
14 concepts, must continue in order to support U.S.  
15 leadership in aviation;

16 (3) the Directorate's efforts to collaborate with  
17 the aviation industry to gather and analyze data and  
18 to prototype and test algorithms that optimize flight  
19 routes, manage air traffic, and account for weather  
20 impacts are critical to supporting the safe use of the  
21 national airspace; and

22 (4) continued cooperation between NASA's Aer-  
23 onautics Research Mission Directorate and the Fed-  
24 eral Aviation Administration is vital to providing the  
25 data and tools necessary to best regulate the na-



1 tional airspace and to ensure that new technologies  
2 are effectively tested and acquire timely regulatory  
3 approval.

## 4 **TITLE V—SPACE TECHNOLOGY**

### 5 **SEC. 501. SPACE TECHNOLOGY.**

6 (a) SENSE OF CONGRESS.—It is the sense of the Con-  
7 gress that—

8 (1) previous investments in space technologies  
9 have not only enabled space exploration and research  
10 missions, but also have improved the quality of life  
11 on Earth;

12 (2) by improving affordability, reliability, and  
13 operational capability, continued space technology  
14 developments will enable NASA missions that other-  
15 wise would be unachievable;

16 (3) investments in space technology engage the  
17 talent of the Administration and of the Nation's aca-  
18 demic and business enterprises; and

19 (4) space technology roadmaps serve as a useful  
20 framework for NASA, academic, and industry devel-  
21 opment efforts.

22 (b) SPACE TECHNOLOGY DIRECTIVE.—To advance  
23 NASA's space exploration and space research goals, the  
24 Administrator shall continue a program with responsibility  
25 for NASA investments in space technologies and capabili-

1 ties. To the greatest extent possible, the Administrator  
 2 shall synergize all NASA space technology investments,  
 3 encourage collaboration in space technology development  
 4 with academia and industry, and minimize duplication of  
 5 space technology development efforts across the Adminis-  
 6 tration and the private sector unless duplication is re-  
 7 quired to maintain mission safety, security, or backup ca-  
 8 pability.

9 (c) SPACE TECHNOLOGY ROADMAP REPORT.—In  
 10 carrying out the policy under subsection (b), the Adminis-  
 11 trator shall submit to the appropriate committees of Con-  
 12 gress, not later than 24 months after the date of enact-  
 13 ment of this Act, a progress report on the development,  
 14 testing, and demonstration of the 14 technological areas  
 15 of the Space Technology Roadmaps.

## 16 TITLE VI—EDUCATION

### 17 SEC. 601. EDUCATION AND OUTREACH ACTIVITIES.

18 (a) SENSE OF CONGRESS.—It is the sense of Con-  
 19 gress that—

20 (1) the Administration is uniquely recognized in  
 21 the educational and global communities for its aero-  
 22 space knowledge, passionate workforce, and unique  
 23 capabilities and facilities;

24 (2) U.S. competitiveness in aerospace requires  
 25 engaging the science, technology, engineering, and

1 mathematics (STEM) talent in all States and juris-  
2 dictions;

3 ~~(3) the Administration's education and outreach~~  
4 ~~programs, including the Experimental Program to~~  
5 ~~Stimulate Competitive Research (EPSCoR) and the~~  
6 ~~Space Grant College and Fellowship Program, re-~~  
7 ~~fect the Administration's successful commitment to~~  
8 ~~growing and diversifying the national science and~~  
9 ~~engineering workforce;~~

10 ~~(4) the Administration's outreach efforts to~~  
11 ~~underrepresented and underserved communities, by~~  
12 ~~helping minorities to pursue higher education in~~  
13 ~~STEM fields and to attain STEM careers, benefit~~  
14 ~~the overall national workforce; and~~

15 ~~(5) the Administration's efforts to improve the~~  
16 ~~management and execution of its education portfolio~~  
17 ~~and to evaluate program success using evidence-~~  
18 ~~based approaches should continue.~~

19 ~~(b) IN GENERAL.—The Administration shall—~~

20 ~~(1) continue to execute its educational and out-~~  
21 ~~reach programs, including providing a wide range of~~  
22 ~~academic research opportunities and engaging the~~  
23 ~~public interest in science, technology, engineering~~  
24 ~~and mathematics;~~

1           (2) continue to collaborate with minority insti-  
2           tutions to increase student participation in science,  
3           technology, engineering, and mathematics; and

4           (3) seek partnerships with industry, academia,  
5           and with other communities to best respond to the  
6           Nation's aerospace-related educational and work-  
7           force needs.

8           (e) SPACE GRANT.—To enhance the United States  
9           STEM education and workforce, the Administrator shall  
10          continue to operate the National Space Grant College and  
11          Fellowship program through a national network of re-  
12          gional consortia. The program shall provide hands-on re-  
13          search, training, and education programs; use measurable  
14          outcomes to gauge success; and allow States flexibility in  
15          its execution.

## 16           **TITLE VII—OTHER MATTERS**

### 17           **SEC. 701. SENSE OF CONGRESS ON NASA'S CROSS AGENCY** 18           **SUPPORT.**

19          (a) FINDINGS.—Congress makes the following find-  
20          ings:

21           (1) Cross Agency Support operates and main-  
22           tains the Administration's centers and facilities, in-  
23           cluding headquarters, enabling the accomplishment  
24           of the Administration's missions while protecting  
25           human health and the environment.

1           (2) Cross Agency Support provides for the  
2 unique facilities, skilled personnel, and administra-  
3 tive support that NASA programs, research, and de-  
4 velopment activities require at the centers.

5           (3) Cross Agency Support provides the Admin-  
6 istration with the capability to improve mission suc-  
7 cess by supplying safety and mission assurance, en-  
8 gineering technical authority, and health and med-  
9 ical oversight across all of NASA's programs, re-  
10 search, and operations.

11           (4) The Orbital Debris Program Office is lo-  
12 cated in Cross Agency Support and leads the Ad-  
13 ministration's effort in addressing the orbital debris  
14 issue, which is an issue resulting from over 50 years  
15 of spaceflight.

16           (5) Cross Agency Support delivers the informa-  
17 tion technology services used throughout the Admin-  
18 istration that allow its workforce to work and com-  
19 municate efficiently and effectively, not only internal  
20 to the Administration, but with the citizens of the  
21 world which provides them the opportunity to be in-  
22 cluded and participate in the Administration's ac-  
23 complishments.

24           (6) The Administration's public affairs, located  
25 in Cross Agency Support, provided worldwide live

1 coverage of the Curiosity Rover's landing on Mars,  
2 the largest rover ever sent to Mars, in August of  
3 2012.

4 (7) The authority and execution of the Admin-  
5 istration's offices responsible for finance, budget, ac-  
6 quisition, external relations, legislative affairs, train-  
7 ing, security, and human capital management are  
8 performed under Cross Agency Support.

9 (b) SENSE OF CONGRESS.—It is the sense of Con-  
10 gress that—

11 (1) Cross Agency Support represents a variety  
12 of functions vital to the strength and success of the  
13 Administration and is essential to the Administra-  
14 tion's vision;

15 (2) the centers and facilities in the Administra-  
16 tion are a vital part of the many advances in science  
17 and technology the Administration has provided and  
18 continues to provide to this Nation and the world  
19 since the Administration was created in 1958;

20 (3) at the Administration's core is safety and  
21 mission success that, through Cross Agency Support,  
22 is carried out by the highly talented and dedicated  
23 workforce at the Administration's centers and facili-  
24 ties;

1           (4) as the Administration looks to continue  
2 international, interagency, and industry cooperation  
3 and partnerships; Cross Agency Support will con-  
4 tinue to provide the overseeing and execution of  
5 these efforts; and

6           (5) Cross Agency Support be given the nec-  
7 essary resources to keep the Administration capable  
8 of meeting the goals set forth by Congress and con-  
9 tinue to be a global leader in space and aeronautics.

10 **SEC. 702. SPACE COMMUNICATIONS NETWORK.**

11       (a) PLAN.—The Administrator shall prepare an up-  
12 dated plan for NASA’s near-Earth, space, and deep space  
13 communications network and infrastructure. The plan  
14 shall—

15           (1) identify steps to sustain the existing net-  
16 work and infrastructure;

17           (2) assess the capabilities, including any up-  
18 grades, needed to support NASA’s programs;

19           (3) identify priorities for how resources should  
20 be used to implement the plan; and

21           (4) assess the impact on missions if resources  
22 are not secured at the level needed.

23       (b) TRANSMITTAL.—Not later than 270 days after  
24 the date of enactment of this Act, the Administrator shall

1 transmit the plan to the appropriate committees of Con-  
 2 gress.

3 **SEC. 703. ASTRONAUT OCCUPATIONAL HEALTHCARE.**

4 (a) ~~IN GENERAL.~~—Chapter ~~313~~ of title 51, United  
 5 States Code, is amended by adding at the end the fol-  
 6 lowing:

7 **“§ 31303. Astronaut occupational healthcare**

8 “(a) ~~IN GENERAL.~~—Notwithstanding any other pro-  
 9 vision of law, the Administrator, as the Administrator con-  
 10 siders necessary, may provide for the medical monitoring,  
 11 diagnosis, and treatment of a crewmember for conditions  
 12 that the Administrator considers associated with human  
 13 space flight, including scientific and medical tests for psy-  
 14 chological and medical conditions.

15 “(b) ~~RECORDS.~~—Consistent with applicable Federal  
 16 privacy laws, the Administration shall retain access to all  
 17 medical records and other health data from the provision  
 18 of healthcare under subsection (a).

19 “(c) ~~DEFINITION OF CREWMEMBER.~~—In this section,  
 20 the term ‘crewmember’ means—

21 “(1) a former NASA astronaut/payload spe-  
 22 cialist who has flown on at least 1 space mission;

23 “(2) a management NASA astronaut who has  
 24 flown at least 1 space mission and is currently em-  
 25 ployed by the U.S. Government; or



1           “(3) an active NASA astronaut/payload spe-  
2           cialist assigned, waiting assignment, or training for  
3           an assignment to a NASA human space flight.”.

4           (b) CONFORMING AMENDMENT.—The table of con-  
5           tents for chapter 313 of title 51, United States Code, is  
6           amended by adding after the item relating to section  
7           31302 the following:

          “31303. Astronaut occupational healthcare.”.

8           **SEC. 704. HELIUM CAPTURE AND RECOVERY.**

9           (a) IN GENERAL.—Not later than 180 days after the  
10          date of enactment of this Act, the Administrator shall sub-  
11          mit to the appropriate committees of Congress an agency-  
12          wide plan to recover and recycle helium, whenever possible,  
13          that the Administration uses or will use in current,  
14          planned, and future experimentation, tests, launches, and  
15          operations.

16          (b) CONSIDERATIONS.—In developing the plan under  
17          subsection (a), the Administrator shall consider how modi-  
18          fications, updates, or new lifecycle designs for engines, bal-  
19          loons, airships, or other future programs can be designed  
20          or operated to recover and recycle helium.

21          **SEC. 705. INFORMATION TECHNOLOGY GOVERNANCE.**

22          (a) SENSE OF CONGRESS.—It is the sense of Con-  
23          gress that effective information technology governance is  
24          critical to ensuring information security, decreased costs,  
25          and overall mission assurance. The June 5, 2013, NASA

1 Office of Inspector General audit, “NASA’s Information  
2 Technology Governance,” found that the NASA Chief In-  
3 formation Officer has limited oversight and control over  
4 a majority of the Administration’s information technology  
5 assets and cannot enforce security measures across the  
6 agency’s computer networks. For nearly 2 decades, the  
7 Administration has operated under a decentralized infor-  
8 mation technology governance structure that has resulted  
9 in increased costs and inadequate security. At the same  
10 time, centralization of information technology governance  
11 has resulted in increased security and lower operating  
12 costs at other agencies.

13 (b) INFORMATION TECHNOLOGY GOVERNANCE.—  
14 The Administrator shall, in consultation with Mission Di-  
15 rectorate and NASA Center Chief Information Officers—

16 (1) ensure the Agency Chief Information Offi-  
17 cer has the appropriate resources and visibility to  
18 oversee agency-wide information technology oper-  
19 ations and investments;

20 (2) establish a direct line of report between the  
21 Agency Chief Information Officer and the Adminis-  
22 trator;

23 (3) establish a minimum monetary threshold for  
24 all agency information technology investments over

1 which the Agency Chief Information Officer shall  
2 have final approval; and

3 (4) consider appropriate revisions to the char-  
4 ters of information technology boards and councils  
5 that inform information technology investment and  
6 operation decisions.

7 **SEC. 706. IMPROVEMENTS TO BASELINES AND COST CON-**  
8 **TROLS BREACH REPORTING PROCESS.**

9 Section 30104 of title 51, United States Code is  
10 amended—

11 (1) in subsection (d)(3)—

12 (A) by striking “the notification”; and

13 (B) by inserting “the notification and a  
14 timeline by which the Administrator intends to  
15 make the determination, report, and analysis  
16 under subsection (e)” before the period at the  
17 end;

18 (2) in subsection (e)(1), by striking “Not later  
19 than 30 days after receiving a written notification  
20 under subsection (d)(2)” and inserting “In accord-  
21 ance with the timeline under subsection (d)(3)”;

22 (3) in subsection (e)(1)(A), by striking “not  
23 later than 15 days after making the determination”  
24 and inserting “in accordance with the timeline under  
25 subsection (d)(3)”;

1           (4) in subsection (e)(2), by striking “not later  
2 than 6 months after the Administrator makes a de-  
3 termination under this subsection” and inserting “in  
4 accordance with the timeline under subsection  
5 (d)(3)”; and

6           (5) in subsection (f), by inserting “or an annual  
7 budget request that reflects this growth” after “a  
8 report under subsection (e)(1)(A)”.

9 **SEC. 707. INFRASTRUCTURE.**

10       (a) SENSE OF CONGRESS.—It is the sense of Con-  
11 gress that—

12           (1) the Administration has a role in providing  
13 access to unique or specialized laboratory capabilities  
14 that are not economically viable for purchase by  
15 commercial entities and therefore are not available  
16 outside of NASA;

17           (2) the deteriorating condition of the Adminis-  
18 tration’s facilities and other infrastructure is ham-  
19 pering the research effectiveness and efficiency per-  
20 formed at those facilities by both the Administration  
21 and industry participants;

22           (3) the Administration must improve the condi-  
23 tion of its facilities and infrastructure to maintain  
24 the competitiveness of the U.S. aerospace industry;

1           (4) to ensure continued researcher access to re-  
2           liable and efficient world-class facilities; the Admin-  
3           istration should seek to establish strategic partner-  
4           ships with other Federal agencies; academic institu-  
5           tions; and industry; as appropriate; and

6           (5) decisions regarding whether to dispose of,  
7           maintain, or modernize existing facilities and other  
8           infrastructure must be made in the context of meet-  
9           ing the future laboratory needs of the Administra-  
10          tion and other Federal agencies.

11          (b) PLAN.—Not later than 1 year after the date of  
12          enactment of this Act, the Administrator shall submit to  
13          the appropriate committees of Congress a plan for retain-  
14          ing or acquiring the facilities, laboratories, equipment, test  
15          capabilities, and other infrastructure necessary to meet  
16          the Administration’s mandates and its current and future  
17          missions. The plan shall—

18               (1) identify the Administration’s future infra-  
19               structure needs, including facilities, laboratories,  
20               equipment, and test capabilities;

21               (2) include a strategy for identifying and re-  
22               moving unnecessary or duplicative infrastructure  
23               consistent with the national strategic direction under  
24               the National Space Policy, the National Aeronautics  
25               Research, Development, Test and Evaluation Infra-

1 structure Plan, the National Aeronautics and Space  
2 Administration Authorization Act of 2010, title 51  
3 of the United States Code, and other Administra-  
4 tion-related law;

5 (3) include a strategy for the maintenance, re-  
6 pair, upgrading, and modernization of the Adminis-  
7 tration's facilities, laboratories, equipment, and  
8 other infrastructure;

9 (4) recommend criteria for prioritizing deferred  
10 maintenance tasks and for upgrading or modernizing  
11 facilities, laboratories, equipment, and other infra-  
12 structure;

13 (5) include an assessment of modifications  
14 needed to maximize the use of facilities, laboratories,  
15 equipment, and other infrastructure that offer  
16 unique and highly specialized benefits to the aero-  
17 space industry and the public; and

18 (6) include recommendations for implementa-  
19 tion, including a timeline, milestones, and an esti-  
20 mate of the resources required for carrying out the  
21 plan.

22 (c) ESTABLISHMENT OF CAPITAL FUNDS.—The Ad-  
23 ministrator shall establish a capital fund at each of  
24 NASA's field centers for the modernization of facilities,  
25 laboratories, equipment, and other infrastructure in ac-

1 accordance with the plan under subsection (b). The Adminis-  
 2 trator shall ensure, to the greatest extent practicable, that  
 3 any financial savings achieved by closing an outdated or  
 4 surplus facility at a NASA field center is made available  
 5 to that field center's capital fund for the purpose of mod-  
 6 ernizing that field center's facilities, laboratories, equip-  
 7 ment, and other infrastructure in accordance with the plan  
 8 under subsection (b).

9 **SEC. 708. KNOWLEDGE MANAGEMENT.**

10 (a) SENSE OF CONGRESS.—It is the sense of the Con-  
 11 gress that—

12 (1) the Administration's success relies heavily  
 13 on the accumulated technical knowledge of its skilled  
 14 civil servant and contractor workforce;

15 (2) in light of an aging workforce, it is impera-  
 16 tive that the Administration preserve, to the max-  
 17 imum extent possible, both critical technical skills  
 18 and all knowledge valuable to future mission plan-  
 19 ning and operation; and

20 (3) exercising best practice knowledge manage-  
 21 ment systems within the Administration will benefit  
 22 the future NASA workforce and help ensure future  
 23 mission successes.

24 (b) KNOWLEDGE MANAGEMENT SYSTEM.—The Ad-  
 25 ministrator shall establish an Administration-wide knowl-

1 edge management system and implement industry-stand-  
2 ard best practices for capturing, archiving, and retrieving  
3 heritage and future information. The information under  
4 this subsection shall be accessible to all Administration  
5 employees unless otherwise prohibited because of the clas-  
6 sified or sensitive nature of the information.

7 (c) REPORT.—Not later than 12 months after the  
8 date of enactment of this Act, the Administrator shall sub-  
9 mit to the appropriate committees of Congress a report  
10 that, at a minimum, includes—

11 (1) a description of any actions necessary to  
12 create or modify an Administration-wide knowledge  
13 management system;

14 (2) a plan for implementing the knowledge  
15 management system, including employee training  
16 and the provision of secure access to information, as  
17 required for all personnel working on Administration  
18 programs, projects, and research;

19 (3) a summary of implementation costs for the  
20 knowledge management system; and

21 (4) a timeline and progress report for imple-  
22 mentation.

23 (d) WORKFORCE STABILIZATION AND CRITICAL  
24 SKILLS PRESERVATION.—Section 1105 of the National  
25 Aeronautics and Space Administration Authorization Act



1 of 2010 (42 U.S.C. 18431) is amended by striking “2013”  
 2 and inserting “2016”.

3 **SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

4 (a) *SHORT TITLE.*—This Act may be cited as the “Na-  
 5 tional Aeronautics and Space Administration Authoriza-  
 6 tion Act of 2013”.

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

*TITLE I—AUTHORIZATION OF APPROPRIATIONS*

*Sec. 101. Fiscal year 2014.*

*Sec. 102. Fiscal year 2015.*

*Sec. 103. Fiscal year 2016.*

*TITLE II—HUMAN SPACE FLIGHT EXPLORATION AND OPERATIONS*

*Subtitle A—Exploration*

*Sec. 201. Missions and destinations.*

*Sec. 202. NASA processing and launch infrastructure.*

*Sec. 203. Naming of the space launch system.*

*Sec. 204. Report; space suit system.*

*Subtitle B—Maximizing ISS Utilization*

*Sec. 221. Operation and utilization of the ISS.*

*Sec. 222. Research roles and responsibilities.*

*Sec. 223. ISS national laboratory; property rights in inventions.*

*Sec. 224. Commercial cargo and crew capabilities.*

*Subtitle C—Other Matters*

*Sec. 231. Safety and mission assurance in human space flight.*

*Sec. 232. Launch liability provisions.*

*Sec. 233. Termination liability.*

*TITLE III—SCIENCE*

*Subtitle A—Earth Science*

*Sec. 301. Earth science.*

*Sec. 302. Land remote sensing.*

*Subtitle B—Space Science*

*Sec. 321. Human exploration and science collaboration.*

*Sec. 322. Maintaining a balanced space science portfolio.*

*Sec. 323. Science mission extensions.*

*Sec. 324. Planetary science.*

Sec. 325. *Space weather.*  
 Sec. 326. *James Webb space telescope.*  
 Sec. 327. *University class science missions.*

*TITLE IV—AERONAUTICS*

Sec. 401. *NASA aeronautics.*

*TITLE V—SPACE TECHNOLOGY*

Sec. 501. *Space technology.*

*TITLE VI—EDUCATION*

Sec. 601. *Education and outreach activities.*

*TITLE VII—OTHER MATTERS*

Sec. 701. *Sense of Congress on NASA's cross agency support.*  
 Sec. 702. *Space communications network.*  
 Sec. 703. *Astronaut occupational healthcare.*  
 Sec. 704. *Helium capture and recovery.*  
 Sec. 705. *Information technology governance.*  
 Sec. 706. *Improvements to baselines and cost controls breach reporting process.*  
 Sec. 707. *Infrastructure.*  
 Sec. 708. *Commercial launch cooperation.*  
 Sec. 709. *Knowledge management.*  
 Sec. 710. *Authority to protect certain technical data from public disclosure.*

1 **SEC. 2. FINDINGS.**

2 *Congress makes the following findings:*

3 *(1) A robust and balanced space program en-*  
 4 *hances the United States long-term national and eco-*  
 5 *nom ic security by—*

6 *(A) stimulating development of advanced*  
 7 *technologies with widespread applications;*

8 *(B) increasing the United States techno-*  
 9 *logical competitiveness;*

10 *(C) enhancing global prosperity and secu-*  
 11 *rity through cooperation in shared interests, such*  
 12 *as advancement of science, understanding of*

1 *Earth and the universe, and protection from*  
2 *space borne threats, such as asteroids;*

3 *(D) opening the solar system to the full*  
4 *range of peaceful human activity; and*

5 *(E) inspiring students to pursue disciplines*  
6 *in science, technology, engineering, and mathe-*  
7 *matics.*

8 *(2) The Nation's space program should include—*

9 *(A) national security and civil space activi-*  
10 *ties;*

11 *(B) robotic and human exploration;*

12 *(C) advancement of scientific knowledge and*  
13 *engagement of the general public;*

14 *(D) U.S. Government led launch capability*  
15 *development, including the Space Launch Sys-*  
16 *tem and the Orion multi-purpose crew vehicle,*  
17 *and partnerships with commercial and inter-*  
18 *national entities;*

19 *(E) advancement of the space frontier and*  
20 *stimulation of commerce; and*

21 *(F) searching outward to further our under-*  
22 *standing of the universe and observing Earth to*  
23 *expand knowledge of our home planet.*

24 **SEC. 3. DEFINITIONS.**

25 *In this Act:*

1           (1) *ADMINISTRATION.*—*The term “Administration” means the National Aeronautics and Space Administration.*

2  
3  
4           (2) *ADMINISTRATOR.*—*The term “Administrator” means the Administrator of the National Aeronautics and Space Administration.*

5  
6  
7           (3) *APPROPRIATE COMMITTEES OF CONGRESS.*—  
8 *The term “appropriate committees of Congress”*  
9 *means—*

10                   (A) *the Committee on Commerce, Science,*  
11 *and Transportation of the Senate; and*

12                   (B) *the Committee on Science, Space, and*  
13 *Technology of the House of Representatives.*

14           (4) *ISS.*—*The term “ISS” means the Inter-*  
15 *national Space Station.*

16           (5) *NASA.*—*The term “NASA” means the Na-*  
17 *tional Aeronautics and Space Administration.*

18           (6) *ORION.*—*The term “Orion” means the multi-*  
19 *purpose crew vehicle described under section 303 of*  
20 *the National Aeronautics and Space Administration*  
21 *Authorization Act of 2010 (42 U.S.C. 18323).*

22           (7) *SPACE LAUNCH SYSTEM.*—*The term “Space*  
23 *Launch System” has the meaning given the term*  
24 *under section 3 of the National Aeronautics and*

1       *Space Administration Authorization Act of 2010 (42*  
2       *U.S.C. 18302).*

3       ***TITLE I—AUTHORIZATION OF***  
4       ***APPROPRIATIONS***

5       ***SEC. 101. FISCAL YEAR 2014.***

6       *There are authorized to be appropriated to NASA for*  
7       *fiscal year 2014, \$18,100,000,000, as follows:*

8               *(1) For Exploration, \$4,275,000,000, of which—*

9                       *(A) \$1,600,000,000 shall be for Space*  
10                      *Launch System;*

11                     *(B) \$1,200,000,000 shall be for the Orion*  
12                      *multi-purpose crew vehicle;*

13                     *(C) \$350,000,000 shall be for Exploration*  
14                      *Ground Systems;*

15                     *(D) \$325,000,000 shall be for Exploration*  
16                      *Research and Development; and*

17                     *(E) \$800,000,000 shall be for Commercial*  
18                      *Space Flight.*

19               *(2) For Space Operations, \$3,832,000,000, of*  
20       *which—*

21                     *(A) \$3,000,000,000 shall be for the ISS pro-*  
22                      *gram; and*

23                     *(B) \$832,000,000 for Space and Flight*  
24                      *Support.*

25               *(3) For Science, \$5,154,000,000, of which—*

1           (A) \$1,800,000,000 shall be for Earth  
2           Sciences;

3           (B) \$1,400,000,000 shall be for Planetary  
4           Science;

5           (C) \$642,000,000 shall be for Astrophysics;

6           (D) \$658,000,000 shall be for the James  
7           Webb Space Telescope; and

8           (E) \$654,000,000 shall be for Heliophysics.

9           (4) For Aeronautics, \$570,000,000.

10          (5) For Space Technology, \$635,000,000.

11          (6) For Education, \$136,000,000.

12          (7) For Cross-Agency Support Programs,  
13          \$2,850,000,000.

14          (8) For Construction and Environmental Com-  
15          pliance and Restoration, \$610,000,000.

16          (9) For Inspector General, \$38,000,000.

17 **SEC. 102. FISCAL YEAR 2015.**

18          There are authorized to be appropriated to NASA for  
19          fiscal year 2015, \$18,462,000,000, as follows

20          (1) For Exploration, \$4,522,000,000, of which—

21               (A) \$1,725,000,000 shall be for Space  
22               Launch System;

23               (B) \$1,225,000,000 shall be for the Orion  
24               multi-purpose crew vehicle;

1           (C) \$425,000,000 shall be for *Exploration*  
2 *Ground Systems*;

3           (D) \$332,000,000 shall be for *Exploration*  
4 *Research and Development*; and

5           (E) \$815,000,000 shall be for *Commercial*  
6 *Space Flight*.

7       (2) *For Space Operations*, \$3,948,000,000, of  
8 *which—*

9           (A) \$3,103,000,000 shall be for the *ISS pro-*  
10 *gram*; and

11          (B) \$845,000,000 for *Space and Flight*  
12 *Support*.

13       (3) *For Science*, \$5,234,400,000, of *which—*

14          (A) \$1,836,000,000 shall be for *Earth*  
15 *Sciences*;

16          (B) \$1,450,000,000 shall be for *Planetary*  
17 *Science*;

18          (C) \$670,000,000 shall be for *Astrophysics*;

19          (D) \$645,400,000 shall be for the *James*  
20 *Webb Space Telescope*; and

21          (E) \$633,000,000 shall be for *Heliophysics*.

22       (4) *For Aeronautics*, \$581,000,000.

23       (5) *For Space Technology*, \$650,000,000.

24       (6) *For Education*, \$139,800,000.

1           (7) *For Cross-Agency Support Programs,*  
2           \$2,907,000,000.

3           (8) *For Construction and Environmental Com-*  
4           *pliance and Restoration, \$441,000,000.*

5           (9) *For Inspector General, \$38,800,000.*

6 **SEC. 103. FISCAL YEAR 2016.**

7           *There are authorized to be appropriated to NASA for*  
8 *fiscal year 2016, \$18,831,000,000, as follows:*

9           (1) *For Exploration, \$4,660,000,000, of which—*

10           (A) *\$1,800,000,000 shall be for Space*  
11 *Launch System;*

12           (B) *\$1,250,000,000 shall be for the Orion*  
13 *multi-purpose crew vehicle;*

14           (C) *\$435,000,000 shall be for Exploration*  
15 *Ground Systems;*

16           (D) *\$350,000,000 shall be for Exploration*  
17 *Research and Development; and*

18           (E) *\$825,000,000 shall be for Commercial*  
19 *Space Flight.*

20           (2) *For Space Operations, \$4,010,000,000, of*  
21 *which—*

22           (A) *\$3,196,000,000 shall be for the ISS pro-*  
23 *gram; and*

24           (B) *\$814,000,000 for Space and Flight*  
25 *Support.*



1           (3) *For Science, \$5,315,800,000, of which—*

2                 (A) *\$1,872,000,000 shall be for Earth*  
3                 *Sciences;*

4                 (B) *\$1,500,000,000 shall be for Planetary*  
5                 *Science;*

6                 (C) *\$686,800,000 shall be for Astrophysics;*

7                 (D) *\$620,000,000 shall be for the James*  
8                 *Webb Space Telescope; and*

9                 (E) *\$637,000,000 shall be for Heliophysics.*

10           (4) *For Aeronautics, \$593,000,000.*

11           (5) *For Space Technology, \$665,000,000.*

12           (6) *For Education, \$142,000,000.*

13           (7) *For Cross-Agency Support Programs,*  
14           *\$2,965,000,000.*

15           (8) *For Construction and Environmental Com-*  
16           *pliance and Restoration, \$441,000,000.*

17           (9) *For Inspector General, \$39,200,000.*

18           ***TITLE II—HUMAN SPACE FLIGHT***

19           ***EXPLORATION AND OPERATIONS***

20                         ***Subtitle A—Exploration***

21           ***SEC. 201. MISSIONS AND DESTINATIONS.***

22           (a) *IN GENERAL.—Congress reaffirms that the long-*  
23           *term goal of the human space flight and exploration efforts*  
24           *of NASA shall be to expand permanent human presence be-*  
25           *yond low-Earth orbit and to do so, where practical, in a*

1 *manner involving international partners, as stated in sec-*  
2 *tion 202(a) of the National Aeronautics and Space Admin-*  
3 *istration Authorization Act of 2010 (42 U.S.C. 18312(a)).*

4 *(b) HUMAN EXPLORATION OF MARS.—Section 202(b)*  
5 *of the National Aeronautics and Space Administration Au-*  
6 *thorization Act of 2010 (42 U.S.C. 18312(b)) is amended—*

7 *(1) by striking “and” at the end of paragraph*  
8 *(3);*

9 *(2) by striking the period at the end of para-*  
10 *graph (4) and inserting “; and”; and*

11 *(3) by adding at the end the following:*

12 *“(5) to achieve human exploration of Mars, in-*  
13 *cluding the establishment of a capability for human*  
14 *habitation on the surface of Mars.”.*

15 *(c) DEVELOPMENT OF EXPLORATION STRATEGY.—*

16 *(1) IN GENERAL.—Not later than 90 days after*  
17 *the date of enactment of this Act, and biennially*  
18 *thereafter, the Administrator shall submit to the ap-*  
19 *propriate committees of Congress a strategy to achieve*  
20 *the objective under section 202(b)(5) of the National*  
21 *Aeronautics and Space Administration Authorization*  
22 *Act of 2010, as amended (42 U.S.C. 18312(b)(5))*  
23 *through a series of successive, free-standing, but com-*  
24 *plementary missions making robust utilization of cis-*  
25 *lunar space and employing the Space Launch Sys-*

1        *tem, Orion, and other capabilities provided under ti-*  
2        *tles III, IV, V, and IX of that Act (42 U.S.C. 18301*  
3        *et seq.).*

4            (2) *STRATEGY REQUIREMENTS.—In developing*  
5        *the strategy under paragraph (1), the Administrator*  
6        *shall include—*

7            (A) *the utility of an expanded human pres-*  
8        *ence in cis-lunar space toward enabling missions*  
9        *to various lunar orbits, the lunar surface, aster-*  
10       *oids, the Mars system, and other destinations of*  
11       *interest for future human exploration and devel-*  
12       *opment;*

13           (B) *the utility of an expanded human pres-*  
14       *ence in cis-lunar space for economic, scientific,*  
15       *and technological advances;*

16           (C) *the opportunities for collaboration*  
17       *with—*

18                (i) *international partners;*

19                (ii) *private industry; and*

20                (iii) *other Federal agencies, including*  
21       *missions relevant to national security or*  
22       *scientific needs;*

23           (D) *the opportunities specifically afforded*  
24       *by the ISS to support high priority scientific*  
25       *and technological developments useful in expand-*

1            *ing and sustaining a human presence in cis-*  
2            *lunar space and beyond;*

3            *(E) a range of exploration mission architec-*  
4            *tures and approaches for the missions identified*  
5            *under paragraph (1); and*

6            *(F) standards for ensuring crew health and*  
7            *safety, including limits regarding radiation ex-*  
8            *posure and countermeasures necessary to meet*  
9            *those limits, means and methods for addressing*  
10           *urgent medical conditions or injuries, and other*  
11           *such safety, health, and medical issues that can*  
12           *be anticipated in the conduct of the missions*  
13           *identified under paragraph (1).*

14           *(3) COMPARISON OF MISSION ARCHITECTURES*  
15           *AND APPROACHES.—*

16           *(A) IN GENERAL.—The strategy shall in-*  
17           *clude a comparison of mission architectures and*  
18           *approaches identified under paragraph (2)(E)*  
19           *with a primary objective of identifying the ar-*  
20           *chitectures and approaches that—*

21           *(i) best support the long-term goal*  
22           *under section 202(a) of the National Aero-*  
23           *navitics and Space Administration Author-*  
24           *ization Act of 2010 (42 U.S.C. 18312(a));*  
25           *and*

1                   (ii) are enabled by the Space Launch  
2                   System, Orion, and other transportation ca-  
3                   pabilities and technologies provided under  
4                   titles III, IV, V, and IX of the National  
5                   Aeronautics and Space Administration Au-  
6                   thorization Act of 2010 (42 U.S.C. 18301 et  
7                   seq.) and by other capabilities that may be  
8                   available commercially or internationally.

9                   (B) *FACTORS.*—The comparison of mission  
10                  architectures and approaches under subpara-  
11                  graph (A) shall include options that assess cost,  
12                  schedule, safety, sustainability, opportunities for  
13                  international collaboration, the enabling of new  
14                  markets and opportunities for U.S. private in-  
15                  dustry, compelling scientific opportunities or na-  
16                  tional security considerations and requirements,  
17                  the flexibility of the architecture to adjust to  
18                  evolving technologies, leadership, and priorities,  
19                  and contributions made to U.S. technological ex-  
20                  cellence, competitiveness, and leadership.

21                  (C) *NATIONAL SECURITY COLLABORA-*  
22                  *TION.*—In identifying opportunities for collabo-  
23                  ration under paragraph (2)(C)(iii), the Admin-  
24                  istrator, in collaboration with the Secretary of  
25                  Defense and Director of National Intelligence,

1           *shall include a discussion of the work, cost, and*  
2           *schedule required to enable and utilize a cargo*  
3           *variant of the Space Launch System, including*  
4           *the 70-, 105-, and 130-metric ton configurations,*  
5           *with both a 5-meter or 8-meter faring.*

6           (4) *ADDITIONAL REQUIREMENTS.—The strategy*  
7           *shall include—*

8                     (A) *technical information as needed to iden-*  
9                     *tify interest from the scientific and national se-*  
10                    *curity communities; and*

11                   (B) *an assessment of the Space Launch Sys-*  
12                    *tem to enable and sustain near-Earth object sur-*  
13                    *veillance of potentially Earth-threatening objects*  
14                    *for the purpose of planetary protection.*

15 **SEC. 202. NASA PROCESSING AND LAUNCH INFRASTRUC-**  
16                    **TURE.**

17           (a) *POLICY.—It is the policy of the United States that*  
18           *the Exploration Ground Systems to process and launch the*  
19           *Space Launch System, Orion, and related exploration ele-*  
20           *ments, and the 21st Century Space Launch Complex to en-*  
21           *able and facilitate civil, defense, and private launches are*  
22           *complementary efforts to modernize infrastructure, reduce*  
23           *costs, and maintain capabilities for current and future mis-*  
24           *sions.*

1           **(b) DEVELOPMENT OF THE PROCESSING AND LAUNCH**  
2 **SUPPORT INFRASTRUCTURE.**—*In executing the programs*  
3 *described under subsection (a), the Administrator, to the ex-*  
4 *tent practicable—*

5           (1) *may not exclude the ability of Exploration*  
6 *Ground Systems to support efforts under section*  
7 *305(b) of the National Aeronautics and Space Admin-*  
8 *istration Authorization Act of 2010 (42 U.S.C.*  
9 *18325(b));*

10           (2) *shall allow for cost-sharing opportunities by*  
11 *providing multi-use systems and capabilities to cur-*  
12 *rent and future users of the 21st Century Space*  
13 *Launch Complex through modernization, refurbish-*  
14 *ment, or development of infrastructure; and*

15           (3) *shall pursue, in collaboration with local,*  
16 *State, or Federal agencies, or private industry, capa-*  
17 *bilities and investments that support multiple entities*  
18 *to advance NASA’s current and future missions and*  
19 *benefit NASA by creating new partnerships.*

20           **(c) IMPROVEMENT OF LAUNCH INFRASTRUCTURE FOR**  
21 **ACCESS TO ISS.**—

22           (1) **IN GENERAL.**—*The Administrator shall con-*  
23 *tinue to improve launch infrastructure at United*  
24 *States facilities launching vehicles to resupply the*

1        *ISS in order to ensure continuous, timely, redundant,*  
2        *and efficient access to the ISS.*

3            (2) *FUNDING.*—*The budget materials for the Ad-*  
4        *ministration in each budget of the President for a fis-*  
5        *cal year (as submitted to Congress pursuant to section*  
6        *1105(a) of title 31, United States Code) shall specify*  
7        *the amount required for the Administration for such*  
8        *fiscal year for purposes of paragraph (1).*

9        **SEC. 203. NAMING OF THE SPACE LAUNCH SYSTEM.**

10        (a) *FINDINGS.*—*Congress finds that education and*  
11        *outreach to encourage the next generation of scientists and*  
12        *engineers to become involved in science and space explo-*  
13        *ration is one of the Administration’s most important mis-*  
14        *sions.*

15        (b) *REPORT.*—*Not later than 30 days after the date*  
16        *of enactment of this Act, the Administration shall submit*  
17        *to the appropriate committees of Congress a plan to engage*  
18        *the public, including science students in elementary and*  
19        *secondary education programs, throughout the United*  
20        *States in naming—*

21            (1) *NASA’s overall deep space human explo-*  
22        *ration program; and*

23            (2) *the Space Launch System.*



1 **SEC. 204. REPORT; SPACE SUIT SYSTEM.**

2 *Not later than 90 days after the date of enactment of*  
3 *this Act, the Administration shall submit to the appropriate*  
4 *committees of Congress a report updating Congress on the*  
5 *Constellation Space Suit System. The report shall include*  
6 *justification as to whether another competition to award*  
7 *contracts for the design, development, certification, produc-*  
8 *tion, and sustaining engineering of this space suit system*  
9 *is required to meet the needs of NASA's human exploration*  
10 *program.*

11 ***Subtitle B—Maximizing ISS***  
12 ***Utilization***

13 **SEC. 221. OPERATION AND UTILIZATION OF THE ISS.**

14 *(a) SENSE OF CONGRESS.—It is the sense of Congress*  
15 *that—*

16 *(1) maximum utilization of partnerships, sci-*  
17 *entific research, commercial applications, and explo-*  
18 *ration test bed capabilities of the ISS is essential to*  
19 *ensuring the greatest return on investments made by*  
20 *the United States and its international partners in*  
21 *the development, assembly, and operations of that*  
22 *unique facility; and*

23 *(2) every effort should be made to ensure that de-*  
24 *isions regarding the service life of the ISS are made*  
25 *on the basis of its projected capability to continue*

1        *providing effective and productive research and explo-*  
2        *ration test bed capabilities.*

3        *(b) CONTINUATION OF THE INTERNATIONAL SPACE*  
4        *STATION.—Congress reaffirms the policy stated in section*  
5        *501(a) of the National Aeronautics and Space Administra-*  
6        *tion Authorization Act of 2010 (42 U.S.C. 18351(a)) that*  
7        *it shall be the policy of the United States, in consultation*  
8        *with its international partners in the ISS program, to sup-*  
9        *port full and complete utilization of the ISS through at*  
10       *least 2020.*

11       *(c) NASA ACTIONS.—In furtherance of the policy*  
12       *under subsection (b), the Administrator shall ensure, to the*  
13       *extent practicable, that the ISS, as a designated national*  
14       *laboratory—*

15                *(1) remains viable as an element of overall explo-*  
16                *ration and partnership strategies and approaches;*

17                *(2) is considered for use by all NASA mission di-*  
18                *rectorates, as appropriate, for technically appropriate*  
19                *scientific data gathering or technology risk reduction*  
20                *demonstrations; and*

21                *(3) remains an effective, functional vehicle pro-*  
22                *viding research and test bed capabilities for the*  
23                *United States through 2020, up to 2028, and possibly*  
24                *beyond.*

1       (d) *REPORT.*—*The Administrator, in consultation*  
2 *with the Office of Science and Technology Policy, shall de-*  
3 *termine, through analyses and discussions with ISS part-*  
4 *ners, the feasible and preferred service life of the ISS as*  
5 *a unique scientific, commercial, and exploration-related fa-*  
6 *cility. Not later than 120 days after the date of enactment*  
7 *of this Act, and triennially thereafter, the Administrator*  
8 *shall submit to the appropriate committees of Congress a*  
9 *report that, at a minimum, includes—*

10           (1) *an assessment of whether ISS operations can*  
11 *be extended to at least 2028, including—*

12                   (A) *a description of any activities that*  
13 *would be required of the international partner-*  
14 *ship to ensure that safety requirements are met;*

15                   (B) *a general discussion of international*  
16 *partner capabilities and interest in extension, to*  
17 *include the potential for participation by addi-*  
18 *tional countries;*

19                   (C) *a review of essential systems or equip-*  
20 *ment upgrades that would be necessary for ISS*  
21 *extension and utilization to at least 2028;*

22                   (D) *an evaluation of the cost and schedule*  
23 *requirements associated with the development*  
24 *and delivery of essential systems or equipment*

1           *upgrades identified under subparagraph (C);*  
2           *and*

3                     *(E) an identification of possible partner*  
4                     *contributions and program transitions to pro-*  
5                     *vide the upgrades identified under subparagraph*  
6                     *(C);*

7                     *(2) an evaluation of the potential for expanding*  
8                     *the use of ISS facilities to accommodate the needs of*  
9                     *researchers and other users, including changes to poli-*  
10                    *cies, regulations, and laws that would stimulate*  
11                    *greater private and public involvement on the ISS;*  
12                    *and*

13                    *(3) such other information as may be necessary*  
14                    *to fully describe the justification for and feasibility of*  
15                    *extending the service life of the ISS, including the po-*  
16                    *tential scientific or technological benefits to the Fed-*  
17                    *eral Government or public, or to academic or com-*  
18                    *mercial entities that, within the United States-owned*  
19                    *modules of the ISS or in partner-owned facilities of*  
20                    *the ISS allocated for United States utilization by*  
21                    *international agreement, are or may become engaged*  
22                    *in research and testing activities sponsored, con-*  
23                    *ducted, and managed by the Administration or by the*  
24                    *ISS management entity.*

1           (e) *DEFINITION OF ISS MANAGEMENT ENTITY.*—In  
2 *this section, the term “ISS management entity” means the*  
3 *organization with which the Administrator enters into a*  
4 *cooperative agreement under section 504(a) of the National*  
5 *Aeronautics and Space Administration Authorization Act*  
6 *of 2010 (42 U.S.C. 18354(a)).*

7 **SEC. 222. RESEARCH ROLES AND RESPONSIBILITIES.**

8           (a) *SENSE OF CONGRESS.*—*It is the sense of Congress*  
9 *that—*

10                 (1) *expansion of the non-NASA utilization of the*  
11 *ISS is critical to maximizing the research potential*  
12 *of the ISS national laboratory and to facilitating ex-*  
13 *panded commercial activity in low-Earth orbit; and*

14                 (2) *in order to expand the non-NASA scientific*  
15 *utilization of ISS research capabilities and facilities,*  
16 *it is essential to clarify the roles and responsibilities*  
17 *of the entities managing research within the U.S.*  
18 *Segment of the ISS.*

19           (b) *MANAGEMENT OF THE ISS NATIONAL LABORA-*  
20 *TORY.*—*Section 504 of the National Aeronautics and Space*  
21 *Administration Authorization Act of 2010 (42 U.S.C.*  
22 *18354) is amended—*

23                 (1) *in subsection (b), by adding at the end the*  
24 *following:*

1           “(3) *CONFLICTS OF INTEREST.*—*The Administrator shall ensure that the liaison function under*  
2           *this subsection is implemented in a manner that pre-*  
3           *cludes any conflict of interest between the objectives*  
4           *and activities of the entities identified under sub-*  
5           *section (e).”;*  
6

7           (2) *in subsection (d)(2)—*

8                   (A) *by inserting “(A) IN GENERAL.—” be-*  
9                   *fore “If any NASA research plan” and adjusting*  
10                  *the text accordingly;*

11                  (B) *by inserting “and subject to subpara-*  
12                  *graph (B)” after “Until September 30, 2020” in*  
13                  *subparagraph (A), as redesignated; and*

14                  (C) *by adding at the end the following:*

15                   “(B) *MUTUAL AGREEMENT.*—*An exception*  
16                   *under subparagraph (A) may only be granted if*  
17                   *there is mutual agreement between the entities*  
18                   *identified under subsection (e).”;* and

19                  (3) *by adding at the end the following:*

20                  “(e) *CLARIFICATION OF ROLES.*—*The organization*  
21                  *with which the Administrator enters into a cooperative*  
22                  *agreement under subsection (a) for management of the ISS*  
23                  *national laboratory shall be considered a separate and*  
24                  *equal partner of any NASA organizational entity respon-*

1 sible for management of the NASA research plan onboard  
2 the ISS.”.

3 (c) *REPORT.*—

4 (1) *IN GENERAL.*—Not later than 180 days after  
5 the date of enactment of this Act, the Administrator  
6 shall submit to the appropriate committees of Con-  
7 gress a report on the following:

8 (A) *Options for expanding the Administra-*  
9 *tion’s collaboration with its ISS partners, in-*  
10 *cluding—*

11 (i) *providing U.S. personnel expanded*  
12 *access to international partner research fa-*  
13 *cilities; and*

14 (ii) *coordinating research efforts to*  
15 *minimize the duplication of effort, unless*  
16 *duplication is a justified element of the sci-*  
17 *entific process or essential for backup or re-*  
18 *dundant capability.*

19 (B) *The potential for increasing ISS crew*  
20 *size to maximize utilization and applications.*

21 (C) *Efforts undertaken by the Administra-*  
22 *tion and the ISS management entity—*

23 (i) *to enhance collaborative research be-*  
24 *tween the Administration and other Federal*  
25 *science agencies, such as the National Insti-*

1            *tutes of Health and the National Science*  
 2            *Foundation; and*

3            *(ii) to expand the use of the ISS na-*  
 4            *tional laboratory capabilities by Federal*  
 5            *science agencies.*

6            (2) *DEFINITION OF ISS MANAGEMENT ENTITY.—*  
 7            *In this subsection, the term “ISS management entity”*  
 8            *means the organization with which the Administrator*  
 9            *enters into a cooperative agreement under section*  
 10           *504(a) of the National Aeronautics and Space Ad-*  
 11           *ministration Authorization Act of 2010 (42 U.S.C.*  
 12           *18354(a)).*

13 **SEC. 223. ISS NATIONAL LABORATORY; PROPERTY RIGHTS**  
 14            **IN INVENTIONS.**

15           *Section 20135 of title 51, United States Code, is*  
 16 *amended—*

17           (1) *in subsection (g), by striking “Each such*  
 18           *waiver” and inserting “Except as provided under*  
 19           *subsection (l), each such waiver”; and*

20           (2) *by adding at the end the following:*

21           *“(l) WAIVER OF RIGHTS TO INVENTIONS; COMMERCIAL*  
 22 *MICROGRAVITY RESEARCH.—*

23           *“(1) IN GENERAL.—With respect to any inven-*  
 24           *tion or class of inventions made or which may be*  
 25           *made by any person or class of persons in the per-*



1        *formance of any non-NASA scientific utilization of*  
2        *the ISS national laboratory, the Administrator may*  
3        *waive the license reserved by the Administrator under*  
4        *subsection (g), in whole or in part and according to*  
5        *negotiated terms and conditions, including the terms*  
6        *and conditions under paragraphs (1), (2), (3), and*  
7        *(5) of section 202(c) of title 35, if the Administrator*  
8        *finds that the reservation of the license by the Admin-*  
9        *istrator would substantially inhibit the commer-*  
10       *cialization of an invention.*

11                *“(2) CONSTRUCTION.—Nothing in this subsection*  
12        *shall be construed to affect the rights of the Federal*  
13        *Government under any other procurement contract,*  
14        *grant, understanding, arrangement, agreement, or*  
15        *transaction.”.*

16        **SEC. 224. COMMERCIAL CARGO AND CREW CAPABILITIES.**

17        *(a) FINDINGS.—Congress finds that—*

18                *(1) NASA’s Commercial Orbital Transportation*  
19        *Services, Cargo Resupply Services, and Commercial*  
20        *Crew Program demonstrate the potential for pro-*  
21        *curring routine, commercially provided access to the*  
22        *ISS and to low-Earth orbit using innovative and*  
23        *cost-effective development and procurement strategies;*

24                *(2) Federal investments in the U.S. private space*  
25        *industry have the ability to provide for lower cost ac-*

1       *cess to space for researchers and for commercial ven-*  
2       *tures;*

3             (3) *commercially provided space transportation*  
4       *is critical to maximizing utilization of the ISS;*

5             (4) *encouraging competition among launch serv-*  
6       *ice providers and maintaining multiple space trans-*  
7       *portation options helps to reduce long-term costs to*  
8       *the Federal Government and to induce continual im-*  
9       *provement in available private-sector services; and*

10            (5) *consistent with section 201(b) of the National*  
11       *Aeronautics and Space Administration Authorization*  
12       *Act of 2010 (42 U.S.C. 18311(b)), maintaining mul-*  
13       *tiple launch service providers helps ensure uninter-*  
14       *rupted access to the space environment should a par-*  
15       *ticular provider's services become unavailable.*

16       (b) *SENSE OF CONGRESS.—It is the sense of Congress*  
17       *that the Administration—*

18             (1) *should continue to support the development*  
19       *of safe, reliable, and cost effective commercial launch*  
20       *capabilities for the primary purpose of securing do-*  
21       *mestic access to the ISS as quickly and safely as pos-*  
22       *sible; and*

23             (2) *should encourage a viable commercial market*  
24       *for the capabilities under paragraph (1).*

1           (c) *UNITED STATES POLICY.*—*It is the policy of the*  
2 *United States that, to foster the competitive development,*  
3 *operation, and improvement of private space transpor-*  
4 *tation services, services for Federal Government access to*  
5 *and return from the ISS, whenever feasible, shall be pro-*  
6 *cured via fair and open competition for well-defined, mile-*  
7 *stone-based, Federal Acquisition Regulation-based contracts*  
8 *under section 201(a) of the National Aeronautics and Space*  
9 *Administration Authorization Act of 2010 (42 U.S.C.*  
10 *18311(a)).*

11           (d) *SELECTION OF COMMERCIAL PROVIDERS.*—*In*  
12 *evaluating commercial space transportation service pro-*  
13 *viders, the Administrator—*

14                   (1) *shall aim to minimize the life-cycle costs of*  
15 *obtaining transportation services;*

16                   (2) *shall assure compliance with all safety and*  
17 *mission assurance requirements;*

18                   (3) *shall consider contractor financial invest-*  
19 *ment into the development of transportation capabili-*  
20 *ties; and*

21                   (4) *for commercial crew transport services—*

22                           (A) *shall consider flexibility in design, in-*  
23 *cluding sample return capabilities; and*

24                           (B) *shall provide a written notification and*  
25 *justification to the appropriate committees of*

1           Congress if the price per seat exceeds the cost ne-  
2           gotiated by NASA for crew transport in April  
3           2013.

4           (5) *STRATEGY FOR PROCURING COMMERCIAL*  
5           *SERVICES.*—*In implementing the policy under sub-*  
6           *section (c), the Administrator shall submit to the ap-*  
7           *propriate committees of Congress, not later than 120*  
8           *days after the date of enactment of this Act, a strat-*  
9           *egy for transitioning from Space Act Agreements to*  
10          *Federal Acquisition Regulation-based contracts for the*  
11          *procurement of crew transportation services to and*  
12          *from the ISS. The strategy shall include—*

13                   (A) *a comparison of potential procurement*  
14                   *strategies based on—*

15                           (i) *maximizing safety and mission as-*  
16                           *urance;*

17                           (ii) *the total projected costs to the Fed-*  
18                           *eral Government through 2020, given mul-*  
19                           *tiple projections of Government demand for*  
20                           *launch services;*

21                           (iii) *the feasibility of the procurement*  
22                           *strategy and timeline, given projected fund-*  
23                           *ing availabilities;*

24                           (iv) *the potential for supporting the re-*  
25                           *search and exploration test bed needs of the*

1 *Federal Government and of the independent*  
2 *entity responsible for ISS national labora-*  
3 *tory activities for the purposes described*  
4 *under section 504(d) of the National Aero-*  
5 *navitics and Space Administration Author-*  
6 *ization Act of 2010 (42 U.S.C. 18354(d));*  
7 *and*

8 *(v) the projected impacts on developing*  
9 *a viable market for commercial launch serv-*  
10 *ices;*

11 *(B) an evaluation of the costs and benefits*  
12 *of ensuring the availability of at least 2 U.S.-*  
13 *based launch service providers, considering—*

14 *(i) the potential need for diversified*  
15 *cargo and sample return capabilities, in-*  
16 *cluding a soft-landing capability as de-*  
17 *scribed under section 404 of the National*  
18 *Aeronautics and Space Administration Au-*  
19 *thorization Act of 2010 (124 Stat. 2822);*  
20 *and*

21 *(ii) the ability of multiple cargo or*  
22 *crew launch service providers to meet pri-*  
23 *vate or non-NASA Government mission re-*  
24 *quirements and the subsequent benefit to the*  
25 *United States of such ability;*

1           (C) justification for the procurement strat-  
2           egy selected from among those considered; and

3           (D) for the selected procurement strategy,  
4           identification of additional or modified authori-  
5           ties, regulations, or guidelines that are necessary  
6           for successful implementation.

### 7           **Subtitle C—Other Matters**

#### 8   **SEC. 231. SAFETY AND MISSION ASSURANCE IN HUMAN** 9           **SPACE FLIGHT.**

10          (a) *FINDINGS.*—Congress makes the following findings:

11           (1) *In the early part of the space race, the*  
12           *United States took over 3 years from the launch of the*  
13           *first American satellite, Explorer I, to the launch of*  
14           *the first American to space, Alan B. Shepard, Jr.*

15           (2) *It was known then, as it is now, that the ex-*  
16           *ploration of space by humans is an inherently dan-*  
17           *gerous endeavor.*

18           (3) *Access to space requires complex propulsion*  
19           *systems, such as the now retired Space Shuttle, which*  
20           *generated over 7,000,000 pounds of thrust.*

21           (4) *Adding humans to the complex systems re-*  
22           *quired to reach space requires additional safeguards,*  
23           *life support systems, and other measures to protect*  
24           *from the harsh environment of space in order to mini-*  
25           *mize risk to human life.*

1       (b) *SENSE OF CONGRESS.*—*It is the sense of Congress*  
2 *that—*

3           (1) *meticulousness and attention to detail helps*  
4 *ensure that all humans are safe and protected to the*  
5 *best of the abilities of all those involved in helping*  
6 *achieve the reaches of space;*

7           (2) *those who strive to send humans into space*  
8 *should make every effort to ensure the success of mis-*  
9 *sions and programs through independent safety and*  
10 *mission assurance analyses;*

11          (3) *diligent oversight efforts ensure adherence to*  
12 *safety, reliability, and quality assurance policies and*  
13 *procedures for missions and programs; and*

14          (4) *lessons learned from mishaps and near*  
15 *misses should be implemented into designs, decisions,*  
16 *policy, and procedures to reduce the risk of future in-*  
17 *cidents that could jeopardize crew safety or mission*  
18 *success.*

19 **SEC. 232. LAUNCH LIABILITY PROVISIONS.**

20       (a) *LIABILITY EXTENSION.*—*Section 50915(f) of title*  
21 *51, United States Code, is amended by striking “December*  
22 *31, 2013” and inserting “December 31, 2016”.*

23       (b) *PROTECTION FOR LAUNCH ACTIVITIES.*—*Sub-*  
24 *chapter III of chapter 201 of title 51, United States Code*  
25 *is amended by inserting after section 20147 the following:*

1 **“§ 20148. Indemnification; NASA launch services**

2       “(a) *IN GENERAL.*—Under such regulations in con-  
 3 formity with this section as the Administrator shall pre-  
 4 scribe taking into account the availability, cost, and terms  
 5 of liability insurance, any contract between the Adminis-  
 6 tration and a provider may provide that the United States  
 7 will indemnify a provider against claims (including rea-  
 8 sonable expenses of litigation or settlement) by third parties  
 9 for death, bodily injury, or loss of or damage to property  
 10 resulting from activities that the contract defines as unusu-  
 11 ally hazardous or nuclear in nature, but—

12               “(1) only to the extent that such claims are not  
 13 compensated by liability insurance of the provider;  
 14 and

15               “(2) only to the extent that such claims arise out  
 16 of the direct performance of the contract.

17       “(b) *LIMITATION.*—Indemnification under subsection  
 18 (a) may be limited to claims resulting from other than the  
 19 actual negligence or willful misconduct of the provider.

20       “(c) *TERMS OF INDEMNIFICATION.*—A contract made  
 21 under subsection (a) that provides indemnification shall  
 22 also provide for—

23               “(1) notice to the United States of any claim or  
 24 suit against the provider for death, bodily injury, or  
 25 loss of or damage to property; and



1           “(2) control of or assistance in the defense by the  
2           United States, at its election, of that suit or claim.

3           “(d) *LIABILITY INSURANCE OF THE PROVIDER.*—Each  
4 provider that is a party to a contract made under sub-  
5 section (a) shall have and maintain liability insurance in  
6 such amounts as the Administrator shall require to cover  
7 liability to third parties and loss of or damage to property.

8           “(e) *NO INDEMNIFICATION WITHOUT CROSS-WAIV-*  
9 *ER.*—Notwithstanding subsection (a), the Administrator  
10 may not indemnify a provider under this section unless  
11 there is a cross-waiver between the Administration and the  
12 provider as described in subsection (f).

13           “(f) *CROSS-WAIVERS.*—The Administrator, on behalf  
14 of the United States, and its departments, agencies, and in-  
15 strumentalities, may reciprocally waive claims with a pro-  
16 vider under which each party to the waiver agrees to be  
17 responsible, and agrees to ensure that its own related enti-  
18 ties are responsible, for damage or loss to its property for  
19 which it is responsible, or for losses resulting from any in-  
20 jury or death sustained by its own employees or agents, as  
21 a result of activities arising out of the performance of the  
22 contract.

23           “(g) *CERTIFICATION OF JUST AND REASONABLE*  
24 *AMOUNT.*—No payment may be made under subsection (a)

1 *unless the Administrator or the Administrator's designee*  
2 *certifies that the amount is just and reasonable.*

3       “(h) *PAYMENTS.*—*Upon the approval by the Adminis-*  
4 *trator, payments under subsection (a) may be made, at the*  
5 *Administrator's election, either from—*

6               “(1) *funds obligated for the performance of the*  
7 *contract concerned;*

8               “(2) *funds available for research and develop-*  
9 *ment not otherwise obligated; or*

10              “(3) *funds appropriated for such payments.*

11       “(i) *APPLICATION OF CERTAIN PROVISIONS.*—*If the*  
12 *Administrator requests additional appropriations to make*  
13 *payments under this section, then the request for those ap-*  
14 *propriations shall be made in accordance with the proce-*  
15 *dures established under section 50915. The Administrator*  
16 *shall not authorize payments under subsection (h) of this*  
17 *section, except to the extent provided in an appropriation*  
18 *law or to the extent additional legislative authority is en-*  
19 *acted providing for such payments. Notwithstanding any*  
20 *other provision of this section, all obligations under this sec-*  
21 *tion are subject to the availability of funds, and nothing*  
22 *in this section shall be interpreted to require obligation or*  
23 *payment of funds in violation of the Anti-Deficiency Act*  
24 *(31 U.S.C. 1341).*

1       “(j) *RELATIONSHIP TO OTHER LAWS.*—*The Adminis-*  
 2 *trator may not provide indemnification under this section*  
 3 *for an activity that requires a license or permit under chap-*  
 4 *ter 509.*

5       “(k) *CONSTRUCTION.*—*The authority to indemnify*  
 6 *under this section shall not create any rights in third per-*  
 7 *sons that would not otherwise exist by law.*

8       “(l) *DEFINITIONS.*—*In this section:*

9               “(1) *LAUNCH SERVICES.*—*The term ‘launch serv-*  
 10 *ices’ has the meaning given the term in section 50902.*

11              “(2) *PROVIDER.*—*The term ‘provider’ means a*  
 12 *person that provides domestic launch services in sup-*  
 13 *port of any space activity the Government carries out*  
 14 *for the Government, including a subcontractor under*  
 15 *a contract containing an indemnification provision*  
 16 *under subsection (a).*

17              “(3) *RELATED ENTITY.*—*The term ‘related enti-*  
 18 *ty’ includes a contractor or subcontractor.”.*

19       “(c) *CONFORMING AMENDMENT.*—*The table of contents*  
 20 *for subchapter III of chapter 201 of title 51, United States*  
 21 *Code, is amended by inserting after the item relating to*  
 22 *section 20147 the following:*

      “20148. *Indemnification; NASA launch services.*”.

23 **SEC. 233. TERMINATION LIABILITY.**

24       “(a) *SENSE OF CONGRESS.*—*It is the sense of Congress*  
 25 *that—*

1           (1) *while NASA's rate of contract termination is*  
2           *relatively low, the proper management of termination*  
3           *liability is essential to minimizing the government's*  
4           *cost risk and to ensuring that taxpayer funding prop-*  
5           *erly supports meeting NASA contract performance*  
6           *goals;*

7           (2) *maintaining the Administration's flexibility*  
8           *in executing termination liability provisions helps*  
9           *NASA to effectively manage its cost risks, given the*  
10          *circumstances relevant to individual contracts;*

11          (3) *current statute provides the Administration*  
12          *with broad leeway in determining the amount of and*  
13          *managing its termination liability reserves; and*

14          (4) *the concerns noted in 2011 by the Comp-*  
15          *troller General, who found that NASA had not suc-*  
16          *cessfully monitored potential termination liability*  
17          *costs or enforced related procedures, must be addressed*  
18          *in order to ensure the best use of taxpayer funds.*

19          (b) *REPORT.—Not later than 90 days after the date*  
20          *of enactment of this Act, the Administrator shall deliver to*  
21          *the appropriate committees of Congress a review of its cur-*  
22          *rent termination liability practices and the benefits of po-*  
23          *tential alternatives. The report shall include –*

24                 (1) *an accounting of the total budget currently*  
25                 *held in reserve, by either the Administration or a con-*

1 *tractor, to cover termination liability for the Space*  
2 *Launch System and Orion programs;*

3 (2) *an accounting of the current cost risk of ter-*  
4 *mination liability for the Space Launch System and*  
5 *Orion programs;*

6 (3) *a description of the guidelines by which the*  
7 *Administration determines the appropriate level of*  
8 *termination liability and monitors potential termi-*  
9 *nation liability costs over the lifetime of a contract;*

10 (4) *a descriptive list of alternative frameworks*  
11 *for managing termination liability, including frame-*  
12 *works wherein neither NASA nor the contractor holds*  
13 *funds in reserve to cover termination liability;*

14 (5) *a comparison demonstrating the benefits and*  
15 *drawbacks of the current and alternative termination*  
16 *liability frameworks; and*

17 (6) *a description of any statutory changes that*  
18 *may be required to implement alternative termi-*  
19 *nation liability frameworks, which may include per-*  
20 *mitting the Administration to pool reserves across*  
21 *programs or to apply current year appropriations to-*  
22 *wards liability payments.*

23 (c) *GAO REVIEW.—Concurrent with the delivery of the*  
24 *report to the appropriate committees of Congress, the Ad-*  
25 *ministration shall submit the report for review by the*

1 *Comptroller General. Not later than 30 days after the date*  
2 *that NASA receives the report, the Comptroller General*  
3 *shall deliver to Congress an assessment of the potential for*  
4 *continued improvement relative to the previous GAO review*  
5 *of NASA termination liability, conducted in 2011.*

## 6 **TITLE III—SCIENCE**

### 7 **Subtitle A—Earth Science**

#### 8 **SEC. 301. EARTH SCIENCE.**

9 *(a) FINDINGS.—Congress finds that—*

10 *(1) continuous, long-term Earth observation data*  
11 *supports the preparation for and management of nat-*  
12 *ural and human-induced disasters, benefits resource*  
13 *management and agricultural forecasting, improves*  
14 *our understanding of climate, and encourages envi-*  
15 *ronmental and economic sustainability;*

16 *(2) due to the scope of activities required, Earth*  
17 *science research and Earth observation are multi-*  
18 *agency endeavors requiring significant cooperation*  
19 *and information sharing among government, inter-*  
20 *national, and scientific community partners;*

21 *(3) in developing Earth observation technologies,*  
22 *conducting Earth science satellite missions, and pro-*  
23 *viding research products to the scientific community,*  
24 *NASA plays a crucial role in advancing Earth*  
25 *science; and*

1           (4) *the loss of observational capabilities in Earth*  
2 *science, as predicted by the National Research Coun-*  
3 *cil’s midterm update to its Earth Science Decadal*  
4 *Survey, risks reversing gains in weather forecast ac-*  
5 *curacy, reducing disaster response capabilities, and*  
6 *creating an irreversible gap in Earth science data.*

7           (b) *SENSE OF CONGRESS.—It is the sense of Congress*  
8 *that—*

9           (1) *given the importance of Earth science and*  
10 *Earth observation data, NASA Earth science efforts—*

11                   (A) *should be conducted in coordination*  
12 *with other Federal agencies; and*

13                   (B) *should be cognizant of international ef-*  
14 *forts and the needs of the scientific and busi-*  
15 *nesses communities; and*

16           (2) *whenever feasible, NASA and other Federal*  
17 *agencies should consider the potential for reducing*  
18 *costs by purchasing commercially available Earth*  
19 *science data and services while maintaining free and*  
20 *open data policies.*

21           (c) *MISSION PRIORITIZATION.—*

22           (1) *NATIONAL STRATEGY FOR EARTH OBSERVA-*  
23 *TION.—The Office of Science and Technology Policy,*  
24 *in implementing its National Strategy for Earth Ob-*  
25 *serva-tion and in developing a National Plan for Civil*

1 *Earth Observations, shall prioritize Federal Earth*  
 2 *science and observation investments based on—*

3 *(A) its assessment of Earth science and ob-*  
 4 *servaion data requirements;*

5 *(B) the capability requirements as identi-*  
 6 *fied by the National Academies decadal surveys;*

7 *(C) the projected costs of Earth science mis-*  
 8 *sions and data gathering activities; and*

9 *(D) the projected and available budgets.*

10 *(2) NATIONAL PLAN FOR CIVIL EARTH OBSERVA-*  
 11 *TIONS.—The Administration, in prioritizing future*  
 12 *Earth science and Earth observation missions and*  
 13 *technology development under the National Plan for*  
 14 *Civil Earth Observations and chapter 201 of title 51,*  
 15 *United States Code, shall consider potential cost-re-*  
 16 *duction opportunities, including—*

17 *(A) if feasible, co-locating Earth science sen-*  
 18 *sors on other satellites; and*

19 *(B) purchasing commercially available serv-*  
 20 *ices, such as launch access to orbital and sub-or-*  
 21 *bital space, and Earth science data with free and*  
 22 *open data policies.*

23 *(d) DEEP SPACE CLIMATE OBSERVATORY.—The Ad-*  
 24 *ministratoer shall continue to develop and integrate the Na-*  
 25 *tional Institute of Standards and Technology Advanced Ra-*



1 *diometer, the Earth Polychromatic Imaging Camera, and*  
2 *related hardware and software onto the Deep Space Climate*  
3 *Observatory.*

4 **SEC. 302. LAND REMOTE SENSING.**

5       (a) *REAFFIRMATION OF FINDING.*—Congress reaffirms  
6 *the finding in section 2(1) of the Land Remote Sensing Pol-*  
7 *icy Act of 1992 (Public Law 102–555; 106 Stat. 4163; 15*  
8 *U.S.C. 5601), namely, that “[t]he continuous collection and*  
9 *utilization of land remote sensing data from space are of*  
10 *major benefit in studying and understanding human im-*  
11 *pacts on the global environment, in managing the Earth’s*  
12 *natural resources, in carrying out national security func-*  
13 *tions, and in planning and conducting many other activi-*  
14 *ties of scientific, economic, and social importance”.*

15       (b) *FINDINGS.*—Congress makes the following findings:

16           (1) *Since 1972, the Landsat program has pro-*  
17 *vided standardized scientific data, the continuity of*  
18 *which is essential to ensuring the value of Landsat in*  
19 *monitoring the environment, modeling and detecting*  
20 *changes in the global supply of natural resources, and*  
21 *updating maps relevant to national security.*

22           (2) *Landsat data engages and benefits a broad*  
23 *group of national stakeholders, from Landsat data*  
24 *processors in South Dakota to coastal restoration*  
25 *planners in Louisiana, forest managers in Colorado,*

1 *Texas, and West Virginia, fire risk assessors in Cali-*  
2 *fornia, and beyond.*

3 (3) *The May 2013 operationalization of Landsat*  
4 *8 is especially notable given the dramatic increase in*  
5 *the usage and economic value of Landsat data which*  
6 *has occurred since the 2008 adoption of free and open*  
7 *data policies.*

8 (4) *Rapidly proceeding with the definition and*  
9 *construction of the next global land-imaging system,*  
10 *Landsat 9 offers the potential for cost savings by tak-*  
11 *ing advantage of the standing infrastructure and*  
12 *flight hardware used to construct Landsat 8 to sus-*  
13 *tain the highly successful Landsat partnership be-*  
14 *tween the Administration and the United States Geo-*  
15 *logical Survey.*

16 (5) *According to the report of the National Acad-*  
17 *emies of Sciences entitled “Future U.S. Workforce on*  
18 *Geospatial Intelligence”, remote sensing is one of the*  
19 *5 core areas on which the current production and*  
20 *analysis of geospatial intelligence relies.*

21 (c) *SYSTEM DEFINITION AND PROCUREMENT OF NEXT*  
22 *GLOBAL LAND-IMAGING SYSTEM.—The Administrator shall*  
23 *use existing studies and data to initiate system definition*  
24 *and procurement of the next global land-imaging system in*

1 *a manner consistent with continuing Earth remote sensing*  
2 *data collection over multi-decade time periods.*

3 (d) *SUPPORT FOR EDUCATION IN REMOTE SENSING*  
4 *DISCIPLINES.—The Administrator shall, to the extent prac-*  
5 *ticable within funds available to the Administration, seek*  
6 *partnerships with institutions of higher education, and*  
7 *other Federal agencies, to support education of the next gen-*  
8 *eration of remote sensing engineers, scientists, and analysts.*

9 ***Subtitle B—Space Science***

10 ***SEC. 321. HUMAN EXPLORATION AND SCIENCE COLLABORA-***  
11 ***TION.***

12 *The Administrator shall ensure that the Science Mis-*  
13 *sion Directorate and the Human Exploration and Oper-*  
14 *ations Mission Directorate coordinate in researching and*  
15 *reducing the risks that space exploration beyond low-Earth*  
16 *orbit pose to astronaut health. Not later than 90 days after*  
17 *the date of enactment of this Act, the Administrator shall*  
18 *provide to the appropriate committees of Congress a report*  
19 *detailing the results of previous research in this area and*  
20 *identifying opportunities for future science missions to con-*  
21 *tribute to the understanding of these risks.*

1 **SEC. 322. MAINTAINING A BALANCED SPACE SCIENCE PORT-**  
2 **FOLIO.**

3 (a) *IN GENERAL.*—Section 803 of the National Aero-  
4 nautics and Space Administration Authorization Act of  
5 2010 (124 Stat. 2832) is amended to read as follows:

6 **“SEC. 803. OVERALL SCIENCE PORTFOLIO; SENSE OF CON-**  
7 **GRESS.**

8 “Congress reaffirms its sense that a balanced and ade-  
9 quately funded set of activities, consisting of research and  
10 analysis grants programs, technology development, small,  
11 medium, and large space missions, and suborbital research  
12 activities, contributes to a robust and productive science  
13 program and serves as a catalysis for innovation and dis-  
14 covery. The Administrator should set science priorities by  
15 following the guidance provided by the scientific community  
16 through the National Academies’ decadal surveys.”.

17 (b) *CONFORMING AMENDMENT.*—The item relating to  
18 section 803 in the table of contents in section 1(b) of the  
19 National Aeronautics and Space Administration Author-  
20 ization Act of 2010 (124 Stat. 2806) is amended by striking  
21 “Overall science portfolio-sense of the Congress” and insert-  
22 ing “Overall science portfolio; sense of Congress”.

23 **SEC. 323. SCIENCE MISSION EXTENSIONS.**

24 Section 30504 of title 51, United States Code is  
25 amended to read as follows:

1 **“§ 30504. Assessment of science mission extensions**

2       “(a) *ASSESSMENT.*—*The Administrator shall carry*  
 3 *out biennial reviews within each of the Science divisions*  
 4 *to assess the cost and benefits of extending the date of the*  
 5 *termination of data collection for those missions that have*  
 6 *exceeded their planned mission lifetime. In conducting these*  
 7 *assessments, the Administrator shall consider—*

8               “(1) *the potential continued benefit of instru-*  
 9 *ments on missions that are beyond their planned mis-*  
 10 *sion lifetime; and*

11               “(2) *the cost and schedule impacts, if any, of*  
 12 *mission extension on other NASA activities and*  
 13 *science missions.*

14       “(b) *CONSULTATION REQUIREMENT.*—*When deciding*  
 15 *whether to extend science missions with an operational com-*  
 16 *ponent, the Administrator shall consult with the National*  
 17 *Oceanic and Atmospheric Administration and any other af-*  
 18 *ected Federal agency.”.*

19 **SEC. 324. PLANETARY SCIENCE.**

20       “(a) *FINDINGS.*—*Congress finds that—*

21               “(1) *Administration support for planetary science*  
 22 *is critical to enabling greater understanding of the*  
 23 *solar system and its origin;*

24               “(2) *the United States leads the world in plan-*  
 25 *etary science and can augment its success with appro-*  
 26 *priate international partnerships;*

1           (3) *a mix of small-, medium-, and large-plan-*  
2           *etary science missions is required to sustain a steady*  
3           *cadence of planetary exploration; and*

4           (4) *robotic planetary exploration is a key compo-*  
5           *nent of preparing for future human exploration.*

6           (b) *MISSION PRIORITIES.*—*In accordance with the pri-*  
7           *orities established in the most recent decadal survey for*  
8           *planetary science, the Administrator shall ensure, to the*  
9           *greatest extent practicable, the completion of a balanced set*  
10          *of Discovery, New Frontiers, and flagship missions. Con-*  
11          *sistent with this balanced mix of missions and maintaining*  
12          *the continuity of scientific data and steady development of*  
13          *capabilities and technologies, the Administrator may seek,*  
14          *if necessary, adjustments to mission priorities, schedule,*  
15          *and scope in light of changing budget projections.*

16          (c) *INSTRUMENTATION.*—*To support its science mis-*  
17          *sion priorities, the Administration shall invest in a sus-*  
18          *tained program to develop or mature scientific instrument*  
19          *capabilities, as delineated in the NASA Science Instru-*  
20          *ments, Observatories, and Sensor Systems Roadmap.*

21          **SEC. 325. SPACE WEATHER.**

22          (a) *OSTP ROADMAP.*—*In coordination with NASA,*  
23          *the National Oceanic and Atmospheric Administration,*  
24          *and other relevant Federal agencies, the Director of the Of-*  
25          *fice of Science and Technology Policy, not later than 24*

1 months after the date of enactment of this Act, shall deliver  
2 to the appropriate committees of Congress a roadmap for  
3 developing and deploying space weather forecasting tech-  
4 nologies. The roadmap shall, at a minimum—

5           (1) aim to relieve capability gaps identified by  
6           the National Space Weather Program Council review  
7           of space weather observing systems, as requested by  
8           the National Aeronautics and Space Administration  
9           Authorization Act of 2010 (42 U.S.C. 18301 et seq.);  
10          and

11           (2) consider ongoing and future requirements for  
12          space weather modeling, monitoring, and prediction.

13          (b) NASA TECHNOLOGY ROADMAPS.—The Adminis-  
14 tration shall update and further develop its technology  
15 roadmaps as required to address mitigating a wide range  
16 of space weather effects on both satellites and spacecraft.

17          (c) ALERT PROTOCOL.—The Director of the Office of  
18 Science and Technology Policy shall coordinate relevant  
19 Federal agencies to propose protocols for communicating  
20 and responding to space weather forecasts. Protocol assess-  
21 ment shall consider the needs of both government and pri-  
22 vate sector entities. The Director of the Office of Science  
23 and Technology Policy shall deliver a report on proposed  
24 protocols to Congress not later than 24 months after the  
25 date of enactment of this Act.

1 **SEC. 326. JAMES WEBB SPACE TELESCOPE.**

2 *It is the sense of Congress that—*

3 *(1) the James Webb Space Telescope will signifi-*  
4 *cantly advance our understanding of star and planet*  
5 *formation, improve our knowledge of the early uni-*  
6 *verse, and support U.S. leadership in astrophysics;*

7 *(2) significant progress has been made with re-*  
8 *gard to overcoming the James Webb Space Telescope’s*  
9 *technical challenges and in improving NASA manage-*  
10 *ment oversight;*

11 *(3) the on-time and on-budget completion of the*  
12 *James Webb Space Telescope should remain a top*  
13 *NASA priority; and*

14 *(4) consistent with annual Government Account-*  
15 *ability Office reviews of the James Webb Space Tele-*  
16 *scope program, the Administrator should continue to*  
17 *improve the James Webb Space Telescope’s cost and*  
18 *schedule estimates and oversight procedures in order*  
19 *to enhance NASA’s ability to successfully deliver the*  
20 *James Webb Space Telescope on time and on budget.*

21 **SEC. 327. UNIVERSITY CLASS SCIENCE MISSIONS.**

22 *(a) SENSE OF CONGRESS.—It is the sense of Congress*  
23 *that principal investigator-led suborbital and small orbital*  
24 *science missions, including CubeSat, University Explorer*  
25 *(UNEX), Small Explorer (SMEX), and Venture class mis-*  
26 *sions, offer valuable, lower-cost opportunities to advance*



1 *science, train the next generation of scientists and engi-*  
2 *neers, and provide opportunities for program participants*  
3 *to acquire skills in systems engineering and systems inte-*  
4 *gration that are critical to maintaining the Nation's leader-*  
5 *ship in space. The use of public-private partnerships and*  
6 *commercial contracting are important means for sustaining*  
7 *lower costs.*

8       **(b) REVIEW OF PRINCIPAL INVESTIGATOR LED SUB-**  
9 **ORBITAL AND SMALL ORBITAL SCIENCE MISSIONS.—**

10           **(1) IN GENERAL.—***Not later than 120 days after*  
11 *the date of enactment of this Act, the Administrator,*  
12 *in collaboration with the Director of the National*  
13 *Science Foundation, shall enter into an arrangement*  
14 *with the National Academy of Sciences to conduct a*  
15 *review of suborbital and small orbital science mis-*  
16 *sions, including those described under subsection (a).*

17           **(2) REQUIREMENTS.—***The review under para-*  
18 *graph (1) shall include the following:*

19               **(A)** *The status, capability, and availability*  
20 *of existing suborbital and small orbital science*  
21 *mission programs in which the missions are led*  
22 *by principal investigators and enable significant*  
23 *participation by university scientists and stu-*  
24 *dents.*

1           (B) *The opportunities that suborbital and*  
2           *small orbital science missions provide for sci-*  
3           *entific research, training, and education, includ-*  
4           *ing scientific and engineering workforce develop-*  
5           *ment.*

6           (C) *The use of commercial applications,*  
7           *such as hosted payloads, free flyers, data buys,*  
8           *secondary payloads, and commercial launches*  
9           *further the goals of suborbital and small orbital*  
10           *science missions, while preserving the principle*  
11           *of independent peer review as the basis for mis-*  
12           *sion selection.*

13       (c) *REPORT.—*

14           (1) *IN GENERAL.—Not later than 15 months*  
15           *after the date of enactment of this Act, the Adminis-*  
16           *trator and the Director of the National Science Foun-*  
17           *dation shall submit to the appropriate committees of*  
18           *Congress a report on the review required by this sec-*  
19           *tion.*

20           (2) *CONTENTS.—The report shall include—*

21                   (A) *a summary of the review under sub-*  
22                   *section (b);*

23                   (B) *the findings of the Administrator and*  
24                   *the Director of the National Science Foundation*  
25                   *with respect to that review; and*

1                   (C) recommendations regarding principal  
2                   investigator led suborbital and small orbital  
3                   science missions conducted by the Administra-  
4                   tion and the National Science Foundation.

5                   **TITLE IV—AERONAUTICS**

6                   **SEC. 401. NASA AERONAUTICS.**

7                   (a) *FINDINGS.*—Congress finds that—

8                   (1) aviation is vital to the United States econ-  
9                   omy, with the industry supporting nearly 1,000,000  
10                  jobs, conducting nearly 10,000,000 commercial flights  
11                  per year within the United States alone, and contrib-  
12                  uting to the aerospace industry’s positive trade bal-  
13                  ance in 2012;

14                  (2) in helping test and mature new technologies  
15                  for quiet and efficient air transportation, NASA’s  
16                  Aeronautics Research Mission Directorate addresses  
17                  major aviation trends, such as the rapid growth in  
18                  passengers, increasing fuel costs, and the demand for  
19                  faster vehicles;

20                  (3) the Directorate works closely with industry  
21                  and academia to address long-term challenges to the  
22                  air transportation system that require improving  
23                  aviation safety, increasing the capacity of the increas-  
24                  ingly crowded national airspace system, and reducing  
25                  environmental impacts;

1           (4) *through its Aeronautics Test Program, the*  
2           *Directorate manages the flight operations and test in-*  
3           *frastructure at 4 NASA centers, providing both NASA*  
4           *and its industry partners with access to critical fa-*  
5           *cilities;*

6           (5) *NASA's contribution to aeronautics is evi-*  
7           *denced in the use of its technologies in almost every*  
8           *modern aircraft; and*

9           (6) *the Directorate has identified otherwise un-*  
10          *known safety issues and helped optimize aircraft*  
11          *routes, yielding millions of dollars in potential sav-*  
12          *ings to airlines and benefitting passengers.*

13          (b) *SENSE OF CONGRESS.—It is the sense of Congress*  
14          *that—*

15               (1) *the Aeronautics Research Mission Directorate*  
16               *builds on the successful legacy of NASA's predecessor,*  
17               *the National Advisory Committee for Aeronautics,*  
18               *which worked closely with industry partners to ad-*  
19               *vance both military and civil aviation until its dis-*  
20               *solution in 1958;*

21               (2) *NASA aeronautics research, development,*  
22               *and test activities, including investments into com-*  
23               *posite structures, new fuels, and innovative aircraft*  
24               *concepts, must continue in order to support U.S.*  
25               *leadership in aviation;*

1           (3) *the Directorate's efforts to collaborate with*  
2 *the aviation industry to gather and analyze data and*  
3 *to prototype and test algorithms that optimize flight*  
4 *routes, manage air traffic, and account for weather*  
5 *impacts are critical to supporting the safe use of the*  
6 *national airspace;*

7           (4) *continued cooperation between NASA's Aero-*  
8 *navitics Research Mission Directorate and the Federal*  
9 *Aviation Administration is vital to providing the*  
10 *data and tools necessary to best regulate the national*  
11 *airspace and to ensure that new technologies are effec-*  
12 *tively tested and acquire timely regulatory approval;*  
13 *and*

14           (5) *continued cooperation between NASA's Aero-*  
15 *navitics Research Mission Directorate and the Depart-*  
16 *ment of Defense is vital to providing technical exper-*  
17 *tise, research, and experimental and test facilities for*  
18 *a broad range of aeronautics research and develop-*  
19 *ment, including hypersonics and rotorcraft.*

20 *(c) ADVANCED COMPOSITES PROJECT.—*

21           (1) *IN GENERAL.—The Administrator shall carry*  
22 *out an Advanced Composites Project to accelerate the*  
23 *use of advanced composite materials in aircraft. To*  
24 *implement the project, the Administrator shall enter*  
25 *into a public-private partnership between the Admin-*

1        *istration and appropriate private sector entities. The*  
 2        *partnership shall be called the “Advanced Composites*  
 3        *Consortium”.*

4            (2) *PARTICIPATION AND COORDINATION WITH*  
 5        *OTHER FEDERAL AGENCIES.—The partnership to im-*  
 6        *plement the project—*

7            (A) *may include other Federal agencies if*  
 8        *the Administrator determines that the participa-*  
 9        *tion of such agencies in the partnership will fur-*  
 10        *ther the purpose of the partnership; and*

11            (B) *shall coordinate with the Joint Ad-*  
 12        *vanced Materials and Structures Center of Excel-*  
 13        *lence of the Federal Aviation Administration.*

14            (3) *PURPOSE.—The purpose of the Advanced*  
 15        *Composites Project shall be to accelerate the develop-*  
 16        *ment and certification of advanced composite mate-*  
 17        *rials and structures for use in commercial and mili-*  
 18        *tary aircraft. The partnership shall foster collabora-*  
 19        *tion with the private sector, and with other Federal*  
 20        *agencies, in order to accomplish the purpose of the*  
 21        *project.*

## 22        **TITLE V—SPACE TECHNOLOGY**

### 23        **SEC. 501. SPACE TECHNOLOGY.**

24            (a) *SENSE OF CONGRESS.—It is the sense of the Con-*  
 25        *gress that—*

1           (1) *previous investments in space technologies*  
2           *have not only enabled space exploration and research*  
3           *missions, but also have improved the quality of life on*  
4           *Earth;*

5           (2) *by improving affordability, reliability, and*  
6           *operational capability, continued space technology de-*  
7           *velopments will enable NASA missions that otherwise*  
8           *would be unachievable;*

9           (3) *investments in space technology engage the*  
10          *talent of the Administration and of the Nation's aca-*  
11          *ademic and business enterprises; and*

12          (4) *space technology roadmaps serve as a useful*  
13          *framework for NASA, academic, and industry devel-*  
14          *opment efforts.*

15          (b) *SPACE TECHNOLOGY DIRECTIVE.—To advance*  
16          *NASA's space exploration and space research goals, the Ad-*  
17          *ministrator shall continue a program with responsibility*  
18          *for NASA investments in space technologies and capabili-*  
19          *ties. To the greatest extent possible, the Administrator shall*  
20          *synergize all NASA space technology investments, encourage*  
21          *collaboration in space technology development with aca-*  
22          *demia and industry, and minimize duplication of space*  
23          *technology development efforts across the Administration*  
24          *and the private sector unless duplication is required to*  
25          *maintain mission safety, security, or backup capability.*

1           (c) *SPACE TECHNOLOGY ROADMAP REPORT.*—*In car-*  
2 *rying out the policy under subsection (b), the Administrator*  
3 *shall submit to the appropriate committees of Congress, not*  
4 *later than 24 months after the date of enactment of this*  
5 *Act, a progress report on the development, testing, and dem-*  
6 *onstration of the 14 technological areas of the Space Tech-*  
7 *nology Roadmaps.*

8           (d) *FLIGHT OPPORTUNITIES.*—

9               (1) *DEVELOPMENT OF PAYLOADS.*—*In order to*  
10 *do necessary research, the Administrator shall con-*  
11 *tinue and, as appropriate, expand the development of*  
12 *technology payloads that investigate improved capa-*  
13 *bilities and scientific research.*

14               (2) *FLIGHT OPPORTUNITIES FOR PAYLOADS.*—  
15 *The Administrator shall provide flight opportunities*  
16 *for such payloads to microgravity environments and*  
17 *suborbital altitudes as authorized by section 907 of*  
18 *the National Aeronautics and Space Administration*  
19 *Authorization Act of 2010 (42 U.S.C. 18405).*

20           (e) *REPORT REPEAL.*—*Notwithstanding any other*  
21 *provision of law, the Administration is not required to com-*  
22 *pile or submit the annual report on the Innovative Partner-*  
23 *ships Program under section 1107(c) of the National Aero-*  
24 *nautics and Space Administration Authorization Act of*  
25 *2008 (122 Stat. 4779).*



**TITLE VI—EDUCATION****SEC. 601. EDUCATION AND OUTREACH ACTIVITIES.**

(a) *SENSE OF CONGRESS.*—*It is the sense of Congress that—*

(1) *the Administration is uniquely recognized in the educational and global communities for its aerospace knowledge, passionate workforce, and unique capabilities and facilities;*

(2) *U.S. competitiveness in aerospace requires engaging the science, technology, engineering, and mathematics (STEM) talent in all States and jurisdictions;*

(3) *the Administration’s education and outreach programs, including the Experimental Program to Stimulate Competitive Research (EPSCoR) and the Space Grant College and Fellowship Program, reflect the Administration’s successful commitment to growing and diversifying the national science and engineering workforce;*

(4) *the Administration’s outreach efforts to underrepresented and underserved communities, by helping minorities to pursue higher education in STEM fields and to attain STEM careers, benefit the overall national workforce; and*

1           (5) *the Administration's efforts to improve the*  
2           *management and execution of its education portfolio*  
3           *and to evaluate program success using evidence-based*  
4           *approaches should continue.*

5           **(b) IN GENERAL.—***The Administration shall—*

6           (1) *continue to execute its educational and out-*  
7           *reach programs, including providing a wide range of*  
8           *academic research opportunities and engaging the*  
9           *public interest in science, technology, engineering and*  
10          *mathematics;*

11          (2) *continue to collaborate with minority institu-*  
12          *tions (as defined in section 365 of title III of the*  
13          *Higher Education Act of 1965 (20 U.S.C. 1067k) to*  
14          *increase student participation in science, technology,*  
15          *engineering, and mathematics; and*

16          (3) *seek partnerships with industry, academia,*  
17          *and with other communities to best respond to the*  
18          *Nation's aerospace-related educational and workforce*  
19          *needs.*

20          **(c) SPACE GRANT.—***To enhance the United States*  
21          *STEM education and workforce, the Administrator shall*  
22          *continue to operate the National Space Grant College and*  
23          *Fellowship program through a national network consisting*  
24          *of a state-based consortium in each State (as defined under*  
25          *section 40302 of title 51, United States Code). The program*

1 *shall provide hands-on research, training, and education*  
2 *programs, use measurable outcomes to gauge success, and*  
3 *allow States flexibility in its execution.*

## 4 **TITLE VII—OTHER MATTERS**

### 5 **SEC. 701. SENSE OF CONGRESS ON NASA'S CROSS AGENCY** 6 **SUPPORT.**

7 *(a) FINDINGS.—Congress makes the following findings:*

8 *(1) Cross Agency Support operates and main-*  
9 *tains the Administration's centers and facilities, in-*  
10 *cluding headquarters, enabling the accomplishment of*  
11 *the Administration's missions while protecting*  
12 *human health and the environment.*

13 *(2) Cross Agency Support provides for the*  
14 *unique facilities, skilled personnel, and administra-*  
15 *tive support that NASA programs, research, and de-*  
16 *velopment activities require at the centers.*

17 *(3) Cross Agency Support provides the Adminis-*  
18 *tration with the capability to improve mission success*  
19 *by supplying safety and mission assurance, engineer-*  
20 *ing technical authority, and health and medical over-*  
21 *sight across all of NASA's programs, research, and*  
22 *operations.*

23 *(4) The Orbital Debris Program Office is located*  
24 *in Cross Agency Support and leads the Administra-*  
25 *tion's effort in addressing the orbital debris issue,*

1       *which is an issue resulting from over 50 years of*  
2       *spaceflight.*

3               (5) *Cross Agency Support delivers the informa-*  
4       *tion technology services used throughout the Adminis-*  
5       *tration that allow its workforce to work and commu-*  
6       *nicate efficiently and effectively, not only internal to*  
7       *the Administration, but with the citizens of the world*  
8       *which provides them the opportunity to be included*  
9       *and participate in the Administration's accomplish-*  
10       *ments.*

11              (6) *The Administration's public affairs, located*  
12       *in Cross Agency Support, provided worldwide live*  
13       *coverage of the Curiosity Rover's landing on Mars,*  
14       *the largest rover ever sent to Mars, in August of 2012.*

15              (7) *The authority and execution of the Adminis-*  
16       *tration's offices responsible for finance, budget, acqui-*  
17       *sition, external relations, legislative affairs, training,*  
18       *security, and human capital management are per-*  
19       *formed under Cross Agency Support.*

20       (b) *SENSE OF CONGRESS.—It is the sense of Congress*  
21       *that—*

22              (1) *Cross Agency Support represents a variety of*  
23       *functions vital to the strength and success of the Ad-*  
24       *ministration and is essential to the Administration's*  
25       *vision;*

1           (2) *the centers and facilities in the Administra-*  
2           *tion are a vital part of the many advances in science*  
3           *and technology the Administration has provided and*  
4           *continues to provide to this Nation and the world*  
5           *since the Administration was created in 1958;*

6           (3) *at the Administration's core is safety and*  
7           *mission success that, through Cross Agency Support,*  
8           *is carried out by the highly talented and dedicated*  
9           *workforce at the Administration's centers and facili-*  
10          *ties;*

11          (4) *as the Administration looks to continue*  
12          *international, interagency, and industry cooperation*  
13          *and partnerships, Cross Agency Support will con-*  
14          *tinue to provide the overseeing and execution of these*  
15          *efforts; and*

16          (5) *Cross Agency Support be given the necessary*  
17          *resources to keep the Administration capable of meet-*  
18          *ing the goals set forth by Congress and continue to be*  
19          *a global leader in space and aeronautics.*

20 **SEC. 702. SPACE COMMUNICATIONS NETWORK.**

21          (a) *PLAN.—The Administrator shall prepare an up-*  
22          *dated plan for NASA's near-Earth, space, and deep space*  
23          *communications network and infrastructure. The plan*  
24          *shall—*

1           (1) *identify steps to sustain the existing network*  
2           *and infrastructure;*

3           (2) *assess the capabilities, including any up-*  
4           *grades, needed to support NASA’s programs;*

5           (3) *identify priorities for how resources should be*  
6           *used to implement the plan; and*

7           (4) *assess the impact on missions if resources are*  
8           *not secured at the level needed.*

9           (b) *TRANSMITTAL.—Not later than 270 days after the*  
10          *date of enactment of this Act, the Administrator shall trans-*  
11          *mit the plan to the appropriate committees of Congress.*

12          **SEC. 703. ASTRONAUT OCCUPATIONAL HEALTHCARE.**

13          (a) *IN GENERAL.—Chapter 313 of title 51, United*  
14          *States Code, is amended by adding at the end the following:*

15          **“§ 31303. Astronaut occupational healthcare**

16          *“(a) IN GENERAL.—Notwithstanding any other provi-*  
17          *sion of law, the Administrator, as the Administrator con-*  
18          *siders necessary, may provide for the medical monitoring,*  
19          *diagnosis, and treatment of a crewmember for conditions*  
20          *that the Administrator considers associated with human*  
21          *space flight, including scientific and medical tests for psy-*  
22          *chological and medical conditions.*

23          *“(b) RECORDS.—Consistent with applicable Federal*  
24          *privacy laws, the Administration shall retain access to all*

1 *medical records and other health data from the provision*  
2 *of healthcare under subsection (a).*

3 “(c) *DEFINITION OF CREWMEMBER.*—*In this section,*  
4 *the term ‘crewmember’ means—*

5 “(1) *a former NASA astronaut/payload specialist*  
6 *who has flown on at least 1 space mission;*

7 “(2) *a management NASA astronaut who has*  
8 *flown at least 1 space mission and is currently em-*  
9 *ployed by the U.S. Government; or*

10 “(3) *an active NASA astronaut/payload spe-*  
11 *cialist assigned, waiting assignment, or training for*  
12 *an assignment to a NASA human space flight.”.*

13 (b) *CONFORMING AMENDMENT.*—*The table of contents*  
14 *for chapter 313 of title 51, United States Code, is amended*  
15 *by adding after the item relating to section 31302 the fol-*  
16 *lowing:*

“31303. *Astronaut occupational healthcare.*”.

17 **SEC. 704. HELIUM CAPTURE AND RECOVERY.**

18 (a) *IN GENERAL.*—*Not later than 180 days after the*  
19 *date of enactment of this Act, the Administrator shall sub-*  
20 *mit to the appropriate committees of Congress an agency-*  
21 *wide plan to recover and recycle helium, whenever possible,*  
22 *that the Administration uses or will use in current,*  
23 *planned, and future experimentation, tests, launches, and*  
24 *operations.*

1           **(b) CONSIDERATIONS.**—*In developing the plan under*  
2 *subsection (a), the Administrator shall consider how modi-*  
3 *fications, updates, or new lifecycle designs for engines, bal-*  
4 *loons, airships, or other future programs can be designed*  
5 *or operated to recover and recycle helium.*

6 **SEC. 705. INFORMATION TECHNOLOGY GOVERNANCE.**

7           **(a) SENSE OF CONGRESS.**—*It is the sense of Congress*  
8 *that effective information technology governance is critical*  
9 *to ensuring information security, decreased costs, and over-*  
10 *all mission assurance. The June 5, 2013, NASA Office of*  
11 *Inspector General audit, “NASA’s Information Technology*  
12 *Governance,” found that the NASA Chief Information Offi-*  
13 *cer has limited oversight and control over a majority of the*  
14 *Administration’s information technology assets and cannot*  
15 *enforce security measures across the agency’s computer net-*  
16 *works. For nearly 2 decades, the Administration has oper-*  
17 *ated under a decentralized information technology govern-*  
18 *ance structure that has resulted in increased costs and inad-*  
19 *equately security. At the same time, centralization of infor-*  
20 *mation technology governance has resulted in increased se-*  
21 *curity and lower operating costs at other agencies.*

22           **(b) INFORMATION TECHNOLOGY GOVERNANCE.**—*The*  
23 *Administrator shall, in consultation with Mission Direc-*  
24 *torate and NASA Center Chief Information Officers—*



1           (1) *ensure the Agency Chief Information Officer*  
 2           *has the appropriate resources and visibility to oversee*  
 3           *agency-wide information technology operations and*  
 4           *investments;*

5           (2) *establish a direct line of report between the*  
 6           *Agency Chief Information Officer and the Adminis-*  
 7           *trator;*

8           (3) *establish a minimum monetary threshold for*  
 9           *all agency information technology investments over*  
 10          *which the Agency Chief Information Officer shall have*  
 11          *final approval; and*

12          (4) *consider appropriate revisions to the charters*  
 13          *of information technology boards and councils that*  
 14          *inform information technology investment and oper-*  
 15          *ation decisions.*

16 **SEC. 706. IMPROVEMENTS TO BASELINES AND COST CON-**  
 17 **TROLS BREACH REPORTING PROCESS.**

18          *Section 30104 of title 51, United States Code is*  
 19          *amended—*

20               (1) *in subsection (d)(3)—*

21                       (A) *by striking “the notification”; and*

22                       (B) *by inserting “the notification and a*  
 23                       *timeline by which the Administrator intends to*  
 24                       *make the determination, report, and analysis*

1           *under subsection (e)” before the period at the*  
2           *end;*

3           (2) *in subsection (e)(1), by striking “Not later*  
4           *than 30 days after receiving a written notification*  
5           *under subsection (d)(2)” and inserting “In accord-*  
6           *ance with the timeline under subsection (d)(3)”;*

7           (3) *in subsection (e)(1)(A), by striking “not later*  
8           *than 15 days after making the determination” and*  
9           *inserting “in accordance with the timeline under sub-*  
10          *section (d)(3)”;*

11          (4) *in subsection (e)(2), by striking “not later*  
12          *than 6 months after the Administrator makes a deter-*  
13          *mination under this subsection” and inserting “in ac-*  
14          *cordance with the timeline under subsection (d)(3)”;*  
15          *and*

16          (5) *in subsection (f), by inserting “or an annual*  
17          *budget request that reflects this growth” after “a re-*  
18          *port under subsection (e)(1)(A)”.*

19 **SEC. 707. INFRASTRUCTURE.**

20          (a) *SENSE OF CONGRESS.—It is the sense of Congress*  
21          *that—*

22                  (1) *the Administration has a role in providing*  
23                  *access to unique or specialized laboratory capabilities*  
24                  *that are not yet economically viable for purchase by*

1        *commercial entities and therefore are not available*  
2        *outside of NASA;*

3            (2) *the Administration must improve the condi-*  
4        *tion of its relevant facilities and infrastructure to*  
5        *maintain the competitiveness of the U.S. aerospace*  
6        *industry;*

7            (3) *to ensure continued researcher access to reli-*  
8        *able and efficient world-class facilities, the Adminis-*  
9        *tration should continue to seek to establish strategic*  
10       *partnerships with other Federal agencies, academic*  
11       *institutions, and industry, as appropriate; and*

12           (4) *decisions regarding whether to dispose of,*  
13       *maintain, or modernize existing facilities and other*  
14       *infrastructure must be made in the context of meeting*  
15       *the future needs of the Administration.*

16        (b) *PLAN.*—*Not later than 1 year after the date of en-*  
17       *actment of this Act, the Administrator shall submit to the*  
18       *appropriate committees of Congress a plan for retaining,*  
19       *acquiring, or disposing of the facilities, laboratories, equip-*  
20       *ment, test capabilities, and other infrastructure necessary*  
21       *to meet the Administration’s mandates and its current and*  
22       *future missions. The plan shall—*

23            (1) *identify the Administration’s future infra-*  
24       *structure needs, including facilities, laboratories,*  
25       *equipment, and test capabilities;*

1           (2) include a strategy for identifying and remov-  
2           ing unnecessary or duplicative infrastructure con-  
3           sistent with the national strategic direction under the  
4           National Space Policy, the National Aeronautics Re-  
5           search, Development, Test and Evaluation Infrastruc-  
6           ture Plan, the National Aeronautics and Space Ad-  
7           ministration Authorization Act of 2010, title 51 of the  
8           United States Code, and other Administration-related  
9           law;

10          (3) include a strategy for the maintenance, re-  
11          pair, upgrading, and modernization of the Adminis-  
12          tration's facilities, laboratories, equipment, and other  
13          infrastructure not being excessed or disposed of;

14          (4) recommend criteria for prioritizing deferred  
15          maintenance tasks and for upgrading or modernizing  
16          facilities, laboratories, equipment, and other infra-  
17          structure;

18          (5) include an assessment , including cost-effec-  
19          tiveness, of any modifications needed to maximize the  
20          use of facilities, laboratories, equipment, and other in-  
21          frastructure that offer unique and highly specialized  
22          benefits to the aerospace industry and the public; and

23          (6) include recommendations for implementa-  
24          tion, including a timeline, milestones, and an esti-

1        *mate of the resources required for carrying out the*  
 2        *plan.*

3        (c) *ESTABLISHMENT OF CAPITAL FUNDS.—The Ad-*  
 4        *ministrators shall establish a capital fund at each of NASA’s*  
 5        *field centers for the modernization of facilities, laboratories,*  
 6        *equipment, and other infrastructure in accordance with the*  
 7        *plan under subsection (b). The Administrator shall ensure,*  
 8        *to the greatest extent practicable, that any financial savings*  
 9        *achieved by closing an outdated or surplus facility at a*  
 10        *NASA field center is made available to that field center’s*  
 11        *capital fund for the purpose of modernizing that field cen-*  
 12        *ter’s facilities, laboratories, equipment, and other infra-*  
 13        *structure in accordance with the plan under subsection (b).*

14        **SEC. 708. COMMERCIAL LAUNCH COOPERATION.**

15        (a) *IN GENERAL.—Chapter 505 of title 51, United*  
 16        *States Code, is amended by adding at the end the following:*

17        **“§ 50507. Commercial launch cooperation**

18        *“(a) AUTHORITY FOR AGREEMENTS RELATING TO*  
 19        *SPACE TRANSPORTATION INFRASTRUCTURE.—Notwith-*  
 20        *standing section 50504, the Administrator—*

21                *“(1) may enter into an agreement with a covered*  
 22        *entity to provide the covered entity with support and*  
 23        *services related to the space transportation infrastruc-*  
 24        *ture of the Administration; and*

1           “(2) *at the request of the covered entity, may in-*  
2 *clude that support and services in the launch and re-*  
3 *entry range support requirements of the Administra-*  
4 *tion if—*

5                   “(A) *the Administrator determines that in-*  
6 *cluding that support and services in the require-*  
7 *ments—*

8                           “(i) *is in the best interest of the Fed-*  
9 *eral Government;*

10                           “(ii) *does not interfere with the re-*  
11 *quirements of the Administration; and*

12                           “(iii) *does not compete with the com-*  
13 *mercial space activities of other covered en-*  
14 *tities, unless that competition is in the na-*  
15 *tional security interests of the United*  
16 *States; and*

17                   “(B) *any commercial requirement included*  
18 *in the agreement has full non-Federal funding*  
19 *before the execution of the agreement.*

20           “(b) *CONTRIBUTIONS.—*

21                   “(1) *IN GENERAL.—The Administrator may*  
22 *enter into an agreement with a covered entity on a*  
23 *cooperative and voluntary basis to accept contribu-*  
24 *tions of funds, services, and equipment to carry out*  
25 *this section.*

1           “(2) *USE OF CONTRIBUTIONS.*—*Any funds, serv-*  
2           *ices, or equipment accepted by the Administrator*  
3           *under this subsection—*

4                   “(A) *may be used only for the objectives*  
5                   *specified in this section in accordance with terms*  
6                   *of use set forth in the agreement entered into*  
7                   *under this subsection; and*

8                   “(B) *shall be managed by the Administrator*  
9                   *in accordance with regulations of the Adminis-*  
10                  *tration.*

11           “(3) *REQUIREMENTS WITH RESPECT TO AGREE-*  
12           *MENTS.*—*An agreement entered into with a covered*  
13           *entity under this subsection shall—*

14                   “(A) *address the terms of use, ownership,*  
15                   *and disposition of the funds, services, or equip-*  
16                   *ment contributed pursuant to the agreement; and*

17                   “(B) *include a provision that the covered*  
18                   *entity will not recover the costs of its contribu-*  
19                   *tion through any other agreement with the*  
20                   *United States.*

21           “(c) *ANNUAL REPORT.*—*Not later than January 31 of*  
22           *each year, the Administrator shall submit to its congres-*  
23           *sional oversight committees a report on the funds, services,*  
24           *and equipment accepted and used by the Administrator*  
25           *under this section during the preceding fiscal year.*

1       “(d) *REGULATIONS.*—*The Administrator shall pre-*  
2 *scribe regulations to carry out this section.*”

3       “(e) *DEFINITION OF COVERED ENTITY.*—*In this sec-*  
4 *tion, the term ‘covered entity’ means a non-Federal entity*  
5 *that—*

6               “(1) *is organized under the laws of the United*  
7 *States or of any jurisdiction within the United*  
8 *States; and*

9               “(2) *is engaged in commercial space activities.*”.

10       “(b) *CLERICAL AMENDMENT.*—*The table of contents for*  
11 *chapter 505 of title 51, United States Code, is amended by*  
12 *adding after the item relating to section 50506 the fol-*  
13 *lowing:*

          “50507. *Commercial launch cooperation.*”.

14       **SEC. 709. KNOWLEDGE MANAGEMENT.**

15       “(a) *SENSE OF CONGRESS.*—*It is the sense of the Con-*  
16 *gress that—*

17               “(1) *the Administration’s success relies heavily on*  
18 *the accumulated technical knowledge of its skilled*  
19 *civil servant and contractor workforce;*

20               “(2) *in light of an aging workforce, it is impera-*  
21 *tive that the Administration preserve, to the max-*  
22 *imum extent possible, both critical technical skills*  
23 *and all knowledge valuable to future mission plan-*  
24 *ning and operation; and*



1           (3) *exercising best practice knowledge manage-*  
2           *ment systems within the Administration will benefit*  
3           *the future NASA workforce and help ensure future*  
4           *mission successes.*

5           (b) *KNOWLEDGE MANAGEMENT SYSTEM.*—*The Admin-*  
6           *istrator shall establish an Administration-wide knowledge*  
7           *management system and implement industry-standard best*  
8           *practices for capturing, archiving, and retrieving heritage*  
9           *and future information. The information under this sub-*  
10          *section shall be accessible to all Administration employees*  
11          *unless otherwise prohibited because of the classified or sen-*  
12          *sitive nature of the information.*

13          (c) *REPORT.*—*Not later than 12 months after the date*  
14          *of enactment of this Act, the Administrator shall submit*  
15          *to the appropriate committees of Congress a report that,*  
16          *at a minimum, includes—*

17                 (1) *a description of any actions necessary to cre-*  
18                 *ate or modify an Administration-wide knowledge*  
19                 *management system;*

20                 (2) *a plan for implementing the knowledge man-*  
21                 *agement system, including employee training and the*  
22                 *provision of secure access to information, as required*  
23                 *for all personnel working on Administration pro-*  
24                 *grams, projects, and research;*

1           (3) a summary of implementation costs for the  
2           knowledge management system; and

3           (4) a timeline and progress report for implemen-  
4           tation.

5           (d) *WORKFORCE STABILIZATION AND CRITICAL*  
6 *SKILLS PRESERVATION.*—Section 1105 of the National Aer-  
7 onautics and Space Administration Authorization Act of  
8 2010 (42 U.S.C. 18431) is amended by striking “2013” and  
9 inserting “2016”.

10 **SEC. 710. AUTHORITY TO PROTECT CERTAIN TECHNICAL**  
11 **DATA FROM PUBLIC DISCLOSURE.**

12           Section 20131 of title 51, United States Code, is  
13 amended—

14           (1) in subsection (a)(3), by striking “subsection  
15 (b)” and inserting “subsection (b) or (c)”;

16           (2) by redesignating subsection (c) as subsection  
17 (d); and

18           (3) by inserting after subsection (b) the fol-  
19 lowing:

20           “(c) *AUTHORITY TO WITHHOLD FROM PUBLIC DIS-*  
21 *CLOSURE CERTAIN TECHNICAL DATA.*—

22           “(1) *IN GENERAL.*—Notwithstanding any other  
23 provision of law, the Administrator may withhold  
24 from public disclosure any technical data with aero-  
25 nautical or space application in the possession of, or

1        *under the control of, the Administration, if the data*  
2        *may not be exported lawfully outside the United*  
3        *States without an approval, authorization, or license*  
4        *under the Export Administration Act of 1979 (50*  
5        *U.S.C. App. 2401 et seq.) or the Arms Export Control*  
6        *Act (22 U.S.C. 2751 et seq.).*

7            *“(2) DEFINITION OF TECHNICAL DATA.—In this*  
8        *subsection, the term ‘technical data’ means any blue-*  
9        *prints, drawings, photographs, plans, instructions,*  
10       *computer software, or documentation, or other tech-*  
11       *nical information that can be used, or be adapted for*  
12       *use, to design, develop, engineer, produce, manufac-*  
13       *ture, assemble, operate, repair, test, maintain, over-*  
14       *haul, modify, or reproduce any aeronautical or space*  
15       *items, including subsystems, components, or parts*  
16       *therefor, or technology concerning such items.*

17            *“(3) FOIA EXEMPTION 3.—This subsection shall*  
18       *be considered a statute described in section 552(b)(3)*  
19       *of title 5.*

20            *“(4) REPORT REPEAL.—Notwithstanding any*  
21       *other provision of law, the Administration is not re-*  
22       *quired to compile or submit the annual audit on ex-*  
23       *port controls compliance under section 126 of the Na-*  
24       *tional Aeronautics and Space Administration Author-*  
25       *ization Act of 2000 (114 Stat. 1585).”.*

Calendar No. 628

113<sup>TH</sup> CONGRESS  
2<sup>D</sup> SESSION

**S. 1317**

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**A BILL**

To authorize the programs of the National Aeronautics and Space Administration for fiscal years 2014 through 2016 and for other purposes.

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DECEMBER 10, 2014

Reported with an amendment