

115TH CONGRESS
2D SESSION

S. 3799

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

IN THE SENATE OF THE UNITED STATES

DECEMBER 19, 2018

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

A BILL

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

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

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

4 (a) **SHORT TITLE.**—This Act may be cited as the
5 “National Aeronautics and Space Administration Author-
6 ization Act of 2018”.

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

Sec. 1. Short title; table of contents.
Sec. 2. Definitions.

TITLE I—AUTHORIZATION OF APPROPRIATIONS

Sec. 101. Fiscal year 2019.

TITLE II—HUMAN SPACE FLIGHT AND EXPLORATION

- Sec. 201. Value of ISS and capabilities in low-Earth orbit.
- Sec. 202. Continuation of the ISS.
- Sec. 203. Review of and report on DOD activities on the ISS.
- Sec. 204. Low-Earth orbit commercialization.
- Sec. 205. Low-Earth orbit commercialization program.
- Sec. 206. Stepping stone approach to exploration.
- Sec. 207. Space Launch System configurations.
- Sec. 208. Advanced space suits.
- Sec. 209. Acquisition of space transportation services.
- Sec. 210. 21st century space launch infrastructure.
- Sec. 211. Indian River Bridge.
- Sec. 212. ISS national laboratory; property rights in inventions.
- Sec. 213. Data first produced during non-NASA scientific utilization of the ISS national laboratory.
- Sec. 214. Royalties and other payments received for designated activities.

TITLE III—SCIENCE

- Sec. 301. Science priorities.
- Sec. 302. Lunar discovery program.
- Sec. 303. Search for life.
- Sec. 304. James Webb Space Telescope.
- Sec. 305. Wide-Field Infrared Survey Telescope.
- Sec. 306. Sense of Congress regarding small satellite science.
- Sec. 307. Study on satellite servicing for science missions.
- Sec. 308. Earth science.

TITLE IV—AERONAUTICS

- Sec. 401. Short title.
- Sec. 402. Definitions.
- Sec. 403. Experimental aircraft projects.
- Sec. 404. On-demand air transportation.
- Sec. 405. Unmanned aircraft systems.
- Sec. 406. 21st Century Aeronautics Research Capabilities Initiative.
- Sec. 407. Hypersonic technology research projects.

TITLE V—SPACE TECHNOLOGY

- Sec. 501. Space Technology Mission Directorate.
- Sec. 502. Flight opportunities program.

TITLE VI—STEM ENGAGEMENT

- Sec. 601. Sense of Congress.
- Sec. 602. STEM engagement activities.

TITLE VII—MISCELLANEOUS

- Sec. 701. Protect certain technical data from public disclosure.
- Sec. 702. Protecting certain voluntarily provided, safety-related information from public disclosure.
- Sec. 703. Small satellite launch services program.

Sec. 704. Limitations on cooperation with the People's Republic of China.

Sec. 705. Cybersecurity.

1 **SEC. 2. DEFINITIONS.**

2 In this Act:

3 (1) **ADMINISTRATION.**—The term “Administra-
4 tion” means the National Aeronautics and Space
5 Administration.

6 (2) **ADMINISTRATOR.**—The term “Adminis-
7 trator” means the Administrator of the National
8 Aeronautics and Space Administration.

9 (3) **APPROPRIATE COMMITTEES OF CON-**
10 **GRESS.**—Except as otherwise expressly provided, the
11 term “appropriate committees of Congress”
12 means—

13 (A) the Committee on Commerce, Science,
14 and Transportation of the Senate; and

15 (B) the Committee on Science, Space, and
16 Technology of the House of Representatives.

17 (4) **CIS-LUNAR SPACE.**—The term “cis-lunar
18 space” means the region of space beyond low-Earth
19 orbit out to and including the region around the sur-
20 face of the Moon.

21 (5) **DEEP SPACE.**—The term “deep space”
22 means the region of space beyond low-Earth orbit,
23 to include cis-lunar space.

1 (6) ISS.—The term “ISS” means the Inter-
2 national Space Station.

3 (7) ISS MANAGEMENT ENTITY.—The term
4 “ISS management entity” means the organization
5 with which the Administrator has a cooperative
6 agreement under section 504(a) of the National Aer-
7 onautics and Space Administration Authorization
8 Act of 2010 (42 U.S.C. 18354(a)).

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

11 (9) OSTP.—The term “OSTP” means the Of-
12 fice of Science and Technology Policy.

13 **TITLE I—AUTHORIZATION OF** 14 **APPROPRIATIONS**

15 **SEC. 101. FISCAL YEAR 2019.**

16 There are authorized to be appropriated to NASA for
17 fiscal year 2019, \$21,545,740,000, as follows:

18 (1) For Exploration, \$5,338,700,000.

19 (2) For Space Operations, \$4,639,100,000.

20 (3) For Science, \$6,400,300,000.

21 (4) For Aeronautics, \$725,000,000.

22 (5) For Space Technology, \$1,002,700,000.

23 (6) For Education, \$100,000,000.

24 (7) For Safety, Security, and Mission Services,
25 \$2,850,000,000.

1 (8) For Construction and Environmental Com-
2 pliance and Restoration, \$450,640,000.

3 (9) For Inspector General, \$39,300,000.

4 **TITLE II—HUMAN SPACE FLIGHT**
5 **AND EXPLORATION**

6 **SEC. 201. VALUE OF ISS AND CAPABILITIES IN LOW-EARTH**
7 **ORBIT.**

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

10 (1) it is in the national and economic security
11 interests of the United States to maintain a contin-
12 uous human presence in low-Earth orbit; and

13 (2) low-Earth orbit should be utilized as a
14 testbed to advance human space exploration and sci-
15 entific discoveries.

16 (b) HUMAN PRESENCE REQUIREMENT.—NASA shall
17 continuously maintain the capability for a continuous
18 human presence in low-Earth orbit through and beyond
19 the useful life of the ISS.

20 **SEC. 202. CONTINUATION OF THE ISS.**

21 (a) CONTINUATION OF THE ISS.—Section 501(a) of
22 the National Aeronautics and Space Administration Au-
23 thorization Act of 2010 (42 U.S.C. 18351(a)) is amended
24 by striking “2024” and inserting “2030”.

1 (b) MAINTENANCE OF THE UNITED STATES SEG-
2 MENT AND ASSURANCE OF CONTINUED OPERATIONS OF
3 THE ISS.—Section 503(a) of the National Aeronautics
4 and Space Administration Authorization Act of 2010 (42
5 U.S.C. 18353(a)) is amended by striking “2024” and in-
6 serting “2030”.

7 (c) RESEARCH CAPACITY ALLOCATION AND INTE-
8 GRATION OF RESEARCH PAYLOADS.—Section 504(d) of
9 the National Aeronautics and Space Administration Au-
10 thorization Act of 2010 (42 U.S.C. 18354(d)) is amend-
11 ed—

12 (1) in paragraph (1)—

13 (A) by striking “As soon as practicable
14 after the date of the enactment of this Act, but
15 not later than October 1, 2011,” and inserting
16 “The”; and

17 (B) by striking “2024” and inserting
18 “2030”; and

19 (2) in paragraph (2), by striking “2024” and
20 inserting “2030”.

21 (d) MAINTAINING USE THROUGH AT LEAST 2030.—
22 Section 70907 of title 51, United States Code, is amend-
23 ed—

24 (1) in the heading, by striking “**2024**” and in-
25 serting “**2030**”; and

1 (2) in subsections (a) and (b)(3), by striking
2 “2024” and inserting “2030”.

3 (e) ISS TRANSITION PLAN.—Section 50111(c)(2) of
4 title 51, United States Code—

5 (1) in the matter preceding subparagraph (A),
6 by striking “2023” and inserting “2028”; and

7 (2) in subparagraph (J), by striking “2028”
8 and inserting “2030”.

9 **SEC. 203. REVIEW OF AND REPORT ON DOD ACTIVITIES ON**
10 **THE ISS.**

11 (a) IN GENERAL.—Not later than March 1, 2019, the
12 Secretary of Defense shall—

13 (1) identify and review each activity, program,
14 and project of the Department of Defense com-
15 pleted, being carried out, or planned to be carried
16 out on the ISS as of the date of the review; and

17 (2) submit to the appropriate committees of
18 Congress a report that describes the results of the
19 review under paragraph (1).

20 (b) APPROPRIATE COMMITTEES OF CONGRESS DE-
21 FINED.—In this section, the term “appropriate commit-
22 tees of Congress” includes—

23 (1) the Committee on Armed Services of the
24 Senate;

1 (2) the Committee on Armed Services of the
2 House of Representatives; and

3 (3) the Committee on Energy and Commerce of
4 the House of Representatives.

5 **SEC. 204. LOW-EARTH ORBIT COMMERCIALIZATION.**

6 (a) **POLICY.**—It is the policy of the United States to
7 encourage the development of a healthy and robust United
8 States commercial sector in low-Earth orbit.

9 (b) **PREFERENCE FOR UNITED STATES COMMERCIAL**
10 **PRODUCTS AND SERVICES.**—The Administrator shall con-
11 tinue to increase the usage of assets, products, and serv-
12 ices of the private sector of the United States to fulfill
13 the requirements of the Administration.

14 (c) **NONCOMPETITION.**—The Administrator may not
15 offer a space flight product or service related to the ISS
16 to a foreign person or foreign government, except a signa-
17 tory government to the Intergovernmental Agreement
18 Concerning Cooperation on the Civil International Space
19 Station, signed at Washington January 29, 1998 (TIAS
20 12927), if the space flight product or service, as applica-
21 ble, would compete with a commercial space flight product
22 or service offered by the private sector of the United
23 States.

1 **SEC. 205. LOW-EARTH ORBIT COMMERCIALIZATION PRO-**
2 **GRAM.**

3 (a) PROGRAM AUTHORIZATION.—The Administrator
4 may establish a low-Earth orbit commercialization pro-
5 gram to encourage the fullest commercial use and develop-
6 ment of space by the private sector of the United States.

7 (b) CONTENTS.—The program under subsection (a)
8 may include—

9 (1) activities to stimulate demand for human
10 space flight products and services in low-Earth orbit;

11 (2) activities to improve the capability of the
12 ISS to accommodate commercial users; and

13 (3) subject to subsection (c), activities to accel-
14 erate the development of commercial space stations
15 or commercial space habitats.

16 (c) CONDITIONS.—

17 (1) COST SHARE.—The Administration shall
18 give priority to each activity under subsection (b)(3)
19 in which the private sector entity conducting the ac-
20 tivity provides a share of the costs to develop and
21 operate the activity.

22 (2) COMMERCIAL SPACE HABITAT.—The Ad-
23 ministration may not engage in an activity under
24 subsection (b)(3) until after the date that the Ad-
25 ministrator awards a contract for the use of a dock-
26 ing port on the ISS.

1 (d) REPORTS.—Not later than 30 days after the date
2 that an award or agreement is made under subsection
3 (b)(3), the Administrator shall submit to the appropriate
4 committees of Congress a report on the development of
5 the commercial space station or commercial space habitat,
6 as applicable, including a business plan for how the activ-
7 ity will—

8 (1) meet NASA’s future requirements for low-
9 Earth orbit human space flight services; and

10 (2) satisfy the non-Federal funding requirement
11 under subsection (c)(1).

12 **SEC. 206. STEPPING STONE APPROACH TO EXPLORATION.**

13 (a) IN GENERAL.—Section 70504 of title 51, United
14 States Code, is amended to read as follows:

15 **“§ 70504. Stepping stone approach to exploration**

16 “(a) IN GENERAL.—The Administrator may conduct
17 missions to intermediate destinations in sustainable steps
18 in accordance with section 20302(b) of this title, and on
19 a timetable determined by the availability of funding, in
20 order to achieve the objective of human exploration of
21 Mars specified in section 202(b)(5) of the National Aero-
22 nautics and Space Administration Authorization Act of
23 2010 (42 U.S.C. 18312(b)(5)), if the Administrator—

24 “(1) determines that each such mission dem-
25 onstrates or advances a technology or operational

1 concept that will enable human missions to Mars;
2 and

3 “(2) incorporates each such mission into the
4 human exploration roadmap under section 432 of
5 the National Aeronautics and Space Administration
6 Transition Authorization Act of 2017 (Public Law
7 115–10; 131 Stat. 18).

8 “(b) CIS-LUNAR SPACE EXPLORATION ACTIVI-
9 TIES.—In conducting a mission under subsection (a), the
10 Administrator—

11 “(1) shall utilize a mix of launches of the Space
12 Launch System and space transportation services
13 from United States commercial providers, as appro-
14 priate for the mission;

15 “(2) beginning after the first successful crewed
16 launch of Orion on the Space Launch System, shall
17 plan for not less than 1 Space Launch System
18 launch annually; and

19 “(3) may establish an outpost in orbit around
20 the Moon that—

21 “(A) demonstrates technologies, systems,
22 and operational concepts directly applicable to
23 the space vehicle that will be used to transport
24 humans to Mars;

1 “(B) has the capability for periodic human
2 habitation; and

3 “(C) can function as a point of departure,
4 return, or staging for NASA, commercial, or
5 international partner missions to the lunar sur-
6 face or other destinations.

7 “(c) COST-EFFECTIVENESS.—In order to maximize
8 the cost-effectiveness of the long-term space exploration
9 and utilization activities of the United States, the Admin-
10 istrator shall take all necessary steps, including engaging
11 international, academic, and industry partners, to ensure
12 that activities in the Administration’s human space explo-
13 ration program balance how those activities might also
14 help meet the requirements of future exploration and utili-
15 zation activities leading to human habitation on the sur-
16 face of Mars.

17 “(d) COMPLETION.—Within budgetary consider-
18 ations, once an exploration-related project enters its devel-
19 opment phase, the Administrator shall seek, to the max-
20 imum extent practicable, to complete that project without
21 undue delays.

22 “(e) INTERNATIONAL PARTICIPATION.—In order to
23 achieve the goal of successfully conducting a crewed mis-
24 sion to the surface of Mars, the President may invite the
25 United States partners in the ISS program and other na-

1 tions, as appropriate, to participate in an international ini-
2 tiative under the leadership of the United States.”.

3 (b) DEFINITION OF CIS-LUNAR SPACE.—Section
4 10101 of title 51, United States Code, is amended by add-
5 ing at the end the following:

6 “(3) CIS-LUNAR SPACE.—The term ‘cis-lunar
7 space’ means the region of space beyond low-Earth
8 orbit out to and including the region around the sur-
9 face of the Moon.”.

10 (c) TECHNICAL AND CONFORMING AMENDMENTS.—
11 Section 3 of the National Aeronautics and Space Adminis-
12 tration Authorization Act of 2010 (42 U.S.C. 18302) is
13 amended by striking paragraphs (2) and (3) and inserting
14 the following:

15 “(2) APPROPRIATE COMMITTEES OF CON-
16 GRESS.—The term ‘appropriate committees of Con-
17 gress’ means—

18 “(A) the Committee on Commerce,
19 Science, and Transportation of the Senate; and

20 “(B) the Committee on Science, Space,
21 and Technology of the House of Representa-
22 tives.

23 “(3) CIS-LUNAR SPACE.—The term ‘cis-lunar
24 space’ means the region of space beyond low-Earth

1 orbit out to and including the region around the sur-
2 face of the Moon.”.

3 **SEC. 207. SPACE LAUNCH SYSTEM CONFIGURATIONS.**

4 (a) **MOBILE LAUNCH PLATFORM.**—The Adminis-
5 trator is authorized to maintain 2 operational mobile
6 launch platforms to enable the launch of multiple configu-
7 rations of the Space Launch System.

8 (b) **ENHANCED UPPER STAGE.**—In order to meet the
9 capability requirements under section 302(c)(2) of the Na-
10 tional Aeronautics and Space Administration Authoriza-
11 tion Act of 2010 (42 U.S.C. 18322 (c)(2)), the Adminis-
12 trator shall continue development of the enhanced upper
13 stage for the Space Launch System with a scheduled avail-
14 ability date of not later than the third flight of the Space
15 Launch System.

16 (c) **BRIEFING.**—Not later than 90 days after the date
17 of enactment of this Act, the Administrator shall brief the
18 appropriate committees of Congress on the development
19 and scheduled availability of the enhanced upper stage.

20 **SEC. 208. ADVANCED SPACE SUITS.**

21 (a) **SENSE OF CONGRESS.**—It is the sense of Con-
22 gress that—

23 (1) next-generation advanced space suits are a
24 critical technology for human space exploration be-

1 facilities to enhance safety and to advance Government
2 and commercial space transportation and exploration.

3 (b) PROJECTS.—Projects funded under the program
4 under subsection (a) may include—

5 (1) infrastructure related to commodities;

6 (2) standard interfaces for multiple payload and
7 launch vehicle processing customer needs;

8 (3) enhancements to range capacity and flexi-
9 bility; and

10 (4) such other projects as the Administrator de-
11 termines meet the goals described in subsection (a).

12 (c) REQUIREMENTS.—In carrying out the program
13 under subsection (a), the Administrator shall—

14 (1) prioritize investments in projects that can
15 be used by multiple users and launch vehicles, in-
16 cluding non-NASA users and launch vehicles; and

17 (2) limit investments to projects that would not
18 otherwise be funded by a NASA program, such as
19 an institutional or programmatic infrastructure pro-
20 gram.

21 (d) SAVINGS CLAUSE.—Nothing in this section shall
22 preclude a NASA program, including the Space Launch
23 System and Orion, from utilizing the modernized launch
24 infrastructure under the program under subsection (a).

1 **SEC. 211. INDIAN RIVER BRIDGE.**

2 (a) IN GENERAL.—NASA shall continue to ensure
3 the Indian River Bridge continues to provide access to the
4 Eastern Range for national security, civil, and commercial
5 space operations.

6 (b) TRANSFER OF FUNDS.—In accordance with sec-
7 tion 20113 of title 51, United States Code, the Adminis-
8 trator is authorized to accept money from other Federal
9 agencies to upgrade the Indian River Bridge.

10 **SEC. 212. ISS NATIONAL LABORATORY; PROPERTY RIGHTS**
11 **IN INVENTIONS.**

12 (a) IN GENERAL.—Subchapter III of chapter 201 of
13 title 51, United States Code, is amended by adding at the
14 end the following:

15 **“§ 20150. Property rights in designated inventions**

16 “(a) EXCLUSIVE PROPERTY RIGHTS.—Notwith-
17 standing section 3710a of title 15, chapter 18 of title 35,
18 section 20135 of this title, or any other provision of law
19 to the contrary, a designated invention shall be the exclu-
20 sive property of a user, and shall not be subject to a Gov-
21 ernment-purpose license, if—

22 “(1) the Administration is reimbursed under
23 the terms of the contract for the total cost of any
24 contribution by the Government of the use of Gov-
25 ernment facilities, equipment, materials, information
26 proprietary to the Government, or services of a Gov-

1 ernment employee during working hours, including
2 the cost for the Administration to carry out its re-
3 sponsibilities under paragraphs (1) and (4) of sec-
4 tion 504(d) of the National Aeronautics and Space
5 Administration Authorization Act of 2010 (42
6 U.S.C. 18354(d));

7 “(2) no Government funds are transferred to
8 the user under the contract; and

9 “(3) the invention was made—

10 “(A) solely by the user; or

11 “(B) by the user with the services of a
12 Government employee under the terms of the
13 contract and the Government is reimbursed for
14 such services under paragraph (1).

15 “(b) RULE OF CONSTRUCTION.—Nothing in this sec-
16 tion may be construed to affect the rights of the Federal
17 Government, including property rights in inventions,
18 under any contract, except for a written contract with the
19 Administration or ISS management entity for the per-
20 formance of designated activities.

21 “(c) DEFINITIONS.—In this section—

22 “(1) CONTRACT.—The term ‘contract’ has the
23 meaning giving the term in section 20135(a).

24 “(2) DESIGNATED ACTIVITIES.—The term ‘des-
25 ignated activities’ means any non-NASA scientific

1 utilization of the ISS national laboratory as de-
2 scribed in section 504 of the National Aeronautics
3 and Space Administration Authorization Act of 2010
4 (42 U.S.C. 18354).

5 “(3) DESIGNATED INVENTION.—The term ‘des-
6 ignated invention’ means any invention or class of
7 inventions made or that may be made by any person
8 in the performance of designated activities under a
9 written contract with the Administration or the ISS
10 management entity.

11 “(4) GOVERNMENT-PURPOSE LICENSE.—The
12 term ‘Government-purpose license’ means a reserva-
13 tion by the Government of an irrevocable, nonexclu-
14 sive, nontransferable, royalty-free license for the
15 practice of an invention throughout the world by or
16 on behalf of the United States or any foreign gov-
17 ernment pursuant to any treaty or agreement with
18 the United States.

19 “(5) ISS MANAGEMENT ENTITY.—The term
20 ‘ISS management entity’ means the organization
21 with which the Administrator enters into a coopera-
22 tive agreement under section 504(a) of the National
23 Aeronautics and Space Administration Authorization
24 Act of 2010 (42 U.S.C. 18354(a)).

1 “(6) MADE.—The term ‘made’ has the meaning
2 given the term in section 20135(a).

3 “(7) NONPROFIT ORGANIZATION.—The term
4 ‘nonprofit organization’ has the meaning given the
5 term in section 201 of title 35.

6 “(8) SMALL BUSINESS FIRM.—The term ‘small
7 business firm’ has the meaning given the term in
8 section 201 of title 35.

9 “(9) USER.—The term ‘user’ means a person
10 (as defined in section 1 of title 1), including a non-
11 profit organization or small business firm, or class
12 of persons that enters into a written contract with
13 the Administration or the ISS management entity
14 for the performance of designated activities.”.

15 (b) TABLE OF CONTENTS.—The table of contents for
16 chapter 201 of title 51, United States Code, is amended
17 by inserting after the item relating to section 20149 the
18 following:

“20150. Property rights in designated inventions.”.

19 **SEC. 213. DATA FIRST PRODUCED DURING NON-NASA SCI-**
20 **ENTIFIC UTILIZATION OF THE ISS NATIONAL**
21 **LABORATORY.**

22 (a) DATA RIGHTS.—Subchapter III of chapter 201
23 of title 51, United States Code, as amended by section
24 212 of this Act, is further amended by adding at the end
25 the following:

1 **“§ 20151. Data rights**

2 “(a) NON-NASA SCIENTIFIC UTILIZATION OF THE
3 ISS NATIONAL LABORATORY.—The Federal Government
4 may not use or reproduce, or disclose outside of the Gov-
5 ernment, any data first produced in the performance of
6 designated activities under a written contract with the Ad-
7 ministration or the ISS management entity, unless—

8 “(1) otherwise agreed under the terms of the
9 contract with the Administration or the ISS man-
10 agement entity, as applicable;

11 “(2) any funding for the designated activities is
12 from a Federal source;

13 “(3) disclosure is required by law;

14 “(4) the Government has rights in the data
15 under another Federal contract, grant, cooperative
16 agreement, or other transaction;

17 “(5) otherwise lawfully acquired by the Govern-
18 ment;

19 “(6) related to the health and safety of per-
20 sonnel on the ISS; or

21 “(7) essential to the performance of work by
22 the ISS management entity or NASA personnel.

23 “(b) DEFINITIONS.—In this section:

24 “(1) CONTRACT.—The term ‘contract’ has the
25 meaning given the term under section 20135(a).

26 “(2) DATA.—

1 “(A) IN GENERAL.—The term ‘data’
2 means recorded information, regardless of form
3 or the media on which it may be recorded.

4 “(B) INCLUSIONS.—The term ‘data’ in-
5 cludes technical data and computer software.

6 “(C) EXCLUSIONS.—The term ‘data’ does
7 not include information incidental to contract
8 administration, such as financial, administra-
9 tive, cost or pricing, or management informa-
10 tion.

11 “(3) DESIGNATED ACTIVITIES.—The term ‘des-
12 ignated activities’ has the meaning given the term
13 under section 20150.

14 “(4) ISS MANAGEMENT ENTITY.—The term
15 ‘ISS management entity’ has the meaning given the
16 term under section 20150.”.

17 (b) SPECIAL HANDLING OF TRADE SECRETS OR
18 CONFIDENTIAL INFORMATION.—Section 20131(b)(2) of
19 title 51, United States Code, is amended to read as fol-
20 lows:

21 “(2) INFORMATION DESCRIBED.—

22 “(A) ACTIVITIES UNDER AGREEMENT.—
23 Information referred to in paragraph (1) is in-
24 formation that results from activities conducted
25 under an agreement entered into under sub-

1 sections (e) and (f) of section 20113 of this
2 title, and that would be a trade secret or com-
3 mercial or financial information that is privi-
4 leged or confidential under the meaning of sec-
5 tion 552(b)(4) of title 5 if the information had
6 been obtained from a non-Federal party partici-
7 pating in such an agreement.

8 “(B) CERTAIN DATA.—Information re-
9 ferred to in paragraph (1) includes data first
10 produced by the Administration in the perform-
11 ance of any designated activities (as defined in
12 section 20150 of this title), and that would be
13 a trade secret or commercial or financial infor-
14 mation that is privileged or confidential under
15 the meaning of section 552(b)(4) of title 5 if
16 the data had been obtained from a non-Federal
17 party. In this subparagraph, the term ‘data’
18 has the meaning given the term under section
19 20151.”.

20 (c) TABLE OF CONTENTS.—The table of contents for
21 chapter 201 of title 51, United States Code, as amended
22 by section 212 of this Act, is further amended by inserting
23 after the item relating to section 20150 the following:

“20151. Data rights.”.

1 **SEC. 214. ROYALTIES AND OTHER PAYMENTS RECEIVED**
2 **FOR DESIGNATED ACTIVITIES.**

3 (a) SENSE OF CONGRESS.—It is the sense of Con-
4 gress that NASA should determine a threshold for which
5 it may be appropriate for NASA to recuperate the costs
6 of supporting the creation of invention aboard the ISS,
7 through the negotiation of royalties, similar to agreements
8 made by other Federal agencies that support private sec-
9 tor innovation.

10 (b) IN GENERAL.—Subchapter III of chapter 201 of
11 title 51, United States Code, as amended by section 213
12 of this Act, is further amended by adding at the end the
13 following:

14 **“§ 20152. Royalties and other payments received for**
15 **designated activities**

16 “(a) DESIGNATED INVENTIONS MADE WITH FED-
17 ERAL ASSISTANCE.—If the Administration is required to
18 provide, unreimbursed, the total cost of any contribution
19 by the Government of the use of Government facilities,
20 equipment, materials, information proprietary to the Gov-
21 ernment, or services of a Government employee during
22 working hours, including the cost for the Administration
23 to carry out its responsibilities under paragraphs (1) and
24 (4) of section 504(d) of the National Aeronautics and
25 Space Administration Authorization Act of 2010 (42
26 U.S.C. 18354(d)), under the terms of any written contract

1 for the performance of designated activities, the Adminis-
2 trator, notwithstanding any other law to the contrary,
3 shall negotiate and agree upon the terms and rates of roy-
4 alty payments with respect to any invention or class of
5 inventions made or which may be made by any person or
6 class of persons in the performance of such designated ac-
7 tivities.

8 “(b) LICENSING AND ASSIGNMENT OF INVEN-
9 TIONS.—Notwithstanding sections 3710a and 3710c of
10 title 15, or any other provision of law to the contrary, the
11 balance of any royalties or other payments received by the
12 Administrator or ISS management entity from licensing
13 and assignment of inventions under a written contract
14 with the Administration or ISS management entity for the
15 performance of designated activities, after payment in ac-
16 cordance with section 3710c(a)(1)(A)(i) to the inventors
17 who have directly assigned their interests in such inven-
18 tions to the Government, shall be paid to the Space Explo-
19 ration Fund by the Administrator or ISS management en-
20 tity, as applicable.

21 “(c) SPACE EXPLORATION FUND.—

22 “(1) ESTABLISHMENT.—There is established in
23 the Treasury a fund to be known as the Space Ex-
24 ploration Fund, to be administered by the Adminis-
25 trator, to be available without fiscal year limitation

1 and without further appropriation, for carrying out
2 Administration-related space exploration activities
3 under section 20302 of this title.

4 “(2) DEPOSITS.—There shall be deposited in
5 the Space Exploration Fund—

6 “(A) amounts appropriated to the fund;

7 “(B) fees and royalties collected by the Ad-
8 ministrator or ISS management entity under
9 subsections (a) and (b) of this section; and

10 “(C) donations or contributions accepted
11 by the Administrator to support authorized ac-
12 tivities.

13 “(3) RULE OF CONSTRUCTION.—Any amount
14 under this subsection shall be in addition to amounts
15 otherwise made available for the purpose described
16 in paragraph (1).

17 “(d) DEFINITIONS.—The terms used in this section
18 have the meanings given the terms in section 20150.”.

19 (c) TABLE OF CONTENTS.—The table of contents for
20 chapter 201 of title 51, United States Code, as amended
21 by section 213 of this Act, is further amended by inserting
22 after the item relating to section 20151 the following:

“20152. Royalties and other payments received for designated activities.”.

TITLE III—SCIENCE**SEC. 301. SCIENCE PRIORITIES.**

(a) REAFFIRMATION.—Congress reaffirms the sense of Congress under section 501 of the National Aeronautics and Space Administration Transition Authorization Act of 2017 (Public Law 115–10; 131 Stat. 18) that—

(1) a balanced and adequately funded set of activities, consisting of research and analysis grant programs, technology development, suborbital research activities, and small, medium, and large space missions, contributes to a robust and productive science program and serves as a catalyst for innovation and discovery; and

(2) the Administrator should set science priorities by following the guidance provided by the scientific community through the National Academies of Sciences, Engineering, and Medicine’s decadal surveys.

(b) DECADAL RESULTS.—Section 805 of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18384) is amended—

(1) by inserting “(a) IN GENERAL.—” before “NASA”; and

(2) by adding at the end the following:

1 “(b) PRIORITY CHANGES.—If scientific discoveries or
2 external factors compel NASA to reassess decadal survey
3 priorities, NASA shall, to the greatest extent practicable,
4 consult with the relevant National Academies commit-
5 tees.”.

6 **SEC. 302. LUNAR DISCOVERY PROGRAM.**

7 (a) IN GENERAL.—The Administrator may carry out
8 a program to conduct lunar science research, including
9 missions to the surface of the Moon, if that program con-
10 tributes materially to the objective described in section
11 20102(d)(1) of title 51, United States Code.

12 (b) COMMERCIAL LANDERS.—In carrying out the
13 program under subsection (a), the Administrator shall
14 procure the services of commercial landers developed pri-
15 marily by United States industry to land science payloads
16 on the lunar services.

17 (c) NATIONAL ACADEMIES.—Lunar science research
18 funded by the program carried out under subsection (a)
19 shall be consistent with recommendations made by the Na-
20 tional Academies.

21 (d) AUTHORIZATION OF APPROPRIATIONS.—There
22 are authorized to be appropriated to carry out this sec-
23 tion—

1 (1) \$218,000,000 for fiscal year 2019, of which
2 \$18,000,000 shall be made available for the oper-
3 ation of the Lunar Reconnaissance Orbiter; and

4 (2) \$218,000,000 for each fiscal year there-
5 after, of which \$18,000,000 shall be made available,
6 in each fiscal year that the Lunar Reconnaissance
7 Orbiter is operational, for the operation of the
8 Lunar Reconnaissance Orbiter.

9 **SEC. 303. SEARCH FOR LIFE.**

10 (a) SENSE OF CONGRESS.—It is the sense of Con-
11 gress that the 2018 National Academies Astrobiology
12 Strategy for the Search for Life in the Universe outlines
13 the key scientific questions and methods for fulfilling
14 NASA’s objective to search for life’s origin, evolution, dis-
15 tribution, and future in the universe.

16 (b) PROGRAM AUTHORIZED.—

17 (1) IN GENERAL.—In support of the objective
18 described in section 20102(d)(10) of title 51, United
19 States Code, the Administrator shall continue to im-
20 plement a collaborative, multidisciplinary science and
21 technology development program to search for proof
22 of the existence or historical existence of life beyond
23 Earth.

1 (2) CONTENTS.—The program under paragraph
2 (1) shall include astronomy, biology, geology, and
3 planetary science.

4 (3) TECHNOSIGNATURES.—In carrying out the
5 program under paragraph (1), the Administrator
6 may fund activities to search for and analyze
7 technosignatures.

8 **SEC. 304. JAMES WEBB SPACE TELESCOPE.**

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

11 (1) the James Webb Space Telescope will be
12 the next premier observatory in space and has a
13 great potential to help to further scientific study and
14 assist scientists in making new discoveries in the
15 field of astronomy;

16 (2) the James Webb Space Telescope was devel-
17 oped as an ambitious project with a scope that was
18 not fully defined at inception and with risk that was
19 not fully known or understood;

20 (3) despite the major technology development
21 and innovation that was needed to construct the
22 James Webb Space Telescope, major negative im-
23 pacts to the cost and schedule of the James Webb
24 Space Telescope resulted from poor program man-
25 agement and poor contractor performance;

1 (4) the Administrator should take into account
2 the lessons learned from the cost and schedule issues
3 realized in developing the James Webb Space Tele-
4 scope when making decisions regarding the scope of
5 and the technologies needed for future scientific mis-
6 sions;

7 (5) the Administrator should take into account
8 the impact large programs that overrun cost and
9 schedule may have on other NASA programs in ear-
10 lier phases of development when selecting future sci-
11 entific missions; and

12 (6) the Administration should continue to de-
13 velop the James Webb Space Telescope with a devel-
14 opment cost (as defined in section 30104 of title 51,
15 United States Code) of no more than
16 \$9,000,000,000 as estimated by the James Webb
17 Space Telescope Independent Review Board report
18 released in May 2018.

19 (b) REQUIREMENTS.—

20 (1) IN GENERAL.—The Administrator shall con-
21 tinue—

22 (A) to closely observe the performance of
23 the James Webb Space Telescope project; and

24 (B) to improve the reliability of cost esti-
25 mates and contractor performance data

1 throughout the development of the James Webb
2 Space Telescope.

3 (2) **KEY PROGRAM OBJECTIVE.**—The Adminis-
4 trator shall continue to develop the James Webb
5 Space Telescope on a schedule to meet the objective
6 of safely launching the James Webb Space Telescope
7 before March 31, 2021.

8 **SEC. 305. WIDE-FIELD INFRARED SURVEY TELESCOPE.**

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

11 (1) a major cost growth in astrophysics Dis-
12 covery class missions has been harmful to the overall
13 portfolio balance; and

14 (2) the Administrator should continue to de-
15 velop the Wide-Field Infrared Survey Telescope with
16 a development cost (as defined in section 30104 of
17 title 51, United States Code) of no more than
18 \$3,200,000,000.

19 (b) **REQUIREMENTS.**—The Administrator shall con-
20 tinue to develop the Wide-Field Infrared Survey Telescope
21 to meet the objectives outlined in the 2010 National Acad-
22 emies' Astronomy and Astrophysics Decadal Survey in a
23 way that maximizes the scientific productivity of meeting
24 those objectives for the resources invested.

1 **SEC. 306. SENSE OF CONGRESS REGARDING SMALL SAT-**
2 **ELLITE SCIENCE.**

3 It is the sense of Congress that—

4 (1) small satellites are increasingly robust, ef-
5 fective, and affordable platforms for carrying out
6 space science missions;

7 (2) small satellites can work in tandem with or
8 augment NASA's larger spacecraft to support
9 NASA's high-priority science missions;

10 (3) small satellites are cost-effective solutions
11 that may allow NASA to continue collecting legacy
12 observations while developing next generation science
13 missions; and

14 (4) NASA should continue to support small sat-
15 ellite research, development, technologies, and pro-
16 grams.

17 **SEC. 307. STUDY ON SATELLITE SERVICING FOR SCIENCE**
18 **MISSIONS.**

19 (a) **FEASIBILITY STUDY.**—Not later than 1 year
20 after the date of enactment of this Act, the Administrator
21 shall—

22 (1) study the feasibility of using in-space
23 robotic refueling, repair, or refurbishment capabili-
24 ties to extend the useful life of telescopes and other
25 science missions currently operational or in develop-
26 ment; and

1 (2) submit to the appropriate committees of
2 Congress and the National Academies Space Studies
3 Board, for its consideration during formulation of
4 upcoming decadal surveys, a report on the study.

5 (b) CONTENTS.—The study shall include the pro-
6 jected cost of such activities, including the cost of ex-
7 tended operations for refurbished science missions.

8 **SEC. 308. EARTH SCIENCE.**

9 (a) SENSE OF CONGRESS.—It is the sense of Con-
10 gress that NASA’s Earth Science Division plays an impor-
11 tant role in national efforts to collect and use Earth obser-
12 vations in service to society and to understand global
13 change.

14 (b) EARTH SCIENCE PROGRAM.—The Administrator
15 shall, to the extent practicable, follow the recommenda-
16 tions and guidance provided by the scientific community
17 through the National Academies of Sciences, Engineering,
18 and Medicine decadal survey for Earth Science, including
19 the following:

20 (1) The science priorities established by the
21 decadal survey.

22 (2) The execution of the series of existing or
23 previously planned observations, known as the pro-
24 gram of record.

1 (3) The development of cost-capped medium-
2 and large-size missions.

3 (4) Opportunities for a mid-size principal inves-
4 tigator-led, competitively selected explorer class mis-
5 sions.

6 (5) The development of the Venture-continuity
7 class of small satellite missions in order to provide
8 opportunity for low-cost sustained observations.

9 **TITLE IV—AERONAUTICS**

10 **SEC. 401. SHORT TITLE.**

11 This title may be cited as the “Aeronautics Innova-
12 tion Act”.

13 **SEC. 402. DEFINITIONS.**

14 In this title:

15 (1) **AERONAUTICS STRATEGIC IMPLEMENTA-**
16 **TION PLAN.**—The term “Aeronautics Strategic Im-
17 plementation Plan” means the Aeronautics Strategic
18 Implementation Plan issued by the NASA Aero-
19 nautics Research Mission Directorate.

20 (2) **UNMANNED AIRCRAFT SYSTEM; UNMANNED**
21 **AIRCRAFT.**—The terms “unmanned aircraft system”
22 and “unmanned aircraft” have the meanings given
23 those terms in section 44801 of title 49, United
24 States Code.

1 (3) X-PLANE.—The term “X-plane” means an
2 experimental aircraft that—

3 (A) is used to test and evaluate a new
4 technology or aerodynamic concept; and

5 (B) is operated by NASA or the Air Force.

6 **SEC. 403. EXPERIMENTAL AIRCRAFT PROJECTS.**

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

9 (1) developing high-risk, precompetitive aero-
10 space technologies for which there is not yet a profit
11 rationale is a fundamental NASA role;

12 (2) large-scale piloted flight test experimen-
13 tation and validation are necessary for—

14 (A) transitioning new technologies and ma-
15 terials, including associated manufacturing
16 processes, for general aviation, commercial avia-
17 tion, and military aeronautics use; and

18 (B) capturing the full extent of benefits
19 from the Aeronautics Research Mission Direc-
20 torate’s investments in priority programs called
21 for in—

22 (i) the National Aeronautics Research
23 and Development Plan issued by the Na-
24 tional Science and Technology Council in
25 February 2010;

- 1 (ii) the NASA 2014 Strategic Plan;
- 2 (iii) the Aeronautics Strategic Imple-
- 3 mentation Plan; and
- 4 (iv) any updates to the programs
- 5 called for in the plans described in clauses
- 6 (i) through (iii); and

7 (3) a level of funding that adequately supports
8 large-scale piloted flight test experimentation and
9 validation, including related infrastructure, must be
10 assured over a sustained period of time to restore
11 NASA's capacity to see legacy priority programs
12 through to completion and achieve national economic
13 and security objectives.

14 (b) POLICY.—It is the policy of the United States—

15 (1) to maintain world leadership in military and
16 civilian aeronautical science and technology, global
17 air power projection, and industrialization; and

18 (2) to maintain as a fundamental objective of
19 NASA aeronautics research the steady progression
20 and expansion of flight research and capabilities, in-
21 cluding the science and technology of critical under-
22 lying disciplines and competencies, such as—

23 (A) computational-based analytical and
24 predictive tools and methodologies;

25 (B) aerothermodynamics;

1 (C) propulsion;

2 (D) advanced materials and manufacturing
3 processes; high-temperature structures and ma-
4 terials; and

5 (E) flight controls.

6 (c) ESTABLISHMENT OF X-PLANE PROJECTS.—

7 (1) IN GENERAL.—Consistent with the roadmap
8 for supersonic research under section 604(b) of the
9 National Aeronautics and Space Administration
10 Transition Authorization Act of 2017 (Public Law
11 115–10; 131 Stat. 18), the Administrator shall es-
12 tablish the following projects:

13 (A) A low-boom supersonic aircraft project
14 to demonstrate supersonic aircraft designs and
15 technologies that—

16 (i) reduce sonic boom noise; and

17 (ii) assist the Administrator of the
18 Federal Aviation Administration in ena-
19 bling the safe commercial deployment of
20 civil supersonic aircraft technology and the
21 safe and efficient operation of civil super-
22 sonic aircraft.

23 (B) A series of large-scale X-plane dem-
24 onstrators that—

1 (i) are developed sequentially or in
2 parallel; and

3 (ii) are each based on a set of new
4 configuration concepts or technologies de-
5 termined by the Administrator—

6 (I) to demonstrate aircraft and
7 propulsion concepts and technologies
8 and related advances in alternative
9 propulsion and energy;

10 (II) to enable significant in-
11 creases in energy efficiency and re-
12 duced life cycle emissions in the avia-
13 tion system while reducing noise emis-
14 sions; and

15 (III) to demonstrate flight pro-
16 pulsion concepts and technologies.

17 (2) PROJECT ELEMENTS.—For each project
18 under paragraph (1), the Administrator shall—

19 (A) include the development of X-planes
20 and all necessary supporting flight test assets;

21 (B) pursue a robust technology maturation
22 and flight test validation effort;

23 (C) improve necessary facilities, flight test-
24 ing capabilities, and computational tools to sup-
25 port the project;

1 (D) award primary contracts for design,
2 procurement, and manufacturing to United
3 States persons, consistent with international ob-
4 ligations and commitments;

5 (E) coordinate research and flight test
6 demonstration activities with other Federal
7 agencies, as appropriate, and the United States
8 aviation community; and

9 (F) ensure that the project is aligned with
10 the Aeronautics Strategic Implementation Plan,
11 and any updates to the Aeronautics Strategic
12 Implementation Plan.

13 (d) ADVANCED MATERIALS AND MANUFACTURING
14 TECHNOLOGY PROGRAM.—

15 (1) IN GENERAL.—The Administrator may es-
16 tablish an advanced materials and manufacturing
17 technology program that—

18 (A) consists of new material developments,
19 from base material formulation through full-
20 scale structural validation and manufacture;

21 (B) will develop advanced materials and
22 manufacturing processes to reduce the cost of
23 manufacturing scale-up and certification for use
24 in general aviation, commercial aviation, and
25 military aeronautics;

1 (C) will reduce the time it takes to design,
2 industrialize, and certify advanced materials
3 and manufacturing processes, including manu-
4 facturing; and

5 (D) will address global cost competitive-
6 ness for United States aeronautical industries
7 and technological leadership in advanced mate-
8 rials and manufacturing technology.

9 (2) CONTENTS.—In carrying out the program
10 under paragraph (1), the Administrator shall—

11 (A) build on work that was carried out by
12 the Advanced Composites Project of NASA;

13 (B) partner with the private and academic
14 sector, including members of the Advanced
15 Composites Consortium, as appropriate;

16 (C) coordinate with advanced manufac-
17 turing and composites initiatives in other NASA
18 mission directorates, as the Administrator con-
19 siders appropriate; and

20 (D) comply with existing Federal Aviation
21 Administration regulations for use within pro-
22 grams in general aviation, commercial aviation,
23 and military aeronautics.

24 **SEC. 404. ON-DEMAND AIR TRANSPORTATION.**

25 It is the sense of Congress that—

1 (1) greater use of high-speed air transportation,
2 small airports, helipads, vertical flight infrastruc-
3 ture, and other aviation-related infrastructure can
4 alleviate surface transportation congestion and sup-
5 port economic growth within cities;

6 (2) NASA should continue—

7 (A) to conduct research focused on con-
8 cepts, technologies, and design tools; and

9 (B) to support the evaluation of advanced
10 technologies and operational concepts that can
11 be leveraged by—

12 (i) industry to develop future vehicles
13 and systems; and

14 (ii) the Federal Aviation Administra-
15 tion to support vehicle safety and oper-
16 ational certification; and

17 (3) NASA should leverage ongoing efforts to
18 develop advanced technologies to actively support the
19 research needed for on-demand air transportation.

20 **SEC. 405. UNMANNED AIRCRAFT SYSTEMS.**

21 (a) UNMANNED AIRCRAFT SYSTEMS OPERATION
22 PROGRAM.—The Administrator shall—

23 (1) research, develop, and test capabilities and
24 concepts, including unmanned aircraft systems com-
25 munications and spectrum-related resources, for in-

1 tegrating unmanned aircraft systems into the na-
2 tional airspace system;

3 (2) leverage NASA's partnership with industry
4 focused on the advancement of technologies for fu-
5 ture air traffic management systems for unmanned
6 aircraft systems; and

7 (3) continue to align NASA's research and test-
8 ing portfolio to inform unmanned aircraft system in-
9 tegration consistent with public safety and national
10 security objectives.

11 (b) COORDINATION WITH THE FEDERAL AVIATION
12 ADMINISTRATION.—It is the sense of Congress that—

13 (1) NASA should continue—

14 (A) to coordinate with the Federal Avia-
15 tion Administration on research on air traffic
16 management systems for unmanned aircraft
17 systems; and

18 (B) to assist the Federal Aviation Admin-
19 istration in the integration of unmanned air-
20 craft systems traffic management systems in
21 the national airspace system; and

22 (2) the test ranges (as defined in section 44801
23 of title 49, United States Code) should continue to
24 be leveraged to research unmanned aircraft system

1 integration and unmanned aircraft systems traffic
2 management.

3 **SEC. 406. 21ST CENTURY AERONAUTICS RESEARCH CAPA-**
4 **BILITIES INITIATIVE.**

5 (a) ESTABLISHMENT.—The Administrator may es-
6 tablish a 21st Century Aeronautics Capabilities Initiative,
7 within the Construction and Environmental Compliance
8 and Restoration Account, to ensure that NASA possesses
9 the infrastructure and capabilities necessary to conduct
10 proposed flight demonstration projects across the range
11 of NASA aeronautics interests.

12 (b) ACTIVITIES.—As part of the 21st Century Aero-
13 nautics Capabilities Initiative, the Administrator may
14 carry out the following activities:

15 (1) Any investments the Administrator con-
16 siders necessary to upgrade and create facilities for
17 civil and national security aeronautics research to
18 support advancements in long-term foundational
19 science and technology, advanced aircraft systems,
20 air traffic management systems, fuel efficiency and
21 electric propulsion technologies, system-wide safety
22 assurance, autonomous aviation, and supersonic and
23 hypersonic aircraft design and development.

1 (2) Any measures the Administrator considers
2 necessary to support flight testing activities, includ-
3 ing—

4 (A) continuous refinement and develop-
5 ment of free-flight test techniques and meth-
6 odologies;

7 (B) upgrades and improvements to real-
8 time tracking and data acquisition; and

9 (C) such other measures related to aero-
10 nautics research support and modernization as
11 the Administrator considers appropriate to
12 carry out the scientific study of the problems of
13 flight, with a view to their practical solutions.

14 **SEC. 407. HYPERSONIC TECHNOLOGY RESEARCH**
15 **PROJECTS.**

16 It is the sense of Congress that—

17 (1) hypersonic technology is critical to the de-
18 velopment of advanced high-speed aerospace vehicles
19 for both civilian and national security purposes;

20 (2) for hypersonic vehicles to be realized, re-
21 search is needed to overcome technical challenges,
22 including in propulsion, advanced materials, and
23 entry, descent, and landing;

24 (3) NASA plays a critical role in supporting
25 fundamental hypersonic research and testing;

1 (4) NASA research efforts in hypersonic tech-
2 nology complement research supported by the De-
3 partment of Defense and contributions from both
4 agencies working in partnership with universities
5 and industry are necessary to overcome key technical
6 challenges;

7 (5) previous coordinated research programs be-
8 tween NASA and the Department of Defense en-
9 abled important progress on hypersonic technology;

10 (6) the commercial sector could provide flight
11 platforms and other capabilities that can host and
12 support NASA hypersonic technology research
13 projects; and

14 (7) in carrying out hypersonic technology re-
15 search projects, the Administrator should—

16 (A) focus research and development efforts
17 on high-speed propulsion systems, reusable ve-
18 hicle technologies, high-temperature materials,
19 and systems analysis;

20 (B) coordinate with the Department of De-
21 fense to prevent duplication of efforts and of in-
22 vestments;

23 (C) include partnerships with universities
24 and industry to accomplish research goals; and

1 (D) maximize public-private utilization of
2 commercially available platforms for hosting re-
3 search and development flight projects.

4 **TITLE V—SPACE TECHNOLOGY**

5 **SEC. 501. SPACE TECHNOLOGY MISSION DIRECTORATE.**

6 (a) SENSE OF CONGRESS.—It is the sense of Con-
7 gress that an independent Space Technology Mission Di-
8 rectorate is critical to ensuring continued investments in
9 the development of technologies for missions across
10 NASA’s portfolio, including science and human explo-
11 ration.

12 (b) REQUIREMENT.—NASA shall maintain a Space
13 Technology Mission Directorate consistent with section
14 702 of the National Aeronautics and Space Administra-
15 tion Transition Authorization Act of 2017 (51 U.S.C.
16 20301 note).

17 **SEC. 502. FLIGHT OPPORTUNITIES PROGRAM.**

18 Congress reaffirms that the Administrator should
19 provide flight opportunities for payloads to microgravity
20 environments and suborbital altitudes as authorized by
21 section 907 of the National Aeronautics and Space Admin-
22 istration Authorization Act of 2010 (42 U.S.C. 18405).

23 **TITLE VI—STEM ENGAGEMENT**

24 **SEC. 601. SENSE OF CONGRESS.**

25 It is the sense of Congress that—

1 (1) NASA serves as a source of inspiration to
2 many United States citizens and is uniquely posi-
3 tioned to help increase United States students' inter-
4 est in science, technology, engineering, and math;

5 (2) engaging students in science, technology,
6 engineering, and math and providing hands-on expe-
7 rience at an early age are important aspects of en-
8 suring and promoting United States leadership in
9 innovation; and

10 (3) NASA should strive to use its unique posi-
11 tion—

12 (A) to increase K–12 involvement in NASA
13 projects;

14 (B) to enhance higher education in the
15 United States; and

16 (C) to support underrepresented popu-
17 lations, such as women, underrepresented mi-
18 norities, and persons in rural areas, in the
19 fields of science, technology, engineering, and
20 math.

21 **SEC. 602. STEM ENGAGEMENT ACTIVITIES.**

22 (a) IN GENERAL.—The Administrator shall continue
23 to carry out opportunities for both formal and informal
24 STEM engagement activities either within the Office of

1 STEM Engagement or within other directorates, including
2 the following:

3 (1) Established Program to Stimulate Competi-
4 tive Research.

5 (2) Minority University Research and Edu-
6 cation Project.

7 (3) National Space Grant College and Fellow-
8 ship Program.

9 (b) BRIEFING.—Not later than 1 year after the date
10 of enactment of this Act, the Administrator shall brief the
11 appropriate committees of Congress on—

12 (1) the status of the programs listed under sub-
13 section (a); and

14 (2) how all other STEM engagement activities
15 at NASA are organized and funded.

16 (c) DEFINITION OF STEM.—In this section, the term
17 “STEM” means science, technology, engineering, and
18 mathematics, including computer science.

19 **TITLE VII—MISCELLANEOUS**

20 **SEC. 701. PROTECT CERTAIN TECHNICAL DATA FROM PUB- 21 LIC DISCLOSURE.**

22 Section 20131 of title 51, United States Code, as
23 amended in section 213 of this Act, is further amended—

24 (1) by redesignating subsection (c) as sub-
25 section (d);

1 (2) in subsection (a)(3), by striking “subsection
2 (b)” and inserting “subsection (b) or subsection
3 (c)”;

4 (3) by inserting after subsection (b) the fol-
5 lowing:

6 “(c) SPECIAL HANDLING OF CERTAIN TECHNICAL
7 DATA.—

8 “(1) IN GENERAL.—The Administrator may
9 provide appropriate protections against the dissemi-
10 nation of certain technical data, including exemption
11 from subchapter II of chapter 5 of title 5.

12 “(2) DEFINITIONS.—In this subsection:

13 “(A) CERTAIN TECHNICAL DATA.—The
14 term ‘certain technical data’ means technical
15 data that may not be exported lawfully outside
16 the United States without approval, authoriza-
17 tion, or license under—

18 “(i) the Export Control Reform Act of
19 2018 (Public Law 115–232; 132 Stat.
20 2208); or

21 “(ii) the International Security Assist-
22 ance and Arms Export Control Act of
23 1976 (Public Law 94–329; 90 Stat. 729).

24 “(B) TECHNICAL DATA.—The term ‘tech-
25 nical data’ means any blueprint, drawing, pho-

1 tograph, plan, instruction, computer software,
 2 or documentation, or other technical informa-
 3 tion that is required to design, develop, engi-
 4 neer, produce, manufacture, assemble, operate,
 5 repair, test, maintain, overhaul, modify, or re-
 6 produce any aeronautical, space, or other export
 7 controlled item, including any related sub-
 8 system, component, or part therefor, or tech-
 9 nology.”;

10 (4) in subsection (d), as redesignated, by insert-
 11 ing “, including any data,” after “information”; and

12 (5) by adding at the end the following:

13 “(e) SECTION 552 OF TITLE 5.—For purposes of sec-
 14 tion 552 of title 5, this section shall be considered a stat-
 15 ute described in subsection (b)(3)(B) of that section.”.

16 **SEC. 702. PROTECTING CERTAIN VOLUNTARILY PROVIDED,**
 17 **SAFETY-RELATED INFORMATION FROM PUB-**
 18 **LIC DISCLOSURE.**

19 (a) IN GENERAL.—Whenever the Administrator col-
 20 lects safety-related information as part of a mishap inves-
 21 tigation, under the NASA Safety Reporting System or as
 22 part of an organizational safety assessment, the Adminis-
 23 tration, the Administration shall provide appropriate pro-
 24 tections against the dissemination of safety-related infor-
 25 mation if the Administrator determines that—

1 (1) disclosure of the information would inhibit
2 the voluntary provision of that type of information;
3 and

4 (2)(A) receipt of that information aids in im-
5 proving the safety of NASA's programs and NASA's
6 research related to aeronautics and space; or

7 (B) withholding such information from disclo-
8 sure is consistent with improving the safety of
9 NASA's programs and NASA's research related to
10 aeronautics and space.

11 (b) OTHER FEDERAL AGENCIES.—If the Adminis-
12 trator provides to the head of another Federal agency
13 safety-related information described in subsection (a) with
14 respect to which the Administrator has made a determina-
15 tion described in that subsection, the head of that Federal
16 agency shall (notwithstanding any other provision of law)
17 withhold the information from public disclosure.

18 (c) TRANSPARENCY.—Each determination of the Ad-
19 ministration under subsection (a) shall be made in writing
20 and accompanied by a statement of the basis for the deter-
21 mination. All such determinations and statements of basis
22 shall be available to the public, upon request.

23 (d) REGULATIONS.—The Administrator shall issue
24 regulations to carry out this section.

1 (e) SECTION 552 OF TITLE 5.—For purposes of sec-
2 tion 552 of title 5, this section shall be considered a stat-
3 ute described in subsection (b)(3)(B) of that section.

4 **SEC. 703. SMALL SATELLITE LAUNCH SERVICES PROGRAM.**

5 (a) IN GENERAL.—The Administrator shall continue
6 to procure dedicated launch services for cubesats and
7 small satellites for the purpose of conducting science and
8 technology missions that further the agency’s goals.

9 (b) REQUIREMENTS.—In carrying out the program
10 under subsection (a), the Administrator shall—

11 (1) engage with the academic community to
12 maximize awareness and utilization of these dedi-
13 cated small satellite launch opportunities; and

14 (2) to the maximum extent practicable, utilize
15 secondary payload of procured launch services for
16 cubesats.

17 **SEC. 704. LIMITATIONS ON COOPERATION WITH THE PEOPLES
18 REPUBLIC OF CHINA.**

19 (a) LIMITATIONS.—NASA, OSTP, and the National
20 Space Council, are prohibited from—

21 (1) developing, designing, planning, promul-
22 gating, implementing, or executing a bilateral policy,
23 program, order, or contract of any kind to partici-
24 pate, collaborate, or coordinate bilaterally in any
25 way with the People’s Republic of China, or any

1 company owned by the People’s Republic of China or
2 incorporated under the laws of the People’s Republic
3 of China, unless such activities are specifically au-
4 thorized by a law enacted after the date of enact-
5 ment of this Act; and

6 (2) hosting official visitors from the People’s
7 Republic of China at facilities belonging to or uti-
8 lized by NASA.

9 (b) EXCEPTIONS.—The limitations described in sub-
10 section (a) shall not apply to activities which the head of
11 NASA, OSTP, or the National Space Council certifies—

12 (1) will pose no risk of resulting in the transfer
13 of technology, data, or other information with na-
14 tional security or economic security implications to
15 the People’s Republic of China, or to any company
16 owned by the People’s Republic of China or incor-
17 porated under the laws of the People’s Republic of
18 China; and

19 (2) will not involve knowing interactions with
20 officials who have been determined by the United
21 States to have direct involvement with violations of
22 human rights.

23 (c) SUBMISSION TO CONGRESS.—Not later than 30
24 days after the date that a certification is made under sub-
25 section (b), the head of NASA, OSTP, or the National

1 Space Council, as applicable, shall transmit the certifi-
2 cation to the Committee on Commerce, Science, and
3 Transportation and the Committee on Appropriations of
4 the Senate and the Committee on Science, Space, and
5 Technology and the Committee on Appropriations of the
6 House of Representatives.

7 **SEC. 705. CYBERSECURITY.**

8 (a) SPACE CYBERSECURITY.—Section 20301 of title
9 51 is amended by adding at the end the following:

10 “(c) CYBERSECURITY.—The Administrator shall up-
11 date and improve, as necessary, the cybersecurity of the
12 space assets and supporting infrastructure within the Ad-
13 ministration’s domain.”.

14 (b) SECURITY OPERATIONS CENTER.—

15 (1) IN GENERAL.—The Administrator shall
16 maintain a Security Operations Center to identify
17 and respond to cybersecurity threats to NASA infor-
18 mation technology systems, including, when appro-
19 priate, institutional systems and mission systems.

20 (2) INSPECTOR GENERAL OF NASA REC-
21 OMMENDATIONS.—Not later than 18 months after
22 the date of enactment of this Act, in carrying out
23 paragraph (1), the Administrator shall implement
24 each of the recommendations of the Inspector Gen-

1 eral of NASA in the report issued May 23, 2018
2 (IG–18–020), including the following:

3 (A) Developing a charter and set of au-
4 thorities approved by the Administrator that
5 addresses the Security Operation’s Center orga-
6 nizational placement, purpose, authority, and
7 responsibilities.

8 (B) Establishing Operational Level Agree-
9 ments with NASA Centers, Mission Direc-
10 torates, and other divisions to direct the roles
11 and data visibility Administration-wide.

12 (C) Developing initiatives to improve Ad-
13 ministration-wide visibility.

14 (D) Identifying and reducing unnecessary
15 duplication to incident monitoring, detection,
16 and response capabilities.

17 (c) GAO PRIORITY RECOMMENDATIONS.—Not later
18 than 18 months after the date of enactment of this Act,
19 the Administrator shall implement the priority rec-
20 ommendations of the Comptroller General of the United
21 States in the report issued May 18, 2016 (GAO–16–501),
22 pertaining to information security controls over select
23 high-impact systems, including—

24 (1) re-evaluating security control assessments;

25 and

- 1 (2) specifying metrics to be used as part of the
- 2 Administration's continuous monitoring strategy.

○