

117TH CONGRESS
1ST SESSION

S. 1756

To extend the commitment of the United States to the International Space Station, to develop advanced space suits, and to authorize a stepping stone approach to exploration, and for other purposes.

IN THE SENATE OF THE UNITED STATES

MAY 20, 2021

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

A BILL

To extend the commitment of the United States to the International Space Station, to develop advanced space suits, and to authorize a stepping stone approach to exploration, and for other purposes.

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

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Advancing Human
5 Spaceflight Act of 2021”.

6 **SEC. 2. FINDINGS.**

7 Congress makes the following findings:

1 (1) The Apollo 11 landing on July 20, 1969,
2 marked the first steps of a human being on the sur-
3 face of another world, representing a giant leap for
4 all humanity and a significant demonstration of the
5 spaceflight capabilities of the United States.

6 (2) Section 202(a) of the National Aeronautics
7 and Space Administration Authorization Act of 2010
8 (42 U.S.C. 18312(a)) establishes for the National
9 Aeronautics and Space Administration the long-term
10 goals of expanding human presence in space and es-
11 tablishing a thriving space economy in low-Earth
12 orbit and beyond.

13 (3) The 2017 National Security Strategy des-
14 ignates the human exploration of the solar system as
15 a strategic priority for the United States.

16 (4) Establishing and ensuring the sustainability
17 of human space exploration of the solar system, as
18 called for in the Space Policy Directive–1 entitled
19 “Reinvigorating America’s Human Space Explo-
20 ration Program” (82 Fed. Reg. 239 (December 11,
21 2017)) and the National Space Exploration Cam-
22 paign Report of the National Aeronautics and Space
23 Administration issued in September 2018, will re-
24 quire carrying out human exploration and related

1 extravehicular activities on the surface of other ce-
2 lestial bodies in a safe and cost-effective manner.

3 (5) The Johnson Space Center has decades of
4 experience working with international partners,
5 other Federal agencies, and partners in industry and
6 academia to study, develop, and carry out the
7 human spaceflight priorities of the United States.

8 **SEC. 3. DEFINITIONS.**

9 In this Act:

10 (1) ADMINISTRATION.—The term “Administra-
11 tion” means the National Aeronautics and Space
12 Administration.

13 (2) ADMINISTRATOR.—The term “Adminis-
14 trator” means the Administrator of the National
15 Aeronautics and Space Administration.

16 (3) JOHNSON SPACE CENTER.—The term
17 “Johnson Space Center” means the Lyndon B.
18 Johnson Space Center in Houston, Texas.

19 (4) NASA.—The term “NASA” means the Na-
20 tional Aeronautics and Space Administration.

21 **SEC. 4. SENSE OF CONGRESS.**

22 It is the sense of Congress that the United States
23 should support efforts to establish a long-term human set-
24 tlement in space.

1 **SEC. 5. STATEMENT OF POLICY ON PERMANENT ESTAB-**
2 **LISHMENT OF HUMAN PRESENCE CAPA-**
3 **BILITY IN LOW-EARTH ORBIT.**

4 It is the policy of the United States—

5 (1) to continuously maintain the capability for
6 a continuous human presence in low-Earth orbit
7 through and beyond the useful life of the Inter-
8 national Space Station; and

9 (2) that such capability shall—

10 (A) maintain the global leadership of the
11 United States and relationships with partners
12 and allies;

13 (B) contribute to the general welfare of the
14 United States; and

15 (C) leverage commercial capabilities to pro-
16 mote affordability so as not to preclude a ro-
17 bust portfolio of other human space exploration
18 activities.

19 **SEC. 6. INTERNATIONAL SPACE STATION.**

20 (a) CONTINUATION OF INTERNATIONAL SPACE STA-
21 TION.—Section 501(a) of the National Aeronautics and
22 Space Administration Authorization Act of 2010 (42
23 U.S.C. 18351(a)) is amended by striking “2024” and in-
24 serting “2030”.

25 (b) CONTINUED OPERATIONS AND MAINTENANCE OF
26 UNITED STATES SEGMENT OF INTERNATIONAL SPACE

1 STATION.—Section 503(a) of the National Aeronautics
 2 and Space Administration Authorization Act of 2010 (42
 3 U.S.C. 18353(a)) is amended by striking “2024” and in-
 4 serting “2030”.

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

10 (1) in paragraph (1), in the first sentence, by
 11 striking “2024” and inserting “2030”; and

12 (2) in paragraph (2), in the third sentence, by
 13 striking “2024” and inserting “2030”.

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

17 (1) in the section heading, by striking “**2024**”
 18 and inserting “**2030**”;

19 (2) in subsection (a), by striking “2024” and
 20 inserting “2030”; and

21 (3) in subsection (b)(3), by striking “2024”
 22 and inserting “2030”.

23 (e) TRANSITION STRATEGY.—

24 (1) IN GENERAL.—Not later than 300 days
 25 after the date of the enactment of this Act, the Ad-

1 administrator shall submit to the Committee on Com-
2 merce, Science, and Transportation of the Senate
3 and the Committee on Science, Space, and Tech-
4 nology of the House of Representatives a strategy
5 that—

6 (A) describes the manner in which the Ad-
7 ministration will ensure a stepwise transition to
8 an eventual successor platform consistent with
9 the ISS Transition Principles specified in the
10 International Space Station Transition Report
11 issued pursuant to section 50111(c)(2) of title
12 51, United States Code, on March 30, 2018;

13 (B) includes capability-driven milestones
14 and timelines leading to such a transition;

15 (C) takes into account the importance of
16 maintaining workforce expertise, core capabili-
17 ties, and continuity at the centers of the Ad-
18 ministration, including such centers that are
19 primarily focused on human spaceflight;

20 (D) considers how any transition described
21 in subparagraph (A) affects international and
22 commercial partnerships;

23 (E) presents opportunities for future en-
24 gagement with—

25 (i) international partners;

1 (ii) countries with growing spaceflight
2 capabilities, if such engagement is not pre-
3 cluded by other provisions of law;

4 (iii) the scientific community, includ-
5 ing the microgravity research community;

6 (iv) the private sector; and

7 (v) other United States Government
8 users; and

9 (F) promotes the continued economic de-
10 velopment of low-Earth orbit.

11 (2) IMPLEMENTATION PLAN.—The strategy re-
12 quired by paragraph (1) shall include an implemen-
13 tation plan describing the manner in which the Ad-
14 ministration plans to carry out such strategy.

15 (3) REPORT.—Not less frequently than bienni-
16 ally, the Administrator shall submit to the Com-
17 mittee on Commerce, Science, and Transportation of
18 the Senate and the Committee on Science, Space,
19 and Technology of the House of Representatives a
20 report on the implementation of the strategy re-
21 quired by paragraph (1).

22 **SEC. 7. ADVANCED SPACE SUITS.**

23 (a) FINDINGS.—Congress makes the following find-
24 ings:

(1) Space suits and associated extravehicular activity technologies (in this section referred to as “EVA technologies”) are critical space exploration technologies.

(2) The civil service workforce of the Administration at the Johnson Space Center has unique capabilities to integrate, design, and validate space suits and associated EVA technologies.

(3) Maintaining a strong core competency in the design, development, manufacture, and operation of space suits and related technologies allows the Administration to be an informed purchaser of competitively awarded commercial space suits and associated EVA technologies.

(4) The Administration should fully use the International Space Station by 2025 to test future space suits and associated EVA technologies to reduce risk and improve safety.

(b) SPACE SUITS.—

(1) IN GENERAL.—The Administrator shall establish a program to develop next-generation space suits and associated EVA technologies.

(2) SUPPORT FOR PROGRAM.—The Director of the Johnson Space Center shall support the program established under paragraph (1).

1 (3) ACCOMMODATION OF DIVERSE ASTRONAUT
 2 CORPS.—The Administrator shall ensure that space
 3 suits developed and manufactured after the date of
 4 the enactment of this Act accommodate a wide range
 5 of sizes of astronauts so as to meet the needs of the
 6 diverse NASA astronaut corps.

7 (4) AGREEMENTS WITH PRIVATE ENTITIES.—In
 8 carrying out this subsection, the Administrator
 9 may—

10 (A) enter into 1 or more agreements with
 11 1 or more industry-proven space suit design,
 12 development, and manufacturing suppliers; and

13 (B) leverage—

14 (i) prior and existing investments in
 15 advanced space suit technologies; and

16 (ii) existing capabilities at NASA cen-
 17 ters.

18 **SEC. 8. HUMAN SPACE FACILITIES IN AND BEYOND LOW-**
 19 **EARTH ORBIT.**

20 (a) HUMAN SPACE FACILITY DEFINED.—In this sec-
 21 tion, the term “human space facility” means a structure
 22 for use in or beyond low-Earth orbit that supports, or has
 23 the potential to support, human life.

24 (b) SENSE OF CONGRESS.—It is the sense of Con-
 25 gress that human space facilities play a significant role

1 in the long-term pursuit by the Administration of the ex-
2 ploration goals under section 202(a) of the National Aero-
3 nautics and Space Administration Authorization Act of
4 2010 (42 U.S.C. 18312(a)).

5 (c) REPORT ON CREWED AND UNCREWED HUMAN
6 SPACE FACILITIES.—

7 (1) IN GENERAL.—Not later than 180 days
8 after the date of the enactment of this Act, the Ad-
9 ministrator shall submit to the Committee on Com-
10 merce, Science, and Transportation of the Senate
11 and the Committee on Science, Space, and Tech-
12 nology of the House of Representatives a report on
13 the potential development of 1 or more human space
14 facilities.

15 (2) CONTENTS.—With respect to the potential
16 development of each human space facility referred to
17 in paragraph (1), the report required under such
18 paragraph shall include a description of the fol-
19 lowing:

20 (A) The capacity of the human space facil-
21 ity to advance, enable, or complement human
22 exploration of the solar system, including
23 human exploration of the atmosphere and the
24 surface of celestial bodies.

1 (B) The role of the human space facility as
2 a staging, logistics, and operations hub in ex-
3 ploration architecture.

4 (C) The capacity of the human space facil-
5 ity to support the research, development, test-
6 ing, validation, operation, and launch of space
7 exploration systems and technologies.

8 (D) Opportunities and strategies for com-
9 mercial operation or public-private partnerships
10 with respect to the human space facility that
11 protect taxpayer interests and foster competi-
12 tion.

13 (E) The role of the human space facility in
14 encouraging further crewed and uncrewed ex-
15 ploration investments.

16 (F) The manner in which the development
17 and maintenance of the International Space
18 Station would reduce the cost of, and time nec-
19 essary for, the development of the human space
20 facility.

21 (d) CISLUNAR SPACE EXPLORATION ACTIVITIES.—
22 The Administrator shall establish an outpost in orbit
23 around the Moon that—

24 (1) demonstrates technologies, systems, and
25 operational concepts directly applicable to the space

1 vehicle that will be used to transport humans to
2 Mars;

3 (2) has the capability for periodic human habi-
4 tation; and

5 (3) can function as a point of departure, return,
6 or staging for Administration or nongovernmental or
7 international partner missions to multiple locations
8 on the lunar surface or other destinations.

9 **SEC. 9. STEPPING STONE APPROACH TO EXPLORATION.**

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

12 **“§ 70504. Stepping stone approach to exploration**

13 “(a) IN GENERAL.—The Administrator, in sustain-
14 able steps, may conduct missions to intermediate destina-
15 tions, such as the Moon, in accordance with section
16 20302(b), and on a timetable determined by the avail-
17 ability of funding, in order to achieve the objective of
18 human exploration of Mars specified in section 202(b)(5)
19 of the National Aeronautics and Space Administration Au-
20 thorization Act of 2010 (42 U.S.C. 18312(b)(5)), if the
21 Administrator—

22 “(1) determines that each such mission dem-
23 onstrates or advances a technology or operational
24 concept that will enable human missions to Mars;
25 and

1 “(2) incorporates each such mission into the
 2 human exploration roadmap under section 432 of
 3 the National Aeronautics and Space Administration
 4 Transition Authorization Act of 2017 (Public Law 2
 5 115–10; 51 U.S.C. 20302 note).”.

6 **SEC. 10. REPORT ON RESEARCH AND DEVELOPMENT RE-**
 7 **LATING TO LIFE-SUSTAINING TECHNICAL**
 8 **SYSTEMS AND PLAN FOR ACHIEVING POWER**
 9 **SUPPLY.**

10 Not later than 1 year after the date of the enactment
 11 of this Act, the Administrator shall submit to the Com-
 12 mittee on Commerce, Science, and Transportation of the
 13 Senate and the Committee on Science, Space, and Tech-
 14 nology of the House of Representatives—

15 (1) a report on the research and development of
 16 the Administration relating to technical systems for
 17 the self-sufficient sustainment of life in and beyond
 18 low-Earth orbit; and

19 (2) a plan for achieving a power supply on the
 20 Moon that includes—

21 (A) a consideration of the resources nec-
 22 essary to accomplish such plan in the subse-
 23 quent—

24 (i) 1 to 3 years;

25 (ii) 3 to 5 years; and

1 (iii) 5 to 10 years;

2 (B) collaboration and input from industry
3 and the Department of Energy, specifically the
4 Advanced Research Projects Agency–Energy;

5 (C) the use of a variety of types of energy,
6 including solar and nuclear; and

7 (D) a detailed description of the resources
8 necessary for the Administration to build a
9 lunar power facility with human-tended maintenance requirements during the subsequent 10-year period.
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12 **SEC. 11. TECHNICAL AMENDMENTS RELATING TO ARTEMIS**
13 **MISSIONS.**

14 (a) Section 421 of the National Aeronautics and
15 Space Administration Authorization Act of 2017 (Public
16 Law 115–10; 51 U.S.C. 20301 note) is amended—

17 (1) in subsection (c)(3)—

18 (A) by striking “EM–1” and inserting
19 “Artemis I”;

20 (B) by striking “EM–2” and inserting
21 “Artemis II”; and

22 (C) by striking “EM–3” and inserting
23 “Artemis III”; and

24 (2) in subsection (f)(3), by striking “EM–3”
25 and inserting “Artemis III”.

1 (b) Section 432(b) of the National Aeronautics and
2 Space Administration Authorization Act of 2017 (Public
3 Law 115–10; 51 U.S.C. 20302 note) is amended—

4 (1) in paragraph (3)(D)—

5 (A) by striking “EM–1” and inserting
6 “Artemis I”; and

7 (B) by striking “EM–2” and inserting
8 “Artemis II”; and

9 (2) in paragraph (4)(C), by striking “EM–3”
10 and inserting “Artemis III”.

11 **SEC. 12. MISSIONS OF NATIONAL NEED.**

12 (a) SENSE OF CONGRESS.—It is the Sense of Con-
13 gress that—

14 (1) while certain space missions, such as aster-
15 oid detection or space debris mitigation or removal
16 missions, may not provide the highest-value science,
17 as determined by the National Academies of Science,
18 Engineering, and Medicine decadal surveys, such
19 missions provide tremendous value to the United
20 States and the world; and

21 (2) the current organizational and funding
22 structure of NASA has not prioritized the funding
23 of missions of national need.

24 (b) STUDY.—

1 (1) IN GENERAL.—The Director of the Office of
2 Science and Technology Policy shall conduct a study
3 on the manner in which NASA funds missions of na-
4 tional need.

5 (2) MATTERS TO BE INCLUDED.—The study
6 conducted under paragraph (1) shall include the fol-
7 lowing:

8 (A) An identification and assessment of
9 the types of missions or technology development
10 programs that constitute missions of national
11 need.

12 (B) An assessment of the manner in which
13 such missions are currently funded and man-
14 aged by NASA.

15 (C) An analysis of the options for funding
16 missions of national need, including—

17 (i) structural changes required to
18 allow NASA to fund such missions; and

19 (ii) an assessment of the capacity of
20 other Federal agencies to make funds
21 available for such missions.

22 (c) REPORT TO CONGRESS.—Not later than 1 year
23 after the date of the enactment of this Act, the Director
24 of the Office of Science and Technology Policy shall sub-
25 mit to the appropriate committees of Congress a report

- 1 on the results of the study conducted under subsection (b),
- 2 including recommendations for funding missions of na-
- 3 tional need.

