AMENDMENT NO._____ Calendar No._____

Purpose: In the nature of a substitute.

IN THE SENATE OF THE UNITED STATES—118th Cong., 1st Sess.

S. 447

To establish a demonstration program for the active remediation of orbital debris and to require the development of uniform orbital debris standard practices in order to support a safe and sustainable orbital environment, and for other purposes.

Referred to the Committee on _____ and ordered to be printed

Ordered to lie on the table and to be printed

AMENDMENT IN THE NATURE OF A SUBSTITUTE intended to be proposed by Mr. HICKENLOOPER

Viz:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the ''Orbital Sustainability Act of 2023'' or the ''ORBITS Act of 2023''.

SEC. 2. FINDINGS; SENSE OF CONGRESS.

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

(1) The safety and sustainability of operations in low-Earth orbit and nearby orbits in outer space

have become increasingly endangered by a growing amount of orbital debris.

(2) Exploration and scientific research missions and commercial space services of critical importance to the United States rely on continued and secure access to outer space.

(3) Efforts by nongovernmental space entities to apply lessons learned through standards and best practices will benefit from government support for implementation both domestically and internationally.

(b) SENSE OF CONGRESS.—It is the sense of Congress that to preserve the sustainability of operations in space, the United States Government should—

(1) to the extent practicable, develop and carry out programs, establish or update regulations, and commence initiatives to minimize orbital debris, including initiatives to demonstrate active debris remediation of orbital debris generated by the United States Government or other entities under the jurisdiction of the United States;

(2) lead international efforts to encourage other spacefaring countries to mitigate and remediate orbital debris under their jurisdiction and control; and

(3) encourage space system operators to continue implementing best practices for space safety when deploying satellites and constellations of satellites, such as transparent data sharing and designing for system reliability, so as to limit the generation of future orbital debris.

SEC. 3. DEFINITIONS.

In this Act:

(1) ACTIVE DEBRIS REMEDIATION.—The term ''active debris remediation''—

(A) means the deliberate process of facilitating the de-orbit, repurposing, or other disposal of orbital debris, which may include moving orbital debris to a safe position, using an object or technique that is external or internal to the orbital debris; and

(B) does not include de-orbit, repurposing, or other disposal of orbital debris by passive means.

(2) ADMINISTRATOR.—The term ''Administrator'' means the Administrator of the National Aeronautics and Space Administration.

(3) APPROPRIATE COMMITTEES OF CONGRESS.—The term ''appropriate committees of Congress'' means—

(A) the Committee on Appropriations, the Committee on Commerce, Science, and Transportation, the Committee on Foreign Relations, and the Committee on Armed Services of the Senate; and

(B) the Committee on Appropriations, the Committee on Science, Space, and Technology, the Committee on Foreign Affairs, and the Committee on Armed Services of the House of Representatives.

(4) DEMONSTRATION PROJECT.—The term ''demonstration project'' means the active orbital debris remediation demonstration project carried out under section 4(b).

(5) ELIGIBLE ENTITY.—The term ''eligible entity'' means—

(A) a United States-based—

(i) non-Federal, commercial entity;

(ii) institution of higher education (as defined in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a))); or

(iii) nonprofit organization;

(B) any other United States-based entity the Administrator considers appropriate; and

(C) a partnership of entities described in subparagraphs (A) and (B).

(6) ORBITAL DEBRIS.—The term ''orbital debris'' means any human-made space object orbiting Earth that—

(A) no longer serves an intended purpose; and

(B)(i) has reached the end of its mission; or

(ii) is incapable of safe maneuver or operation.

(7) PROJECT .—The term ''project'' means a specific investment with defined requirements, a lifecycle cost, a period of duration with a beginning and an end, and a management structure that may interface with other projects, agencies, and international partners to yield new or revised technologies addressing strategic goals.

(8) SECRETARY.—The term ''Secretary'' means the Secretary of Commerce.

(9) SPACE TRAFFIC COORDINATION.—The term ''space traffic coordination'' means the planning, coordination, and on-orbit synchronization of activities to enhance the safety and sustainability of operations in the space environment.

SEC. 4. ACTIVE DEBRIS REMEDIATION.

(a) PRIORITIZATION OF ORBITAL DEBRIS.—

(1) LIST.—Not later than 90 days after the date of the enactment of this Act, the Secretary, in consultation with the Administrator, the Secretary of Defense, the Secretary of State, the National Space Council, and representatives of the commercial space industry, academia, and nonprofit organizations, shall publish a list of select identified orbital debris that may be remediated to improve the safety and sustainability of orbiting satellites and on-orbit activities.

(2) CONTENTS.—The list required under paragraph (1)—

(A) shall be developed using appropriate sources of data and information derived from governmental and nongovernmental sources, including space situational awareness data obtained by the Office of Space Commerce, to the extent practicable;

(B) shall include, to the extent practicable—

(i) a description of the approximate age, location in orbit, size, mass, tumbling state, post-mission passivation actions

taken, and national jurisdiction of each orbital debris identified; and

(ii) data required to inform decisions regarding potential risk and feasibility of safe remediation;

(C) may include orbital debris that poses a significant risk to terrestrial people and assets, including risk resulting from potential environmental impacts from the uncontrolled reentry of the orbital debris identified; and

(D) may include collections of small debris that, as of the date of the enactment of this Act, are untracked.

(3) PUBLIC AVAILABILITY; PERIODIC UPDATES.—

(A) IN GENERAL.—Subject to subparagraph (B), the list required under paragraph (1) shall be published in unclassified form on a publicly accessible internet website of the Department of Commerce.

(B) EXCLUSION.—The Secretary may not include on the list published under subparagraph (A) data acquired from nonpublic sources.

(C) PERIODIC UPDATES.—Such list shall be updated periodically.

(4) ACQUISITION, ACCESS, USE, AND HANDLING OF DATA OR INFORMATION.—In carrying out the activities under this subsection, the Secretary—

(A) shall acquire, access, use, and handle data or information in a manner consistent with applicable provisions of law and policy, including laws and policies providing for the protection of privacy and civil liberties, and subject to any restrictions required by the source of the information;

(B) shall have access, upon written request, to all information, data, or reports of any executive agency that the Secretary determines necessary to carry out the activities under this subsection, provided that such access is—

(i) conducted in a manner consistent with applicable provisions of law and policy of the originating agency, including laws and policies providing for the protection of privacy and civil liberties; and

(ii) consistent with due regard for the protection from unauthorized disclosure of classified information relating to sensitive

intelligence sources and methods or other exceptionally sensitive matters; and

(C) may obtain commercially available information that may not be publicly available.

(b) ACTIVE ORBITAL DEBRIS REMEDIATION DEMONSTRATION PROJECT.—

(1) ESTABLISHMENT.—Not later than 180 days after the date of the enactment of this Act, subject to the availability of appropriations, the Administrator, in consultation with the head of each relevant Federal department or agency, shall establish a demonstration project to make competitive awards for the research, development, and demonstration of technologies leading to the remediation of selected orbital debris identified under subsection (a)(1).

(2) PURPOSE.—The purpose of the demonstration project shall be to enable eligible entities to pursue the phased development and demonstration of technologies and processes required for active debris remediation.

(3) PROCEDURES AND CRITERIA.—In establishing the demonstration project, the Administrator shall—

(A) establish—

(i) eligibility criteria for participation; and

(ii) a process for soliciting proposals from eligible entities;

(iii) criteria for the contents of such proposals;

(iv) project compliance and evaluation metrics; and

(v) project phases and milestones;

(B) identify government-furnished data or equipment;

(C) develop a plan for National Aeronautics and Space Administration participation, as appropriate, in technology development and intellectual property rights that—

(i) leverages National Aeronautics and Space Administration Centers that have demonstrated expertise and historical knowledge in measuring, modeling, characterizing, and describing the current and future orbital debris environment; and

(ii) develops the technical consensus for adopting mitigation measures for such participation; and

(D)(i) assign a project manager to oversee the demonstration project and carry out project activities under this subsection; and

(ii) in assigning such project manager, leverage National Aeronautics and Space Administration Centers and the personnel of National Aeronautics and Space Administration Centers, as practicable.

(4) RESEARCH AND DEVELOPMENT PHASE.—With respect to orbital debris identified under paragraph (1) of subsection (a), the Administrator shall, to the extent practicable and subject to the availability of appropriations, carry out the additional research and development activities necessary to mature technologies, in partnership with eligible entities, with the intent to close commercial capability gaps and enable potential future remediation missions for such orbital debris, with a preference for technologies that are capable of remediating orbital debris that have a broad range of characteristics described in paragraph (2)(B)(i) of that subsection.

(5) DEMONSTRATION MISSION PHASE.—

(A) IN GENERAL.—The Administrator shall evaluate proposals for a demonstration mission, and select and enter into a partnership

with an eligible entity, subject to the availability of appropriations, with the intent to demonstrate technologies determined by the Administrator to meet a level of technology readiness sufficient to carry out on-orbit remediation of select orbital debris.

(B) EVALUATION.—In evaluating proposals for the demonstration project, the Administrator shall—

(i) consider the safety, feasibility, cost, benefit, and maturity of the proposed technology;

(ii) consider the potential for the proposed demonstration to successfully remediate orbital debris and to advance the commercial state of the art with respect to active debris remediation;

(iii) carry out a risk analysis of the proposed technology that takes into consideration the potential casualty risk to humans in space or on the Earth's surface;

(iv) in an appropriate setting, conduct thorough testing and evaluation of the proposed technology and each component of

such technology or system of technologies; and

(v) consider the technical and financial feasibility of using the proposed technology to conduct multiple remediation missions.

(C) CONSULTATION.—The Administrator shall consult with the head of each relevant Federal department or agency before carrying out any demonstration mission under this paragraph.

(D) ACTIVE DEBRIS REMEDIATION DEMONSTRATION MISSION.—It is the sense of Congress that the Administrator should consider maximizing competition for, and use best practices to engage commercial entities in, an active debris remediation demonstration mission.

(6) BRIEFING AND REPORTS.—

(A) INITIAL BRIEFING.—Not later than 30 days after the establishment of the demonstration project under paragraph (1), the Administrator shall provide to the appropriate committees of Congress a briefing on the details of the demonstration project.

(B) ANNUAL REPORT.—Not later than 1 year after the initial briefing under subparagraph (A), and annually thereafter until the conclusion of the 1 or more demonstration missions, the Administrator shall submit to the appropriate committees of Congress a status report on—

(i) the technology developed under the demonstration project;

(ii) progress toward the accomplishment of the 1 or more demonstration missions; and

(iii) any duplicative efforts carried out or supported by the National Aeronautics and Space Administration or the Department of Defense.

(C) RECOMMENDATIONS.—Not later than 1 year after the date on which the first demonstration mission is carried out under this subsection, the Administrator, in consultation with the head of each relevant Federal department or agency, shall submit to Congress a report that provides legislative, regulatory, and policy recommendations to improve active debris remediation missions, as applicable.

(D) TECHNICAL ANALYSIS.—

(i) IN GENERAL.—To inform decisions regarding the acquisition of active debris remediation services by the Federal Government, not later than 1 year after the date on which an award is made under paragraph (1), the Administrator shall submit to Congress a report that—

(I) summarizes the cost-effectiveness, and provides a technical analysis of, technologies developed under the demonstration project;

(II) identifies any technology gaps addressed by the demonstration project and any remaining technology gaps; and

(III) provides, as applicable, any further legislative, regulatory, and policy recommendations to enable active debris remediation missions.

(ii) AVAILABILITY.—The Administration shall make the report submitted under clause (i) available to the Secretary, the Secretary of Defense, and other relevant

Federal departments and agencies, as determined by the Administrator.

(7) SENSE OF CONGRESS ON INTERNATIONAL COOPERATION.—It is the sense of Congress that, in carrying out the demonstration project, it is critical that the Administrator, in coordination with the Secretary of State and in consultation with the National Space Council, cooperate with one or more partner countries to enable the remediation of orbital debris that is under their respective jurisdictions.

(c) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to the Administrator to carry out this section $150,000,000 for the period of fiscal years 2024 through 2028.

(d) RESCISSION OF UNOBLIGATED FUNDS.—Unobligated balances of amounts appropriated or otherwise made available by subsection (c) as of September 30, 2028, shall be rescinded not later than December 31, 2028.

(e) RULE OF CONSTRUCTION.—Nothing in this section may be construed to grant the Administrator the authority to issue any regulation relating to activities under subsection (b) or related space activities under title 51, United States Code.

SEC. 5. ACTIVE DEBRIS REMEDIATION SERVICES.

(a) IN GENERAL.—To foster the competitive development, operation, improvement, and commercial availability of active debris remediation services, and in consideration of the economic analysis required by subsection (b) and the briefing and reports under section 4(b)(6), the Administrator and the head of each relevant Federal department or agency may acquire services for the remediation of orbital debris, whenever practicable, through fair and open competition for contracts that are well-defined, milestone-based, and in accordance with the Federal Acquisition Regulation.

(b) ECONOMIC ANALYSIS.—Based on the results of the demonstration project, the Secretary, acting through the Office of Space Commerce, shall publish an assessment of the estimated Federal Government and private sector demand for orbital debris remediation services for the 10-year period beginning in 2025.

SEC. 6. UNIFORM ORBITAL DEBRIS STANDARD PRACTICES FOR UNITED STATES SPACE ACTIVITIES.

(a) IN GENERAL.—Not later than 90 days after the date of the enactment of this Act, the National Space Council, in coordination with the Secretary, the Administrator of the Federal Aviation Administration, the Secretary of Defense, the Secretary of State, the Federal Communications Commission, and the Administrator,

shall initiate an update to the Orbital Debris Mitigation Standard Practices that—

(1) considers planned space systems, including satellite constellations; and

(2) addresses—

(A) collision risk;

(B) explosion risk;

(C) casualty probability;

(D) post-mission disposal of space systems;

(E) time to disposal or de-orbit;

(F) spacecraft collision avoidance and automated identification capability; and

(G) the ability to track orbital debris of decreasing size.

(b) CONSULTATION.—In developing the update under subsection (a), the National Space Council, or a designee of the National Space Council, shall seek advice and input on commercial standards and best practices from representatives of the commercial space industry, academia, and nonprofit organizations, including through workshops and, as appropriate, advance public notice and comment processes under chapter 5 of title 5, United States Code.

(c) PUBLICATION.—Not later than 1 year after the date of the enactment of this Act, such update shall be

published in the Federal Register and posted to the relevant Federal Government internet websites.

(d) REGULATIONS.—To promote uniformity and avoid duplication in the regulation of space activity, including licensing by the Federal Aviation Administration, the National Oceanic and Atmospheric Administration, and the Federal Communications Commission, such update, after publication, shall be used to inform the further development and promulgation of Federal regulations relating to orbital debris.

(e) INTERNATIONAL PROMOTION.—To encourage effective and nondiscriminatory standards, best practices, rules, and regulations implemented by other countries, such update shall inform bilateral and multilateral discussions focused on the authorization and continuing supervision of nongovernmental space activities.

(f) PERIODIC REVIEW.—Not less frequently than every 5 years, the Orbital Debris Mitigation Standard Practices referred to in subsection (a) shall be assessed and, if necessary, updated, used, and promulgated in a manner consistent with this section.

SEC. 7. STANDARD PRACTICES FOR SPACE TRAFFIC CO-ORDINATION.

(a) IN GENERAL.—The Secretary, in coordination with the Secretary of Defense and members of the Na-

tional Space Council and the Federal Communications Commission, shall facilitate the development of standard practices for on-orbit space traffic coordination based on existing guidelines and best practices used by Government and commercial space industry operators.

(b) CONSULTATION.—In facilitating the development of standard practices under subsection (a), the Secretary, through the Office of Space Commerce, in consultation with the National Institute of Standards and Technology, shall engage in frequent and routine consultation with representatives of the commercial space industry, academia, and nonprofit organizations.

(c) PROMOTION OF STANDARD PRACTICES.—On completion of such standard practices, the Secretary, the Secretary of State, the Secretary of Transportation, the Administrator, and the Secretary of Defense shall promote the adoption and use of the standard practices for domestic and international space missions.