[DISCUSSION DRAFT]

JUNE 12, 2013

113TH CONGRESS
1ST SESSION

H. R. _____

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

IN THE HOUSE OF REPRESENTATIVES

M__. _____ introduced the following bill; which was referred to the Committee on _____

A BILL

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

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the ''National Aeronautics and Space Administration Authorization Act of 2013''.

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

SEC. 2. DEFINITIONS.

In this Act:

(1) ADMINISTRATION.—The term ''Administration'' means the National Aeronautics and Space Administration.

(2) ADMINISTRATOR.—The term ''Administrator'' means the Administrator of the Administration.

(3) ORION CREW CAPSULE.—The term ''Orion crew capsule'' refers to the multi-purpose crew vehicle described in section 303 of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18323).

(4) SPACE ACT AGREEMENT.—The term ''Space Act Agreement'' means an agreement created under the authority to enter into ''other transactions'' under section 20113(e) of title 51, United States Code.

(5) SPACE LAUNCH SYSTEM.—The term ''Space Launch System'' refers to the follow-on Government-owned civil launch system developed, managed, and operated by the Administration to serve as a key component to expand human presence beyond low-Earth orbit, as described in section 302 of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18322).

TITLE I—AUTHORIZATION OF APPROPRIATIONS

SEC. 101. FISCAL YEAR 2014.

There are authorized to be appropriated to the Administration for fiscal year 2014, $16,865,200,000 as follows:

(1) For Space Exploration $4,007,400,000, of which—

(A) $1,454,200,000 shall be for the Space Launch System;

(B) $318,000,000 shall be for Exploration Ground Systems;

(C) $1,200,000,000 shall be for the Orion Crew Capsule;

(D) $305,000,000 shall be for Exploration Research and Development; and

(E) $700,000,000 shall be for Commercial Crew Development activities.

(2) For Space Operations $3,817,900,000, of which—

(A) $2,984,100,000 shall be for the International Space Station (ISS) Program; and

(B) $833,800,000 shall be for Space and Flight Support.

(3) For Science $4,626,900,000, of which—

(A) $1,200,000,000 shall be for Earth Science;

(B) $1,500,000,000 shall be for Planetary Science;

(C) $642,300,000 shall be for Astrophysics;

(D) $658,200,000 shall be for the James Webb Space Telescope; and

(E) $626,400,000 shall be for Heliophysics.

(4) For Aeronautics $565,700,000.

(5) For Space Technology $500,000,000.

(6) For Education $125,000,000.

(7) For Cross-Agency Support $2,600,000,000, of which—

(A) $2,000,000,000 shall be for Center Management and Operations; and

(B) $600,000,000 shall be for Agency Management and Operations.

(8) For Construction and Environmental Compliance and Restoration $587,000,000, of which—

(A) $542,000,000 shall be for Construction and Facilities; and

(B) $45,000,000 shall be for Environmental Compliance and Restoration.

(9) For Inspector General $35,300,000.

SEC. 102. FISCAL YEAR 2015.

There are authorized to be appropriated to the Administration for fiscal year 2015, $16,865,200,000 as follows:

(1) For Space Exploration $4,007,400,000, of which—

(A) $1,454,200,000 shall be for the Space Launch System;

(B) $318,000,000 shall be for Exploration Ground Systems;

(C) $1,200,000,000 shall be for the Orion Crew Capsule;

(D) $305,000,000 shall be for Exploration Research and Development; and

(E) $700,000,000 shall be for Commercial Crew Development activities.

(2) For Space Operations $3,817,900,000, of which—

(A) $2,984,100,000 shall be for the International Space Station (ISS) Program; and

(B) $833,800,000 shall be for Space and Flight Support.

(3) For Science $4,626,900,000, of which—

(A) $1,200,000,000 shall be for Earth Science;

(B) $1,500,000,000 shall be for Planetary Science;

(C) $642,300,000 shall be for Astrophysics;

(D) $658,200,000 shall be for the James Webb Space Telescope; and

(E) $626,400,000 shall be for Heliophysics.

(4) For Aeronautics $565,700,000.

(5) For Space Technology $500,000,000.

(6) For Education $125,000,000.

(7) For Cross-Agency Support $2,600,000,000, of which—

(A) $2,000,000,000 shall be for Center Management and Operations; and

(B) $600,000,000 shall be for Agency Management and Operations.

(8) For Construction and Environmental Compliance and Restoration $587,000,000, of which—

(A) $542,000,000 shall be for Construction and Facilities; and

(B) $45,000,000 shall be for Environmental Compliance and Restoration.

(9) For Inspector General $35,300,000.

SEC. 103. BUDGET CONTROL.

The amounts authorized to be appropriated to the Administration for fiscal years 2014 and 2015 are consistent with the Public Law 112–25, the Budget Control Act of 2011. If Public Law 112–25 is repealed or replaced

with an Act that increases allocations, there are authorized to be appropriated to the Administration such sums as that increase allows, with increases for the following programs in order of priority—

(1) 50 percent of such increase for the International Space Station Program.

(2) 25 percent of such increase for the Space Launch System.

(3) 25 percent of such increase for Commercial Crew Development activities.

TITLE II—HUMAN SPACE FLIGHT

Subtitle A—Exploration

SEC. 201. SPACE EXPLORATION POLICY.

(a) FINDINGS.—The finds the following:

(1) Congress supports a human exploration program that is not critically dependent on the achievement of milestones by fixed dates and an exploration technology development program to enable lunar human and robotic operations, as described in paragraphs (1) and (2) of section 70502 of title 51, United States Code.

(2) Congress supports the expansion of permanent human presence beyond low-Earth orbit, in a manner involving international partners where practical.

(3) Congress remains committed to ensuring that authorized budgets for the human space flight program shall maintain the Administration's high safety standards and shall apply to programs in a cost effective manner.

(4) Exploration deeper into the solar system should be the core mission of the Administration.

(5) Congress strongly supports the development of the Space Launch System and the Orion crew capsule as the enabling elements for human exploration, advanced scientific missions, and national security priorities beyond low-Earth orbit.

(b) POLICY.—It is the policy of the United States that the development of capabilities and technologies necessary for human missions to lunar orbit, the surface of the Moon, the surface of Mars, and beyond shall be the goals of the Administration's human space flight program.

(c) VISION FOR SPACE EXPLORATION.—Section 20302 of title 51, United States Code, is amended—

(1) by striking subsection (a) and inserting the following:

''(a) IN GENERAL.—The Administrator shall establish a program to develop a sustained human presence on the Moon and the surface of Mars, including a robust precursor program that follows the stepping stone plan re-

quired in section 70504 to promote exploration, science, commerce, and United States preeminence in space. The Administrator is further authorized to develop and conduct appropriate international collaborations in pursuit of such program, but the absence of an international partner may not be justification for failure to pursue such program in a timely manner.'';

(2) in subsection (b)—

(A) by striking paragraph (1) and inserting the following:

''(1) Returning Americans to the Moon.'';

(B) by striking paragraph (2) and inserting the following:

''(2) Launching the first crewed mission of the fully integrated Orion crew capsule with the Space Launch System as close to 2020 as possible.''; and

(C) in paragraph (4), by striking ''from Mars and'' and inserting ''from the Moon, Mars, and''; and

(3) by adding at the end the following:

''(c) DEFINITIONS.—In this section:

''(1) ORION CREW CAPSULE.—The term 'Orion crew capsule' refers to the multi-purpose crew vehicle described in section 303 of the National Aero-

nautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18323).

''(2) SPACE LAUNCH SYSTEM.—The term 'Space Launch System' refers to the follow-on Government-owned civil launch system developed, managed, and operated by the Administration to serve as a key component to expand human presence beyond low-Earth orbit, as described in section 302 of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18322).''.

(d) KEY OBJECTIVES.—Section 202(b) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18312(b)) is amended—

(1) in paragraph (3), by striking ''and'' after the semicolon;

(2) in paragraph (4), by striking the period at the end and inserting ''; and''; and

(3) by adding at the end the following:

''(5) to accelerate the development of capabilities to enable a human exploration mission to the surface of Mars and beyond through the prioritization of those technologies and capabilities best suited for such a mission in accordance with the Mars Human Exploration Roadmap under section 70504 of title 51, United States Code.''.

(e) USE OF NON-UNITED STATES HUMAN SPACE FLIGHT TRANSPORTATION CAPABILITIES.—Section 201(a) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18311(a)) is amended to read as follows:

''(a) USE OF NON-UNITED STATES HUMAN SPACE FLIGHT TRANSPORTATION CAPABILITIES.—

''(1) IN GENERAL.—NASA may not obtain non-United States human space flight capabilities unless no domestic commercial provider is available to provide such capabilities.

''(2) DEFINITION.—For purposes of this subsection, the term 'domestic commercial provider' means a person providing space transportation services or other space-related activities, the majority control of which is held by persons other than a Federal, State, local, or foreign government, foreign company, or foreign national.''.

(f) REPEAL OF SPACE SHUTTLE CAPABILITY ASSURANCE.—Section 203 of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18313) is amended—

(1) by striking subsection (b);

(2) in subsection (d), by striking ''subsection (c)'' and inserting ''subsection (b)''; and

(3) by redesignating subsections (c) and (d) as subsections (b) and (c), respectively.

SEC. 202. STEPPING STONE APPROACH TO EXPLORATION.

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

"§ 70504. Stepping stone approach to exploration

''(a) IN GENERAL.—In order to maximize the cost-effectiveness of the long-term space exploration and utilization activities of the United States, the Administrator shall direct the Human Exploration and Operations Mission Directorate to develop a Mars Human Exploration Roadmap to define the specific capabilities and technologies necessary to extend human presence to the surface of Mars and the mission sets required to demonstrate these capabilities and technologies.

''(b) ROADMAP REQUIREMENTS.—In developing the Mars Human Exploration Roadmap, the Administrator shall—

''(1) include the specific set of capabilities and technologies required to extend human presence to the surface of Mars and the mission sets necessary to demonstrate the proficiency of these capabilities and technologies with an emphasis on using the International Space Station, lunar landings, cis-lunar space, trans-lunar space, Lagrangian points,

and the natural satellites of Mars, Phobos and Deimos, as testbeds, as necessary, and shall include the most appropriate process for developing such capabilities and technologies;

''(2) provide a specific process for the evolution of the capabilities of the fully integrated Orion crew capsule with the Space Launch System and how these systems demonstrate the capabilities and technologies described in paragraph (1);

''(3) provide a description of the capabilities and technologies that could be demonstrated or research data that could be gained through the utilization of the International Space Station, and the status of the development of such capabilities and technologies;

''(4) describe a framework for international cooperation in the development of all technologies and capabilities required in this section, as well as an assessment of the risks posed by relying on international partners for capabilities and technologies on the critical path of development;

''(5) describe a process for utilizing non-governmental entities for future human exploration beyond trans-lunar space and specify what, if any, synergy could be gained from—

''(A) partnerships using Space Act Agreements (as defined in section 2 of the National Aeronautics and Space Administration Authorization Act of 2013); or

''(B) other acquisition instruments;

''(6) update such Roadmap at least every 4 years and include it in the budget for that fiscal year transmitted to Congress under section 1105(a) of title 31, and describe—

''(A) the achievements and goals reached in the process of developing such capabilities and technologies during the 4-year period prior to the submission of the Roadmap to Congress; and

''(B) the expected goals and achievements in the following 4-year period; and

''(7) include in the Roadmap an addendum from the NASA Advisory Council with a statement of review of the Roadmap that shall include—

''(A) subjects of agreement;

''(B) areas of concern; and

''(C) recommendations.

''(c) DEFINITIONS.—The terms 'Orion crew capsule' and 'Space Launch System' have the meanings given such terms in section 20302.''.

(b) REPORT.—

(1) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the Administrator shall transmit a copy of the Mars Human Exploration Roadmap developed under section 70504 of title 51, United States Code, to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

(2) UPDATES.—The Administrator shall transmit a copy of each updated Mars Human Exploration Roadmap to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 7 days after such Roadmap is updated under section 70504(b)(6) of such title.

SEC. 203. SPACE LAUNCH SYSTEM.

(a) FINDINGS.—Congress finds that the Space Launch System is the most practical approach to reaching the Moon, Mars, and beyond, and reaffirms the policy and minimum capability requirements contained in such section.

(b) REPORT.—Working with the Secretary of Defense and the Director of National Intelligence, the Adminis-

trator shall transmit a report to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 180 days after the date of enactment of this Act that addresses the effort and budget required to enable and utilize a cargo variant of the 130 ton Space Launch System configuration described in section 302(c) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18322(c)). This report shall also include consideration of the technical requirements of the scientific and national security communities related to such Space Launch System and shall directly assess the utility and estimated cost savings obtained by using such Space Launch System for national security and space science missions.

SEC. 204. ORION CREW CAPSULE.

(a) IN GENERAL.—The Orion crew capsule shall meet the practical needs and the minimum capability requirements described in section 303 of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18323).

(b) REPORT.—Not later than 60 days after the date of enactment of this Act, the Administrator shall transmit a report to the Committee on Science, Space, and Tech-

nology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate—

(1) detailing those components and systems of the Orion crew capsule that ensure it is in compliance with section 303(b) of such Act (42 U.S.C. 18323(b));

(2) detailing the expected date that the Orion crew capsule will be available to transport crew and cargo to the International Space Station; and

(3) certifying that the requirements of section 303(b)(3) of such Act (42 U.S.C. 18323(b)(3)) will be met by the Administration in time for the first crewed test flight in 2021.

Subtitle B—Space Operations

SEC. 211. FINDINGS.

Congress finds the following:

(1) The International Space Station is the ideal short-term testbed for future exploration systems development, including long-duration space travel.

(2) The use of the private market to provide cargo and crew transportation services is currently the most expeditious process to restore domestic access to the International Space Station and low-Earth orbit.

(3) Government assured access to low-Earth orbit is paramount to the continued success of the International Space Station and National Laboratory.

(4) Acquiring and maintaining an operational domestic commercial crew transportation service by the year 2017 is of the utmost importance for the future viability of the International Space Station and National Laboratory.

SEC. 212. INTERNATIONAL SPACE STATION.

(a) IN GENERAL.—The following is the policy of the United States:

(1) The International Space Station shall be utilized to the maximum extent practicable for the development of capabilities and technologies needed for the future of human exploration beyond low-Earth orbit.

(2) The Administrator shall, in consultation with the International Space Station partners—

(A) take all necessary measures to support the operation and full utilization of the International Space Station; and

(B) seek to minimize, to the extent practicable, the operating costs of the International Space Station.

(3) Reliance on foreign carriers for crew transfer is unacceptable, and the Nation's human space flight program must acquire the capability to launch United States astronauts on United States rockets from United States soil as soon as is safe and practically possible whether on Government-owned and operated space transportation systems or privately owned systems that have been certified for flight by the appropriate Federal agencies.

(b) REAFFIRMATION OF POLICY.—Congress reaffirms—

(1) its commitment to the development of a commercially developed launch and delivery system to the International Space Station for crew missions as expressed in the National Aeronautics and Space Administration Authorization Act of 2005 (Public Law 109–155), the National Aeronautics and Space Administration Authorization Act of 2008 (Public Law 110–422), and the National Aeronautics and Space Administration Authorization Act of 2010 (Public Law 111–267);

(2) that the Administration shall make use of United States commercially provided International Space Station crew transfer and crew rescue services to the maximum extent practicable; and

(3) the policy in section 501(b) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18351(b)) that the Administration shall pursue international, commercial, and intragovernmental means to maximize International Space Station logistics supply, maintenance, and operational capabilities, reduce risks to International Space Station systems sustainability, and offset and minimize United States operations costs relating to the International Space Station.

(c) ASSURED ACCESS TO LOW-EARTH ORBIT.—Section 70501(a) of title 51, United States Code, is amended to read as follows:

''(a) POLICY STATEMENT.—It is the policy of the United States to maintain an uninterrupted capability for human space flight and operations in low-Earth orbit, and beyond, as an essential instrument of national security and the capability to ensure continued United States participation and leadership in the exploration and utilization of space.''.

(d) REPEALS.—

(1) USE OF SPACE SHUTTLE OR ALTERNATIVES.—Chapter 701 of title 51, United States Code, and the item relating to such chapter in the table of chapters for such title, is repealed.

(2) SHUTTLE PRICING POLICY FOR COMMERCIAL AND FOREIGN USERS.—Chapter 703 of title 51, United States Code, and the item relating to such chapter in the table of chapters for such title, is repealed.

(3) SHUTTLE PRIVATIZATION.—Section 50133 of title 51, United States Code, and the item relating to such section in the table of sections for chapter 501 of such title, is repealed.

(e) EXTENSION CRITERIA REPORT.—Not later than 1 year after the date of enactment of this Act, the Administrator shall submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on the feasibility of extending the operation of the International Space Station that includes—

(1) criteria for defining the International Space Station as a research success;

(2) cost estimates for operating the International Space Station to achieve the criteria in paragraph (1);

(3) cost estimates for extending operations to 2020, 2025, and 2030; and

(4) an assessment of how the defined criteria under paragraph (1) respond to the National Acad-

emies Decadal Survey on Biological and Physical Sciences in Space.

(f) STRATEGIC PLAN FOR INTERNATIONAL SPACE STATION RESEARCH.—

(1) IN GENERAL.—The Director of the Office of Science and Technology Policy, in consultation with the Administrator, academia, other Federal agencies, the International Space Station National Laboratory Advisory Committee, and other potential stakeholders, shall develop and transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a strategic plan for conducting competitive, peer-reviewed research in physical and life sciences and related technologies on the International Space Station through at least 2020.

(2) PLAN REQUIREMENTS.—The strategic plan shall—

(A) be consistent with the priorities and recommendations established by the National Academies in its Decadal Survey on Biological and Physical Sciences in Space;

(B) provide a research timeline and identify resource requirements for its implementa-

tion, including the facilities and instrumentation necessary for the conduct of such research; and

(C) identify—

(i) criteria for the proposed research, including—

(I) a justification for the research to be carried out in the space microgravity environment;

(II) the use of model systems;

(III) the testing of flight hardware to understand and ensure its functioning in the microgravity environment;

(IV) the use of controls to help distinguish among the direct and indirect effects of microgravity, among other effects of the flight or space environment;

(V) approaches for facilitating data collection, analysis, and interpretation;

(VI) procedures to ensure repetition of experiments, as needed;

(VII) support for timely presentation of the peer-reviewed results of the research; and

(VIII) defined metrics for the success of each study;

(ii) instrumentation required to support the measurements and analysis of the research to be carried out under the strategic plan;

(iii) the capabilities needed to support direct, real-time communications between astronauts working on research experiments onboard the International Space Station and the principal investigator on the ground;

(iv) a process for involving the external user community in research planning, including planning for relevant flight hardware and instrumentation, and for utilization of the International Space Station, free flyers, or other research platforms; and

(v) defined metrics for success for the research plan.

(3) REPORT.—

(A) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Comptroller General of the United States shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on the progress of the organization chosen for the management of the International Space Station National Laboratory as directed in section 504 of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18354).

(B) SPECIFIC REQUIREMENTS.—The report shall assess the management, organization, and performance of such organization and shall include a review of the status of each of the 7 required activities listed in section 504(c) of such Act (42 U.S.C. 18354(c)).

SEC. 213. COMMERCIAL CREW REPORT.

(a) IN GENERAL.—The Administration shall consider the ramifications of and create contingencies as the sequestration adopted in the Budget Control Act of 2011 (Public Law 112–25) continues to reduce the Administration's overall budget.

(b) REPORT.—

(1) IN GENERAL.—Not later than 60 days after the date of enactment of this Act, the Administrator shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report containing 5 distinct options for the final stages of the commercial crew program.

(2) REQUIREMENTS.—These options shall include—

(A) a strategy that assumes an appropriation of $500,000,000 over the next 3 fiscal years;

(B) a strategy that assumes an appropriation of $600,000,000 over the next 3 fiscal years

(C) a strategy that assumes an appropriation of $700,000,000 over the next 3 fiscal years;

(D) a strategy that assumes an appropriation of $800,000,000 over the next 3 fiscal years; and

(E) a strategy that has yet to be considered previously in any budget submission but

that the Administration believes could ensure the flight readiness date of 2017 for at least one provider or significantly decreases the overall program life cycle cost.

(3) INCLUSIONS.—Each strategy shall include the contracting instruments the Administration will employ to acquire the services in each phase of development or acquisition, the number of commercial providers the Administration will include in the program, and the estimated flight readiness date in each scenario.

SEC. 214. FLIGHT READINESS DEMONSTRATION DEADLINE.

(a) IN GENERAL.—

(1) DEADLINE.—The Administration shall meet a flight readiness demonstration deadline of December 31, 2017.

(2) DEFINITION.—For purposes of this section, the term ''flight readiness demonstration deadline'' means the date by which one or more commercial crew partner companies shall have successfully transported American astronauts to the International Space Station.

(b) REPORT.—Not later than 180 days after the date of enactment of this Act and every 90 days thereafter until the Administration meets the flight readiness demonstra-

tion deadline, the Administrator shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report—

(1) describing the current status of the Commercial Crew program, including all funding paid to any partner company throughout the life of the program detailed by specific dollar amounts provided for each milestone completed for each partner company;

(2) specifying the accomplishments and milestones completed in the 90 days prior to the date of transmission of the report under any phase of the program and all dollar amounts provided for each of those milestones;

(3) identifying those accomplishments and milestones that were expected to be completed in the 90 days prior to the date of transmission of such report under any phase of the program but that were not completed in that timeframe;

(4) setting forth the accomplishments and milestones that are expected to be completed in the 90-day period following the transmission of such report under any phase of the program; and

(5) containing a statement of flight readiness under subsection (c).

(c) STATEMENT OF FLIGHT READINESS.—The statement of flight readiness required in subsection (b)(5) shall include either—

(1) a certification by the Administrator that the Administration is on schedule to comply with the flight readiness demonstration deadline; or

(2) an explanation as to why the Administration is not on schedule to comply with the flight readiness demonstration deadline and why the Administration did not develop an acquisition strategy based on existing budget authority.

(d) AUTHORIZATION OF FUNDS.—Not later than 60 days after the issuance of the explanation described in subsection (c)(2), the Administrator shall provide, and begin implementation of, a new acquisition strategy that ensures that at least 1 company will be prepared to provide crew transport services by the flight readiness demonstration deadline.

TITLE III—SCIENCE

Subtitle A—General

SEC. 301. SCIENCE PORTFOLIO.

(a) BALANCED AND ADEQUATELY FUNDED ACTIVITIES.—Section 803 of the National Aeronautics and Space

Administration Authorization Act of 2010 (124 Stat. 2832) is amended to read as follows:

"SEC. 803. OVERALL SCIENCE PORTFOLIO; SENSE OF THE CONGRESS.

''Congress reaffirms its sense, expressed in section 803 of the National Aeronautics and Space Administration Authorization Act of 2010, that a balanced and adequately funded set of activities, consisting of research and analysis grants programs, technology development, small, medium, and large space missions, and suborbital research activities, contributes to a robust and productive science program and serves as a catalyst for innovation and discovery.''.

(b) DECADAL SURVEYS.—In proposing the funding of programs and activities for the National Aeronautics and Space Administration for each fiscal year, the Administrator shall, to the greatest extent practicable, follow guidance provided in the current decadal surveys from the National Academies' Space Studies Board.

SEC. 302. ASSESSMENT OF SCIENCE MISSION EXTENSIONS.

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

"§ 30504. Assessment of science mission extensions

''(a) ASSESSMENT.—The Administrator shall carry out biennial reviews within each of the Science divisions

to assess the cost and benefits of extending the date of the termination of data collection for those missions that exceed their planned mission lifetime. The assessment shall take into consideration the impact on delaying the start of future missions in order to extend existing missions.

''(b) CONSULTATION AND CONSIDERATION OF POTENTIAL BENEFITS OF INSTRUMENTS ON MISSIONS.—When deciding whether to extend a mission that has an operational component, the Administrator shall consult with the National Oceanic and Atmospheric Administration, the United States Geological Survey, or any other affected agency, and shall take into account the potential benefits of instruments on missions that are beyond their planned mission lifetime.

''(c) COSTS.—If a mission is extended based on consultation required under subsection (b), the full costs of the extension shall be paid for by the operational agency or agencies.

''(d) REPORT.—The Administrator shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate, at the same time as the submission to Congress of the President's annual budget request, a report detailing any as-

sessment required by subsection (a) that was carried out during the previous year.''.

SEC. 303. SPACE COMMUNICATIONS.

(a) PLAN.—The Administrator shall develop a plan, in consultation with relevant Federal agencies, for updating the Administration's space communications architecture for both low-Earth orbital operations and deep space exploration so that it is capable of meeting the Administration's needs over the next 20 years. The plan shall include life-cycle cost estimates, milestones, estimated performance capabilities, and 5-year funding profiles. The plan shall also include an estimate of the amounts of any reimbursements the Administration is likely to receive from other Federal agencies during the expected life of the upgrades described in the plan. At a minimum, the plan shall include a description of the following:

(1) Projected Deep Space Network requirements for the next 20 years, including those in support of human space exploration missions.

(2) Upgrades needed to support Deep Space Network requirements, including cost estimates and schedules.

(3) Cost estimates for the maintenance of existing Deep Space Network capabilities.

(4) Projected Tracking and Data Relay Satellite System requirements for the next 20 years, including those in support of other relevant Federal agencies.

(5) Cost and schedule estimates to maintain and upgrade the Tracking and Data Relay Satellite System to meet projected requirements.

(b) SCHEDULE.—The Administrator shall transmit the plan developed under this section to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than one year after the date of enactment of this Act.

SEC. 304. RADIOISOTOPE THERMOELECTRIC GENERATORS.

(a) ANALYSIS OF REQUIREMENTS AND RISKS.—The Administrator, in consultation with other Federal agencies, shall conduct an analysis of—

(1) the requirements of the Administration for radioisotope power system material which is needed to carry out planned, high priority robotic missions in the solar system and other surface exploration activities beyond low-Earth orbit; and

(2) the risks to missions of the Administration in meeting those requirements, or any additional re-

quirements, due to a lack of adequate radioisotope power system material.

(b) CONTENTS OF ANALYSIS.—The analysis conducted under subsection (a) shall—

(1) detail the Administration's current projected mission requirements and associated timeframes for radioisotope power system material;

(2) explain the assumptions used to determine the Administration's requirements for the material, including—

(A) the planned use of Advanced Stirling Radioisotope Generator technology;

(B) the status of and timeline for completing development and demonstration of the Advanced Stirling Radioisotope Generator technology, including the development of flight readiness requirements; and

(C) the risks, implications, and contingencies for the Administration's mission plans of any delays or unanticipated technical challenges related to the anticipated use of Advanced Stirling Radioisotope Generator technology;

(3) assess the risk to the Administration's programs of any potential delays in achieving the sched-

ule and milestones for planned domestic production of radioisotope power system material;

(4) outline a process for meeting any additional Administration requirements for the material;

(5) estimate the incremental costs required to increase the amount of material produced each year, if such an increase is needed to support additional Administration requirements for the material;

(6) detail how the Administration and the Department of Energy will manage, operate, and fund production facilities and the design and development of all radioisotope power systems used by the Administration and other government entities as necessary;

(7) specify the steps the Administration will take, in consultation with the Department of Energy, to preserve the infrastructure and workforce necessary for production of radioisotope power systems; and

(8) detail how the Administration has implemented or rejected the recommendations from the National Research Council's 2009 report titled ''Radioisotope Power Systems: An Imperative for Maintaining U.S. Leadership in Space Exploration''.

(c) TRANSMITTAL.—Not later than 180 days after the date of enactment of this Act, the Administrator shall transmit the results of the analysis to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

Subtitle B—Astrophysics

SEC. 311. DECADAL CADENCE.

In carrying out section 301(b), the Administrator shall ensure a steady cadence of large, medium, and small astrophysics missions.

SEC. 312. EXTRASOLAR PLANET EXPLORATION STRATEGY.

(a) STRATEGY.—The Administrator shall enter into an arrangement with the National Academies to develop a science strategy for the study and exploration of extrasolar planets that would—

(1) outline key scientific questions;

(2) identify the most promising research in the field;

(3) indicate the extent to which the mission priorities in existing decadal surveys address key extrasolar planet research goals; and

(4) make recommendations with respect to optimal coordination with international partners.

(b) USE OF STRATEGY.—The Administrator shall use the strategy to inform roadmaps, strategic plans, and other activities of the Administration as they relate to extrasolar planet research and exploration, and to provide a foundation for future activities and initiatives.

(c) REPORT TO CONGRESS.—Not later than 2 years after the date of enactment of this Act, the National Academies shall transmit a report to the Administrator, and to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate, containing the strategy developed under subsection (a).

SEC. 313. JAMES WEBB SPACE TELESCOPE.

It is the sense of Congress that the James Webb Space Telescope program is significant to our understanding of the history of the universe, including galaxies, stars, and planetary systems, and should continue to receive priority of funding in accord with the recommendation of the National Academies' Space Studies Board most recent decadal survey for Astronomy and Astrophysics.

SEC. 314. WIDE-FIELD INFRARED SURVEY TELESCOPE.

The Administrator shall ensure that the development of the Wide-Field Infrared Survey Telescope continues while the James Webb Space Telescope is completed.

SEC. 315. NATIONAL RECONNAISSANCE OFFICE TELESCOPE DONATION.

Not later than 90 days after the date of enactment of this Act, the Administrator shall transmit a report to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate outlining the cost of the Administration's potential plan for developing the Wide-Field Infrared Survey Telescope as described in the most recent astronomy and astrophysics decadal survey, including an alternative plan for the Wide-Field Infrared Survey Telescope 2.4, which includes the donated 2.4-meter aperture National Reconnaissance Office telescope. Due to the budget constraints on the Administration's science programs, this report shall include—

(1) an assessment of affordable approaches to develop the Wide-Field Infrared Survey Telescope;

(2) a comparison to the development of mission concepts that exclude the utilization of the donated asset;

(3) an assessment of how the Administration's existing science missions will be affected by the utilization of the donated asset described in this section; and

(4) a description of the cost associated with storing and maintaining the donated asset.

SEC. 316. PUBLIC-PRIVATE PARTNERSHIPS.

Not later than 180 days after the date of enactment of the Act, the Administrator shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report describing how the Administration can use the lessons learned from partnerships with private sector organizations to expand collaborative public-private partnerships to the study life's origin, evolution, distribution, and future in the Universe.

Subtitle C—Planetary Science

SEC. 321. DECADAL CADENCE.

In carrying out section 301(b), the Administrator shall ensure, to the greatest extent practicable, that the Administration carries out a balanced set of planetary science programs in accordance with the priorities established in the most recent decadal survey for planetary science. Such programs shall include, at a minimum—

(1) a Discovery-class mission at least once every 24 months;

(2) a New Frontiers-class mission at least once every 60 months; and

(3) a Flagship-class mission at least once every decade thereafter, including the Multiple-Flyby Europa mission, as recommended by the 2012 Europa Study and initiated through the Science Appropriations Act, 2013 (127 Stat. 261).

SEC. 322. NEAR-EARTH OBJECTS.

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

(1) Near-Earth objects pose a serious and credible threat to humankind, as many scientists believe that a major asteroid or comet was responsible for the mass extinction of the majority of the Earth's species, including the dinosaurs, nearly 65,000,000 years ago.

(2) Similar objects have struck the Earth or passed through the Earth's atmosphere several times in the Earth's history and pose a similar threat in the future.

(3) Several such near-Earth objects have only been discovered within days of the objects' closest approach to Earth, and recent discoveries of such large objects indicate that many large near-Earth objects remain to be discovered.

(4) The efforts taken to date by the Administration for detecting and characterizing the hazards

of near-Earth objects must continue to fully determine the threat posed by such objects to cause widespread destruction and loss of life.

(b) DEFINITION.—For purposes of this section the term ''near-Earth object'' means an asteroid or comet with a perihelion distance of less than 1.3 Astronomical Units from the Sun.

(c) NEAR-EARTH OBJECT SURVEY.—The Administrator shall continue to discover, track, catalogue, and characterize the physical characteristics of near-Earth objects equal to or greater than 140 meters in diameter in order to assess the threat of such near-Earth objects to the Earth, pursuant to the George E. Brown, Jr. Near-Earth Object Survey Act (42 U.S.C. 16691). It shall be the goal of the Survey program to achieve 90 percent completion of its near-Earth object catalogue (based on statistically predicted populations of near-Earth objects) by 2020.

(d) WARNING AND MITIGATION OF POTENTIAL HAZARDS OF NEAR-EARTH OBJECTS.—Congress reaffirms the policy set forth in section 20102(g) of title 51, United States Code (relating to detecting, tracking, cataloguing, and characterizing asteroids and comets).

(e) PROGRAM REPORT.—The Administrator shall transmit to the Committee on Science, Space, and Tech-

nology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate, not later than 1 year after the date of enactment of this Act, an initial report that provides—

(1) a recommended option and proposed budget to carry out the Survey program pursuant to the recommended option;

(2) analysis of possible options that the Administration could employ to divert an object on a likely collision course with Earth; and

(3) a description of the status of efforts to coordinate and cooperate with other countries to discover hazardous asteroids and comets, plan a mitigation strategy, and implement that strategy in the event of the discovery of an object on a likely collision course with Earth.

(f) ANNUAL REPORTS.—The Administrator shall annually transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report that provides—

(1) a summary of all activities taken pursuant to subsection (c) since the date of enactment of this Act; and

(2) a summary of expenditures for all activities pursuant to subsection (c) since the date of enactment of this Act.

SEC. 323. ASTROBIOLOGY STRATEGY.

(a) STRATEGY.—The Administrator shall enter into an arrangement with the National Academies to develop a science strategy for astrobiology that would outline key scientific questions, identify the most promising research in the field, and indicate the extent to which the mission priorities in existing decadal surveys address the search for life's origin, evolution, distribution, and future in the Universe.

(b) USE OF STRATEGY.—The Administrator shall use the strategy developed under subsection (a) in planning and funding research and other activities and initiatives in the field of astrobiology. The strategy shall include recommendations for coordination with international partners.

(c) REPORT TO CONGRESS.—Not later than 2 years after the date of enactment of this Act, the National Academies shall transmit a report to the Administrator, and to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate, containing the strategy developed under subsection (a).

Subtitle D—Heliophysics

SEC. 331. DECADAL CADENCE.

In carrying out section 301(b), the Administrator shall ensure a steady cadence of large, medium, and small heliophysics missions.

SEC. 332. REVIEW OF SPACE WEATHER.

(a) REVIEW.—The Director of the Office of Science and Technology Policy, with cooperation from the Administrator, the Administrator of the National Oceanic and Atmospheric Administration, the Director of the National Science Foundation, the Secretary of Defense, the Secretary of Energy, and the Secretary of Homeland Security, shall enter into an arrangement with the National Academies to provide a comprehensive study that reviews current and planned space weather monitoring requirements and capabilities. The study shall inform the process of identifying national needs for future space weather monitoring and mitigation. The National Academies shall give consideration to international and private sector efforts and collaboration. The study shall also review the current state of research capabilities in observing, modeling, and prediction and provide recommendations to ensure future advancement of predictive capability.

(b) REPORT TO CONGRESS.—Not later than 1 year after the date of enactment of this Act, the National Acad-

emies shall transmit a report to the Administrator, and to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate, containing the results of the study provided under subsection (a).

SEC. 333. DEEP SPACE CLIMATE OBSERVATORY.

(a) INTEGRATING SENSORS.—The Administrator shall not integrate or fund the development of any sensor on the Deep Space Climate Observatory (DSCOVR) that is not aligned with the spacecraft's original space weather mission requirements.

(b) ALGORITHMS.—The Administration shall not develop or implement algorithms, or any other application or product, that are not aligned with the Deep Space Climate Observatory mission's intended space weather requirements, or to enable ''Earth at noon'' images from the spacecraft.

Subtitle E—Earth Science

SEC. 341. GOAL.

(a) IN GENERAL.—Recognizing the contributions that Earth science and remote sensing have made to society over the last 50 years, the Administration shall continue to develop first-of-a-kind instruments that, once

proved, can be transitioned to other agencies for operations.

(b) AMENDMENT.—Section 60501 of title 51, United States Code, is amended by inserting ''In order to accomplish this goal, the Administrator shall conduct research and development on new sensors and instruments that will mitigate the risks associated with the development of operational systems and long term data continuity requirements by other agencies. The Administration shall not be responsible for the development of operational Earth science systems, including satellite, sensor, or instrument development, acquisition, and operations, as well as product development and data analysis, unless such work is conducted on a reimbursable basis that accounts for the full cost of the work. The Administrator shall use the Joint Agency Satellite Division structure, or a direct successor thereto, to manage this process on a fully reimbursable basis.'' after ''Earth observations-based research program.''.

SEC. 342. DECADAL CADENCE.

In carrying out section 301(b), the Administrator shall ensure a steady cadence of large, medium, and small Earth science missions.

SEC. 343. RESEARCH TO OPERATIONS.

Section 60502(a) of title 51, United States Code, is amended by inserting ''Operational responsibility for Earth science or space weather missions or sensors shall not be transferred from any other Federal agency to the Administration, except as specifically authorized by law.'' after ''execute the transitions.''.

SEC. 344. INTERAGENCY COORDINATION.

Section 60505 of title 51, United States Code, is amended—

(1) in the section heading, by inserting ''**and the United States Geological Survey**'' after ''**Atmospheric Administration**'';

(2) in subsection (a)—

(A) by striking ''and the Administrator of the National Oceanic and Atmospheric Administration'' and inserting '', the Administrator of the National Oceanic and Atmospheric Administration, and the Director of the United States Geological Survey''; and

(B) by striking ''two agencies'' and inserting ''3 agencies'';

(3) in subsection (b)—

(A) by striking ''and the Administrator of the National Oceanic and Atmospheric Administration'' both places it appears and inserting

", the Administrator of the National Oceanic and Atmospheric Administration, and the Director of the United States Geological Survey"; and

(B) by striking "Committee on Science and Technology" and inserting "Committee on Science, Space, and Technology";

(4) in subsection (c), by inserting "and the Director of the United States Geological Survey," after "Atmospheric Administration"; and

(5) in subsection (d), by striking "Administration Earth science mission" and all that follows through the period and inserting "Earth science mission or Earth observing system to or from the National Oceanic and Atmospheric Administration, the United States Geological Survey, or the Administration, or to or from other stakeholders, until the plans required under subsection (c) have been approved by the Administrator, the Administrator of the National Oceanic and Atmospheric Administration, and the Director of the United States Geological Survey, and until financial resources have been identified to support the transition or transfer in the President's annual budget request for the National Oceanic and Atmospheric Administration, the Ad-

ministration, the United States Geological Survey, or other relevant agencies. Operational responsibility for Earth science programs shall not be transferred from any other Federal agency to the Administration, except as specifically authorized by law.''.

SEC. 345. JOINT POLAR SATELLITE SYSTEM CLIMATE SENSORS.

The Administration shall not be responsible for the development of Joint Polar Satellite System climate sensors, including the Total Solar Irradiance Sensor (TSIS-2), the Ozone Mapping and Profiler Suite–Limb (OMPS-L), or the Clouds and Earth Radiant Energy System (CERES-C). Any effort by the Administration related to this work shall be conducted on a fully-reimbursable basis, and executed by the Administration's Joint Agency Satellite Division or a direct successor thereto.

SEC. 346. LAND IMAGING.

(a) REAFFIRMATION OF POLICY.—The Congress reaffirms the finding in section 2(1) of the Land Remote Sensing Policy Act of 1992 (15 U.S.C. 5601(1)) which states that ''The continuous collection and utilization of land remote sensing data from space are of major benefit in studying and understanding human impacts on the global environment, in managing the Earth's natural resources, in carrying out national security functions, and

in planning and conducting many other activities of scientific, economic, and social importance.''.

(b) CONTINUOUS LAND REMOTE SENSING DATA COLLECTION.—The Director of Office of Science and Technology Policy shall take steps in consultation with other relevant Federal agencies to ensure, to the maximum extent practicable, the continuous collection of space-based medium-resolution observations of the Earth's land cover, and to ensure that the data are made available in such ways as to facilitate the widest possible use.

(c) DEFINITION OF LAND IMAGING CAPABILITIES.—The Administrator shall not initiate the definition of land imaging capabilities, including the system design, flight system implementation, and launch of future mission, unless this work is conducted on a fully-reimbursable basis, and executed by the Administrations's Joint Agency Satellite Division or a direct successor thereto.

SEC. 347. SOURCES OF EARTH SCIENCE DATA.

(a) ACQUISITION.—The Administrator shall, to the extent possible and while satisfying the scientific or educational requirements of the Administration, and, where appropriate, of other Federal agencies and scientific researchers, acquire, where cost-effective, space-based and airborne Earth remote sensing data, services, distribution, and applications from a commercial provider.

(b) TREATMENT AS COMMERCIAL ITEM UNDER ACQUISITION LAWS.—Acquisitions by the Administrator of the data, services, distribution, and applications referred to in subsection (a) shall be carried out in accordance with applicable acquisition laws and regulations (including chapters 137 and 140 of title 10, United States Code). For purposes of such law and regulations, such data, services, distribution, and applications shall be considered to be a commercial item. Nothing in this subsection shall be construed to preclude the United States from acquiring, through contracts with commercial providers, sufficient rights in data to meet the needs of the scientific and educational community or the needs of other government activities.

(c) SAFETY STANDARDS.—Nothing in this section shall be construed to prohibit the Federal Government from requiring compliance with applicable safety standards.

(d) REPORT.—Not later than 180 days after the date of enactment of the Act, the Administrator shall submit a report to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on the Administration's efforts to carry out this section.

TITLE IV—AERONAUTICS

SEC. 401. SENSE OF CONGRESS.

It is the sense of Congress that—

(1) a robust aeronautics research portfolio will help maintain the United States status as a leader in aviation;

(2) aeronautics research is essential to the Administration's mission; and

(3) the Administrator should coordinate and consult with relevant Federal agencies and the private sector to minimize duplication and leverage resources.

SEC. 402. UNMANNED AERIAL SYSTEMS RESEARCH AND DEVELOPMENT.

(a) IN GENERAL.—The Administrator, in consultation with the Administrator of the Federal Aviation Administration and other Federal agencies, shall direct research and technological development to facilitate the safe integration of unmanned aerial systems into the National Airspace System, including—

(1) positioning and navigation systems;

(2) sense and avoid capabilities;

(3) secure data and communication links;

(4) flight recovery systems; and

(5) human systems integration.

(b) ROADMAP.—The Administrator shall update a roadmap for unmanned aerial systems research and development and transmit this roadmap to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate not later than 90 days after the date of enactment of this Act.

(c) COOPERATIVE UNMANNED AERIAL VEHICLE ACTIVITIES.—Section 31504 of title 51, United States Code, is amended by inserting ''Operational flight data derived from these cooperative agreements shall be made available, in appropriate and usable formats, to the Administration and the Federal Aviation Administration for the development of regulatory standards.'' after ''in remote areas.''.

SEC. 403. RESEARCH PROGRAM ON COMPOSITE MATERIALS USED IN AERONAUTICS.

(a) CONSULTATION.—The Administrator, in overseeing the Administration's Integrated Systems Research Program's work on composite materials, shall consult with the Administrator of the Federal Aviation Administration and partners in industry to accelerate safe development and certification processes for new composite materials and design methods while maintaining rigorous inspection of new composite materials.

(b) REPORT.—Not later than 1 year after the date of enactment of this Act, the Administrator shall transmit a report to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate detailing the Administration's and the Federal Aviation Administration's work on new composite materials and the coordination efforts between the agencies.

SEC. 404. HYPERSONIC RESEARCH.

Not later than 1 year after the date of enactment of this Act, the Administrator, in consultation with other Federal agencies, shall develop and transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a research and development roadmap for hypersonic aircraft research with the objective of exploring the science and technology of hypersonic flight using air-breathing propulsion concepts, through a mix of theoretical work, basic and applied research, and development of flight research demonstration vehicles. The roadmap shall prescribe appropriate agency contributions, coordination efforts, and technology milestones.

SEC. 405. SUPERSONIC RESEARCH.

Not later than 1 year after the date of enactment of this Act, the Administrator shall develop and transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a roadmap, that allows for flexible funding profiles, for supersonic transport research and development with the objective of developing and demonstrating, in a relevant environment, airframe and propulsion technologies to minimize the environmental impact, including noise, of overland flight of supersonic civil transport aircraft in an efficient and economical manner. The roadmap shall include—

(1) a status report on the Administration's existing research on supersonic flight;

(2) a list of specific technological, environmental, and other challenges that must be overcome to minimize the environmental impact, including noise, of supersonic overland flight of civil transport;

(3) a research plan to address these challenges, as well as a project timeline for accomplishing relevant research goals; and

(4) a plan for coordination with stakeholders, including relevant government agencies and industry.

SEC. 406. RESEARCH ON NEXTGEN AIRSPACE MANAGEMENT CONCEPTS AND TOOLS.

(a) IN GENERAL.—The Administrator shall, in consultation with the Director of the Joint Planning and Development Office of the Federal Aviation Administration, review at least annually the alignment and timing of the Administration's research and development activities in support of the NextGen airspace management modernization initiative, and shall make any necessary adjustments by reprioritizing or retargeting the Administration's research and development activities in support of the NextGen initiative.

(b) ANNUAL REPORTS.—The Administrator shall report to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate annually regarding the progress of the Administration's research and development activities in support of the NextGen airspace management modernization initiative, including details of coordination with the Federal Aviation Administration and any adjustments made to research activities.

SEC. 407. ROTORCRAFT RESEARCH.

Not later than 1 year after the date of enactment of this Act, the Administrator, in coordination with other Federal agencies, shall prepare and transmit to the Com-

mittee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a plan for research relating to rotorcraft and other runway-independent air vehicles, with the objective of developing and demonstrating improved safety, noise, and environmental impact in a relevant environment. The plan shall include specific goals for the research, a timeline for implementation, metrics for success, and guidelines for collaboration and coordination with industry and other Federal agencies.

TITLE V—SPACE TECHNOLOGY

SEC. 501. SPACE TECHNOLOGY.

(a) FINDINGS.—Congress finds the following:

(1) The Space Technology Mission Directorate created by the Administration is lacking an organic statutory authorization and in need of congressional direction.

(2) In order to appropriately prioritize the Administration's resources to accomplish its goals and purposes, the Space Technology Mission Directorate needs to be reorganized as provided in the amendments made by this section.

(b) EXPLORATION TECHNOLOGY RESEARCH.—Section 70506 of title 51, United States Code, is amended

by striking ''The Administrator'' and inserting ''Within the Human Exploration and Operations Mission Directorate, the Administrator''.

(c) SPACE TECHNOLOGY PROGRAM.—

(1) AMENDMENT.—Section 70507 of title 51, United States Code, is amended to read as follows:

''§ 70507. Space Technology Program authorized

''(a) PROGRAM AUTHORIZED.—The Administrator shall establish, within the office of the Administrator, a Space Technology Program, to pursue the development of technologies that enable exploration that supports human missions to the surface of the Moon, the surface of Mars, and beyond.

''(b) CROSS-CUTTING DEVELOPMENT PROJECTS.—In carrying out its purpose under subsection (a), the Space Technology Program may manage cross-cutting development projects within the various elements of the Administration that have specific applications to such purpose.

''(c) SMALL BUSINESS PROGRAMS.—The Administrator shall organize and manage the Administration's Small Business Innovation Research program and Small Business Technology Transfer program within the Space Technology Program.

''(d) NONDUPLICATION CERTIFICATION.—The Administrator shall include in the budget for each fiscal year,

as transmitted to Congress under section 1105(a) of title 31, a certification that no project, program, or mission undertaken by the Space Technology Program is independently under development by any other office or directorate of the Administration.''.

(2) TABLE OF SECTIONS AMENDMENT.—The item relating to section 70507 in the table of sections for chapter 705 of title 51, United States Code, is amended to read as follows:

''70507. Space Technology Program authorized.''.

TITLE VI—EDUCATION

SEC. 601. EDUCATION.

(a) IN GENERAL.—The Administration shall continue its education and outreach efforts to—

(1) increase student interest and participation in Science, Technology, Engineering, and Mathematics (''STEM'') education;

(2) improve public literacy in STEM;

(3) employ proven strategies for improving student learning and teaching;

(4) provide curriculum support materials; and

(5) create and support opportunities for professional development for STEM teachers.

(b) ORGANIZATION.—In order to ensure the inspiration and engagement of children and the general public, the Administration shall continue its STEM education and

outreach activities within the Science, Aeronautics Research, Space Operations, and Exploration Mission Directorates. Funds devoted to education and public outreach shall be maintained in the Directorates, and the consolidation of these activities into the Education Directorate is prohibited.

(c) PROHIBITION.—The Administration may not implement any proposed STEM education and outreach-related changes proposed in the budget for fiscal year 2014 transmitted to Congress under section 1105(a) of title 31, United States Code.

TITLE VII—POLICY PROVISIONS

SEC. 701. ASTEROID RETRIEVAL MISSION.

(a) IN GENERAL.—Consistent with the policy stated in section 201(b), the Administrator shall not fund the development of an asteroid retrieval mission to send a robotic spacecraft to a near-Earth asteroid for rendezvous, retrieval, and redirection of that asteroid to lunar orbit for exploration by astronauts.

(b) ASTEROID SURVEY.—The Administration shall not pursue a program to search for asteroids of 20 meters or less in diameter unless the survey program described in section 322(c) is at least 90 percent complete.

(c) REPORT.—Not later than 180 days after the date of enactment of this Act, the Administrator shall provide

to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on the proposed Asteroid Retrieval Mission. Such report shall include—

(1) a detailed budget profile, including cost estimates for the development of all necessary technologies and spacecraft required for the mission;

(2) a detailed technical plan that includes milestones and a specific schedule;

(3) a description of the technologies and capabilities anticipated to be gained from the proposed mission that will enable future human missions to Mars which could not be gained by lunar missions; and

(4) a complete review by the Small Bodies Assessment Group and the NASA Advisory Council that includes a recommendation to Congress on the feasibility of the mission as proposed by the Administration.

SEC. 702. TERMINATION LIABILITY.

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

(1) The International Space Station and the Space Launch System will enable the Nation to con-

tinue operations in low-Earth orbit and to send its astronauts to deep space. As a result of their unique capabilities and their critical contribution to the future of space exploration, these systems have been designated by the Congress and the National Aeronautics and Space Administration as priority investments.

(2) While the Space Launch System, currently under development, has made significant progress, it has not been funded at levels authorized, and as a result congressionally-authorized milestones will be delayed by several years.

(3) In addition, contractors are currently holding program funding, estimated to be in the hundreds of millions of dollars, to cover the potential termination liability should the Government choose to terminate a program for convenience. As a result, hundreds of millions of taxpayer dollars are unavailable for meaningful work on these programs.

(4) According to the Government Accountability Office, the National Aeronautics and Space Administration procures most of its goods and services through contracts, and it terminates very few of them. In fiscal year 2010, the agency terminated 28

of 16,343 active contracts and orders—a termination rate of about 0.17 percent.

(5) Providing processes requiring Congressional action on termination of these high-priority programs and requiring a supplemental appropriation for termination liability would enable contractors to apply the full appropriation of taxpayer dollars to making maximum progress in meeting the established goals and milestones of these programs.

(b) NASA TERMINATION LIABILITY.—

(1) GENERAL RULE.—Termination liability costs for a covered program shall be provided only pursuant to this subsection.

(2) PROHIBITION ON RESERVING FUNDS.—The Administrator shall not reserve funds from amounts appropriated for a covered program, and shall direct prime contractors not to reserve funds, for potential termination liability costs with respect to a covered program.

(3) VOID CONTRACTUAL PROVISIONS.—Any provision in a prime contract entered into before the date of enactment of this Act that provides for the payment of termination liability costs through any means other than as provided in this subsection is hereby declared to be void and unenforceable.

(4) CONGRESSIONAL ACTION; NOTICE.—

(A) TERMINATION FOR CONVENIENCE.—The Administrator shall not initiate termination for the convenience of the Government of a prime contract on a covered program unless such program termination is authorized or required by a law enacted after the date of enactment of this Act.

(B) TERMINATION FOR CAUSE.—The Administrator shall notify the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate before initiating termination for cause of a prime contract on a covered program.

(5) SUPPLEMENTAL APPROPRIATION REQUEST.—

(A) REQUEST.—If the Administrator decides to terminate a prime contract on a covered program and sufficient unobligated appropriations are not available to cover termination liability costs in the appropriations account that is funding the prime contract being terminated, the Administrator shall provide to Congress a supplemental appropriation request not later

than 120 days in advance of the contract termination settlement for the covered program.

(B) INTENT OF CONGRESS.—It is the intent of Congress to provide such additional appropriations as may be necessary to pay termination liability costs on prime contracts for covered programs.

(6) DEFINITIONS.—For purposes of this section:

(A) COVERED PROGRAM.—The term ''covered program'' means the International Space Station and the Space Launch System.

(B) PRIME CONTRACTOR.—The term ''prime contractor'' means a person or entity contracting directly with the Federal Government on a covered program.

(C) TERMINATION LIABILITY COSTS.—The term ''termination liability costs'' means any costs incurred by a prime contractor, or by any subcontractor of a prime contractor, for which the Federal Government is liable as a result of termination of a prime contract by the Administrator.

(c) REPORTING.—Not later than 6 months after the date of enactment of this Act, and every 6 months there-

after for the duration of the prime contracts on covered programs, the Administrator shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report that provides—

(1) the estimated termination liability costs for each of the prime contracts; and

(2) the basis for how the estimate was determined.

SEC. 703. INDEMNIFICATION EXTENSION.

Section 50915(f) of title 51, United States Code, is amended by striking ''December 31, 2013'' and inserting ''December 31, 2018''.

SEC. 704. BASELINE AND COST CONTROLS.

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

(1) in subsection (a), by striking ''Procedural Requirements 7120.5c, dated March 22, 2005'' and inserting ''Procedural Requirements 7120.5E, dated August 14, 2012''; and

(2) in subsection (f), by striking ''beginning 18 months after the date the Administrator transmits a report under subsection (e)(1)(A)'' and inserting

''beginning 18 months after the Administrator makes such determination''.

SEC. 705. PROJECT AND PROGRAM RESERVES.

To ensure that the establishment, maintenance, and allotment of project and program reserves contribute to prudent management, not later than 180 days after the date of enactment of this Act, the Administrator shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report describing the Administration's criteria for establishing the amount of reserves at the project and program levels and how such criteria complement the Administration's policy of budgeting at a 70 percent confidence level.

SEC. 706. INDEPENDENT REVIEWS.

Not later than 270 days after the date of enactment of this Act, the Administrator shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report describing the Administration's procedures for conducting independent reviews of projects and programs at lifecycle milestones and how the Administration ensures the independence of the individuals who conduct those reviews prior to their assignment.

SEC. 707. SPACE ACT AGREEMENTS.

(a) COST-SHARING.—To the extent that the Administrator determines practicable, the funds provided by the Government under a Space Act Agreement shall not exceed the total amount provided by other parties to the Space Act Agreement.

(b) NEED.—A Space Act Agreement may be used for a research project only when the use of a standard contract, grant, or cooperative agreement for such project is not feasible or appropriate.

(c) TRANSPARENCY.—The Administrator shall publically disclose on the Administration's website and make available in a searchable format all Space Act Agreements, with appropriate redactions for proprietary, sensitive, or classified information, in a timely manner.

(d) PUBLIC NOTICE AND COMMENT.—The Administrator shall make available for public notice and comment each proposed Space Act Agreement before entering into such agreement.

(e) AUTHORIZATION.—The Administrator shall not enter into a funded Space Act Agreement for an amount in excess of $50,000,000 unless such agreement has been specifically authorized by law.

(f) ANNUAL REPORT.—

(1) REQUIREMENT.—Not later than 90 days after the end of each fiscal year, the Administrator

shall submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on the use of Space Act Agreement authority by the Administration during the previous fiscal year.

(2) CONTENTS.—The report shall include for each Space Act Agreement in effect at the time of the report—

(A) an indication of whether the agreement is a reimbursable, nonreimbursable, or funded Space Act Agreement;

(B) a description of—

(i) the subject and terms;

(ii) the parties;

(iii) the responsible mission directorate, center, or headquarters element;

(iv) the value;

(v) the extent of the cost-sharing among Federal Government and non-Federal sources;

(vi) the time period or schedule; and

(vii) all milestones; and

(C) an indication of whether the agreement was renewed during the previous fiscal year.

(3) ANTICIPATED AGREEMENTS.—The report shall also include a list of all anticipated reimbursable, nonreimbursable, and funded Space Act Agreements for the upcoming fiscal year.

(4) CUMULATIVE PROGRAM BENEFITS.—The report shall also include, with respect to the Space Act Agreements covered by the report, a summary of—

(A) the technology areas in which research projects were conducted under such agreements;

(B) the extent to which the use of the Space Act Agreements—

(i) has contributed to a broadening of the technology and industrial base available for meeting Administration needs; and

(ii) has fostered within the technology and industrial base new relationships and practices that support the United States; and

(C) the total amount of value received by the Federal Government during the fiscal year pursuant to such Space Act Agreements.

SEC. 708. HUMAN SPACEFLIGHT ACCIDENT INVESTIGATIONS.

Section 70702 of title 51, United States Code, is amended by striking paragraph (3) and inserting the following:

''(3) any other space vehicle carrying humans that is owned by the Federal Government or that is being used pursuant to a contract or Space Act Agreement, as defined in section 2 of the National Aeronautics and Space Administration Authorization Act of 2013 with the Federal Government; or''.

SEC. 709. COMMERCIAL TECHNOLOGY TRANSFER PROGRAM.

Section 50116(a) of title 51, United States Code, is amended by inserting '', while protecting national security'' after ''research community''.

SEC. 710. ORBITAL DEBRIS.

(a) FINDING.—Congress finds that orbital debris poses serious risks to the operational space capabilities of the United States and that an international consensus and strategic plan is needed to mitigate the growth of orbital debris wherever possible.

(b) REPORTS.—

(1) COORDINATION.—Not later than 90 days after the date of enactment of this Act, the Administrator shall provide the Committee on Science,

Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate with a report on the status of efforts to coordinate with countries within the Inter-Agency Space Debris Coordination Committee to mitigate the effects and growth of orbital debris as required by section 1202(b)(1) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18441(b)(1)).

(2) MITIGATION STRATEGY.—Not later than 90 days after the date of enactment of this Act, the Director of the Office of Science and Technology Policy shall provide the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate with a report on the status of the orbital debris mitigation strategy required under section 1202(b)(2) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18441(b)(2)).

SEC. 711. NASA LEADERSHIP.

Section 20111 of title 51, United States Code, is amended—

(1) in subsection (a), by inserting ''The Administrator shall serve for a term of 6 years, and may

be reappointed for additional terms.'' after ''and activities thereof.''; and

(2) in subsection (b)—

(A) by inserting ''The Deputy Administrator shall not act for, and exercise the powers of, the Administrator for a period in excess of 45 days. After 45 days, the Associate Administrator shall exercise the powers of Administrator until a new Administrator is appointed and confirmed by the Senate.'' after ''absence or disability.''; and

(B) by striking ''from civilian life''.

SEC. 712. NASA ADVISORY COUNCIL.

(a) ESTABLISHMENT.—Subchapter II of chapter 201 of title 51, United States Code, is amended by adding at the end the following new section:

''§ 20118. NASA Advisory Council

''(a) ESTABLISHMENT.—There shall be established a NASA Advisory Council (in this section referred to as 'the Council') for the Administration in accordance with this section, not later than 9 months after the date of enactment of this section.

''(b) MEMBERSHIP AND APPOINTMENT.—The Council shall consist of 11 members to be appointed as follows:

''(1) 3 members shall be appointed by the President.

''(2) 3 members shall be appointed by the president pro tempore of the Senate.

''(3) 1 member shall be appointed by the minority leader of the Senate.

''(4) 3 members shall be appointed by the Speaker of the House of Representatives.

''(5) 1 member shall be appointed by the minority leader of the House of Representatives.

In addition to the members appointed under paragraphs (1) through (5), the Administrator shall be an ex officio, nonvoting member of the Council. Members of the Council must comply with laws and regulations for Federal advisory committees and ethics in government.

''(c) QUALIFICATIONS.—The persons appointed as members of the Council shall be—

''(1) former astronauts or scientists or engineers eminent in the fields of human spaceflight, planetary science, space science, Earth science, or aeronautics, or other scientific, engineering, business, and disciplines related to space exploration and aeronautics;

''(2) selected on the basis of established records of distinguished service; and

''(3) so selected as to provide representation of the views of engineering, science, and aerospace leaders in all areas of the Nation.

''(e) TERMS.—The term of office of each member of the Council shall be 6 years.

''(f) MEETINGS.—The Council shall meet two times annually at minimum and at such other times as the Chairman may determine, but the Chairman shall also call a meeting whenever one-third of the members so request in writing. The Council shall adopt procedures governing the conduct of its meetings, including delivery of notice and a definition of a quorum, which in no case shall be less than one-half plus one of the members of the Council.

''(g) CHAIRMAN AND VICE CHAIRMAN.—The Chairman and Vice Chairman of the Council shall be elected by a majority vote of the Council for a two-year term. A Member may serve as Chairman and Vice Chairman for up to three terms. The Vice Chairman shall perform the duties of the Chairman in his absence. In case a vacancy occurs in the chairmanship or vice chairmanship, the Council shall elect a member to fill such vacancy.

''(h) STAFF.—The Administrator shall support the Council with professional staff to provide for the performance of such duties as may be prescribed by the Council.

''(i) COMMITTEES.—The Council is authorized to appoint from among its members such committees as it deems necessary, and to assign to committees so appointed such survey and advisory functions as the Council deems appropriate to assist it in exercising its powers and functions.

''(j) FUNCTIONS.—

''(1) BUDGET PROPOSAL.—

''(A) REVIEW OF PROPOSAL.—Not later than October 15 of each year, the Council shall have reviewed the Administration's proposed budget for the next fiscal year and provide to the President their advice based on the best professional judgment of a majority of members. Portions of Council meetings in which the Council considers the budget proposal for the next fiscal year may be closed to the public until the Council submits the proposal to the President and the Congress.

''(B) ADVICE TO CONGRESSIONAL COMMITTEES.—Not later than 14 days following the President's budget submittal to the Congress for the next fiscal year, the Council shall provide to the Committee on Science, Space, and Technology of the House of Representatives

and the Committee on Commerce, Science, and Transportation of the Senate their advice based on the best professional judgment of a majority of members.

''(2) ADVICE TO THE PRESIDENT AND CONGRESS.—The Council shall report their findings, advice, and recommendations to the President and the Congress on matters of particular policy interest on space exploration and aeronautics based on the best professional judgment of a majority of members.''.

(b) TABLE OF SECTIONS.—The table of sections for chapter 201 of title 51, United States Code, is amended by adding at the end of the items for subchapter II the following new item:

''20118. NASA Advisory Council.''.

(c) CONSULTATION AND ADVICE.—Section 20113(g) of title 51, United States Code, is amended by inserting ''and Congress'' after ''advice to the Administration''.

SEC. 713. COST ESTIMATION.

(a) REPORT.—Not later than 90 days after the date of enactment of this Act, the Administrator shall transmit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on current and continuing efforts to implement more effective cost estimation practices.

(b) ELEMENTS.—The report required under subsection (a) shall include—

(1) a list of steps the Administration is undertaking to advance consistent implementation of the joint cost and schedule level (JCL) process; and

(2) a description of mechanisms the Administration is using and will continue to use to ensure that adequate resources are dedicated to cost estimation.