AMENDMENT IN THE NATURE OF A SUBSTITUTE

TO _____

OFFERED BY MR. GORDON OF TENNESSEE

Strike all after the enacting clause and insert the following:

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 2010''.

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

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

TITLE I—AUTHORIZATION OF APPROPRIATIONS

Sec. 101. Fiscal year 2011.
Sec. 102. Fiscal year 2012.
Sec. 103. Fiscal year 2013.

TITLE II—POLICY FOR HUMAN SPACE FLIGHT AND EXPLORATION

Sec. 201. United States human space flight policy.
Sec. 202. Independent study on human exploration of space.

TITLE III—EXPANSION OF HUMAN SPACE FLIGHT BEYOND THE INTERNATIONAL SPACE STATION AND LOW-EARTH ORBIT

Sec. 301. Human space flight beyond low-Earth orbit.
Sec. 302. Space launch system.
Sec. 303. Multipurpose crew vehicle.
Sec. 304. Utilization of existing workforce and assets in development of Space Launch System and multipurpose crew vehicle.
Sec. 305. NASA launch support and infrastructure modernization program for the Space Launch System.
Sec. 306. Space radiation.

TITLE IV—DEVELOPMENT AND USE OF COMMERCIAL CARGO AND CREW TRANSPORTATION CAPABILITIES

Sec. 401. Affirmation of policy.
Sec. 402. Combined commercial cargo and crew capabilities development and crew capabilities account.
Sec. 403. Commercial cargo capabilities development.
Sec. 404. Commercial crew transportation capabilities development activities.
Sec. 405. Procurement of commercial crew transportation services.
Sec. 406. Acquisition strategy for procurement of commercial crew transportation services.
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TITLE V—CONTINUATION, SUPPORT, AND EVOLUTION OF THE INTERNATIONAL SPACE STATION

Sec. 501. Continuation of the International Space Station through 2020.
Sec. 502. Maximum utilization of the International Space Station.
Sec. 503. Maintenance of United States segment and assurance of continued operations of the International Space Station.
Sec. 504. Management of the ISS National Laboratory.
Sec. 505. Outreach plan for United States ISS research.
Sec. 506. Centrifuge.
Sec. 507. ISS cargo resupply requirements and contingency capacity through 2020.
Sec. 508. Exploration technology development using the ISS.
Sec. 509. Fundamental space life science and physical sciences and related technology research.

TITLE VI—SPACE SHUTTLE RETIREMENT AND DISPOSITION

Sec. 601. Sense of Congress on the Space Shuttle program.
Sec. 602. Disposition of orbiter vehicles.

TITLE VII—EARTH SCIENCE

Sec. 701. Sense of Congress on Earth observations.
Sec. 702. Essential space-based Earth science and climate measurements.
Sec. 703. Earth observations strategy and interagency coordination.
Sec. 704. Decadal survey missions implementation for Earth observation.
Sec. 705. Expansion of Earth science applications.
Sec. 706. Earth science applications.
Sec. 707. Commercial remote sensing data purchases pilot project.
Sec. 708. Instrument test-beds and venture class missions.
Sec. 709. Sense of Congress on NPOESS follow-on program.
Sec. 710. Report on temperature records.

TITLE VIII—SPACE SCIENCE

Sec. 801. Technology development.
Sec. 802. Suborbital research activities.
Sec. 803. Sense of Congress on overall science portfolio.
Sec. 804. In-space servicing.
Sec. 805. Decadal results.
Sec. 806. Ongoing restoration of radioisotope thermoelectric generator material production.
Sec. 807. Review of Explorer Program.

Sec. 808. Collaboration with ESMD and SOMD on robotic missions.
Sec. 809. Near-Earth object survey and policy with respect to threats posed.
Sec. 810. Space weather.

TITLE IX—AERONAUTICS AND SPACE TECHNOLOGY

Sec. 901. Sense of Congress on aeronautics research and development.
Sec. 902. Aeronautics research goals.
Sec. 903. Research coordination and collaboration.
Sec. 904. Environmentally friendly aircraft research and development initiative.
Sec. 905. Research on NextGen airspace management concepts and tools.
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Sec. 909. Expanded research program on composite materials used in aerospace.
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Sec. 911. Implementation plan for NASA space technology.
Sec. 912. Decadal survey for NASA space technology.
Sec. 913. Use of operational commercial suborbital vehicles for research, development, and education.

TITLE X—EDUCATION

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Sec. 1002. Sense of Congress on the Experimental Program to Stimulate Competitive Research.
Sec. 1003. Study of potential commercial orbital platform program impact on science, technology, engineering, and mathematics.
Sec. 1004. Assessment of impediments to space science and engineering workforce development for minority and underrepresented groups at NASA.
Sec. 1005. Independent review of the National Space Grant College and Fellowship Program.
Sec. 1006. Hands-on space science and engineering education and training.

TITLE XI—REALIGNING AND REVITALIZING INSTITUTIONAL CAPABILITIES

Sec. 1101. Sense of Congress on realigning and revitalizing institutional capabilities.
Sec. 1102. Institutional requirements study.
Sec. 1103. Modernization of laboratories, facilities, and equipment.
Sec. 1104. NASA capabilities study requirement.
Sec. 1105. Community transition support.
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Sec. 1203. Strengthening acquisition and program management and controlling program costs.
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Sec. 1205. Sense of Congress on independent verification and validation of NASA software.
Sec. 1206. Counterfeit and substandard parts.
Sec. 1207. Information security.
Sec. 1208. Enhanced-use leasing.
Sec. 1209. Sense of Congress concerning the Stennis Space Center.
Sec. 1210. Preservation and management of lunar sites.
Sec. 1211. Continuity of moderate resolution land imaging remote sensing data.
Sec. 1212. Study on export control matters related to United States astronaut safety and NASA mission operations.
Sec. 1213. Ethics programs in the Office of General Counsel.
Sec. 1214. Independent cost analysis.

TITLE XIII—COMPLIANCE WITH STATUTORY PAY-AS-YOU-GO-ACT OF 2010

Sec. 1301. Compliance provision.

SEC. 2. FINDINGS.

The Congress makes the following findings:

(1) In the 50 years since the establishment of NASA, the arena of space has evolved substantially. As the uses and users of space continue to expand, the issues and operations in the regions closest to Earth have become increasingly complex, with a growing number of overlaps between civil, commercial, and national security activities. These developments present opportunities and challenges to the space activities of NASA and the United States.

(2) The extraordinary challenges of achieving access to space both motivated and accelerated the development of technologies and industrial capabilities that have had widespread applications which have contributed to the technological excellence of the United States. It is essential to tie space activity

to human challenges ranging from enhancing the influence, relationships, security, economic development, and commerce of the United States to improving the overall human condition.

(3) NASA's programs have the potential to inspire our youth to pursue studies and careers in science, technology, engineering, and mathematics, and NASA should carry out its activities in a manner that enhances the educational and outreach potential of its programs.

(4) It is essential to the economic well-being of the United States that its aerospace industrial capacity, highly skilled workforce, and embedded expertise remain engaged in demanding, challenging, and exciting efforts that ensure United States leadership in space exploration and related activities.

(5) A strong, robust NASA program is in the national interest. Ensuring that it can continue to pursue cutting-edge space and aeronautical research and development activities and push back the frontier of space exploration requires a sustained and adequate commitment in resources. However, NASA's share of the Federal discretionary budgetary authority has declined significantly relative to its post-Apollo historical average. It should be a na-

tional goal to restore NASA's funding share to its post-Apollo historical average.

(6) NASA is and should remain a multimission agency with a balanced and robust set of core missions in science, aeronautics, and human space flight and exploration.

(7) NASA should be vigilant in taking all necessary steps to control cost and schedule growth in mission projects, including the development of an integrated cost containment strategy, and adopt measures that improve the performance and transparency of its cost and acquisition management practices. NASA should approach cost and schedule management with the same level of innovation, rigor, and technical excellence that it applies to the execution of its mission projects.

SEC. 3. DEFINITIONS.

In this Act:

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

(2) CIS-LUNAR SPACE.—The term ''cis-lunar space'' means the region of space from the Earth out to and including the region around the surface of the Moon.

(3) DEEP SPACE.—The term ''deep space'' means the region of space beyond cis-lunar space.

(4) INSTITUTION OF HIGHER EDUCATION.—The term ''institution of higher education'' has the meaning given such term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 2001).

(5) ISS.—The term ''ISS'' means the International Space Station.

(6) NASA.—The term ''NASA'' means the National Aeronautics and Space Administration.

(7) NEAR-EARTH SPACE.—The term ''near-Earth space'' means the region of space that includes low-Earth orbit and extends out to and includes geosynchronous orbit.

(8) NOAA.—The term ''NOAA'' means the National Oceanic and Atmospheric Administration.

(9) OSTP.—The term ''OSTP'' means the Office of Science and Technology Policy.

(10) SPACE LAUNCH SYSTEM.—The term ''Space Launch System'' means the approach NASA will take, consistent with the provisions of this Act, to achieve the United States Government launch-related capabilities called for in this Act.

TITLE I—AUTHORIZATION OF APPROPRIATIONS

SEC. 101. FISCAL YEAR 2011.

There are authorized to be appropriated to NASA for fiscal year 2011, $19,000,000,000, as follows:

(1) For Exploration, $3,998,100,000, of which—

(A) $3,381,100,000 shall be for the implementation of the Space Launch System, multipurpose crew vehicle, and associated program and other necessary support, including $428,600,000 for the NASA Launch Support and Infrastructure Modernization Program;

(B) $155,000,000 shall be for Human Research;

(C) $412,000,000 shall be for Commercial Cargo and Crew Capability Development Activities and studies related to commercial crew services and for Commercial Crew Capabilities; and

(D) $50,000,000 shall be for Robotic Precursor Studies and Instruments.

(2) For Space Operations, $5,079,900,000, of which—

(A) $2,779,800,000 shall be for the ISS program, of which $75,000,000 shall be for fundamental space life science and physical sciences and related technology research using ground-based, free-flyer, and ISS facilities, including ISS National Laboratory research;

(B) $1,609,700,000 shall be for Space Shuttle, to support Space Shuttle flight operations and related activities; and

(C) $690,400,000 shall be for Space and Flight Support.

(3) For Science, $5,015,700,000, of which—

(A) $1,801,800,000 shall be for Earth Sciences;

(B) $1,485,700,000 shall be for Planetary Science;

(C) $1,076,300,000 shall be for Astrophysics;

(D) $646,900,000 shall be for Heliophysics, of which $5,000,000 shall be an augmentation to the Explorers program; and

(E) $5,000,000 shall be an augmentation to the total amount provided under subparagraphs (C) and (D) for Astrophysics and Heliophysics in order to augment the funding

for the Science Mission Directorate's suborbital research programs, to be allocated between the Astrophysics and Heliophysics suborbital programs at the Administrator's discretion.

(4) For Aeronautics and Space Technology, $1,179,600,000, of which—

(A) $579,600,000 shall be for Aeronautics Research; and

(B) $600,000,000 shall be for Space Technology, of which $300,000,000 shall be for Exploration Technology Development and $15,000,000 shall be for the Commercial Reusable Suborbital Research program.

(5) For Education, $180,000,000, of which—

(A) $25,000,000 shall be for the Experimental Program to Stimulate Competitive Research;

(B) $45,000,000 shall be for the Space Grant program; and

(C) $28,400,000 shall be for the Minority Research and Education Program.

(6) For Cross-Agency Support Programs, $3,111,400,000.

(7) For Construction and Environmental Compliance and Restoration, $397,300,000.

(8) For Inspector General, $38,000,000.

SEC. 102. FISCAL YEAR 2012.

There are authorized to be appropriated to NASA for fiscal year 2012, $19,450,000,000, as follows:

(1) For Exploration, $5,074,400,000, of which—

(A) $4,459,400,000 shall be for the implementation of the Space Launch System, multipurpose crew vehicle, and associated program and other necessary support, including $500,000,000 for the NASA Launch Support and Infrastructure Modernization Program;

(B) $165,000,000 shall be for Human Research;

(C) $400,000,000 shall be for Commercial Cargo and Crew Capability Development Activities and studies related to commercial crew services and for Commercial Crew Capabilities; and

(D) $50,000,000 shall be for Robotic Precursor Studies and Instruments.

(2) For Space Operations, $3,704,200,000, of which—

(A) $2,983,600,000 shall be for the ISS program, of which $100,000,000 shall be for

fundamental space life science and physical sciences and related technology research using ground-based, free-flyer, and ISS facilities, including ISS National Laboratory research; and

(B) $720,600,000 shall be for Space and Flight Support.

(3) For Science, $5,278,600,000, of which—

(A) $1,944,500,000 shall be for Earth Sciences;

(B) $1,547,200,000 shall be for Planetary Science;

(C) $1,109,300,000 shall be for Astrophysics;

(D) $672,600,000 shall be for Heliophysics, of which $25,000,000 shall be an augmentation to the Explorers program; and

(E) $5,000,000 shall be an augmentation to the total amount provided under subparagraphs (C) and (D) for Astrophysics and Heliophysics in order to augment the funding for the Science Mission Directorate's suborbital research programs, to be allocated between the Astrophysics and Heliophysics suborbital programs at the Administrator's discretion.

(4) For Aeronautics and Space Technology, $1,610,900,000, of which—

(A) $598,700,000 shall be for Aeronautics Research; and

(B) $1,012,200,000 shall be for Space Technology, of which $437,300,000 shall be for Exploration Technology Development and $15,000,000 shall be for the Commercial Reusable Suborbital Research program.

(5) For Education, $180,000,000, of which—

(A) $25,000,000 shall be for the Experimental Program to Stimulate Competitive Research;

(B) $45,000,000 shall be for the Space Grant program; and

(C) $28,400,000 shall be for the Minority Research and Education Program.

(6) For Cross-Agency Support Programs, $3,189,600,000.

(7) For Construction and Environmental Compliance and Restoration, $373,800,000, of which $10,000,000 shall be for an augmentation to the President's requested level in order to support the NASA laboratory revitalization initiative described in section 1103.

(8) For Inspector General, $38,500,000.

SEC. 103. FISCAL YEAR 2013.

There are authorized to be appropriated to NASA for fiscal year 2013, $19,960,000,000, as follows:

(1) For Exploration, $4,995,400,000, of which—

(A) $4,370,400,000 shall be for the implementation of the Space Launch System, multipurpose crew vehicle, and associated program and other necessary support, including $400,000,000 for the NASA Launch Support and Infrastructure Modernization Program;

(B) $175,000,000 shall be for Human Research;

(C) $400,000,000 shall be for Commercial Cargo and Crew Capability Development Activities and studies related to commercial crew services and for Commercial Crew Capabilities; and

(D) $50,000,000 shall be for Robotic Precursor Studies and Instruments.

(2) For Space Operations, $3,853,300,000, of which—

(A) $3,129,400,000 shall be for the ISS program, of which $100,000,000 shall be for

fundamental space life science and physical sciences and related technology research using ground-based, free-flyer, and ISS facilities, including ISS National Laboratory research; and

(B) $723,900,000 shall be for Space and Flight Support.

(3) For Science, $5,569,500,000, of which—

(A) $2,089,500,000 shall be for Earth Sciences;

(B) $1,591,200,000 shall be for Planetary Science;

(C) $1,149,100,000 shall be for Astrophysics;

(D) $734,700,000 shall be for Heliophysics, of which $55,000,000 shall be an augmentation to the Explorers program; and

(E) $5,000,000 shall be an augmentation to the total amount provided under subparagraphs (C) and (D) for Astrophysics and Heliophysics in order to augment the funding for the Science Mission Directorate's suborbital research programs, to be allocated between the Astrophysics and Heliophysics suborbital programs at the Administrator's discretion.

(4) For Aeronautics and Space Technology, $1,669,100,000, of which—

(A) $609,400,000 shall be for Aeronautics Research; and

(B) $1,059,700,000 shall be for Space Technology, of which $449,000,000 shall be for Exploration Technology Development and $15,000,000 shall be for the Commercial Reusable Suborbital Research program.

(5) For Education, $180,000,000, of which—

(A) $25,000,000 shall be for the Experimental Program to Stimulate Competitive Research;

(B) $45,000,000 shall be for the Space Grant program; and

(C) $28,400,000 shall be for the Minority Research and Education Program.

(6) For Cross-Agency Support Programs, $3,276,800,000.

(7) For Construction and Environmental Compliance and Restoration, $376,900,000, of which $10,000,000 shall be for an augmentation to the President's requested level in order to support the NASA laboratory revitalization initiative described in section 1103.

(8) For Inspector General, $39,000,000.

TITLE II—POLICY FOR HUMAN SPACE FLIGHT AND EXPLORATION

SEC. 201. UNITED STATES HUMAN SPACE FLIGHT POLICY.

(a) USE OF NON-UNITED STATES HUMAN SPACE FLIGHT TRANSPORTATION CAPABILITIES.—Consistent with other provisions of this Act, it is the policy of the United States that reliance upon non-United States human space flight capabilities shall be undertaken as a contingency in circumstances where no United States-owned and operated human space flight capability is available, operational, and certified for flight by appropriate Federal agencies.

(b) UNITED STATES HUMAN SPACE FLIGHT CAPABILITIES.—Consistent with other provisions of this Act, the Congress reaffirms the policy stated in section 501(a) of the National Aeronautics and Space Administration Authorization Act of 2005 (42 U.S.C. 16761(a)) that the United States shall maintain an uninterrupted capability for human space flight and operations in low-Earth orbit and beyond, as an essential instrument of national security and of the capacity to ensure continued United States participation in and leadership in the exploration and utilization of space.

SEC. 202. INDEPENDENT STUDY ON HUMAN EXPLORATION OF SPACE.

(a) IN GENERAL.—In fiscal year 2013, the Administrator shall contract with the National Academies for a review of progress made by the United States in addressing the goals set forth in the National Aeronautics and Space Act of 1958, the National Aeronautics and Space Administration Authorization Acts of 2005 and 2008, and in this Act for human space flight and exploration.

(b) ELEMENTS.—The review shall include—

(1) participation by representatives of a broad range of disciplines, backgrounds, and ages, including individuals with experience in civil, commercial, international, scientific, and national security interests;

(2) input from international partners involved in human space flight activities;

(3) an examination of the relationship of national goals to foundational capabilities, robotic activities, technologies, and missions authorized by this Act;

(4) a review and prioritization of scientific, engineering, economic, geopolitical, and societal questions that can be addressed by the Nation's human space flight and exploration activities to benefit the

citizens of the United States and to improve the overall human condition; and

(5) findings and recommendations, if any, for the 10-year period commencing October 1, 2015.

TITLE III—EXPANSION OF HUMAN SPACE FLIGHT BEYOND THE INTERNATIONAL SPACE STATION AND LOW-EARTH ORBIT

SEC. 301. HUMAN SPACE FLIGHT BEYOND LOW-EARTH ORBIT.

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

(1) The extension of the human presence from low-Earth orbit to other regions of space beyond low-Earth orbit will enable missions to the surface of the Moon and missions to deep space destinations such as near-Earth asteroids and Mars.

(2) The regions of cis-lunar space are accessible to other national and commercial launch capabilities, and such access raises a host of national security concerns and economic implications that international human space endeavors can help to address.

(3) The ability to support human missions in regions beyond low-Earth orbit and on the surface

of the Moon can also drive developments in emerging areas of space infrastructure and technology.

(4) Developments in space infrastructure and technology can stimulate and enable increased space applications, such as in-space servicing, propellant resupply and transfer, and in situ resource utilization, and open opportunities for additional users of space, whether national, commercial, or international.

(5) A long term objective for human exploration of space should be the eventual international exploration of Mars.

(6) Future international missions beyond low-Earth orbit should be designed to incorporate capability development and availability, affordability, and international contributions.

(7) Human space flight and future exploration beyond low-Earth orbit should be based around a pay-as-you-go approach.

(b) REPORT ON INTERNATIONAL COLLABORATION.—

(1) REPORT REQUIRED.—Not later than 120 days after the date of enactment of this Act, the Administrator shall transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and

Transportation of the Senate a report on the following:

(A) Any effort by NASA to expand and ensure effective international collaboration on the ISS.

(B) The efforts of NASA, including its approach and progress, in defining near-term and far-term human space missions.

(2) NASA CONTRIBUTIONS.—In preparing the report required by paragraph (1), the Administrator shall assume that NASA will contribute to the efforts described in that paragraph the following:

(A) A Space Launch System.

(B) A multipurpose crew vehicle.

(C) Such other technology elements the Administrator may consider appropriate, and which the Administrator shall specifically identify in the report.

SEC. 302. SPACE LAUNCH SYSTEM.

(a) UNITED STATES EXPLORATION POLICY.—The Congress reaffirms its support for the exploration policy set forth in sections 401 and 402 of the National Aeronautics and Space Administration Authorization Act of 2008 (Public Law 110–422; 122 Stat. 4788–4789). Further, it is the policy of the United States that in pursuit

of these objectives, NASA shall develop a Space Launch System capable of accessing, at a minimum, the full range of destinations envisioned in the National Aeronautics and Space Administration Authorization Act of 2008, and including cis-lunar space, Lagrangian points, the Moon, near-Earth objects, and Mars and its moons, as well as being capable of providing, when used in conjunction with the multipurpose crew vehicle described in section 303, a continuing backup capability for supplying and supporting International Space Station cargo requirements or crew delivery requirements not otherwise met by available commercial or partner-supplied vehicles.

(b) INITIATION OF DEVELOPMENT.—

(1) IN GENERAL.—The Administrator shall, within 90 days after the date of the enactment of this Act, develop a plan for a Space Launch System with, at a minimum, the design objectives, capabilities, and requirements specified in subsection (c) and shall proceed immediately thereafter to initiate development, testing, and evaluation. The plan shall include the use of the multipurpose crew vehicle described in section 303 of this Act. The Administrator shall ensure that the plan accounts for the continued operation of the International Space Station until at least 2020 and the anticipated con-

straints in the growth of NASA funding during the development of the Space Launch System and the multipurpose crew vehicle. The Administrator shall provide copies of the plan to the Senate Committee on Appropriations, the Senate Committee on Commerce, Science, and Transportation, the House of Representatives Committee on Appropriations, and the House of Representatives Committee on Science and Technology.

(2) IMPLEMENTATION.—The plan shall be implemented in a manner that—

(A) facilitates the planned transition of Space Shuttle and Constellation program personnel to the activities described in paragraph (1) upon the retirement of the Space Shuttle fleet, while providing for cost effective management and vehicle development;

(B) provides for a robust flight and ground test (as described in subsection (c)(2)) and demonstration program;

(C) streamlines program management processes to the maximum extent practicable while ensuring that the Government's ability to meet its responsibilities for cost discipline, safety, and mission assurance is maintained;

(D) working with industry, eliminates unnecessary NASA and industry institutional infrastructure, other fixed costs, processes, and oversight, reducing fixed costs to the extent practicable and maximizing the program's affordability;

(E) provides incentives, through innovative management practices, to NASA program and project managers and industry counterparts to establish and maintain realistic cost and schedule estimates, and take necessary steps to avoid cost and schedule growth;

(F) seeks to minimize to the extent practicable the operating costs of both the Space Launch System and multipurpose crew vehicle;

(G) enables development to occur in an incremental fashion with increasingly challenging uncrewed and crewed demonstration flights in and beyond low-Earth orbit, as appropriate; and

(H) allows developmental elements to serve as potential testbeds for the demonstration of key enabling exploration technologies and operational capabilities.

(3) MODIFICATION OF CURRENT CONTRACTS.—In order to limit NASA's termination liability costs and support critical capabilities, the Administrator shall, to the extent practicable, extend or modify existing contracts necessary to meet the requirements in paragraphs (1) and (2), including contracts for flight and ground testing of solid rocket motors, if necessary, to ensure their availability for development of the Space Launch System. At least 30 days before terminating any flight support or development contract to which this section applies, or allowing such a contract to lapse, the Administrator shall submit to the committees described in paragraph (1) a justification for such termination or lapse allowed.

(c) MINIMUM CAPABILITY REQUIREMENTS.—

(1) IN GENERAL.—The Space Launch System developed pursuant to subsection (b) shall be designed to, at a minimum—

(A) provide a scalable capability of lifting payloads of at least 130 metric tons into low-Earth orbit on a single launch vehicle with an upper stage in preparation for transit for missions beyond low-Earth orbit;

(B) provide the capability of lifting the multipurpose crew vehicle and associated crew escape launch abort system;

(C) provide the capability to serve as a backup system to ensure continuing capability for supplying and supporting International Space Station cargo requirements or crew delivery requirements not otherwise met by available commercial or partner-supplied vehicles; and

(D) have at least the capability described in subparagraph (C) by December 31, 2016.

(2) TESTING.—Ground and flight testing of elements, components, subsystems, and processes shall be undertaken as appropriate during development of the Space Launch System. Testing activities may include, at a minimum, ground and flight testing of propulsion systems, solid rocket motors, liquid fueled engines, and other elements, components, and subsystems of the Space Launch System.

(3) EVOLVABILITY.—The Space Launch System shall, to the extent practicable, incorporate capabilities for evolutionary growth.

(4) TRANSITION NEEDS.—The Administrator shall ensure critical skills and capabilities are retained, modified, and developed, as appropriate, in

areas related to solid and liquid engines, large diameter fuel tanks, rocket propulsion, and other ground test capabilities for an effective transition to the Space Launch System.

SEC. 303. MULTIPURPOSE CREW VEHICLE.

(a) INITIATION OF DEVELOPMENT.—

(1) IN GENERAL.—The Administrator shall continue the development of a multipurpose crew vehicle to be available as soon as practicable, and no later than for use with the Space Launch System described in section 302. The vehicle shall continue to advance development of the human safety features, designs, and systems in the Orion project. NASA shall develop an integrated approach with the plan developed under section 302(b)(1) that is consistent with the human space flight and exploration goals in the National Aeronautics and Space Administration Authorization Acts of 2005 and 2008, and the overall goals and objectives of this Act.

(2) OPERATIONAL CAPABILITY.—The multipurpose crew vehicle developed pursuant to this section shall achieve operational capability by not later than December 31, 2016.

(3) TESTING.—For purposes of meeting the deadline established by paragraph (2), the Adminis-

trator shall undertake one or more crew capability demonstration prototype tests of the multipurpose crew vehicle, at least one of which shall be to the International Space Station prior to December 31, 2016. The priority for the launch of this vehicle to the International Space Station shall be making use of the capabilities of the Space Launch System, if available.

(b) MINIMUM CAPABILITY REQUIREMENTS.—The multipurpose crew vehicle developed pursuant to subsection (a) shall be designed to have, at a minimum—

(1) the capability to serve as the primary crew vehicle for missions beyond low-Earth orbit;

(2) the capability to conduct regular in-space operations, such as rendezvous, docking, and extravehicular activities, in conjunction with payloads delivered by the Space Launch System developed pursuant to section 302, or other vehicles, in preparation for missions beyond low-Earth orbit or servicing of assets described in section 804, or other assets in cis-lunar space;

(3) the capability to provide an alternative means of delivery of crew and cargo to the International Space Station, in the event other vehicles,

whether commercial vehicles or partner-supplied vehicles, are unable to perform that function; and

(4) the capacity for efficient and timely evolution, including the incorporation of new technologies, and competition of subelements.

SEC. 304. UTILIZATION OF EXISTING WORKFORCE AND ASSETS IN DEVELOPMENT OF SPACE LAUNCH SYSTEM AND MULTIPURPOSE CREW VEHICLE.

(a) IN GENERAL.—In developing the Space Launch System pursuant to section 302 and the multipurpose crew vehicle pursuant to section 303, the Administrator shall, to the extent practicable, utilize—

(1) existing contracts, investments, workforce, industrial base, components, and capabilities from the Space Shuttle and Orion and Ares 1 and exploration program integration and operations projects, including existing United States propulsion systems and those currently under development, solid rocket motors, and space-suit development activities; and

(2) associated testing facilities, either in existence or under construction as of the date of enactment of this Act.

(b) DISCHARGE OF REQUIREMENTS.—In meeting the requirements of subsection (a), the Administrator—

(1) shall, to the extent practicable, utilize existing ground-based manufacturing capability, ground and flight testing activities, launch and operations infrastructure, and workforce expertise;

(2) shall, to the extent practicable, make the best use of existing ground infrastructure investments, software, vehicle, and mission operations processes;

(3) shall complete construction and activation of the A–3 test stand with a completion goal of September 30, 2013;

(4) shall procure, develop, and flight test applicable components as appropriate;

(5) shall take appropriate actions to ensure timely and cost-effective development of the Space Launch System and the multipurpose crew vehicle, including the use of a procurement approach that incorporates adequate and effective oversight, the facilitation of contractor efficiencies, and the streamlining of contract and procurement requirements;

(6) shall strive to ensure that activities undertaken in support of achieving the capability described in section 302(c)(1)(C) shall also contribute to achieving the capability described in section 302(c)(1)(A); and

(7) shall strive to attain, to the extent practicable, the increase in safety relative to the Space Shuttle recommended by the NASA Astronaut Office in the aftermath of the *Columbia* accident.

SEC. 305. NASA LAUNCH SUPPORT AND INFRASTRUCTURE MODERNIZATION PROGRAM FOR THE SPACE LAUNCH SYSTEM.

(a) IN GENERAL.—The Administrator shall carry out a program the primary purpose of which is to prepare infrastructure at the Kennedy Space Center that is needed to enable processing and launch of the Space Launch System. Vehicle interfaces and other ground processing and payload integration areas should be simplified to minimize overall costs, enhance safety, and complement the purpose of this section.

(b) NASA LAUNCH SUPPORT AND INFRASTRUCTURE MODERNIZATION PROGRAM IN SUPPORT OF THE SPACE LAUNCH SYSTEM.—

(1) IN GENERAL.—The Administrator shall carry out a program to prepare infrastructure at the Kennedy Space Center that is needed to enable Space Launch System processing and launch activities, including simplifying vehicle interfaces and other ground processing and payload integration

areas to minimize overall costs, enhance safety, and complement the purpose of this section.

(2) ELEMENTS.—The program required by this section shall include—

(A) investments in support of the Space Launch System to—

(i) improve processing and launch operations at the Kennedy Space Center;

(ii) enhance the overall capabilities of the Eastern Range; and

(iii) reduce the long-term cost of operations and maintenance;

(B) measures in support of the Space Launch System to provide multivehicle support and improvements in payload processing; and

(C) such other measures in support of the Space Launch System as the Administrator may consider appropriate.

(c) REPORT ON NASA LAUNCH SUPPORT AND INFRASTRUCTURE MODERNIZATION PROGRAM FOR THE SPACE LAUNCH SYSTEM.—Not later than 180 days after the date of enactment of this Act, the Administrator shall transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report

on the plan for the implementation of the program authorized in subsection (b).

(d) OTHER ACTIVITIES.—Of the funds authorized to be appropriated in title I to carry out the provisions of subsection (b), up to 10 percent in each of the fiscal years 2011, 2012, and 2013 may be made available to carry out the following activities:

(1) Investments to improve civil and national security operations at the Kennedy Space Center and Cape Canaveral Air Force Station to enhance the overall capabilities of the Eastern Range and to reduce the long-term cost of operations and maintenance.

(2) Such other measures related to launch support and infrastructure modernization at the Kennedy Space Center as the Administrator shall consider appropriate to carry out NASA's launch operations.

(3) Such investments to improve launch infrastructure at NASA flight facilities scheduled to launch cargo to the ISS under the commercial orbital transportation services program as the Administrator may consider appropriate.

SEC. 306. SPACE RADIATION.

(a) STRATEGY AND IMPLEMENTATION PLAN.—

(1) IN GENERAL.—The Administrator shall develop a space radiation mitigation and management strategy and implementation plan that includes key milestones, a timetable, and estimation of budget requirements.

(2) COORDINATION MECHANISM.— The strategy shall include a mechanism to coordinate NASA research, in-house expertise, technology, facilities, engineering, operations, and other functions required to support the strategy and plan.

(3) TRANSMITTAL.—The Administrator shall transmit the strategy and plan to the Committee on Science and Technology 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.

(b) SPACE RADIATION RESEARCH FACILITIES.—The Administrator, in consultation with the heads of other appropriate Federal agencies, shall—

(1) assess the national capabilities for carrying out critical ground-based research on space radiation biology; and

(2) identify any issues that could affect the ability to carry out that research.

(c) RESEARCH ON SOLAR PARTICLE EVENTS.—The Administrator shall carry out research on solar particle events to improve the predictions and forecasts of solar particle events that could affect human missions beyond low-Earth orbit.

(d) RADIATION RESEARCH ON NON-HUMAN PRIMATES.—

(1) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the Administrator shall transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on prior radiation research on non-human primates and the justification and rationale for any additional research involving non-human primates.

(2) CONSULTATION.—In preparing the report, the Administrator shall consult with other Federal agencies that have previously conducted radiation research on non-human primates.

TITLE IV—DEVELOPMENT AND USE OF COMMERCIAL CARGO AND CREW TRANSPORTATION CAPABILITIES

SEC. 401. AFFIRMATION OF POLICY.

The Congress affirms the policy of—

(1) making use of United States commercially provided ISS cargo, crew transportation, and crew rescue services to the maximum extent practicable;

(2) prohibiting, to the extent practicable, any capability of the Space Launch System from competing with United States commercial providers that meet the requirements of this title for the provision of routine ISS crew and cargo transportation and rescue services; and

(3) facilitating, to the maximum extent practicable, the transfer of NASA-developed technologies to United States commercial orbital human space transportation companies in order to help promote the development of commercially provided ISS crew transportation and crew rescue services.

SEC. 402. COMBINED COMMERCIAL CARGO AND CREW CAPABILITIES DEVELOPMENT AND CREW CAPABILITIES ACCOUNT.

(a) ESTABLISHMENT.—Funds authorized in title I of this Act for Commercial Cargo and Crew Capability Development Activities and Commercial Crew Capabilities shall be maintained in a combined funding account within the overall Exploration account.

(b) ALLOCATION OF FUNDS.—Funds in the combined account established under subsection (a) shall be allocated at the discretion of the Administrator to those activities related to commercial cargo and crew capabilities development, including the Commercial Orbital Transportation Services program, and to procurement of commercial crew capabilities, that the Administrator deem to be of the highest priority in each of the fiscal years for which funds are authorized by this Act in order to support the continued operation and utilization of the ISS. The amount of funds made available to a company for the development of commercial crew capabilities shall, to the extent practicable, be limited to that amount of funding that is matched by non-Federal provided funding. If the Administrator determines that the requirement for non-Federal matching funds should be waived in whole or in part in a particular instance, the Administrator shall report to the Committee on Science and Technology of the House of

Representatives and the Committee on Commerce, Science, and Transportation of the Senate in a timely manner the justification for that determination and the amount of non-Federal contribution and what type of noncash match, if any, the Government will receive from the company if the matching funds requirement is waived.

SEC. 403. COMMERCIAL CARGO CAPABILITIES DEVELOPMENT.

(a) IN GENERAL.—The Administrator shall continue to support the existing Commercial Orbital Transportation Services program, aimed at enabling the commercial space industry in support of NASA to develop reliable means of launching cargo and supplies to the ISS throughout the duration of the facility's operation. The Administrator may apply funds towards the reduction of risk to the timely start of these services, specifically towards—

(1) efforts to conduct additional flight tests during the Commercial Orbital Transportation Services program;

(2) activities needed to maintain schedules or minimize any potential delays to the achievement of the commercial cargo resupply capability; and

(3) activities related to the development of the ground infrastructure needed for commercial cargo capability, if those activities are at risk of being de-

layed to the point that there would be significant risk to the provision of the commercial cargo resupply capability as scheduled under NASA's Commercial Resupply Services contract without the additional funds.

(b) REPORTING REQUIREMENT.—The Administrator shall provide to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a quarterly report on any funds provided under this section to commercial entities or utilized by NASA for the activities described in subsection (a). The report shall include the specific justification for each funding action taken, including an estimate of the amount of risk reduced by that funding action.

SEC. 404. COMMERCIAL CREW TRANSPORTATION CAPABILITIES DEVELOPMENT ACTIVITIES.

(a) HUMAN RATING.—Within 120 days after the date of enactment of this Act, the Administrator shall develop and make available to the public procedures for the human rating of space transportation systems, including—

(1) requirements, standards, and processes for the human rating of space transportation systems that are equivalent to NASA safety processes and procedures;

(2) procedures to facilitate the ability of commercial crew transportation providers to understand and comply with such requirements, standards, and processes, including—

(A) effective communication to the commercial sector of necessary information; and

(B) technical assistance, to the maximum extent practicable;

(3) the process NASA will use for certifying that commercial human spaceflight systems (including mission control, operations, ground systems, and other supporting infrastructure) comply with such requirements, standards, and processes and related NASA policies and procedures for safety and reliability, which process shall include independent verification and validation of such compliance, and which shall be no less stringent than the NASA policies and procedural requirements established for launch of Class A (high cost and high priority) payload; and

(4) a description of the process NASA will apply for securing ongoing NASA insight into the design methodologies, processes, technologies, test data, and production and quality control practices employed in the development of the commercial crew

transportation system throughout the development, test, demonstration, and production phases.

(b) LICENSING OF MULTIPURPOSE CREW VEHICLE INTELLECTUAL PROPERTY.—The Administrator shall seek to ensure that contracts for development of the multipurpose crew vehicle under section 303 contain provisions for the nonexclusive licensing of relevant intellectual property derived from the development of a multipurpose crew vehicle authorized by this Act to participating commercial providers of any crew rescue capability development undertaken pursuant to this section.

(c) ASAP REVIEW OF NASA'S HUMAN-RATING REQUIREMENTS, STANDARDS, AND PROCESSES.—

(1) IN GENERAL.—The Aerospace Safety Advisory Panel (ASAP) shall conduct a review to identify issues pertinent to the establishment of human-rating requirements, standards, and processes for commercial crew transportation and rescue systems that are proposed for transport of United States astronauts.

(2) REPORT.—Within 270 days after the date of enactment of this Act, the Aerospace Safety and Advisory Panel shall transmit to the Congress a report describing—

(A) the Panel's assessment of NASA's currently established human-rating specifications and guidance;

(B) the Panel's view of the mandatory safety requirements that should be met with regard to human rating; and

(C) the steps NASA and the commercial space industry need to take to ensure that commercial crew transportation and rescue vehicles have human rating requirements, standards, and processes equivalent to those of NASA.

(d) TECHNOLOGY TRANSFER.—The Administrator shall make available, on a nonexclusive basis, NASA-developed technologies for transfer to potential United States commercial orbital human space transportation companies. NASA shall determine the appropriate means, through cost-reimbursable arrangements or other mechanisms, to transfer the technologies.

(e) TECHNICAL ASSISTANCE AND FACILITIES.—The Administrator shall make available, to the extent practicable, NASA facilities and equipment to assist in the testing and demonstration of commercial crew transportation systems, including those associated with NASA's safety and mission assurance activities, such as NASA's Independent Verification and Validation facility for soft-

ware verification. The Administrator shall determine the appropriate means, through cost-reimbursable arrangements, agreements entered into under section 203(c)(5) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2473(c)(5)), or other mechanisms, to provide technical assistance and access to facilities to the commercial space sector.

(f) USE OF GOVERNMENT-SUPPLIED CAPABILITIES AND INFRASTRUCTURE.—In evaluating any proposed development activity for commercially developed crew or cargo launch capabilities, the Administrator shall identify the anticipated contribution of Federal Government personnel, expertise, technologies, and infrastructure to be utilized in support of design, development, or operations of such capabilities as well as an estimate of the monetary value of that contribution.

SEC. 405. PROCUREMENT OF COMMERCIAL CREW TRANSPORTATION SERVICES.

NASA shall seek, to the extent practicable, to procure available United States commercial crew transportation services to transport astronauts to and from the ISS, if the following conditions are met:

(1) Those commercial services have demonstrated the capability to meet NASA-specified as-

cent, transit, entry, and ISS proximity operations safety requirements.

(2) The service provider has completed, and NASA has verified, crewed flight demonstrations or operational flights that comply with NASA standards, policies, and procedures.

(3) The per-seat cost to the United States is reasonable and has a basis in the cost to the commercial entity providing the crew transportation service.

(4) The Administrator has transmitted to the Committee on Science 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 a commercial space market assessment, conducted in coordination with the Federal Aviation Administration's Office of Commercial Space Transportation and the Department of Commerce Office of Space Commercialization, for purposes of this paragraph, of the potential non-Government market for commercial crew and cargo transportation systems and capabilities, including an assessment of the activities associated with potential private sector utilization of the ISS research and technology develop-

ment capabilities and other potential activities in low-Earth orbit. The market assessment shall include estimates of the lowest, most likely, and highest levels of non-Government market demand for commercial crew transportation systems and capabilities and cargo transportation systems and capabilities over the next 10 years and over the next 20 years.

(5)(A) The Administrator has transmitted to the Congress a review of current Government procurement and acquisition practices and processes and law, including agreement authorities under the National Aeronautics and Space Act of 1958, to determine the most cost-effective means of procuring commercial crew transportation capabilities and related services in a manner that ensures appropriate accountability, transparency, and maximum efficiency in the procurement of such capabilities and services.

(B) The review shall include—

(i) an identification of proposed measures to address risk management and means of indemnification of commercial providers of such capabilities and services;

(ii) measures for quality control, safety oversight, including the application of Federal oversight processes within the jurisdiction of other Federal agencies; and

(iii) a description of, and justification for, the proposed procurement process.

(C) In support of the review by such Committees, the Comptroller General shall undertake an assessment of the proposed procurement process and transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report within 90 days after the date on which the Administrator provides the description and justification to such Committees.

(6) Any company that seeks to provide commercial crew transportation services under contract to NASA shall enter into an arrangement with NASA that allows NASA to obtain ongoing insight into the design methodologies, processes, technologies, test data, and production and quality control practices employed in the development of the commercial crew transportation system throughout the development, test, demonstration, and production phases. NASA—

(A) may offer early warning of conditions that may be the basis for withholding certification of the crew transportation systems for the flight of United States Government personnel or declining to enter into a contract for services; and

(B) may not require the company to make changes to its design, technologies, or processes during the development, test, demonstration, or production phases.

(7) The Administrator shall certify that a commercial ISS crew transportation and crew rescue service provider with which a contract is planned has demonstrated the safety and reliability of its systems for crew transportation and crew rescue to be equivalent to NASA-promulgated safety and reliability policies, procedures, and standards for human spaceflight. Individual certifications made under this paragraph shall be provided to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

(8) Sufficient successful flight experience has been accrued by the service provider's system to provide to NASA the safety-related and reliability-re-

lated data and information needed to determine whether to fly its astronauts on that system. The Administrator shall—

(A) establish qualitative and quantitative guidelines and measures by which systems' flight experience will be assessed and shall establish appropriate milestones and minimum performance objectives to be achieved before authority is granted to proceed to the procurement of commercially developed crew transportation capabilities or systems, which guidelines shall include a procedure to provide independent assurance of flight safety and flight readiness before the authorization of United States Government personnel to participate as crew onboard any commercial launch vehicle developed pursuant to this section; and

(B) certify, prior to entering into any contract or financial commitment with an individual service provider, that successful flight experience accrued has provided NASA with sufficient safety-related and reliability-related data and information to make an informed assessment, with each certification transmitted to the Committee on Science and Technology of the

House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate prior to entering into any contract or financial commitment.

(9) Indemnification and liability issues associated with the use of such systems by the United States Government have been addressed and the Administrator has provided to the Congress a report describing the indemnification and liability provisions that are planned to be included in such contracts and their legal basis.

(10) The provision of a commercial capability to provide ISS crew services shall include crew rescue requirements, and shall be undertaken through the procurement process initiated in conformance with this section and section 406.

SEC. 406. ACQUISITION STRATEGY FOR PROCUREMENT OF COMMERCIAL CREW TRANSPORTATION SERVICES.

(a) ACQUISITION STRATEGY.—The Administrator shall procure commercial crew transportation services using an acquisition strategy consistent with the findings of NASA's review of current Government procurement and acquisition practices and processes and the results of

the Comptroller General's assessment, required under section 405(5)(B), of NASA's proposed procurement process.

(b) FISCAL YEAR 2011 CONTRACTS AND PROCUREMENT AGREEMENTS.—

(1) IN GENERAL.—Except as provided in paragraph (2), the Administrator may not execute a contract or procurement agreement with respect to the procurement of commercial crew services during fiscal year 2011.

(2) EXCEPTION.—Notwithstanding paragraph (1), the Administrator may execute a contract or procurement agreement with respect to commercial crew services during fiscal year 2011 if—

(A) the requirements of section 404(a) and (c) and section 405 are met; and

(B) the total amount involved for all such contracts and procurement agreements executed during fiscal year 2011 does not exceed $50,000,000 for fiscal year 2011.

SEC. 407. REPORT ON INTERNATIONAL SPACE STATION CARGO RETURN CAPABILITY.

Not later than 120 days after the date of enactment of this Act, the Administrator shall transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science,

and Transportation of the Senate a report on potential alternative commercially developed means for the capability for a soft-landing return on land from the ISS of—

(1) research samples or other derivative materials; and

(2) small to mid-sized (up to 1,000 kilograms) equipment for return and analysis, or for refurbishment and redelivery, to the ISS.

TITLE V—CONTINUATION, SUPPORT, AND EVOLUTION OF THE INTERNATIONAL SPACE STATION

SEC. 501. CONTINUATION OF THE INTERNATIONAL SPACE STATION THROUGH 2020.

(a) POLICY OF THE UNITED STATES.—It shall be the policy of the United States, in consultation with its international partners in the ISS program, to support full and complete utilization of the ISS through at least 2020 and to seek to minimize to the extent practicable the operating costs of the ISS.

(b) NASA ACTIONS.—In furtherance of the policy set forth in subsection (a), NASA shall pursue international, United States commercial, and intragovernmental means, consistent with other provisions in this Act, to maximize ISS logistics supply, maintenance, and operational capa-

bilities, reduce risks to ISS systems sustainability, and offset and minimize United States operations costs related to the ISS.

SEC. 502. MAXIMUM UTILIZATION OF THE INTERNATIONAL SPACE STATION.

(a) IN GENERAL.—With assembly of the ISS complete, NASA shall take steps to maximize the productivity and use of the ISS with respect to scientific and technological research and development, advancement of space exploration, and international collaboration.

(b) NASA ACTIONS.—In carrying out subsection (a), NASA shall undertake the following:

(1) INNOVATIVE USE OF UNITED STATES SEGMENT.—The United States segment of the ISS, which has been designated as a National Laboratory, shall be developed, managed, and utilized in a manner that enables the effective and innovative use of such facility, as provided in section 504.

(2) INTERNATIONAL COOPERATION.—The ISS shall continue to be utilized as a key component of international efforts to build missions and capabilities that further the development of a human presence beyond near-Earth space and advance United States security and economic goals. The Administrator shall actively seek ways to encourage and en-

able the use of ISS capabilities to support these efforts.

(3) DOMESTIC COLLABORATION.—The ISS shall be utilized in a manner that provides opportunities for collaboration with other Federal, academic, and United States commercial research and development programs consistent with the objectives of the United States Government and consistent with the provisions in this Act.

SEC. 503. MAINTENANCE OF UNITED STATES SEGMENT AND ASSURANCE OF CONTINUED OPERATIONS OF THE INTERNATIONAL SPACE STATION.

(a) IN GENERAL.—The Administrator shall take all actions necessary to ensure the safe and effective operation, maintenance, and maximum utilization of the United States segment of the ISS through at least September 30, 2020.

(b) VEHICLE AND COMPONENT REVIEW.—

(1) IN GENERAL.—In carrying out subsection (a), the Administrator shall, as soon as is practicable after the date of enactment of this Act, carry out a comprehensive assessment of the essential modules, operational systems and components, structural elements, and permanent scientific equipment on board or planned for delivery and installation

aboard the ISS, including both United States and international partner elements, for purposes of identifying the spare or replacement modules, systems and components, elements, and equipment that are required to ensure complete, effective, and safe functioning and full scientific utilization of the ISS through September 30, 2020.

(2) DATA.—In carrying out the assessment, the Administrator shall assemble any existing data, and provide for the development of any data or analysis not currently available, that is necessary for purposes of the assessment.

(c) REPORTS.—

(1) REPORT ON ASSESSMENT.—

(A) REPORT REQUIRED.—Not later than 120 days after the date of enactment of this Act, the Administrator shall transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on the assessment required by subsection (b).

(B) ELEMENTS.—The report required by this paragraph shall include, to the extent practicable, the following:

(i) A description of the spare or replacement modules, systems and components, elements, and equipment identified pursuant to the assessment that are currently produced, in inventory, or on order, a description of the state of their readiness, and a schedule for their delivery to the ISS (including the planned transportation means for such delivery), including for each such module, system or component, element, or equipment a description of—

(I) its specifications, including size, weight, and necessary configuration for launch and delivery to the ISS;

(II) its function;

(III) its location; and

(IV) its criticality for ISS system integrity.

(ii) A description of the spare or replacement modules, systems and components, elements, and equipment identified pursuant to the assessment that are not currently produced, in inventory, or on

order, including for each such module, system or component, element, or equipment a description of—

(I) its specifications, including size, weight, and necessary configuration for launch and delivery to the ISS;

(II) its function;

(III) its location;

(IV) its criticality for ISS system integrity; and

(V) the anticipated cost and schedule for its design, procurement, manufacture, and delivery to the ISS.

(iii) A detailed summary of the delivery schedule and associated delivery vehicle requirements necessary to transport all spare and replacement elements considered essential for the ongoing and sustained functionality of all critical systems of the ISS, both in and of themselves and as an element of an integrated, mutually dependent essential capability, including an assessment of the current schedule for delivery, the availability of delivery vehicles to

meet that schedule, and the likelihood of meeting that schedule through such vehicles.

(2) GAO REPORT.—

(A) REPORT REQUIRED.—Not later than 90 days after the transmittal under paragraph (1) of the assessment required by subsection (b), the Comptroller General of the United States shall transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on the assessment. The report shall set forth an evaluation of the assessment by the Comptroller General, including an evaluation of the accuracy and level of confidence in the findings of the assessment.

(B) COOPERATION WITH GAO.—The Administrator shall provide for the monitoring and participation of the Comptroller General in the assessment in a manner that permits the Comptroller General to prepare and transmit the report required by subparagraph (A).

(d) UTILIZATION OF RESEARCH FACILITIES AND CAPABILITIES.—NASA shall plan, manage, and support re-

search facilities and capabilities aboard the ISS (other than exploration-related research and technology development facilities and capabilities, and associated ground support and logistics) consistent with section 504. NASA organizations and officials shall plan, manage, and support exploration-related research and technology development facilities, capabilities, and associated ground support and logistics in a manner that does not interfere with other activities under section 504.

(e) SPACE SHUTTLE MISSION TO ISS.—

(1) SPACE SHUTTLE MISSION.—The Administrator shall fly the Launch-On-Need Shuttle mission currently designated in the Shuttle Flight Manifest dated February 28, 2010, to the ISS in fiscal year 2011, but no earlier than June 1, 2011, (unless required earlier by an operations contingency), unless, after review of the results of the assessment required by paragraph (2), and after the determination under paragraph (3)(A), the Administrator determines that the level of risk of flying such mission is unacceptable.

(2) ASSESSMENT OF SAFE MEANS OF RETURN.—The Administrator shall provide for an assessment by the NASA Engineering and Safety Center of the procedures and plans developed to ensure

the safety of the Space Shuttle crew and alternative means of return, in the event the Space Shuttle is damaged or otherwise unable to return safely to Earth.

(3) SCHEDULE AND PAYLOAD.—The determination of the schedule and payload for the mission authorized by paragraph (1) shall take into account the following:

(A) The supply and logistics delivery requirements of the ISS.

(B) The findings of the assessment required by paragraph (2).

(4) FUNDS.—Amounts authorized to be appropriated by section 101(2)(B) shall be available for the mission authorized by paragraph (1).

SEC. 504. MANAGEMENT OF THE ISS NATIONAL LABORATORY.

(a) SELECTION OF NOT-FOR-PROFIT ENTITY FOR MANAGEMENT OF NATIONAL LABORATORY.—

(1) IN GENERAL.—The Administrator shall competitively select an independent, United States entity that is exempt from taxation under section 501(c)(3) of the Internal Revenue Code of 1986 to provide the scientific leadership for and manage the activities of the ISS National Laboratory in accord-

ance with this section and to provide initial financial assistance.

(2) REQUEST FOR INFORMATION.—Not later than 30 days after the date of enactment of this Act, the Administrator shall issue a request for information for the institutional management of non-NASA research to be carried out on the ISS National Laboratory.

(3) PLAN.—Not later than 90 days after the date of enactment of this Act, the Administrator shall develop a plan for the selection of an institutional approach and independent entity for the management of ISS National Laboratory research.

(4) QUALIFICATIONS.—The entity competitively selected under paragraph (1) shall possess the capabilities to coordinate and arrange for competitive, peer-reviewed selection of research and development projects utilizing the ISS National Laboratory and to otherwise manage the activities of the ISS National Laboratory.

(5) PROHIBITION ON OTHER ACTIVITIES.—The competitive selection under paragraph (1) shall require that the selected entity engage exclusively in activities relating to the management of the ISS National Laboratory and activities that promote its

long term research and development mission as required by this section, without any other organizational objectives or responsibilities on behalf of the entity or any parent organization or other entity.

(b) NASA LIAISONS.—

(1) DESIGNATION.—The Administrator shall designate an official or employee of the Space Operations Mission Directorate of NASA headquarters and the responsible official designated under section 509(b)(1) to act as liaisons between NASA and the entity selected under subsection (a) with regard to the management of the ISS National Laboratory.

(2) CONSULTATION WITH LIAISONS.—The entity selected under subsection (a) shall carry out its responsibilities in cooperation and consultation with the officials or employees designated under paragraph (1).

(c) PLANNING AND COORDINATION OF ISS NATIONAL LABORATORY RESEARCH ACTIVITIES.—Following the competitive selection under subsection (a)(1), the Administrator shall provide initial financial assistance to the entity in order for the entity to initiate the following:

(1) Competitive, peer-reviewed selection of non-NASA research and development activities to be carried out using the ISS National Laboratory.

(2) Planning and coordination of the ISS National Laboratory research activities.

(3) Development and implementation of guidelines, selection criteria, and flight support requirements for non-NASA scientific utilization of ISS research capabilities and facilities available in United States-owned modules of the ISS or in partner-owned facilities of the ISS allocated to United States utilization by international agreement.

(4) Interaction with and coordination of the International Space Station National Laboratory Advisory Committee established under section 602 of the National Aeronautics and Space Administration Authorization Act of 2008 (42 U.S.C. 17752) with the governance of the entity, and review of recommendations provided by that Committee regarding agreements with non-NASA Federal agencies, academic institutions and consortia, and commercial entities leading to the utilization of the ISS National Laboratory facilities.

(5) Prioritization and coordination of transportation requirements in support of the ISS National Laboratory research and development objectives, including provision for delivery of instruments, logistics support, and related experiment materials, and

provision for return to Earth of collected samples, materials, and scientific instruments in need of replacement or upgrade.

(6) Cooperation with NASA, other Federal agencies, the States, institutions of higher education, and commercial entities in ensuring the enhancement and sustained operations, as appropriate, of nonexploration-related research payload ground support facilities for the ISS, including the Space Life Sciences Laboratory, the Space Station Processing Facility, and the Payload Operations Integration Center.

(7) Development and implementation of scientific outreach and education activities designed to ensure effective utilization of ISS research capabilities including the conduct of scientific assemblies, conferences, and other fora for the presentation of research findings, methods, and mechanisms for the dissemination of nonrestricted research findings and the development of educational programs, course supplements, and interaction with educational programs at all grade levels, including coordination with NASA mission directorates regarding student-focused research opportunities for conduct of research in the ISS National Laboratory facilities.

(8) Such other matters relating to the utilization of the ISS National Laboratory facilities for research and development as are identified in the agreement between NASA and the independent entity after its competitive selection.

(d) RESEARCH MANAGEMENT PLAN.—The Administrator, in coordination with officials or employees designated under subsection (b), shall require that the entity designated under subsection (a) prepare a United States ISS research management plan that—

(1) establishes a process for selecting United States ISS research;

(2) identifies the expertise and support available to researchers selected to carry out research on the ISS;

(3) establishes a process for prioritizing and determining allocation schedules for research to be carried out on the ISS;

(4) establishes a process for prioritizing and accommodating logistical and transportation requirements for ISS research payloads;

(5) establishes flight schedules for research payloads to the ISS (and research materials to be returned to Earth, if necessary); and

(6) addresses other relevant factors associated with the selection, management, and oversight of research on the ISS National Laboratory.

(e) TRANSMITTAL TO CONGRESS.—The plan prepared under subsection (d) shall be transmitted to the Congress not later than 18 months after the date of enactment of this Act.

(f) RESEARCH CAPACITY ALLOCATION AND INTEGRATION OF RESEARCH PAYLOADS.—

(1) ALLOCATION OF ISS RESEARCH CAPACITY.—As soon as practicable after the date of enactment of this Act, but not later than October 1, 2011, ISS National Laboratory-managed experiments shall be guaranteed access to, and utilization of, not less than 50 percent of the United States ISS research capacity allocation, including power, cold stowage, and requisite crew time onboard the ISS through September 30, 2020. Access to the ISS research capacity includes provision for the adequate upmass and downmass capabilities to utilize the ISS research capacity, as available. The Administrator may allocate additional capacity to the ISS National Laboratory should such additional capacity be in excess of NASA research requirements.

(2) ADDITIONAL RESEARCH CAPABILITIES.—If any NASA research plan is determined to require research capacity onboard the ISS beyond the percentage allocated under paragraph (1), such research plan shall be prepared in the form of a requested research opportunity to be submitted to the process established under this section for the consideration of proposed research within the capacity allocated to the ISS National Laboratory. A proposal for such a research plan may include the establishment of partnerships with non-NASA institutions eligible to propose research to be conducted within the ISS National Laboratory capacity. Until September 30, 2020, the officials or employees designated under subsection (b) may grant an exception to this requirement in the case of a proposed experiment considered essential for purposes of preparing for exploration beyond low-Earth orbit, as determined by joint agreement between the entity selected under subsection (a) and the officials or employees designated under subsection (b).

(3) RESEARCH PRIORITIES AND ENHANCED CAPACITY.—The independent entity selected under subsection (a) shall consider recommendations of the National Academies Decadal Survey on Biological

and Physical Sciences in Space in establishing research priorities and in developing proposed enhancements of research capacity and opportunities for the ISS National Laboratory.

(4) RESPONSIBILITY FOR RESEARCH PAYLOAD INTEGRATION.—NASA shall retain its roles and responsibilities in providing research payload physical, analytical, and operations integration during preflight, post-flight, transportation, and orbital phases essential to ensure safe and effective flight readiness and vehicle integration of research activities approved and prioritized by the independent entity selected under subsection (a) and the officials or employees designated under subsection (b).

SEC. 505. OUTREACH PLAN FOR UNITED STATES ISS RESEARCH.

Not later than 18 months after the date of enactment of this Act, the Administrator shall transmit to the Congress a plan prepared by the independent entity selected under section 504(a) for broadening and enhancing the outreach to potential United States Government, academic, and commercial users of the ISS.

SEC. 506. CENTRIFUGE.

(a) ASSESSMENT.—The Administrator shall issue a request for information and shall carry out an assessment

of innovative options for deploying a variable-gravity centrifuge on the ISS. The assessment shall identify the requirements for a variable-gravity centrifuge to support fundamental and applied research on the ISS, including research to help mitigate the risk of long-term spaceflight beyond low-Earth orbit. The assessment shall also—

(1) review the requirements for development, launch, and operation of the facility on the ISS;

(2) provide an estimate of the potential cost and timeline for developing and deploying the centrifuge capabilities evaluated as part of the assessment;

(3) evaluate the status of previous work on development of an in-flight centrifuge for the ISS and the cost and time that would be required to complete the work and launch the facility; and

(4) identify the potential for international collaboration and other potential partnerships or innovative acquisition approaches that could facilitate the development and deployment of a centrifuge facility for the ISS.

(b) TRANSMITTAL TO CONGRESS.—The Administrator shall transmit to the Congress the assessment described in subsection (a) not later than 1 year after the date of enactment of this Act.

SEC. 507. ISS CARGO RESUPPLY REQUIREMENTS AND CONTINGENCY CAPACITY THROUGH 2020.

(a) IN GENERAL.—The Administrator shall ensure the availability of ISS cargo resupply capacity to support the full and productive utilization and the extended operations of the ISS through the year 2020.

(b) ASSESSMENT.—The Administrator shall conduct an assessment of the ISS cargo resupply capacity required to support the enhanced research utilization and extended operations of the ISS through 2020. The assessment shall describe the methodology and assumptions used to define the cargo requirements and provide a breakdown of the cargo resupply requirements (upmass and downmass) to support scientific research, other research and development, operations and maintenance, crew supplies, and other necessary activities. In addition, the assessment shall identify the systems to be used for ISS cargo resupply, the amount of cargo those systems will transport, and the timeline for cargo resupply services to the ISS.

(c) ADDITIONAL RESUPPLY OPTIONS.—The Administrator shall explore with ISS partners options for ensuring the provision of needed upmass to and downmass from the ISS in the event that adequate commercial cargo resupply capabilities are not available during any extended period after the date that the Space Shuttle is retired. Before acquiring from ISS partners upmass or downmass

cargo, the Administrator must certify to the Congress that no United States or commercial cargo resupply capabilities are available.

SEC. 508. EXPLORATION TECHNOLOGY DEVELOPMENT USING THE ISS.

(a) PLAN.—The Administrator shall develop priorities for technology development, testing, and demonstration activities that enable and support NASA's long-term plans for exploration beyond low-Earth orbit and that require the capabilities of the ISS and shall develop a plan, including milestones, a schedule, and an estimate of resource requirements, for carrying out the prioritized activities. The plan shall be developed for the period of fiscal years 2011 through 2020.

(b) TRANSMITTAL TO CONGRESS.—The Administrator shall transmit to the Congress the plan developed under subsection (a) not later than 270 days after the date of enactment of this Act.

SEC. 509. FUNDAMENTAL SPACE LIFE SCIENCE AND PHYSICAL SCIENCES AND RELATED TECHNOLOGY RESEARCH.

(a) STRATEGIC PLAN FOR SCIENCE AND TECHNOLOGY RESEARCH.—

(1) DEVELOPMENT.—The Administrator, in consultation with academia, other Federal agencies,

and other potential stakeholders, shall develop a strategic plan for carrying out competitive, peer-reviewed fundamental space life science and physical sciences and related technology research, including research on phenomena, such as the response of fluids and materials to reduced gravity environments, that need to be understood in developing exploration-related technologies and systems. The plan shall—

(A) address the facilities and instrumentation that would enable and facilitate such research;

(B) be consistent with the priorities and recommendations established by the National Academies in its decadal survey of life and microgravity sciences;

(C) provide a research timeline and identify the resource requirements for its implementation;

(D) include an estimate of the number of students, including undergraduate, graduate, and post-doctoral students, and early-career researchers that would be supported in carrying out the plan; and

(E) identify—

(i) criteria for the proposed space 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; and

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

(ii) instrumentation required to support the measurements and analysis of the

research to be carried out under the strategic plan, including the potential use of instrumentation developed by other countries and the potential for a variable-gravity centrifuge to support the research;

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

(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 ISS, free flyers, or other research platforms.

(2) TRANSMITTAL TO CONGRESS.—Not later than 1 year after the date of enactment of this Act, the Administrator shall transmit to the Congress the strategic plan developed under paragraph (1).

(b) INTEGRATED RESEARCH MANAGEMENT PROGRAM.—

(1) RESPONSIBLE OFFICIAL.—

(A) IN GENERAL.—The Administrator shall ensure that a responsible official is des-

ignated at NASA headquarters to lead a competitive, integrated basic and applied research program in fundamental space life science and physical sciences and related technology.

(B) RESPONSIBILITIES.—The official designated under subparagraph (A) shall be responsible for—

(i) leading near-term and long-term strategic planning pursuant to the research plan developed under subsection (a);

(ii) ensuring the input of the external user community in science planning processes;

(iii) ensuring the implementation of an integrated, multidisciplinary and interdisciplinary, competitive research program in fundamental space life and physical sciences and related technology;

(iv) supporting the appropriate interaction of research investigators and NASA managers and engineers in planning, designing, testing, and operations related to such research projects;

(v) monitoring progress of the program in achieving the objectives and mile-

stones identified in the strategic plan developed under subsection (a)(1); and

(vi) other functions required to support the research program under this section.

(C) COORDINATION AND COMMUNICATIONS.—The Administrator shall ensure that the responsible official coordinates and communicates the fundamental space life science and physical sciences and related technology research activities with relevant entities within NASA, with the ISS research management entity designated under section 504(a), and with other relevant agencies and organizations.

(2) BUDGET REQUEST.—The Administrator shall, as part of the annual NASA fiscal year budget request—

(A) identify and include a description of research being carried out pursuant to section 204 of the National Aeronautics and Space Administration Authorization Act of 2005 (42 U.S.C. 16633);

(B) identify the percentage of the total research budget for ISS research that the re-

search described in subparagraph (A) represents; and

(C) identify the programs proposed for carrying out research activities on the ISS and the proposed funding to support those research programs, including a breakdown for each of the programs identified of the funding requested for competitive grants.

TITLE VI—SPACE SHUTTLE RETIREMENT AND DISPOSITION

SEC. 601. SENSE OF CONGRESS ON THE SPACE SHUTTLE PROGRAM.

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

(1) The Space Shuttle program represents a national asset consisting of critical skills and capabilities, including the ability to lift large payloads into space and return them to Earth.

(2) The Space Shuttle has carried more than 355 people from 16 nations into space.

(3) The Space Shuttle has projected the best of American values around the world, and Space Shuttle crews have sparked the imagination and dreams of the world's youth and young at heart.

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

(1) it is essential that the retirement of the Space Shuttle and the transition to new human space flight capabilities be done in a manner consistent with the legacy of this national asset; and

(2) it is imperative for the United States to retain the skills and the industrial capability needed to implement the new Space Launch System specified in section 302 of this Act.

SEC. 602. DISPOSITION OF ORBITER VEHICLES.

(a) DISPOSITION.—

(1) IN GENERAL.—The Administrator shall retire the Space Shuttle orbiters pursuant to a schedule established by the Administrator and in a manner consistent with provisions of this Act. Upon the termination of the Space Shuttle program, the Administrator shall decommission any remaining Space Shuttle orbiter vehicles according to established safety and historic preservation procedures prior to their designation as surplus government property. The orbiter vehicles shall be made available and located for display and maintenance through a competitive procedure that takes into account geographical diversity, established pursuant to the disposition plan de-

veloped under section 613(a) of the National Aeronautics and Space Administration Authorization Act of 2008 (42 U.S.C. 17761(a)), with priority consideration given to eligible applicants meeting all conditions of that plan which would provide for the display and maintenance of orbiters at locations with the best potential value to the public, including where the location of the orbiters can advance educational opportunities in science, technology, engineering, and mathematics disciplines, and with an historical relationship with—

(A) the launch, flight operations, or processing of the Space Shuttle orbiters;

(B) the retrieval of NASA manned space vehicles; or

(C) significant contributions to human space flight.

(2) ENTERPRISE.—The Smithsonian Institution, which, as of the date of enactment of this Act, houses the Space Shuttle Enterprise, shall determine any new location for the Enterprise.

(b) DISPLAY AND MAINTENANCE.—The orbiter vehicles made available under subsection (a) shall be displayed and maintained through agreements and procedures established pursuant to section 613(a) of the National Aero-

nautics and Space Administration Authorization Act of 2008 (42 U.S.C. 17761(a)).

TITLE VII—EARTH SCIENCE

SEC. 701. SENSE OF CONGRESS ON EARTH OBSERVATIONS.

It is the sense of the Congress that—

(1) Earth observations are critical to scientific understanding and monitoring of the Earth-system, to protecting human health and property, to growing the economy of the United States, and to strengthening the national security and international posture of the United States;

(2) recognizing the number of relevant participants and activities involved with Earth observations within the United States Government and internationally, collaboration should be strengthened;

(3) NASA plays a critical role through its ability to provide data on solar output, sea level rise, atmospheric and ocean temperature, ozone depletion, and air pollution and to observe human and environment relationships;

(4) programs should utilize open standards consistent with international data-sharing principles and obtain and convert data from other Federal agencies, including data from the United States Geological Survey;

(5) data derived from satellites operated by NOAA, as well as from international satellites, are important to the study of climate science, and cooperative relationships and programs should be maintained;

(6) Earth-observing satellites and sustained monitoring programs will continue to play a vital role in climate science, environmental understanding, mitigation of destructive environmental impacts, and contributing to the general national welfare; and

(7) land remote-sensing observation plays a critical role in Earth science, and the national space policy supports this role by requiring operational land remote-sensing capabilities.

SEC. 702. ESSENTIAL SPACE-BASED EARTH SCIENCE AND CLIMATE MEASUREMENTS.

The Administrator, in cooperation with the Administrator of NOAA and other relevant Federal agencies, shall enter into an arrangement with the National Academies for a study, to be completed and transmitted to the Congress not later than 18 months after the date of enactment of this Act, to provide a prioritized list and definition of essential Earth science and climate measurements that should be collected with Federal Government space-based means and maintained and archived by the Federal Gov-

ernment on a continuous basis. The study shall also identify which measurements could potentially be obtained through international partnerships, from data purchases or other arrangements with private or commercial entities, or from other relevant sources.

SEC. 703. EARTH OBSERVATIONS STRATEGY AND INTERAGENCY COORDINATION.

(a) IN GENERAL.—The Director of OSTP, in consultation with the Administrator, the Administrator of NOAA, and other relevant Federal agencies, shall—

(1) develop a strategy for Earth observations by the Federal Government; and

(2) establish a mechanism to ensure greater coordination of the research, operations, transition of experimental research to operations, and activities relating to civilian Earth observation of those Federal agencies, including NASA, that have active programs that either contribute directly or indirectly to such research, operations, and activities.

(b) STRATEGIC IMPLEMENTATION PLAN.—The Director shall develop a strategic implementation plan to put into practice the strategy and mechanism required under subsection (a)(1) and (2) that is both updated at least every 3 years and includes a process for external independent advisory input. The plan shall include—

(1) a description of the responsibilities of the various Federal agencies in Earth observations;

(2) recommended cost-sharing and procurement arrangements between Federal agencies and other entities, including international arrangements;

(3) provisions to ensure the sustained, long term space-based climate observations; and

(4) a description of the formal mechanism for planning, coordinating, and supporting the transitioning of NASA research findings, assets, and capabilities to NOAA operations and other relevant Federal agency operations, which may include the establishment of a formal or informal interagency transition office.

(c) REPORT.—The Director shall transmit to the Congress within 90 days after the date of enactment of this Act a report on the strategy and mechanism under subsection (a) and shall transmit to the Congress within 270 days after such date of enactment the strategic implementation plan under subsection (b).

SEC. 704. DECADAL SURVEY MISSIONS IMPLEMENTATION FOR EARTH OBSERVATION.

The Administrator shall undertake to implement, as appropriate, missions identified in the National Research Council's Earth Science Decadal Survey, especially the top

priorities, within the scope of the funds authorized for the Earth Science Mission Directorate.

SEC. 705. EXPANSION OF EARTH SCIENCE APPLICATIONS.

It is the sense of the Congress that—

(1) NASA's Earth science data can increasingly aid efforts to improve the human condition and provide greater security; and

(2) NASA's contributions with respect to Earth science applications and NASA's role in such efforts should be supported.

SEC. 706. EARTH SCIENCE APPLICATIONS.

The Administrator shall develop guidelines and procedures for entering into arrangements with State, local, regional, and tribal government agencies and other Federal agencies that seek to benefit from ongoing NASA technical information, capabilities, and support related to Earth science applications and decision support systems. The guidelines and procedures shall include a definition of the partnership, milestones, cost-sharing, and project-relevant criteria for the project. The guidelines and procedures shall define arrangements for reimbursement for NASA services, as appropriate, including the use of NASA spacecraft and aircraft, sensors, equipment, facilities, and associated personnel for the purpose of aiding State, local,

regional, and tribal governments and other Federal agencies.

SEC. 707. COMMERCIAL REMOTE SENSING DATA PURCHASES PILOT PROJECT.

(a) WORKSHOP.—

(1) IN GENERAL.—Not later than 9 months after the date of enactment of this Act, the Administrator shall organize a workshop to identify the essential criteria for a pilot project for purchasing commercial remote sensing data to support research in Earth science and for applied uses of the data to address State, local, regional, and tribal needs.

(2) PARTICIPANTS.—The workshop shall include relevant commercial remote sensing data providers, scientists, remote sensing data users, and other Federal agencies (including NOAA), among other relevant stakeholders.

(3) SUBJECT MATTER.—The workshop shall address lessons learned and recommendations related to past experience with commercial data purchases, including those outlined in the National Research Council report entitled ''Toward New Partnerships in Remote Sensing: Government, the Private Sector, and Earth Science Research''.

(b) PILOT PROJECT.—Not later than 18 months after the date of enactment of this Act, after consideration of the results of the workshop under subsection (a) and after obtaining relevant information from potential commercial remote sensing data providers and users of such data, the Administrator shall establish a pilot project for the provision, through competitive solicitations, of commercial remote sensing data for research and applied uses of the data to serve State, local, regional, and tribal needs.

SEC. 708. INSTRUMENT TEST-BEDS AND VENTURE CLASS MISSIONS.

(a) IN GENERAL.—The Administrator shall pursue innovative ways to fly instrument-level payloads for early demonstration or as co-manifested payloads.

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

(1) the use of the ISS as an accessible platform for the placement of instrument-level payloads for early demonstration or as co-manifested payloads, where practicable, should be encouraged; and

(2) in order to address the cost and schedule challenges associated with large flight systems, NASA should pursue smaller systems where practicable and warranted.

SEC. 709. SENSE OF CONGRESS ON NPOESS FOLLOW-ON PROGRAM.

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

(1) Polar orbiting satellites are vital for weather prediction, climate and environmental monitoring, national security, emergency response, and climate research.

(2) The National Polar Orbiting Environmental Satellite System (NPOESS) has suffered from years of steadily rising cost estimates and schedule delays.

(3) An independent review team recommended that NPOESS be restructured to improve the probability of success and to protect the continuity of weather and climate data.

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

(1) the Congress supports restructuring the program to minimize schedule slips and cost overruns, to clarify the responsibilities and accountability of NASA, NOAA, and the Department of Defense, and to retain necessary coordination across civil and defense weather and climate programs;

(2) the Administrator of NOAA and the Secretary of Defense should maximize the use of assets from the NPOESS as they establish the NOAA

Joint Polar Satellite System at NASA's Goddard Space Flight Center and the Department of Defense's Defense Weather Satellite System;

(3) the Administrator of NOAA and the Secretary of Defense should structure their programs in order to maintain satellite data continuity for the Nation's weather and climate requirements; and

(4) the Administrator of NOAA and the Secretary of Defense should provide immediate notification to the Congress of any impediments that may require congressional intervention in order for the agencies to meet launch readiness dates, together with any recommended actions.

SEC. 710. REPORT ON TEMPERATURE RECORDS.

Not later than 1 year after the date of enactment of this Act, the Administrator shall issue to the Congress a report detailing the extent and degree to which NASA's temperature records overlap with the records at the Climatic Research Unit at the University of East Anglia, the reasons for and sources of that overlap, and the possibility that NASA's temperature records have been compromised.

TITLE VIII—SPACE SCIENCE

SEC. 801. TECHNOLOGY DEVELOPMENT.

The Administrator shall ensure that the Science Mission Directorate maintains a long term technology devel-

opment program for space and Earth science in coordination with the overall NASA technology plan under section 911.

SEC. 802. SUBORBITAL RESEARCH ACTIVITIES.

(a) FINDING.—The report of the National Academy of Sciences entitled ''Revitalizing NASA's Suborbital Program: Advancing Science, Driving Innovation and Developing Workforce'' found that suborbital science missions were critical to building an aerospace workforce capable of meeting the needs of current and future human and robotic space exploration.

(b) MANAGEMENT.—

(1) DESIGNATION.—The Administrator shall designate an individual to lead NASA's suborbital and airborne program.

(2) REPORTING.—Such individual shall report directly to the Associate Administrator of the Science Mission Directorate.

(3) RESPONSIBILITIES.—In order to ensure the long term recognition of the combined value of suborbital facilities and capabilities to the Science Mission Directorate, to NASA, and to the Nation, such individual shall be responsible for—

(A) the development of short- and long-term strategic plans for maintaining, renewing,

and extending suborbital facilities and capabilities;

(B) the monitoring of progress towards goals in the plans; and

(C) the integration of suborbital activities and workforce development within NASA.

(c) ESTABLISHMENT OF SUBORBITAL RESEARCH PROGRAM.—

(1) IN GENERAL.—In order to maintain critical skills in the aerospace workforce, the Administrator shall establish a Suborbital Research Program within the Science Mission Directorate to advance science and to train the next generation of scientists and engineers in systems engineering and systems integration.

(2) PROGRAM REQUIREMENTS.—The Suborbital Research Program shall—

(A) include the use of sounding rockets, aircraft, high altitude balloons, and other NASA suborbital launch vehicles;

(B) integrate existing suborbital research programs with orbital missions at the discretion of the individual designated under subsection (b); and

(C) emphasize the participation of undergraduate and graduate students and post-doctoral researchers when announcements of opportunity are formulated.

(d) STRATEGIC PLAN.—Not later than 1 year after the date of enactment of this Act, the Administrator shall transmit to the Congress a strategic plan to support the full and productive use of NASA's suborbital and airborne assets as a foundation for meeting its scientific research, engineering, workforce development, and education goals and objectives across NASA Centers and mission directorates and in partnership with institutions of higher education and other relevant external institutions. The strategic plan shall—

(1) be developed in consultation with relevant NASA Centers and mission directorates and with input from institutions of higher education, nonprofit research institutions, and private industry;

(2) identify the needs and priorities for using NASA's suborbital and airborne assets to support NASA's scientific research, engineering, workforce development, and educational goals;

(3) provide the number and type of suborbital missions anticipated in each fiscal year and the

number of undergraduate and graduate students expected to participate in the missions;

(4) identify and prioritize the required infrastructure investments, including maintenance, upgrades, and any enhanced facility or equipment capabilities, that are required to carry out the needs and priorities described in paragraph (2); and

(5) provide an estimate of the budget requirements and a schedule and timeline for implementing the plan.

(e) REPORT.—The Administrator shall transmit annually to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on the number and type of suborbital missions conducted in the preceding fiscal year and the number of undergraduate and graduate students participating in the missions.

SEC. 803. SENSE OF CONGRESS ON OVERALL SCIENCE PORTFOLIO.

The Congress reaffirms its sense 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.

SEC. 804. IN-SPACE SERVICING.

Pursuant to section 502 of the National Aeronautics and Space Administration Authorization Act of 2008 (42 U.S.C. 17742), the Administrator shall continue to take all necessary steps to ensure that provisions are made for in-space or human servicing and repair of all future observatory-class scientific spacecraft intended to be deployed in Earth orbit or at a Lagrangian point to the extent practicable and appropriate. The Administrator shall ensure that NASA investments and future capabilities for space technology, robotics, and human space flight take the ability to service and repair these spacecraft into account, where appropriate, and incorporate such ability into design and operational plans.

SEC. 805. DECADAL RESULTS.

(a) IN GENERAL.—The Administrator shall undertake to implement, as appropriate, missions identified in the National Research Council's space science decadal surveys in each mission area, with a focus on the top priorities, within the scope of the funds authorized for the Science Mission Directorate.

(b) EFFECT ON BUDGET REQUEST.—The Administrator shall take into account the current decadal surveys

from the National Academies' Space Studies Board when submitting the President's budget request to the Congress.

SEC. 806. ONGOING RESTORATION OF RADIOISOTOPE THERMOELECTRIC GENERATOR MATERIAL PRODUCTION.

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

(1) The United States has led the world in the scientific exploration of space for nearly 50 years.

(2) Missions such as Viking, Voyager, Cassini, and New Horizons have greatly expanded or will greatly expand knowledge of our solar system and planetary characteristics and evolution.

(3) Radioisotope power systems are the only available power sources for deep space missions, making it possible to travel to such distant destinations as Mars, Jupiter, Saturn, Pluto, and beyond and to maintain operational control and systems viability for extended mission durations.

(4) Current radioisotope power systems supplies and production will not fully support NASA missions planned even in the next decade.

(5) Without a new domestic production capability, the United States will no longer have the

means to explore the majority of the solar system by the end of this decade.

(6) Continuing to rely on Russia or other foreign sources for radioisotope power system fuel production is not a secure option.

(7) Reestablishing domestic production will require a long lead-time. Thus, meeting future space exploration mission needs requires that a restart project begin at the earliest opportunity.

(b) IN GENERAL.—The Administrator, in coordination with the Secretary of Energy, shall pursue a joint approach beginning in fiscal year 2011 towards restarting and sustaining the domestic production of radioisotope thermoelectric generator material for deep space and other science and exploration missions. Funds authorized by this Act for NASA shall be made available under a reimbursable agreement with the Department of Energy for the purpose of reestablishing facilities to produce fuel required for radioisotope thermoelectric generators to enable future missions.

(c) REPORT.—Within 120 days after the date of enactment of this Act, the Administrator and the Secretary of Energy shall transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the

Senate a joint report on coordinated agreements, planned implementation, and anticipated schedule, production quantities, and mission applications under this section.

(d) ANALYSIS OF REQUIREMENTS AND RISKS.—The Administrator, in consultation with other Federal agencies, shall conduct an analysis of NASA requirements for radioisotope power system material to carry out planned, high priority robotic missions in the solar system and other surface exploration activities beyond low-Earth orbit, as well as the risks to NASA missions in meeting those requirements, or any additional requirements, due to a lack of adequate domestic production of radioisotope power system material. The analysis shall—

(1) detail NASA's current projected mission requirements for radioisotope power system material;

(2) explain the assumptions used to determine NASA'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 Advanced Stirling Radioisotope Generator technology, including the development of flight readiness requirements; and

(C) the risks, implications, and contingencies for NASA 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 NASA programs of any potential delays in achieving the schedule and milestones for planned domestic production of radioisotope power system material;

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

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

(e) TRANSMITTAL.—Not later than 180 days after the date of enactment of this Act, the Administrator shall transmit to the Congress the results of the analysis.

SEC. 807. REVIEW OF EXPLORER PROGRAM.

(a) ESTABLISHMENT.—Not later than 120 days after the date of enactment of this Act, the Administrator shall enter into an arrangement with the National Academies to conduct a review of the Explorer Program and offer any recommendations as it considers necessary.

(b) SCOPE.—Such review shall address at least the following:

(1) A review of existing or recent Explorer program elements such as NASA's University Class Explorer (UNEX), Small Explorer (SMEX), Medium Class Explorer (MIDEX), Explorers (EX), and Missions of Opportunity to assess the degree of—

(A) innovation in instrumentation and other technology and space mission elements;

(B) flexibility and new approaches in management and collaboration;

(C) project implementation within the planned budget and schedule; and

(D) training opportunities for space scientists and engineers.

(2) The status, capability, and availability of launch vehicles and infrastructure to support the Explorer program elements.

(3) Projected launch capabilities and facilities for Explorers, including private sector launch capabilities.

(4) The frequency of Explorer missions.

(5) The balance of Explorer missions among theme areas and between larger and smaller mission sizes.

(6) The opportunities and challenges for partner participation in Explorer missions, including international and interagency collaborations.

(7) The contributions of Explorers to a robust space science program, and the value of the Explorer program for the Nation's scientific research and engineering community, including its impact on the training of younger researchers and engineers.

(c) REPORT.—Not later than 16 months after the date of enactment of this Act, the Administrator shall transmit to the Congress the review and a plan for responding to the recommendations of the review.

SEC. 808. COLLABORATION WITH ESMD AND SOMD ON ROBOTIC MISSIONS.

(a) IN GENERAL.—The Administrator shall ensure that the Exploration Systems Mission Directorate and the Space Operations Mission Directorate coordinate with the Science Mission Directorate on an overall approach and plan for interagency and international collaboration on robotic missions that are NASA or internationally developed, including missions to the Moon or its vicinity, Lagrangian points, near-Earth objects, and Mars.

(b) PLAN.—Within 90 days after the date of enactment of this Act, the Administrator shall transmit to the Committee on Science and Technology of the House of

Representatives and the Committee on Commerce, Science, and Transportation of the Senate a plan for implementation of the collaborative approach required by subsection (a).

(c) RESTRICTION.—The Administrator may not cancel or initiate any Exploration Systems Mission Directorate or Science Mission Directorate robotic project before the plan is transmitted under subsection (b).

SEC. 809. NEAR-EARTH OBJECT SURVEY AND POLICY WITH RESPECT TO THREATS POSED.

(a) RESPONSIBLE OFFICIAL.—

(1) IN GENERAL.—The Administrator shall designate a responsible official for coordinating NASA's near-Earth object observation activities and NASA's interactions with other Federal agencies and international entities on near-Earth object surveys, defense, and efforts related to addressing any threats to the United States posed by near-Earth objects.

(2) REPORTING.—The responsible official shall report directly to the Administrator.

(b) REAFFIRMATION OF POLICY ON NEAR-EARTH OBJECT SURVEY.—The Congress reaffirms the direction set forth in section 321(d)(1) of the National Aeronautics and Space Administration Authorization Act of 2005 (42 U.S.C. 16691(d)(1)) that directed the Administrator to

''plan, develop, and implement a Near-Earth Object Survey program to detect, 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''.

(c) REAFFIRMATION OF POLICY WITH RESPECT TO THREATS POSED BY NEAR-EARTH OBJECTS.—The Congress reaffirms the direction set forth in section 804 of the National Aeronautics and Space Administration Authorization Act of 2008 (42 U.S.C. 17794) that directed the Director of OSTP by October 15, 2010, to—

(1) develop a policy for notifying Federal agencies and relevant emergency response institutions of an impending near-Earth object threat, if near-term public safety is at risk; and

(2) recommend a Federal agency or agencies to be responsible for—

(A) protecting the United States from a near-Earth object that is expected to collide with Earth; and

(B) implementing a deflection campaign, in consultation with international bodies, should one be necessary.

(d) ARECIBO OBSERVATORY.—The Congress reiterates its support for the use of the Arecibo Observatory

for NASA-funded near-Earth object-related activities. The Administrator shall coordinate with the Director of the National Science Foundation to ensure the availability of the Arecibo Observatory's planetary radar to support these activities.

(e) PLAN.—Not later than 270 days after the date of enactment of this Act, the Administrator shall transmit to the Congress a plan for carrying out the direction reaffirmed by subsection (b).

(f) AUTHORIZATION OF APPROPRIATIONS.—From the funds authorized for Planetary Science in title I, $1,000,000 in fiscal year 2012 and $1,000,000 in fiscal year 2013 shall be for supporting competitively awarded grants for investigation of innovative approaches to carrying out the congressionally mandated survey of near-Earth objects equal to or greater than 140 meters in diameter.

SEC. 810. SPACE WEATHER.

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

(1) Space weather events pose a significant threat to modern technological systems.

(2) The effects of severe space weather events on the electric power grid, telecommunications and entertainment satellites, airline communications dur-

ing polar routes, and space-based position, navigation, and timing systems could have significant societal, economic, national security, and health impacts.

(3) Earth and space observing satellites, such as the Advanced Composition Explorer, Geostationary Operational Environmental Satellites, Polar Operational Environmental Satellites, and Defense Meteorological Satellites, provide crucial data necessary to predict space weather events.

(b) STRATEGY AND IMPLEMENTATION PLAN.—The Director of OSTP, in coordination with the Administrator and with other relevant Federal agencies, space weather coordinating bodies, industry, academia, and other stakeholders, shall prepare a long-term strategy for a sustainable space weather program and shall develop a plan to implement the strategy. The implementation plan shall—

(1) provide an approach for improving the Nation's ability to prepare, avoid, mitigate, respond to, and recover from potentially devastating impacts of space weather events;

(2) coordinate the operational activities of the National Space Weather Program Council members, including the NOAA Space Weather Prediction Center and the United States Air Force Weather Agency;

(3) detail the current data sources, both space- and ground-based, that are necessary for space weather forecasting;

(4) detail the space- and ground-based systems that will be required to gather data necessary for space weather forecasting for the next 10 years;

(5) define individual agency responsibilities for carrying out the strategy;

(6) identify the milestones and schedule required for each agency's contributions;

(7) provide an estimate of the resources required for each agency to carry out its responsibilities;

(8) establish a process for coordinating agency responsibilities, programs, and budgets required for implementing the plan; and

(9) identify opportunities for private sector and international contributions to implementing the plan.

(c) STUDY ON PREDICTION.—

(1) IN GENERAL.—The Director of OSTP shall enter into an arrangement with the National Academies to assess the status of capabilities for space weather prediction and recommend the highest priority basic research, infrastructure, and operational

needs required to improve the Nation's ability to predict space weather events.

(2) INCLUSION.—The study shall also address the benefits of space weather prediction.

(3) REPORT.—Not later than 18 months after the date of enactment of this Act, the Director shall transmit to the Congress the results of the study.

TITLE IX—AERONAUTICS AND SPACE TECHNOLOGY

SEC. 901. SENSE OF CONGRESS ON AERONAUTICS RESEARCH AND DEVELOPMENT.

It is the sense of the Congress that—

(1) aeronautics research remains vital to NASA's mission and deserves continued support;

(2) NASA aeronautics research should be guided by, and consistent with, the National Aeronautics Research and Development Policy;

(3) the OSTP-led National Science and Technology Council Aeronautics Science and Technology subcommittee remains essential to developing and coordinating national aeronautics research and development plans and their prioritization for funding;

(4) it is also important that such national aeronautics research and development plans include a focus on research, development, testing, and evalua-

tion infrastructure plans, as well as research and development goals and objectives; and

(5) technology research conducted by NASA as part of the larger national aeronautics effort helps to secure, sustain, and advance the leadership role of the United States in global aviation.

SEC. 902. AERONAUTICS RESEARCH GOALS.

The Administrator shall ensure that NASA maintains a strong aeronautics research portfolio ranging from fundamental research through systems research with specific research goals, including the following:

(1) AIRSPACE CAPACITY.—NASA's Aeronautics Research Mission Directorate shall address research needs of the Next Generation Air Transportation System, including the ability of the National Airspace System to handle up to 3 times the current travel demand by 2025.

(2) ENVIRONMENTAL SUSTAINABILITY.—The Directorate shall consider and pursue concepts to reduce noise, emissions, and fuel consumption while maintaining high safety standards and shall pursue research related to alternative fuels.

(3) AVIATION SAFETY.—The Directorate shall proactively address safety challenges with new and

current air vehicles and with operations in the Nation's current and future air transportation system.

SEC. 903. RESEARCH COORDINATION AND COLLABORATION.

(a) DEPARTMENT OF DEFENSE.—The Administrator shall continue to coordinate with the Secretary of Defense, through the National Partnership for Aeronautics Testing, to develop and implement joint plans for those elements of the Nation's research, development, testing, and engineering infrastructure that are of common interest and use.

(b) FEDERAL AVIATION ADMINISTRATION.—The Administrator shall continue to coordinate with, and work closely with, the Administrator of the Federal Aviation Administration, under the framework of the Senior Policy Council, in the development of the Next Generation Air Transportation Program. The Administrator shall encourage the Council to explore areas for greater collaboration, including areas where NASA can help to accelerate the development and demonstration of NextGen technologies.

SEC. 904. ENVIRONMENTALLY FRIENDLY AIRCRAFT RESEARCH AND DEVELOPMENT INITIATIVE.

Section 302 of the National Aeronautics and Space Administration Authorization Act of 2008 (42 U.S.C. 17721) is amended—

(1) by striking ''The Administrator'' and inserting the following:

''(a) IN GENERAL.—The Administrator''; and

(2) by adding at the end the following:

''(b) PLAN.—

''(1) IN GENERAL.—The Administrator shall develop a plan and associated timetable for this initiative identifying key milestones, including projected flight demonstrations to validate vehicle and technology concepts in a relevant environment.

''(2) TRANSMITTAL.—Not later than 270 days after the date of enactment of the National Aeronautics and Space Administration Authorization Act of 2010, the Administrator shall transmit the plan to the Congress.''.

SEC. 905. RESEARCH ON NEXTGEN AIRSPACE MANAGEMENT CONCEPTS AND TOOLS.

The Administrator shall review at least annually the alignment and timing of NASA's research and development activities in support of the NextGen airspace management modernization initiative and shall make any necessary adjustments by reprioritizing or retargeting NASA's research and development activities in support of the NextGen initiative.

SEC. 906. RESEARCH ON AIRCRAFT CABIN AIR QUALITY.

The Administrator shall initiate research on aircraft cabin air quality that complements research conducted by the Federal Aviation Administration and its Center of Excellence on Research in the Intermodal Transport Environment, including research on innovative aircraft cabin air quality sensors operating during ground and flight operations and on innovative warning and mitigation technologies for poor air quality.

SEC. 907. RESEARCH ON ONBOARD VOLCANIC ASH SENSOR SYSTEMS.

(a) IN GENERAL.—The Administrator shall conduct a study to assess the feasibility of establishing a project focused on the development of a low-cost onboard volcanic ash sensor system.

(b) SPECIFICATIONS.—The study shall consider, at a minimum—

(1) NASA's unique capabilities;

(2) opportunities for collaboration, both nationally and internationally; and

(3) projected resource requirements, research milestones, and potential accomplishments.

SEC. 908. AERONAUTICS TEST FACILITIES.

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

(1) NASA must reverse the deteriorating condition of its aeronautics ground test facilities and infrastructure, as this condition is hampering the effectiveness and efficiency of aeronautics research performed by both NASA and industry participants making use of NASA facilities, thus reducing the competitiveness of the United States aviation industry;

(2) NASA has a role in providing test capabilities that are not economically viable as commercial entities and thus are not available elsewhere; and

(3) to ensure continued access to reliable and efficient national-class test capabilities by researchers, NASA should seek to establish strategic partnerships with other Federal agencies, academic institutions, and industry.

(b) PLAN.—The Administrator shall develop a plan to stabilize and, where possible, reverse the deterioration of NASA's aeronautics ground test facilities. The Administrator shall transmit such plan to the Congress not later than 1 year after the date of enactment of this Act.

SEC. 909. EXPANDED RESEARCH PROGRAM ON COMPOSITE MATERIALS USED IN AEROSPACE.

The Administrator shall expand NASA's research program on composite materials used in aerospace applications to address—

(1) progressive damage analysis, aging, inspection techniques, and new manufacturing and repair techniques; and

(2) ways to mitigate how the environment, operating fluids, and mechanical loads interact with composite materials over time.

SEC. 910. GOAL FOR NASA SPACE TECHNOLOGY.

(a) IN GENERAL.—It is critical that NASA maintain a NASA space technology base that helps align mission directorate investments and supports long term needs to complement mission directorate-funded research and support, where appropriate, multiple users, building upon its Innovative Partnerships Program and other partnering approaches.

(b) ESTABLISHMENT OF SPACE TECHNOLOGY PROGRAM.—The Administrator shall establish a space technology program to enable research and development on advanced space technologies and systems that are independent of specific space mission flight projects. The program shall support—

(1) early-stage concepts and innovation;

(2) development of innovative technologies in areas such as in-space propulsion, power generation and storage, liquid rocket propulsion, avionics, structures, and materials that may enable new approaches to human and robotic space missions; and

(3) flight demonstrations of technologies, including those that have the potential to benefit multiple NASA mission directorates, other Federal agencies, and the commercial space industry.

(c) EXPLORATION TECHNOLOGY DEVELOPMENT.—The program established in subsection (b) shall also support the research, development, and demonstration of enabling technologies in areas such as autonomous systems and avionics, human-robotics systems, extravehicular technology, entry, descent, and landing technology, space power systems, closed loop life support systems, cryogenic propellant storage and transfer, and in-situ resource utilization, among other technology areas, in support of future exploration missions.

(d) PROCEDURE.—In establishing the space technology program under this section, the Administrator shall—

(1) to the maximum extent practicable, use a competitive process to select projects to be supported as part of the program;

(2) support the development of an organization to investigate innovative concepts for technological approaches, systems, architectures, or mission strategies;

(3) make use of small satellites and NASA suborbital platforms, to the extent practicable, to demonstrate space technology concepts and developments; and

(4) undertake partnerships with other Federal agencies, institutions of higher education, private industry, and other spacefaring nations, as appropriate.

SEC. 911. IMPLEMENTATION PLAN FOR NASA SPACE TECHNOLOGY.

Within 120 days after the date of enactment of this Act, NASA shall transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a plan that outlines—

(1) how NASA's space technology program will meet the goal described in section 910, including an explanation of how the plan will link to other mission directorate technology efforts outlined in sections 801 and 802 of this Act;

(2) how the program will be structured;

(3) the process for prioritizing and funding space technology efforts carried out within the program;

(4) the performance measures, and a process for evaluating the progress on the performance measures, established for the program; and

(5) advisory input from non-NASA experts, including experts from academia, other Federal agencies, industry, and research institutions.

SEC. 912. DECADAL SURVEY FOR NASA SPACE TECHNOLOGY.

The Administrator shall enter into an arrangement with the National Academies for a decadal survey study to make recommendations for research and development priorities for NASA's space technology program over the next decade. Included in the decadal survey shall be an identification and prioritization of key technology research and development activities needed to enable a robust exploration technology program, from basic research and development through flight demonstrations. The Administrator shall transmit the results of the study to the Congress not later than 20 months after the date of enactment of this Act.

SEC. 913. USE OF OPERATIONAL COMMERCIAL SUBORBITAL VEHICLES FOR RESEARCH, DEVELOPMENT, AND EDUCATION.

(a) IN GENERAL.—The report of the National Academy of Sciences entitled ''Revitalizing NASA's Suborbital Program: Advancing Science, Driving Innovation and Developing Workforce'' found that suborbital science missions were critical to building an aerospace workforce capable of meeting the needs of current and future human and robotic space exploration.

(b) ESTABLISHMENT.—The Administrator shall establish a Commercial Reusable Suborbital Research Program within the Space Technology Program that shall fund the development of competitively selected payloads for scientific research, technology development, and education, and shall provide flight opportunities, consistent with the requirements of subsection (h), for those payloads to microgravity environments and suborbital altitudes that meet the requirements of such scientific research, technology development, and education. The Commercial Reusable Suborbital Research Program may fund engineering and integration demonstrations, proofs of concept, or experiments for commercial reusable vehicle flights, once the vehicles have met the requirements of subsection (h). The program shall coordinate with NASA's mission direc-

torates to help achieve NASA's research, technology, and education goals.

(c) MANAGEMENT.—The Administrator shall designate an officer or employee of the Space Technology Program to act as the responsible official for the Commercial Reusable Suborbital Research Program in the Space Technology Program. The designee shall be responsible for the development of short-term and long-term strategic plans related to the use of commercial reusable suborbital vehicles to support NASA's requirements for competitively-selected science, technology demonstration, and educational activities.

(d) PLAN.—The Administrator shall prepare a plan describing the processes required to support the use of commercial reusable suborbital flight vehicles for carrying out competitively selected scientific and engineering investigations and educational activities. The plan shall—

(1) describe NASA, space flight operator, and supporting contractor responsibilities for developing standard payload interfaces and conducting payload safety analyses, payload integration and processing, payload operations, and safety assurance for NASA-sponsored space flight participants, among other functions required to fly NASA-sponsored payloads

and space flight participants on commercial suborbital vehicles;

(2) identify NASA-provided hardware, software, or services that may be provided to space flight operators on a cost-reimbursable basis, through agreements entered into under section 203(c)(5) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2473(c)(5)), or on a contractual basis; and

(3) describe the United States Government and space flight operator responsibilities for liability and indemnification with respect to commercial suborbital vehicle flights that involve NASA-sponsored payloads or activities, NASA-supported space flight participants, or other NASA-related contributions.

(e) COMMERCIAL REUSABLE SUBORBITAL CAPABILITIES AND RISKS.—The Administrator shall assess and characterize the potential capabilities and performance of commercial reusable suborbital vehicles for addressing scientific research, including research requiring access to low gravity and microgravity environments, for carrying out technology demonstrations related to science, exploration, or space operations requirements, and for providing opportunities for educating and training space scientists and engineers, once those vehicles become operational. The assessment shall also characterize the risks of using poten-

tial commercial reusable suborbital flights to NASA-sponsored researchers, investigators, and scientific investigations and flight hardware. The Administrator shall make a determination on the need to enter into arrangements with commercial reusable suborbital service providers for flights or flight services to acquire analytical data to inform the assessment.

(f) TRANSMITTAL.—The plan and assessment described in subsections (d) and (e) shall be transmitted to the Congress not later than 1 year after the date of enactment of this Act.

(g) REPORT.—The Administrator shall transmit a report annually to the Congress describing progress in carrying out the Commercial Reusable Suborbital Research Program, including the number and type of suborbital missions planned in each fiscal year.

(h) INDEMNIFICATION AND LIABILITY.—The Administrator shall not proceed with a request for proposals, award any contract, commit any United States Government funds, or enter into any other agreement for the provision of a commercial reusable suborbital vehicle launch service of a NASA-sponsored payload or spaceflight participant until indemnification and liability issues associated with the use of such systems by the United States Government shall have been addressed and the Adminis-

trator has provided to the Congress a report describing the indemnification and liability provisions that are planned to be included in such contracts or agreements.

TITLE X—EDUCATION

SEC. 1001. STEM EDUCATION AND TRAINING.

(a) IN GENERAL.—In order to create the diverse, skilled scientific and technical workforce essential to meeting the challenges facing NASA and the Nation in the 21st century, the Administrator shall develop, conduct, support, promote, and coordinate formal and informal educational and training activities that leverage NASA's unique content expertise and facilities to—

(1) contribute to improving science, technology, engineering, and mathematics (STEM) education and training at all levels in the United States; and

(2) enhance awareness and understanding of STEM, including space and Earth sciences, aeronautics, and engineering.

(b) PROGRAMS.—

(1) IN GENERAL.—The Administrator shall carry out evidence-based programs designed to—

(A) increase student interest and participation, including by women, underrepresented minority students, and students in rural schools;

(B) improve public literacy and support; and

(C) improve the teaching and learning of space and Earth sciences, aeronautics, engineering, and other STEM disciplines supported by NASA.

(2) INCLUDED PROGRAMS.—Programs authorized under this subsection may include—

(A) informal educational programming designed to excite and inspire students and the general public about space and Earth science, aeronautics, engineering, and other STEM disciplines supported by NASA while strengthening their content knowledge in these disciplines;

(B) teacher training and professional development opportunities for preservice and inservice elementary and secondary school teachers designed to increase the content knowledge of teachers in space and Earth science, aeronautics, engineering, and other STEM disciplines supported by NASA, especially through hands-on research and technology experiences;

(C) research opportunities for secondary school students, including internships at NASA

and its Centers, that provide secondary school students with hands-on research and technology experiences as well as exposure to working scientists and engineers;

(D) research opportunities at NASA and its Centers for undergraduate and graduate students pursuing degrees in space and Earth sciences, aeronautics, engineering, and other STEM disciplines supported by NASA;

(E) competitive scholarships, fellowships, and traineeships for undergraduate and graduate students in space and Earth sciences, aeronautics, engineering, and other STEM disciplines supported by NASA; and

(F) competitive grants for institutions of higher education, with special consideration for minority serving institutions, including 2-year institutions of higher education, to establish or expand degree programs or courses in space and Earth sciences, aeronautics, engineering, and other STEM disciplines supported by NASA.

(c) ORGANIZATION OF STEM EDUCATION PROGRAMS.—

(1) DIRECTOR OF STEM EDUCATION.—The Administrator shall appoint or designate a Director of STEM Education, who shall have the principal responsibility to oversee and coordinate all NASA programs and activities in support of STEM education and training, including space and Earth sciences, aeronautics, and engineering.

(2) QUALIFICATIONS.—The Director shall be an individual who, by reason of professional background and experience, is specially qualified to advise the Administrator on all matters pertaining to STEM education and training, including space and Earth sciences, aeronautics, and engineering, at NASA.

(3) DUTIES.—The Director shall—

(A) oversee and coordinate all programs in support of STEM education and training, including space and Earth sciences, aeronautics, and engineering;

(B) represent NASA as the principal interagency liaison for all STEM education and training programs, unless otherwise represented by the Administrator or the Associate Administrator for Education;

(C) prepare the annual budget and advise the Associate Administrator for Education and

the Administrator on all budgetary issues for STEM education and training relative to the programs of NASA;

(D) establish, periodically update, and maintain a publicly accessible online inventory of STEM education and training programs and activities;

(E) develop, implement, and update the STEM education and training strategic plan required under subsection (d);

(F) increase, to the maximum extent practicable, the participation and advancement of women and underrepresented minorities at every level of STEM education and training; and

(G) perform such other matters relating to STEM education and training as are required by the Administrator or the Associate Administrator for Education.

(d) STRATEGIC PLAN.—The Director of STEM Education shall develop, implement, and update once every 3 years a STEM education and training strategic plan for NASA. The plan shall—

(1) identify and prioritize annual and long-term STEM education and training goals and objectives for NASA;

(2) describe the role of each NASA program or activity in contributing to the goals and objectives identified under paragraph (1);

(3) specify the metrics that will be used to assess progress toward achieving those goals and objectives; and

(4) describe the approaches that will be taken to assess the effectiveness of each STEM education program and activity supported by NASA.

(e) OUTREACH TO STUDENTS FROM UNDERREPRESENTED GROUPS.—The Administrator shall seek to ensure that program participants include minority and underrepresented groups, including students from a high-need local education agency as defined in section 2102(3) of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 6602(3)).

(f) CONSULTATION AND PARTNERSHIP WITH OTHER AGENCIES.—In carrying out the programs and activities authorized under this section, the Administrator shall—

(1) consult with the Secretary of Education and the Director of the National Science Foundation regarding activities designed to improve elementary

and secondary STEM education and training, and recruit minorities that are underrepresented in STEM teaching; and

(2) consult and partner with the Director of the National Science Foundation in carrying out programs under this section designed to build capacity in STEM education and training at the undergraduate and graduate level.

SEC. 1002. SENSE OF CONGRESS ON THE EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH.

It is the sense of the Congress that—

(1) the Experimental Program to Stimulate Competitive Research of NASA strengthens the research capabilities of jurisdictions that historically have not participated equally in competitive aerospace and aerospace-related research activities;

(2) the Experimental Program to Stimulate Competitive Research of NASA has provided the American taxpayer with a solid return on investment;

(3) the Experimental Program to Stimulate Competitive Research of NASA has helped to achieve broader geographical distribution of research and development support by improving the research

infrastructure in States that historically have received limited Federal research and development funds; and

(4) in order to continue improvement and to increase efficiency, the award of grants under the Experimental Program to Stimulate Competitive Research of NASA should be coordinated with the award of grants under the Experimental Program to Stimulate Competitive Research of the National Science Foundation, the Department of Energy, the Department of Agriculture, the Department of Defense, the Environmental Protection Agency, and the National Institutes of Health.

SEC. 1003. STUDY OF POTENTIAL COMMERCIAL ORBITAL PLATFORM PROGRAM IMPACT ON SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS.

A fundamental and unique capability of NASA is in stimulating science, technology, engineering, and mathematics education in the United States. In ensuring maximum use of that capability, the Administrator shall carry out a study to—

(1) identify the benefits of and lessons learned from ongoing and previous NASA orbital student programs including, at a minimum, the Get Away

Special (GAS) and Earth Knowledge Acquired by Middle School Students (EarthKAM) programs, on science, technology, engineering, and mathematics education;

(2) assess the potential impacts on science, technology, engineering, and mathematics education of a program that would facilitate the development of scientific and educational payloads involving United States students and educators and the flights of those payloads on commercially available orbital platforms, when available and operational, with the goal of providing frequent and regular payload launches;

(3) identify NASA expertise, such as NASA science, engineering, payload development, and payload operations, that could be made available to facilitate a science, technology, engineering, and mathematics program using commercial orbital platforms; and

(4) identify the issues that would need to be addressed before NASA could properly assess the merits and feasibility of the program described in paragraph (2).

SEC. 1004. ASSESSMENT OF IMPEDIMENTS TO SPACE SCIENCE AND ENGINEERING WORKFORCE DEVELOPMENT FOR MINORITY AND UNDERREPRESENTED GROUPS AT NASA.

(a) ASSESSMENT.—The Administrator shall enter into an arrangement for an independent assessment of any impediments to space science and engineering workforce development for minority and underrepresented groups at NASA, including recommendations on—

(1) measures to address such impediments;

(2) opportunities for augmenting the impact of space science and engineering workforce development activities and for expanding proven, effective programs; and

(3) best practices and lessons learned, as identified through the assessment, to help maximize the effectiveness of existing and future programs to increase the participation of minority and underrepresented groups in the space science and engineering workforce at NASA.

(b) REPORT.—A report on the assessment carried out under subsection (a) shall be transmitted to the Congress not later than 15 months after the date of enactment of this Act.

(c) IMPLEMENTATION.—To the extent practicable, the Administrator shall take all necessary steps to address any impediments identified in the assessment.

SEC. 1005. INDEPENDENT REVIEW OF THE NATIONAL SPACE GRANT COLLEGE AND FELLOWSHIP PROGRAM.

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

(1) the National Space Grant College and Fellowship Program, established in title II of the National Aeronautics and Space Administration Authorization Act of 1988 (42 U.S.C. 2486 et seq.), has been an important program through which the Federal Government has partnered with State and local governments, institutions of higher education, private industry, and other organizations to enhance the understanding and use of space and aeronautics activities and their benefits through education, the fostering of interdisciplinary and multidisciplinary space research and training, and supporting Federal funding for graduate fellowships in space-related fields; and

(2) enhancing the National Space Grant College and Fellowship Program's effectiveness will support the program's maximum contribution to NASA's

and the Nation's goals for science, technology, engineering and mathematics (STEM) education and training.

(b) REVIEW.—The Administrator shall enter into an arrangement with the National Academies for a review of the National Space Grant College and Fellowship Program, including its structure and capabilities for supporting STEM education and training, and recommendations on measures, if needed, to enhance the program's effectiveness.

(c) TRANSMITTAL.—The Administrator shall transmit the results of the review to the Congress not later than 18 months after the date of enactment of this Act.

SEC. 1006. HANDS-ON SPACE SCIENCE AND ENGINEERING EDUCATION AND TRAINING.

(a) PILOT PROJECTS.—

(1) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Administrator shall competitively select pilot projects that test and demonstrate new forms of collaborative and hands-on education and training projects related to aeronautics, exploration, science, space operations, and human spaceflight, that serve to stimulate and engage students in science and engineering, and that foster skills including engineering, teamwork, project

management, and problem solving. In particular, the pilot projects shall emphasize engineering and technology-related education and training. The pilot projects shall include a breadth of activities that range in scope and complexity and shall also test and demonstrate selection, evaluation, mentoring, and related tools and services required to support the projects. The program shall be directed at serving undergraduates. The Administrator may include broader participation from precollegiate and graduate students, as appropriate. To the extent practicable, the initiative shall also be accessible to NASA's young science, technical, and project management professionals.

(2) PROJECTS.—The pilot projects shall be carried out through competitive solicitations. The duration of a project awarded under the pilot program shall be no more than 4 years. The pilot projects program shall—

(A) include a range of projects of varying scope and complexity;

(B) provide participants with experience in areas such as—

(i) formulating, planning, designing, developing, testing and integrating, and operating mission or flight hardware;

(ii) systems engineering;

(iii) analyzing data from a mission or investigation; and

(iv) documentation, reporting, and reviews;

(C) include defined and measurable objectives;

(D) provide mentoring for participants;

(E) provide for evaluation of the project and documentation of the outcomes of the project and its contribution to education and training; and

(F) encourage outreach to and partnerships with institutions of higher education, Federal agencies, private entities, and other institutions involved in student collaborations and hands-on training and education, including organizations that focus on engaging young girls in science and engineering hands-on education and training activities.

(3) EMPHASIS ON PARTICIPATION OF INDIVIDUALS FROM UNDERREPRESENTED MINORITY POPU-

LATIONS.—The Administrator shall make it an emphasis of the pilot projects to seek the involvement of participants from underserved and underrepresented minority populations.

(4) FLIGHT OPPORTUNITIES AND ACCESS TO SPACE.—The Administrator shall ensure, to the extent practicable, the availability and accessibility of platforms for flying and launching into space students' collaborative and hands-on projects.

(5) FORUM FOR PARTICIPANT PRESENTATIONS.—The Administrator shall organize a forum for students and other participants in the pilot projects to discuss and present their work, at an appropriate stage of the project, and to engage with other students and young professionals involved in ongoing collaborative and hands-on training activities related to aeronautics, exploration, science, space operations, and human spaceflight.

(6) WORKSHOP.—The Administrator shall organize a workshop or workshops involving the competitively-selected pilot project teams for the purposes of collecting information on the results of the pilot projects (including on selection, evaluation tools, and mentoring services) and identifying lessons learned

and best practices for NASA-supported collaborative and hands-on education and training projects.

(7) REPORT AND STRATEGY.—Not later than 3 years after the date of enactment of this Act, the Administrator shall transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report—

(A) on the outcomes of existing student collaborative and hands-on projects such as those being conducted as part of NASA's science programs;

(B) on the results of the pilot projects; and

(C) on best practices of NASA's student collaborations and hands-on education and training activities.

The report shall define decision criteria, a strategy, and a process for extending successful projects or transitioning them into an ongoing, competitive program.

(b) INFORMATION EXCHANGE.—The Administrator shall support mission directorates sponsoring student collaborative and hands-on education and training projects in exchanging information, sharing knowledge, and leveraging activities, as appropriate.

(c) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated from the authorization of appropriations for education in title I such sums as may be necessary for fiscal years 2011, 2012, and 2013 to carry out this section, to remain available until expended.

TITLE XI—REALIGNING AND REVITALIZING INSTITUTIONAL CAPABILITIES

SEC. 1101. SENSE OF CONGRESS ON REALIGNING AND REVITALIZING INSTITUTIONAL CAPABILITIES.

It is the sense of the Congress that NASA needs to focus on ensuring that its structure, facilities, and equipment are effectively aligned with current and future missions and expected funding levels in order to improve efficiency and productivity. Such focus will also facilitate NASA's ability to modernize its laboratories, facilities, and equipment. Eighty percent of NASA's facilities are over 40 years old. Additionally, in a number of areas, NASA finds itself maintaining facilities and capabilities scaled to another era.

SEC. 1102. INSTITUTIONAL REQUIREMENTS STUDY.

(a) IN GENERAL.—Within one year after the date of submission of the Space Launch System Plan required by section 302 of this Act, the Administrator shall transmit to the Committee on Science and Technology of the House

of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on the results of a comprehensive study that, taking into account the long term direction provided by this Act, carefully examines NASA's structure and institutional assets and identifies a strategy to evolve toward efficient sizing and distribution of facilities, laboratories, test capabilities, and other infrastructure consistent with NASA's missions and mandates. The Administrator shall pay particular attention to identifying and removing unneeded or duplicative infrastructure.

(b) RECONFIGURATION AND REINVESTMENT STRATEGY.—The Administrator shall include in the study a suggested reconfiguration and reinvestment strategy that would conform the needed equipment and facilities to the requirements of missions and priorities authorized and directed by this Act. As part of this strategy, the Administrator shall include consideration and application of the findings and recommendations of the National Research Council report entitled ''Capabilities for the Future: An Assessment of NASA Laboratories for Basic Research'', prepared in response to section 1003 of the National Aeronautics and Space Administration Authorization Act of 2008 (42 U.S.C. 17812).

SEC. 1103. MODERNIZATION OF LABORATORIES, FACILITIES, AND EQUIPMENT.

(a) STRATEGY.—

(1) IN GENERAL.—Within 90 days after completion of the study required under section 1102, the Administrator shall develop a strategy for the maintenance, repair, upgrading, and modernization of NASA's laboratories, facilities, and equipment.

(2) CRITERIA.—The strategy shall include criteria for prioritizing deferred maintenance tasks and also for upgrading or modernizing laboratories, facilities, and equipment.

(3) OTHER CONSIDERATIONS.—The strategy shall also include an assessment of modifications needed to maximize usage of facilities that offer unique and highly specialized benefits to the aerospace industry and the American public.

(b) IMPLEMENTATION PLAN.—The Administrator shall develop a plan for implementing the strategy developed under subsection (a), including a timeline, milestones, and an estimate of resources required for carrying out the plan.

(c) TRANSMITTAL TO CONGRESS.—The Administrator shall transmit to the Congress the strategy developed under subsection (a) and the plan developed under

subsection (b) not later than 180 days after the completion of the study required under section 1102.

(d) ESTABLISHMENT OF CAPITAL FUND.—

(1) IN GENERAL.—The Administrator shall establish a capital fund for each of NASA's Centers for the modernization of facilities and laboratories.

(2) SOURCE OF FUNDING.—The Administrator shall ensure to the maximum extent practicable that all financial savings achieved by closing outdated or surplus facilities at a NASA Center shall be made available to that Center's capital fund for the purpose of modernizing the Center's facilities and laboratories and for upgrading the infrastructure at the Center.

SEC. 1104. NASA CAPABILITIES STUDY REQUIREMENT.

(a) IN GENERAL.—Upon completion of the study required under section 1102, the Administrator shall establish an independent panel to examine alternative models for aligning NASA's workforce, Centers, and related facilities with current and future missions and expected funding levels in order to improve efficiency and productivity, while maintaining core Federal competencies and keeping appropriately governmental functions internal to NASA.

(b) SCOPE OF EXAMINATION.—The panel's examination shall include a recommended implementation strat-

egy, which shall identify any additional legislative authorities necessary to enable implementation of the recommended strategy, including recommended actions to provide aid and assistance to affected communities to mitigate adverse impacts resulting from implementation of the proposed strategy.

(c) TRANSMITTAL.—The Administrator shall transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate the results of this study within 1 year after the date on which the study is begun.

SEC. 1105. COMMUNITY TRANSITION SUPPORT.

(a) SENSE OF CONGRESS.—The Congress supports efforts to assist and provide aid to communities that are adversely impacted by NASA program changes, contract or program cancellations, or proposed institutional changes, so as to minimize the social and economic impacts to those communities, workers, and businesses.

(b) EXPANDED SCOPE OF SPACE SHUTTLE TRANSITION LIAISON OFFICE.—Section 613(b) of the National Aeronautics and Space Administration Authorization Act of 2008 (42 U.S.C. 17761(b)) is amended—

(1) in paragraph (1), by striking ''Space Shuttle Transition Liaison Office'' and inserting ''Post-Shuttle Transition Liaison Office''; and

(2) in paragraph (3), by striking ''2 years after the completion of the last Space Shuttle flight'' and inserting ''2 years after the award of the final funding authorized under section 1105(c) of the National Aeronautics and Space Administration Authorization Act of 2010''.

(c) FUNDING FOR COMMUNITY TRANSITION SUPPORT.—The Administrator shall work closely with other Federal agencies and the private sector to assist communities adversely impacted by NASA program changes, contract or program cancellations with worker retraining, placement and other transition activities. Amounts authorized to be appropriated by section 101(2)(B) shall be available for activities pursuant to this section.

SEC. 1106. WORKFORCE STABILIZATION AND CRITICAL SKILLS PRESERVATION.

(a) LIMITATION.—Prior to receipt by the Congress of the strategy and implementation plan under section 1103(c), none of the funds authorized for use under this Act may be used to transfer the functions, missions, or activities, and associated civil service and contractor posi-

tions, from any NASA facility without authorization by the Congress to implement the proposed strategy.

(b) PRESERVATION OF SKILLS AND COMPETENCIES.—The Administrator shall preserve the critical skills and competencies in place at NASA Centers prior to enactment of this Act in order to facilitate timely implementation of the requirements of this Act and to minimize disruption to the workforce.

(c) PROHIBITION.—The Administrator may not implement any reduction-in-force or other involuntary separations of permanent, non-Senior-Executive-Service, civil servant employees any earlier than 6 months after the receipt of the study required under section 1102, except for cause on charges of misconduct, delinquency, or inefficiency.

SEC. 1107. JAMES E. WEBB COOPERATIVE EDUCATION DISTINGUISHED SCHOLAR PROGRAM.

(a) ESTABLISHMENT.—The Administrator is authorized to establish a national cooperative education program to complement existing NASA Center-administered cooperative education initiatives.

(b) APPLICATION PROCESS.—The Administrator shall encourage and seek applications from the pool of American students pursuing science, technology, engineer-

ing, or mathematics degrees who wish to gain working experience at NASA.

(c) SELECTION.—From the applications, the Administrator shall select 10 finalists annually as James E. Webb Cooperative Education Distinguished Scholars.

(d) AWARD.—The James E. Webb Cooperative Education Distinguished Scholars shall be provided with—

(1) learning experiences that will enhance their understanding of activities conducted in the various NASA Centers in furtherance of NASA's missions and priorities;

(2) exposure to NASA headquarters functions and activities; and

(3) stipends for living expenses.

TITLE XII—OTHER MATTERS

SEC. 1201. REPORT ON SPACE TRAFFIC MANAGEMENT.

Within 180 days after the date of enactment of this Act, the Administrator shall transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on the status of the initiation of discussions with other space-faring countries on a framework to address the sharing of information intended to promote safe access into, operations in, and return from outer space, as required by section 1102 of

the National Aeronautics and Space Administration Authorization Act of 2008 (42 U.S.C. 17821).

SEC. 1202. NATIONAL AND INTERNATIONAL ORBITAL DEBRIS MITIGATION.

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

(1) A national and international effort is needed to develop a coordinated approach towards the prevention, negation, and removal of orbital debris.

(2) The guidelines issued by the Inter-Agency Space Debris Coordination Committee provide a consensus understanding of 10 national space agencies (including NASA) plus the European Space Agency on the necessity of mitigating the creation of space debris and measures for doing so. NASA's participation on the Committee should be robust, and NASA should urge other space-relevant Federal agencies (including the Departments of State, Defense, and Commerce) to work to ensure that their counterpart agencies in foreign governments are aware of these national commitments and the importance in which the United States holds them.

(3) The key components of such approach should include—

(A) a process for debris prevention through agreements regarding spacecraft design, operations, and end-of-life disposition plans to minimize orbiting vehicles or elements which are nonfunctional;

(B) the development of a robust space situational awareness network that can identify potential collisions and provide sufficient trajectory and orbital data to enable avoidance maneuvers; and

(C) the interagency development of an overall strategy for review by the President, with recommendations for proposed international collaborative efforts to address this challenge.

(b) INTERNATIONAL DISCUSSION.—

(1) IN GENERAL.—The Administrator shall, in consultation with such other Federal agencies as the Administrator considers appropriate, continue and strengthen discussions with representatives of other space-faring countries, within the Inter-Agency Space Debris Coordination Committee and elsewhere, to address orbital debris mitigation.

(2) INTERAGENCY EFFORT.—

(A) IN GENERAL.—For purposes of carrying out this subsection, the Director of OSTP, in coordination with the Director of the National Security Council and other Federal agencies and using the President's Council of Advisors on Science and Technology coordinating mechanism, shall develop an overall strategy for review by the President, with recommendations for proposed international collaborative efforts, to address orbital debris mitigation.

(B) REPORT.—Within 1 year after the date of enactment of this Act, the Administrator shall transmit to the Congress a report describing the strategy.

SEC. 1203. STRENGTHENING ACQUISITION AND PROGRAM MANAGEMENT AND CONTROLLING PROGRAM COSTS.

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

(1) In 2007 the Government Accountability Office issued a report on NASA's high risk acquisition performance.

(2) In response, NASA prepared a corrective action plan 2 years ago.

(3) Several major programs, such as the James Webb Space Telescope, have experienced cost growth, significantly exceeding their baseline cost estimate.

(4) The adherence of NASA to program cost and schedule targets and discipline across NASA programs remains a concern.

(b) SUMMARY REPORTS.—

(1) REPORTS REQUIRED.—Not later than 90 days after the date of enactment of this Act, and not later than April 30 of each year thereafter, the Administrator shall transmit to the Congress a report on the implementation during the preceding year for the corrective action plan referred to in subsection (a)(2).

(2) ELEMENTS.—Each report under this subsection shall set forth, for the year covered by such report, the following:

(A) A description of each NASA major program that has exceeded either—

(i) its cost baseline by 15 percent or more; or

(ii) a milestone of the program by 6 months or more from the date provided for it in the Baseline Report.

(B) For each major program specified under subparagraph (A), a plan for such decrease in scope or requirements, or other measures, to be undertaken to control cost and schedule, including any cost monitoring or corrective actions undertaken pursuant to the National Aeronautics and Space Administration Authorization Act of 2005 (Public Law 109–155).

(c) PROHIBITION ON EXPENDITURE OF FUNDS WHEN 30 PERCENT THRESHOLD IS EXCEEDED.—Section 103(e) of the National Aeronautics and Space Administration Authorization Act of 2005 (42 U.S.C. 16613(e)) is amended by striking ''beginning 18 months after the date the Administrator transmits a report under subsection (d)(1)'' and inserting ''beginning 18 months after the Administrator makes such determination''.

(d) 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 Congress a report describing NASA's criteria for establishing the amount of reserves at the project and program

levels and how such criteria complement NASA's policy of budgeting at a 70 percent confidence level.

(e) INDEPENDENT REVIEWS.—Not later than 270 days after the date of enactment of this Act, the Administrator shall transmit to the Congress a report describing NASA's procedures for conducting independent reviews of projects and programs at life-cycle milestones and how NASA ensures the independence of the individuals who conduct those reviews prior to their assignment.

(f) REVISED REGULATIONS REQUIRED.—Not later than 270 days after the date of enactment of this Act, the Administrator shall revise the NASA Supplement to the Federal Acquisition Regulation to provide uniform guidance and tighten existing requirements for preventing organizational conflicts of interest by contractors in major acquisition programs. The revised regulations required by this subsection shall, at a minimum—

(1) address organizational conflicts of interest that could potentially arise as a result of—

(A) lead system integrator contracts on major acquisition programs and contracts that follow lead system integrator contracts on such programs, particularly contracts for development;

(B) the ownership of business units performing systems engineering and technical assistance functions, professional services, or management support services in relation to major acquisition programs by contractors who simultaneously own business units competing to perform as either the prime contractor or the supplier of a major subsystem or component for such programs;

(C) the award of major subsystem contracts by a prime contractor for a major acquisition program to business units or other affiliates of the same parent corporate entity, and particularly the award of subcontracts for software integration or the development of a proprietary software system architecture; or

(D) the performance by, or assistance of, contractors in technical evaluations on major acquisition programs;

(2) ensure that NASA receives advice, when appropriate, on systems architecture and systems engineering matters with respect to major acquisition programs from federally funded research and development centers or other sources independent of the prime contractor;

(3) require that a contract for the performance of systems engineering and technical assistance functions for a major acquisition program contains a provision prohibiting the contractor or any affiliate of the contractor from participating as a prime contractor or a major subcontractor in the development of a system under the program; and

(4) establish such limited exceptions to the requirements in paragraphs (2) and (3) as may be necessary to ensure that NASA has continued access to advice on systems architecture and systems engineering matters from highly qualified contractors with domain experience and expertise, while ensuring that such advice comes from sources that are objective and unbiased.

(g) TOTAL TERMINATION LIABILITY ESTIMATE.—The Administrator shall transmit to the Congress, not later than April 30 of each year, an estimate of the total termination liability as of the end of the second fiscal quarter for each NASA contract with a total value in excess of $200,000,000.

SEC. 1204. AMENDMENT TO THE NATIONAL AERONAUTICS AND SPACE ACT OF 1958.

Section 202 of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2472) is amended by adding at the end the following new subsection:

''(d) The Administrator and the Deputy Administrator may be retired commissioned military personnel.''.

SEC. 1205. SENSE OF CONGRESS ON INDEPENDENT VERIFICATION AND VALIDATION OF NASA SOFTWARE.

It is the sense of the Congress that—

(1) safety is at the heart of every NASA mission;

(2) the Office of Safety and Mission Assurance remains vital to assuring the safety of all NASA activities;

(3) among the most important activities of the Office of Safety and Mission Assurance is the performance of independent safety and mission assurance assessments and process verification reviews;

(4) as NASA embarks on a new path, independent verification and validation of software must be of the highest priority to ensure safety throughout all NASA programs;

(5) NASA's activities depend on software integrity to achieve their goals and deliver a successful mission to the American people;

(6) independent verification and validation is necessary to ensure that safety-critical software will operate dependably and support mission success;

(7) the creation of the Independent Verification and Validation Facility of NASA was the direct result of recommendations made by the National Research Council and the Report of the Presidential Commission on the Space Shuttle Challenger Accident;

(8) the mission-critical software of NASA must operate dependably and safely;

(9) the Independent Verification and Validation Facility of NASA plays an important role in assuring the safety of all NASA activities by improving methodologies for risk identification and assessment and providing recommendations for risk mitigation and acceptance; and

(10) the Independent Verification and Validation Facility of NASA should be the primary provider of independent verification and validation services for software created by or for NASA.

SEC. 1206. COUNTERFEIT AND SUBSTANDARD PARTS.

(a) REVIEW.—

(1) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the Comptroller General shall transmit to the Committee on Science and Technology of the House of Representatives, the Committee on Commerce, Science, and Transportation of the Senate, and the Administrator a review of NASA's practices with respect to counterfeit and substandard parts.

(2) SPECIFICATIONS.—The review shall examine—

(A) the trends in known and identified counterfeit and substandard parts in NASA's supply chain;

(B) NASA's processes and controls to detect counterfeit and substandard parts and to prevent their use;

(C) any gaps in such processes and controls; and

(D) best practices for—

(i) training employees in detecting and preventing the use of counterfeit and substandard parts; and

(ii) establishing an internal database to track suspected or confirmed counterfeit and substandard parts.

(b) DETECTION AND PREVENTION PROGRAM.—

(1) IN GENERAL.—After analyzing the review transmitted under subsection (a), the Administrator shall implement a program, in coordination with other Federal agencies, to detect, track, catalog, and prevent the use of counterfeit and substandard parts by or for NASA.

(2) REQUIREMENTS.—In implementing the program, the Administrator shall establish—

(A) counterfeit and substandard part identification training for all employees that procure, process, distribute, and install parts to—

(i) teach employees how to identify counterfeit and substandard parts;

(ii) teach employees procedures to follow if they suspect a part is counterfeit or substandard; and

(iii) regularly update employees on new threats, identification techniques, and procedures; and

(B) a mechanism to coordinate the training in subparagraph (A) with industry associa-

tions, manufacturers, suppliers, and other Federal agencies, as appropriate;

(C) an internal database to track all suspected or confirmed counterfeit and substandard parts that, at a minimum, includes information on—

(i) companies and individuals known or suspected of selling such parts;

(ii) parts known or suspected of being counterfeit or substandard, including lot and date codes, part numbers, and part images;

(iii) countries of origin of such parts;

(iv) sources of the information included in the database;

(v) United States Customs seizures of such parts; and

(vi) Government-Industry Data Exchange Program reports and other relevant public or private sector reports; and

(D) a mechanism to—

(i) report all information on suspected or confirmed counterfeit or substandard parts to law enforcement agencies, industry associations, and other databases; and

(ii) issue bulletins to industry on counterfeit and substandard parts and related counterfeit activity.

(3) CHANGES TO PROCUREMENT AND ACQUISITION POLICY.—

(A) IN GENERAL.—In implementing the program, the Administrator shall amend existing acquisition and procurement policy to ensure the purchase of parts from trusted or approved manufacturers.

(B) APPROVED MANUFACTURERS.—The Administrator shall establish a list, assessed and adjusted at least annually, of trusted or approved manufacturers.

(C) CRITERIA.—The Administrator shall develop criteria which manufacturers shall meet in order to be placed on such list. The criteria may include—

(i) the use in parts of—

(I) authentication or encryption codes;

(II) embedded security markings;

(III) unique, difficult to counterfeit labels and markings; and

(IV) identified, distinct lot and serial codes on external packaging;

(ii) the use of radio frequency identification embedded into high-value parts;

(iii) physical destruction of defective, damaged, and substandard parts that are byproducts of the manufacturing process;

(iv) testing certifications;

(v) maintenance of procedures for handling any counterfeit parts;

(vi) maintenance of secure facilities to prevent unauthorized access to proprietary information; and

(vii) maintenance of product return, buy back, and inventory control practices that limit counterfeiting.

(4) REPORT.—Within 1 year after the date of the transmittal of the report under subsection (a), the Administrator shall transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on the progress of implementing this subsection.

SEC. 1207. INFORMATION SECURITY.

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

(1) The Comptroller General, as directed by the National Aeronautics and Space Administration Authorization Act of 2008, provided in October 2009 the results of the Government Accountability Office's review of information security controls that protect NASA's information technology resources and information from inadvertent or deliberate misuse, fraudulent use, disclosure, modification, or destruction.

(2) The Comptroller General found that the systems supporting NASA's mission directorates at the 3 Centers it reviewed have vulnerabilities in information security controls that place mission sensitive information, scientific and other data, and information systems at increased risk of compromise.

(b) MONITORING RISK.—

(1) UPDATE ON SYSTEM IMPLEMENTATION.—Not later than 120 days after the date of enactment of this Act, and on a biennial basis thereafter, the chief information officer of NASA, in coordination with other national security agencies, shall provide to the Committee on Science and Technology of the House of Representatives and the Committee on

Commerce, Science, and Transportation of the Senate—

(A) an update on efforts to implement a system to provide dynamic, comprehensive, real-time information regarding the risk of unauthorized remote, proximity, and insider use or access for all information infrastructure under the responsibility of the chief information officer and mission-related networks, including contractor networks, for the purpose of reducing such risk;

(B) an assessment of whether the system has demonstrably and quantifiably reduced network risk compared to alternative methods of ensuring security; and

(C) an assessment of the progress that each Center and facility has made toward implementing the system.

(2) EXISTING ASSESSMENTS.—The assessments required of the Inspector General under section 3545 of title 44, United States Code, shall evaluate the effectiveness of the system described in this subsection.

(c) REPORT ON PROCESSING CLASSIFIED NASA INFORMATION ON NON-FEDERAL CLOUD COMPUTING FA-

CILITIES.—Not later than 1 year after NASA has entered into a contract for its first use of a non-Federal cloud computing facility, the Comptroller General shall transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report detailing—

(1) whether either sensitive but unclassified or classified NASA information, or both, were processed on that facility; and

(2) if any such information was processed on that facility, how NASA ensured that data access and security requirements were in place to safeguard NASA's sensitive or classified information.

(d) INFORMATION SECURITY AWARENESS AND EDUCATION.—

(1) IN GENERAL.—In consultation with the Department of Education, national security agencies, and other NASA directorates, the chief information officer of NASA shall institute an information security awareness and education program for all operators and users of NASA information infrastructure with the goal of reducing unauthorized remote, proximity, and insider use or access.

(2) PROGRAM REQUIREMENTS.—The program shall include, at a minimum—

(A) ongoing classified and unclassified threat-based briefings and automated exercises and examinations that simulate common attack techniques;

(B) a requirement that all NASA employees and contractors engaged in the operation or use of NASA information infrastructure shall participate in the program;

(C) a requirement that access to NASA information infrastructure shall only be granted to operators and users who regularly satisfy the requirements of the program; and

(D) a system, created by the chief human capital officer of NASA in consultation with the chief information officer, to provide recognition to operators and users of NASA information infrastructure for continuous high achievement in the program.

(e) DEFINITIONS.—In this section:

(1) CLOUD COMPUTING.—The term ''cloud computing'' means a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly

provisioned with minimal management effort or service provider interaction.

(2) INFORMATION INFRASTRUCTURE.—The term ''information infrastructure'' means the underlying framework that information systems and assets rely on to process, transmit, receive, or store information electronically, including programmable electronic devices and communications networks and any associated hardware, software, or data.

SEC. 1208. ENHANCED-USE LEASING.

It is the sense of the Congress that NASA is making progress in implementing its enhanced-use leasing program and that NASA should continue to monitor the program's use to ensure effective utilization and sharing of lessons learned across Centers.

SEC. 1209. SENSE OF CONGRESS CONCERNING THE STENNIS SPACE CENTER.

It is the sense of the Congress that—

(1) the Stennis Space Center is essential to the national capability for the development and certification of liquid propulsion technologies vital to our Nation's space flight program; and

(2) the Federal Government should fully utilize the Stennis Space Center by continuing to make it available for further development of commercial

aerospace capabilities under appropriate arrangements.

SEC. 1210. PRESERVATION AND MANAGEMENT OF LUNAR SITES.

(a) INTERNATIONAL DIALOGUE.—The Director of OSTP, in cooperation with the Administrator and other relevant Federal agencies, shall enter into a dialogue with international bodies and commercial entities to identify the questions and research needed to understand—

(1) the potential adverse impacts of various uses of the Moon on scientific research activities;

(2) the potential adverse impacts of such uses on lunar areas of historical, cultural, or scientific value; and

(3) how to prevent or mitigate such impacts.

(b) GRANT PROGRAM.—The Administrator, in cooperation with other relevant Federal agencies and stakeholders, may establish a grant program to conduct research for the purpose of identifying and characterizing potential impacts related to lunar activities and describing potential means for managing and mitigating the impacts.

(c) INTERNATIONAL FRAMEWORK.—Informed by the dialogue under subsection (a), the Director of OSTP shall initiate an effort to establish an international framework for identifying, protecting, and preserving lunar areas de-

termined to be of significant historical, cultural, or scientific value.

(d) REPORT.—Not later than 2 years after the date of enactment of this Act, the Director of OSTP shall transmit to the Congress a report on the results of the international dialogue under subsection (a) and progress toward the establishment of an international framework under subsection (c).

SEC. 1211. CONTINUITY OF MODERATE RESOLUTION LAND IMAGING REMOTE SENSING DATA.

(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)) that states the following: ''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.—In consultation with other relevant Federal agencies, the Director of OSTP shall take steps 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.

SEC. 1212. STUDY ON EXPORT CONTROL MATTERS RELATED TO UNITED STATES ASTRONAUT SAFETY AND NASA MISSION OPERATIONS.

(a) ESTABLISHMENT.—The Director of OSTP, in consultation with the Administrator and other relevant Federal agencies, shall conduct a study to examine the need for a process for granting real-time, limited waivers to export control license restrictions or regulations that are necessary for United States Government entities and contractors to enter into technical discussions and to share technical data with foreign government entities and contractors to resolve anomalies that may—

(1) threaten the safety of United States astronauts aboard cooperative crewed spacecraft such as the ISS; or

(2) impair the operations of international civil research and other spacecraft that involve the national interests of the United States.

(b) TRANSMITTAL.—The Director of OSTP shall transmit to the Committee on Science and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate results

of the study not later than 1 year after the date of enactment of this Act.

SEC. 1213. ETHICS PROGRAMS IN THE OFFICE OF GENERAL COUNSEL.

(a) REAFFIRMATION OF RESPONSIBILITIES OF COUNSEL.—The legal staff of the Office of General Counsel of NASA are reminded that as Government attorneys they have a special obligation to instruct NASA staff to comply with applicable Federal law and regulations.

(b) BIENNIAL ETHICS TRAINING FOR COUNSEL.—Each attorney within the Office of General Counsel of NASA shall be required to receive ethics training in the legal obligations of Government attorneys on a biennial basis.

(c) CERTIFICATION OF TRAINING.—Certification of participation in such training shall be included in each such attorney's personnel record.

(d) DESIGNATED ETHICS OFFICER.—The General Counsel of NASA may not serve as NASA's designated ethics officer.

SEC. 1214. INDEPENDENT COST ANALYSIS.

(a) OFFICE OF PROGRAM ANALYSIS AND EVALUATION.—There is established within NASA an Office of Program Analysis and Evaluation. The Office of Program Analysis and Evaluation shall be headed by an Associate

Administrator designated by the Administrator, who shall report directly to the Administrator. At a minimum, the Office of Program Analysis and Evaluation shall—

(1) prepare NASA's annual budget request for submission to the Office of Management and Budget;

(2) perform routine performance assessments of NASA programs;

(3) perform cost and schedule analysis on NASA programs;

(4) perform independent program reviews of projects at major milestones; and

(5) provide support or analysis at the request of the Administrator.

(b) COST ANALYSIS.—Before any funds may be obligated for implementation of a project that is projected to cost more than $250,000,000 in total project costs, the Administrator, acting though the Associate Administrator of the Office of Program Analysis and Evaluation, shall conduct and consider an independent life-cycle cost analysis of such project and shall report the results to the Congress. In developing cost accounting and reporting standards for carrying out this section, the Associate Administrator of the Office of Program Analysis and Evaluation

shall, to the extent practicable and consistent with other laws, solicit the advice of expertise outside of NASA.

(c) DEFINITION.—For purposes of this section, the term ''implementation'' means all activity in the life cycle of a project after preliminary design, independent assessment of the preliminary design, and approval to proceed into implementation, including critical design, development, certification, launch, operations, disposal of assets, and, for technology programs, development, testing, analysis, and communication of the results.

(d) REPEALS.—Section 301 of the National Aeronautics and Space Administration Authorization Act of 2000 (42 U.S.C. 2459g) and section 1113 of the National Aeronautics and Space Administration Authorization Act of 2008 are repealed.

TITLE XIII—COMPLIANCE WITH STATUTORY PAY-AS-YOU-GO-ACT OF 2010

SEC. 1301. COMPLIANCE PROVISION.

The budgetary effects of this Act, for the purpose of complying with the Statutory Pay-As-You-Go-Act of 2010, shall be determined by reference to the latest statement titled ''Budgetary Effects of PAYGO Legislation'' for this Act, submitted for printing in the Congressional Record by the Chairman of the Senate Budget Committee, pro-

vided that such statement has been submitted prior to the vote on passage.

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