NASA Reauthorization
Section-by-Section

Section 1. Short Title; Table of Contents.
"The National Aeronautics and Space Administration Authorization Act of 2008"

Section 2. Findings.

Section 3. Definitions.

Title I – Authorizations of Appropriations for FY 2009.

Section 101. Fiscal Year 2009.
Authorizes NASA at $20,210,000,000 for FY 09. This amount is approximately $2.59 billion above the President's FY 2009 request, and $1.52B above the FY08 authorization.

The baseline Authorization of $19.21 billion, includes the following breakdown:

- Science: $4,932,200,000 of which
  - $1,518,000,000 is for Earth Science
  - $1,483,000,000 is for Planetary Science
  - $1,290,400,000 is for Astrophysics
  - $640,800,000 is for Heliophysics
- Aeronautics: $853,400,000
- Exploration: $3,886,000,000
- Education: $128,300,000
- Space Operations: $6,074,400,000 of which
  - $150,000,000 increase is for AMS mission
  - $100,000,000 increase for ISS research utilization
  - $50,000,000 for program reserves, shuttle transition and retirement
- Cross-Agency Support Programs: $3,299,900,000
- Inspector General: $35,500,000

In addition to the above amounts, the bill authorizes $1B to accelerate the initial operational capability of the Crew Exploration Vehicle and the Crew Launch Vehicle.

Title II – Earth Science

Sec. 201. Goal.
Expresses the sense of the Congress that the goal of NASA's Earth Science program shall be to pursue a leadership role in providing Earth observations, research, and applications activities to better understand the Earth system.

Sec. 202. Governance of U.S. Earth Observations Activities

Requires the Director of the OSTP to task the National Academies with conducting a study to determine the most appropriate governance structure for U.S. Earth Observation programs.

Directs the study to be delivered to Congress within 18 months after the enactment of the Act, and for the OSTP to provide an implementation plan of the study's recommendations within 24 months of the enactment of the Act.

Sec. 203. Decadal Survey Missions.
Requires the Administrator to submit a plan describing how NASA intends to implement the recommended missions in the National Academies decadal survey "Earth Sciences and Applications from Space," within 270 days of the enactment of the Act.

Sec. 204. Transitioning Experimental Research into Operational Services.
Encourages NASA to transition experimental sensors and missions that have the potential to benefit society into operational status whenever possible.

Directs the Director of the OSTP, in consultation with the Administrator of NASA and the Administrator of NOAA, to develop a process for federal agencies to transition NASA Earth science and space weather missions or sensors into operational status. Requires NASA and NOAA to submit a joint plan for each mission or sensor that is determined to be appropriate for transition to Congress within 60 days of the successful completion of the mission or sensor critical design review.

Sec. 205. Landsat Thermal Infrared Data Continuity
Requires the Administrator to prepare a plan for ensuring the continuity of Landsat thermal infrared data or its equivalent within 60 days of the enactment of the Act.

Sec. 206. Reauthorization of Glory Mission
Reauthorizes NASA to continue with development of the Glory mission and requires the Administrator to submit a report to Congress a new Baseline Report within 90 days of the enactment of the Act.

Sec. 207. Plan for Disposition of Deep Space Climate Observatory.
Requires NASA to develop a plan for the Deep Space Climate Observatory (DSCOVR, also called "Triana"), which shall examine other alternatives for the future of the spacecraft and its instruments if it will not be launched in its current state by NASA, and to submit this plan no later than 180 days after the enactment of the Act.

Title III – Aeronautics

Sec. 301. Environmental aircraft research and development initiative.
Directs the Administrator to establish an initiative with the objective of enabling commercial aircraft performance characteristics such as significant noise reduction near airports and significant reductions in greenhouse gas emissions.

Sec. 302. Research Alignment.
Requires the Administrator, to the maximum extent possible, to align the fundamental aeronautics research program to address high priority technology challenges of the National Academies "Decadal Survey of Civil Aeronautics."

Sec. 303. Research Program to Determine Perceived Impact of Sonic Booms.
Requires the Administrator to establish a cooperative research program with industry to collect data on the impact of sonic booms that can be used by other federal agencies, at their own discretion, to develop standards for overland commercial supersonic flight operations.

Sec. 304. External Review of NASA's Aviation Safety-Related Research Programs.
Requires the Administrator to arrange for the National Research Council to conduct an independent review of NASA's aviation safety-related research programs, and to submit to Congress a report on the results on this review within 14 months of the enactment of the Act.

Sec. 305. Interagency Research Initiative on the Impact of Aviation on the Climate.
Requires the Administrator, in coordination with the U.S. Climate Change Science Program and other appropriate agencies, to establish a research initiative to assess the impact of aviation on the climate, and if warranted, to evaluate approaches to mitigate that impact. Requires the participating entities to jointly develop a plan for the research program no later than 1 year after the enactment of the Act. Requires the Administrator to arrange for the National Research Council to conduct an independent review of the plan and to provide the results of this review no later than 18 months after the enactment of the Act.

Sec. 306. Research Program on Design for Certification.
Requires NASA, in consultation with other appropriate agencies, to establish a research program on methods to improve both the confidence in and the timeliness of certification of new technologies for their introduction into the national airspace system, and to provide a plan for this program no later than 1 year after the enactment of the Act. Requires the Administrator to arrange for the National Research Council to conduct an independent review of the plan and to provide the results of this review no later than 18 months after the enactment of the Act.

Sec. 307. Aviation Weather Research.
Requires the Administrator to establish a research program with NOAA on improving the reliability of 2-hour to 6-hour aviation weather forecasts.

Sec. 308. Joint Aeronautics Research and Development Advisory Committee.
Establishes and provides the guidelines for a joint Aeronautics Research and Development Advisory Committee which shall assess and make recommendations regarding the coordination of research and development activities of NASA and the FAA.

Sec. 309. Funding for R&D Activities in Support of other Mission Directorates.
Establishes that funding for research and development activities performed by the Aeronautics Research Mission Directorate for the flight projects of other Mission Directorates be funded by the Mission Directorate seeking assistance.

Sec. 310. University-Based Centers for Research on Aviation Training.
Changes "may" to "shall" in Section 427 (a) of P.L. 109-155 (NASA Reauthorization Act of 2005), directing NASA to award grants to institutions of higher education (or consortia) to establish one or more Centers for Research on Aviation Training.

Title IV – International Exploration Initiative

Sec. 401. Sense of Congress.
Expresses the sense of Congress that the President should invite America's friends and allies to participate in a long term exploration initiative under the leadership of the U.S.

Sec. 402. Stepping Stone Approach to Exploration
Requires the Administrator to take all necessary steps to ensure that the lunar exploration program be designed and implemented in a manner that gives strong consideration to meeting requirements of future exploration and utilization activities beyond the Moon.

Sec. 403. Lunar Outpost.
Requires that NASA make no plans that would require a lunar outpost to be occupied to maintain its viability. Establishes that the U.S. portion of the first human-tended outpost on the Moon be designated the "Neil A. Armstrong Lunar Outpost." Express the intent of Congress that NASA shall make use of commercial services to the maximum extent practicable in support of its lunar outpost activities.

Sec. 404. Exploration Technology Development
Requires the Administrator to establish a program of long-term exploration-related technology research and development that is not tied to specific flight projects with a funding goal of at least ten percent of the budget of the Exploration Systems Mission Directorate, and of having at least fifty percent of the funding allocated to external research institutions.

Sec. 405. Exploration Risk Mitigation Plan
Requires the Administrator to provide a plan identifying the scientific and technical risks that need to be addressed in carrying out human exploration beyond low Earth orbit and the research and development activities required to address those risks, and to provide the plan no later than 1 year following the enactment of the Act.

Sec. 406. Exploration Crew Rescue.
Directs the Administrator to enter into discussions for the purpose of agreeing to a common docking system standard with other spacefaring nations who have or plan to have crew transportation systems.

Sec. 407. Participatory Exploration.
Requires the Administrator to develop a technology plan to enable dissemination of information to the public for the purpose of fully experiencing NASA's missions to the Moon, Mars and other bodies of our solar system, and to provide Congress with the plan no later than 270 days of the enactment of the Act.

Sec. 408. Science and Exploration.
Expresses the sense of Congress that NASA's scientific and human exploration activities are synergistic, and encourages the Administrator to coordinate NASA's science and exploration activities to maximize the success of the human exploration initiatives.

Title V – Space Science

Sec. 501. Technology Development.
Directs the Administrator to establish a cross-Directorate long-term technology development program for space and Earth science within the Science Mission Directorate that is independent of any flight projects under development, and having a funding goal for the program of five percent of the total Science Mission Directorate.

Sec. 502. Provision for Future Servicing of Observatory-Class Scientific Spacecraft.
Directs the Administrator to ensure that provision is made for all future observatory-class scientific spacecraft intended to be deployed in Earth orbit or at Lagrangian points in space for robotic or human servicing and repair.

Sec. 503. Mars Exploration.
Reaffirms Congress support for a systematic and integrated program of robotic exploration of the Martian surface.

Sec. 504. Importance of a Balanced Science Programs.
Expresses the sense of Congress that a balanced and adequately funded set of activities all contribute to a robust and productive science program and are catalysts for innovation. Expresses the sense of Congress that it supports suborbital flight activities and that it is in the national interest to expand the size of NASA's suborbital research program.

Sec. 505. Restoration of RTG Development.
Requires the Director of the Office of Science and Technology Policy to develop a plan for restarting and sustaining the domestic production of Radioisotopic Thermal Generators (RTGs) for deep space and other space science missions and to deliver the plan to Congress within 270 days of the enactment of the Act. $5,000,000 is authorized for radioisotope production.

Sec. 506. Assessment of Impediments to Interagency Cooperation on Space and Earth Science Missions.
Requires the Administrator to arrange for the National Research Council to assess interagency cooperation on space and Earth science missions and to provide the report to Congress within 15 months of the enactment of the Act.

Sec. 507. Assessment of Cost Growth.
Requires the Administrator to arrange for an independent external assessment to identify the primary causes of cost growth in large, medium, and small space and Earth science spacecraft mission classes and to identify recommendations on changes, if any, to contain costs, and to provide the report within 15 months of the enactment of the Act.

Title VI – Space Operations

Subtitle A – International Space Station

Section 601. Utilization.
Directs the Administrator to take all necessary steps to ensure that the International Space Station (ISS) remains a viable and productive facility of potential U.S. utilization through at least 2020 and to take no steps that would preclude its continued operation and utilization by the U.S. after 2016.

Sec. 602. Research Management Plan.
Requires the Administrator to develop a research management plan for the ISS. Directs the Administrator to establish a process to support ISS National Lab users in identifying requirements for transportation of research supplies to the ISS and to develop an estimate of transportation requirements needed to support users of the ISS National Lab. Directs the Administrator to identify existing research and support equipment that are manifested for flight and to provide a description of the status, budget and milestone of research equipment that were completed or in-development prior to being cancelled. Requires the Administrator to establish an advisory panel under the Federal Advisory Committee Act to monitor the activities and management of the ISS National Lab.

Sec. 603. Contingency Plan for Cargo Resupply.
Requires the Administrator to develop a contingency plan and arrangements to ensure the continued viability and productivity of the ISS in the event that U.S. commercial cargo resupply services are not available after the Space Shuttle is retired and to deliver the plan within one year of enactment of the Act.

SUBTITLE B – Space Shuttle.
Sec. 611. Flight Manifest.
Establishes that the Utilization flights ULF-4 and ULF-5 shall be considered part of the Space Shuttle baseline flight manifest and shall be flown prior to the retirement of the Space Shuttle. Requires the Administrator to take all necessary steps to fly one additional Space Shuttle flight to deliver the Alpha Magnetic Spectrometer (AMS) to the ISS prior to the retirement of the Space Shuttle. Establishes that the Space Shuttle be

retired following the completion of the baseline flight manifest and the additional flight carrying the AMS, events which are anticipated to occur in 2010.

Sec. 612. Disposition of Shuttle-Related Assets.
Requires the Administrator to provide a plan for the disposition of the remaining Space Shuttle orbiters and other Space Shuttle program-related hardware and facilities after the retirement of the Space Shuttle fleet and to not dispose of any Space Shuttle-related hardware prior to the completion of the plan, which shall be submitted to Congress within 90 days on the enactment of the Act.

Sec. 613. Space Shuttle Transition Liaison Office.
Requires the Administrator to establish an office within NASA's Office of Human Capital to assist local communities affected by the termination of the Space Shuttle program, which will be operated until 24 months after the last Space Shuttle flight. The office will provide technical assistance and serve as a clearinghouse in identifying services available from other Federal agencies.

SUBTITLE C – Launch Services.

Sec. 621. Launch Services.
Requires the Administrator to develop a strategy for providing launch services in support of NASA's small, medium, and large science missions as preparation for a NASA Launch Services contract and to provide a report to Congress.

Title VII – Education

Sec. 701. Response to Review.
Requires the Administrator to develop a plan identifying actions taken or planned in response to the recommendations of the National Academies report, *NASA's Elementary and Secondary Education Program: Review and Critique,* and to provide this report within one year of the enactment of the Act.

Sec. 702. External Review of Explorer School Program.
Requires the Administrator to arrange for an independent external review of the Explorer School program and provide the report within one year of the enactment of the Act.

Title VIII – Near Earth Objects

Sec. 801. In General.
Expresses Congress' support of the policy direction in P.L. 109-155 for NASA to detect, track, catalogue and characterize the physical characteristics of near-Earth objects equal to or greater than 140 meters in diameter.

Sec. 802. Findings.
Includes findings on the potential threat posed by near-Earth objects and the need to prepare the appropriate policies and procedures.

Sec. 803. Requests for Information.
Directs the Administrator to issue requests for information on a low cost space mission to rendezvous with the Apophis asteroid, and a medium-sized space mission with the purpose of detecting near-Earth objects equal to or greater than 140 meters in diameter.

Sec. 804. Establishment of Policy
Requires the Director of the Office of Science and Technology Policy to develop a policy for notifying Federal agencies and relevant emergency response institutions of an impending NEO threat, if near term public safety is at stake and recommend a Federal agency or agencies to be responsible for protecting the nation from a near-Earth object that is anticipated to collide with Earth and implementing a deflection campaign, in consultation with international bodies, should one be required.

Sec. 805. Planetary Radar Capability.
Requires the Administrator to maintain a planetary radar that is, at minimum, comparable to the capability provided through the NASA Deep Space Network Goldstone facility.

Sec. 806. Arecibo Observatory.
Expresses Congress' support for the use of the Arecibo Observatory for NASA-funded near-Earth object-related activities, and requires the Administrator to ensure the availability of the Arecibo Observatory's planetary radar to support these activities until the National Academies review of NASA's approach for the survey and deflection of near-Earth objects is completed. $2 million authorized.

Title IX – Commercial Initiatives

Sec. 901. General Support for Such Initiatives.
Expresses the sense of Congress that a healthy and robust commercial sector can make significant contributions to the successful conduct of NASA's space exploration program, and encourages NASA to look for such service opportunities and to the maximum extent practicable, make use of the commercial sector to provide those services.

Sec. 902. Commercial Crew Initiative.
Directs NASA to make use of U.S. commercially provided International Space Station (ISS) crew transfer and crew rescue services to the maximum extent practicable; limit the use, to the maximum extent practicable, of the Crew Exploration Vehicle to missions carrying astronauts beyond low Earth orbit once commercial crew transfer and crew rescue services that meet safety requirements become operational; facilitate the transfer of NASA-developed technologies to potential U.S. commercial crew transfer and rescue service providers; issue a notice of intent within 180 days of the enactment of the Act to enter into a funded Space Act Agreement with two or more commercial entities for a

Phase 1 Commercial Orbital Transportation Services (COTS) crewed vehicle demonstration program with $50,000,000 to be authorized for FY 2009, and $50,000,000 to be authorized for the provision of ISS-compatible docking adaptors to be made available to the commercial crew providers selected to service the ISS. It also directs NASA to enter into a crew transportation services contract with a commercial provider if it demonstrates the ability to provide ISS crew transfer in accordance with safety requirements.

Title X – Revitalization of NASA Institutional Capabilities

Sec. 1001. Review of Information Security Controls.
Requires the Comptroller General to complete a review of information security controls that protect NASA's information technology and to provide a report to Congress no later than one year after enactment of the Act. Requires the Comptroller General to provide a restricted report detailing results of vulnerability assessments conducted by GAO on NASA's network resources within one year of the enactment of the Act.

Sec. 1002. Maintenance and Upgrade of Center Facilities.
Requires the Administrator to ensure that adequate maintenance and upgrading of Center facilities is performed on a regular basis, to develop a budget plan to reduce maintenance and upgrade backlog by 50 percent over the next five years, and to deliver a report to Congress on the results on these activities with the FY 2011 budget request.

Sec. 1003. Assessment of NASA Laboratory Capabilities.
Requires the Administrator to arrange for an independent external review of the overall quality of NASA's laboratories.

Tile XI – Other Provisions

Sec. 1101. Space Weather.
Directs the Office of Science and Technology Policy to develop a plan for sustaining space-based measurements of solar wind from the L1 Lagrangian point in space and to submit the plan within one year of the enactment of the Act.

Requires the Administrator, in coordination with the National Science Foundation, National Oceanic and Atmospheric Administration, and other relevant agencies, to initiate a research program to conduct or supervise research projects on impacts of space weather to aviation and to facilitate the transfer of technology from space weather research programs to Federal agencies with operational responsibilities and to the private sector.

Requires the Administrator to arrange for the National Research Council to conduct a study on the impacts of space weather on the current and future United States aviation industry, and to provide the results of the report no later than one year after the enactment of the Act.

Sec. 1102. Space Traffic Management.
Requires the Administrator, in consultation with other appropriate agencies of the Federal government, to initiate discussions with the appropriate representatives of other spacefaring nations to determine the appropriate framework under which information intended to promote safe overall operations in outer space can be shared.

Sec. 1103. Study of Export Control Policies Related to Civil and Commercial Space Activities.
Requires the Director of the Office of Science and Technology Policy to conduct an assessment of the impact of current export control policies and implementation directives on the U.S. aerospace industry and its competitiveness in global markets, as well as on the ability of U.S. government agencies to carry out cooperative activities in science and technology, including the impact on research, and to provide the report to the Congress within 9 months of the enactment of the Act.

Sec. 1104. Astronaut Health Care.
Directs the Administrator to administer an anonymous survey of astronauts and flight surgeons to evaluate communication, relationships, and the effectiveness of policies on a biennial basis, and to report the results of the Survey to Congress no later than 90 days following completion of the Survey.

Sec. 1105. National Academies Decadal Surveys.
Directs the Administrator to enter into agreements on a periodic basis with the National Academies for independent assessments of the status and opportunities for Earth and space science discipline fields and Aeronautics research and to recommend priorities for research and programmatic areas over the next decade.

Sec. 1106. Innovation Prizes.
Amends Section 104 of P.L. 109-155 by replacing paragraph "(b) TOPICS" with language requiring the Administrator to consult widely in selecting topics for prize competitions and suggesting potential prize competition topics.

Amends the 2005 NASA Authorization Act to permit awards of up to $50 million for innovation prizes.