National Aeronautics and Space Administration

Agency Financial Report
FY 2012

nasa.gov

Cover Image Credits

Front Cover:

Outside Front Main Image:

Curiosity Landing Site Panorama, with the Heights of Mount Sharp, Mars. (Credit: NASA/JPL-Caltech/Malin Space Science Systems (MSSS))

Outside Front Bottom Images (left to right):

MSL lifts off from Cape Canaveral aboard a United Launch Alliance Atlas V. (Credit: NASA/Scott Andrews/Canon); Curiosity Approaching Mars, Artist's Concept. (Credit: NASA/JPL-Caltech); Curiosity's Sky Crane Maneuver, Artist's Concept. (Credit: NASA/JPL-Caltech)

Inside Front:

Space Shuttle Discovery Flown Over the U.S. Capitol (Credit: NASA/Smithsonian Institution/Harold Dorwin)

Rear Cover:

Inside Rear: The International Space Station. (Credit: NASA)

Outside Rear: Self-Portrait of Curiosity by Rover's Arm Camera. (Credit: NASA/JPL-Caltech/MSSS)

Message from the Administrator

November 15, 2012

I am pleased to present to you the National Aeronautics and Space Administration's (NASA) fiscal year (FY) 2012 Agency Financial Report (AFR). In this report, we share the Agency's financial and programmatic performance highlights over the past 12 months. I fully understand the public's expectation for transparency and stewardship from our Government; this AFR reports back to you, the American people, to the President of the United States, and to Congress, NASA's accomplishments and stewardship of the resources entrusted to the Agency.

In 2012, NASA celebrated the pioneering Americans who decades ago planted our Nation's flag on the surface of the Moon. The Agency's daring spirit of adventure and discovery, exemplified in its past pioneers, remains fervent and undiminished in 2012. Looking to the future with great expectations, NASA's achievements provide inspiring evidence that the Agency is once again on the brink of a new era in space exploration. In August 2012, we celebrated the landing of the aptly named Curiosity Rover on the surface of Mars. NASA's people continue to work as tirelessly as they worked to guide the successful landing of Curiosity to inspire the next generation space scientists and explorers to carry on NASA's mission for the Nation.

The end of the Space Shuttle program this past year brought about a concern for NASA's future. As I said on July 1, 2011, America's leadership in space will continue for at least the next half-century. Our shift toward increased commercialization of space flights frees NASA to pursue its bold mission of human exploration beyond low earth orbit and ultimately land humans on Mars. This shift is well under way; the Dragon spacecraft completed the first commercial resupply mission to the International Space Station (ISS) in May 2012. Working with the U.S. commercial space industry provides safe, reliable, and cost-effective crew and cargo transportation to the ISS and allows NASA to focus on developing the new Orion Multi-Purpose Crew Vehicle and the Space Launch System to carry future astronauts farther into deep space than we have ever been. This year, NASA delivered the crew module to Kennedy Space Center on July 2, 2012, in preparation for a fiscal year 2014 demonstration mission.

In addition, we are continuing a robust portfolio of over 1,000 research and technology investments that will boost the Nation's capability to operate more efficiently in space and enable long-term, cost-effective deep space exploration. These investments include numerous high-value technology projects that are not currently commercially feasible, but hold great promise for our space exploration programs and commercial uses yet unknown.

We are proud of our progress this year, both in our program accomplishments and in the way we have managed our resources to efficiently deliver on our commitments. I encourage you to read

the Performance section of this report to learn more about our program activities. I also encourage you to read the Financial section to get a better understanding of how we are managing our resources – your tax dollars. This AFR provides an integrated picture of the relationship between our financial stewardship and programmatic accomplishments. It also includes reports from independent auditors and the Inspector General. These independent reports highlight opportunities for improvement as we strive to continue to do better.

NASA makes every effort to insure that performance data are subject to the same attention to detail as is devoted to our scientific and technical research. With this in mind, I can provide reasonable assurance that the performance data in this report are reliable and complete. Any data limitations are documented explicitly in this report.

In addition, NASA accepts the responsibility of accounting for and reporting on its financial activities. During FY 2012, NASA received an unqualified "clean" opinion on its financial statements. This is the second year in a row that NASA has received an unqualified opinion. NASA continues to be in substantial compliance with the Federal Financial Management Improvement Act. Based on the results of this year's efforts, I am able to provide reasonable assurance that this report's financial data are reliable and complete.

We are proud of the strides we made this year in our programs and in our management of the Agency's resources. For those seeking additional details regarding our performance and progress towards achieving our Strategic Goals, I invite you to read our Annual Performance Report, which will be released with the Congressional Budget Justification in early 2013.

We are excited to be part of this new age of space exploration and discovery. The discoveries we are making are re-writing textbooks and inspiring the next generation who want to make their own discoveries. As we begin a new fiscal year, we will continue our steady pace toward achieving our Strategic Goals. We look forward to sharing our new discoveries in the year ahead with the American people.

Charles F. Bolden, Jr.
Administrator

Message from the Office of the Chief Financial Officer

November 15, 2012

The National Aeronautics and Space Administration is firmly committed to delivering the highest standards of financial accountability, transparency and reporting in support of the nation's aeronautics and space mission. Our Agency Financial Report is an important component in documenting and meeting those standards. In the report, the Agency discloses and reports on our key performance and financial outcomes for the fiscal year.

As Administrator Bolden makes clear in his Message, the complexity, diversity and sheer volume of NASA's Mission portfolio continues to grow as NASA enters a new era of space exploration, commercial partnerships and scientific research. The goals and performance results described in this Report help to describe and explain how NASA is meeting these exciting challenges. The Report also describes how NASA's financial management requirements have necessarily evolved and grown to support this increasingly varied and complex mission and program environment. More than ever, it is vitally important that our financial systems and processes provide NASA leadership and program officials with the right information at the right time to make the most cost effective operational decisions. I invite you to read our full Agency Financial Report for highlights of our 2012 performance and to better understand this intersection of NASA's program and financial management. More detailed performance reporting will be available in our Annual Performance Report, to be released in February 2013.

I am proud to report that NASA, for the second year in a row, received an unqualified or "clean" opinion on its financial statements. Clearly, we have continued to build on our prior year results as we enhance and improve our financial management processes and activities. Additionally, the Agency maintains a robust system of financial and operational controls overseen by senior leadership. The Agency is able to report that it is substantially compliant with the Federal Financial Management Improvement Act (FFMIA) for fiscal year 2012.

We are pleased with our continued progress and achievements, and remain committed to ensuring sound financial management. I appreciate the continued support of the entire Agency, with special thanks to the Office of Inspector General, as we continue to work together in our quest for excellence in financial management.

Dr. Elizabeth Robinson
Chief Financial Officer

Table of Contents

Photo (above): Endeavour and Atlantis come nose-to-nose while being moved from and into processing, respectively (Credit: NASA)

Management Discussion and Analysis

Photo (above): Space Shuttle Enterprise and the Empire State Building, New York City, New York; Space Shuttle Endeavour and the Golden Gate Bridge, San Francisco, California; and Space Shuttle Discovery and the National Mall, Washington, DC. (Credit: NASA). Photo (opposite): MSL-Curiosity fires its ChemCam instrument laser at a rock in this artist's depiction. (Credit: NASA)

Welcome to NASA

The fiscal year 2012 (FY 2012) Agency Financial Report (AFR), provides a review of NASA's major programmatic and financial results for FY 2012. It integrates financial and program performance to demonstrate NASA's stewardship and accountability. It highlights our achievements in FY 2012 and points to the financial and programmatic challenges and opportuni - ties facing the Agency in the years ahead and management's efforts to meet them. The AFR describes NASA's successful landing of Curiosity Rover on Martian soil on an extraordi - nary space science mission to understand the Martian environment, which is one element of NASA's bold mission of deep space exploration and, ultimately, landing humans on Mars. Also highlighted is the successful Space Explora - tion Technologies (SpaceX) flight to the International Space Station (ISS), the first private sector resupply mission to the ISS. This points to strong future private sector spaceflight related industries now being nurtured with NASA 's resources and scientific research. As NASA prepares for deep space exploration beyond low earth orbit, in addition to technological and scientific difficulties, the Agency must balance budget requirements in an environment ofother competing national priorities. This is a serious challenge that the programmatic and financial communities will work together to address.

The AFR explains that NASA demonstrates stewardship and accountability through compliance with the Chief Financial Officers' Act (CFO Act) and the Government Performance and Results Act (GPRA, as amended). NASA accounts for its financial activities according to a set of generally accepted accounting principles applied by the Federal Accounting Standards Advisory Board.

How NASA links resources to program per - formance for greater accountability is further demonstrated in the Financial Section of this AFR. The Financial Section shows the net cost of our operations by both major programs and the Agency as a whole to help the stakeholders understand the connection between resource use and program accomplishment. In addition, this section explains significant changes in NASA's financial condition from FY 2011 to FY 2012.

NASA could not be as successful without financial systems that meet requirements of

the Federal Financial Management Improvement Act. The AFR describes our compliance with this Act, as well as our system of checks and balances, as required by Office of Management and Budget's (OMB) Circular A-123, which places responsibility on management to establish controls to safeguard assets and improve efficiency of operations.

Finally, the AFR presents NASA's audited financial statements and the independent auditor's financial audit opinion for readers to better understand the financial condition of the agency.

Mission and Vision Statement

NASA was created by the National Aeronautics and Space Act of 1958 to provide for research into problems of flight within and outside the Earth's atmosphere and to ensure that the United States conducts activities in space devoted to peaceful purposes for the benefit of mankind. In 2010, the President unveiled an ambitious new direction for NASA, laying the groundwork for a sustainable program of exploration and innovation. Called the National Space Policy, this direction extends the life of the International Space Station (ISS), supports the growing commercial space industry, and addresses important scientific challenges. It also continues NASA's commitment to robust human space exploration, science, and aeronautics programs. Later in 2010, Congress passed the NASA Authorization Act of 2010, which provided the Agency important guidance on program content and conduct.

On February 14, 2011, NASA released a new Strategic Plan that embodies the spirit, principles, and objectives of this and other recent policies and legislation. The plan introduced a

A cutaway of the Orion Multi-Purpose Crew Vehicle (MPCV). The crew module is shrouded inside the Launch Abort System atop the service module. (Credit: NASA)

new framework for NASA's strategic direction and included the following Vision and Mission statements:

- To reach for new heights and reveal the unknown, so that what we do and learn will benefit all humankind; and
- Drive advances in science, technology, and exploration to enhance knowledge, education, innovation, economic vitality, and stewardship of Earth.

Overarching Strategies

Investing in next-generation technologies and approaches to spur innovation;

Inspiring students to be the future scientists, engineers, explorers, and educators through interactions with NASA's people, missions, research, and facilities;

Expanding partnerships with international, intergovernmental, academic, industrial, and entrepreneurial communities and recognizing their role as important contributors of skill and creativity to NASA's missions and for the propagation of NASA's results;

Committing to environmental stewardship through Earth observation and science, and the development and use of green technologies and capabilities in NASA missions and facilities; and

Securing the public trust through transparency and accountability in NASA's programmatic and financial management, procurement, and reporting practices.

Organization

The overarching strategies defined in the 2011 Strategic Plan govern the management and conduct of NASA's aeronautics and space programs.

Each organization uses these strategies in developing and executing its plans to achieve the Agency's strategic goals and annual performance plan. The strategies also provide a framework that guides NASA's support for other areas of national and Administration policies.

NASA's mission is organized into three core programmatic Mission Directorates, one Mission Support Directorate, and three additional Offices, through which it implements its science, research, and technology development programs and manages its operations.

Aeronautics Research Mission Directorate (ARMD) conducts foundational research into early-stage concepts and ideas, develops new technologies and operational procedures and demonstrates the potential of promising new vehicles, operations, and safety technology in relevant environments. ARMD's cutting-edge research yields technologies that overcome a wide range of aeronautics challenges for the Nation's current and future air transportation system.

Human Exploration and Operations Mission Directorate (HEOMD) is responsible for human and robotic space exploration. HEOMD operates the International Space Station and develops technologies and capabilities for human exploration beyond low Earth orbit. It manages the commercial crew and cargo development programs, construction of the Orion Multi-Purpose Crew Vehicle, development of a new heavy lift rocket known as the Space Launch System, launch operations, space communications, rocket propulsion testing, human health and safety, and exploration technology development.

Science Mission Directorate (SMD) conducts the scientific exploration of the Earth, Sun, solar system, and universe. Its strategies include

ground-, air-, and space-based observatories; deep-space automated spacecraft; planetary orbiters; Landers; and surface rovers. It also develops innovative science instruments and techniques.

Mission Support Directorate (MSD) provides efficient Agency-level management support of programmatic Mission Directorates. It includes Headquarters and Centers' management and operations, facility construction, budget and finance, information technology, human capital management, and infrastructure. Organizing mission support services into a Mission Directorate ensures shared management practices across the Agency and provides maximum visibility for management support services inside and outside the Agency.

Office of Education (Education) develops and manages a portfolio of educational programs for students and teachers at all levels. Education seeks to develo p a vibrant pool of future workforce for sustainable support of national and NASA mission by attracting and retaining students in STEM disciplines, and raising public awareness of NASA's activities. To achieve these goals, Education works in partnership with other government agencies, non-profit organizations, museums and the education community at large.

Office of the Chief Technologist (OCT) is the principal adviser to the Administrator and advocate on matters concerning agency-wide technology policy and programs. OCT manages NASA's Space Technology programs and coordinates and tracks all technology investments across the Agency.

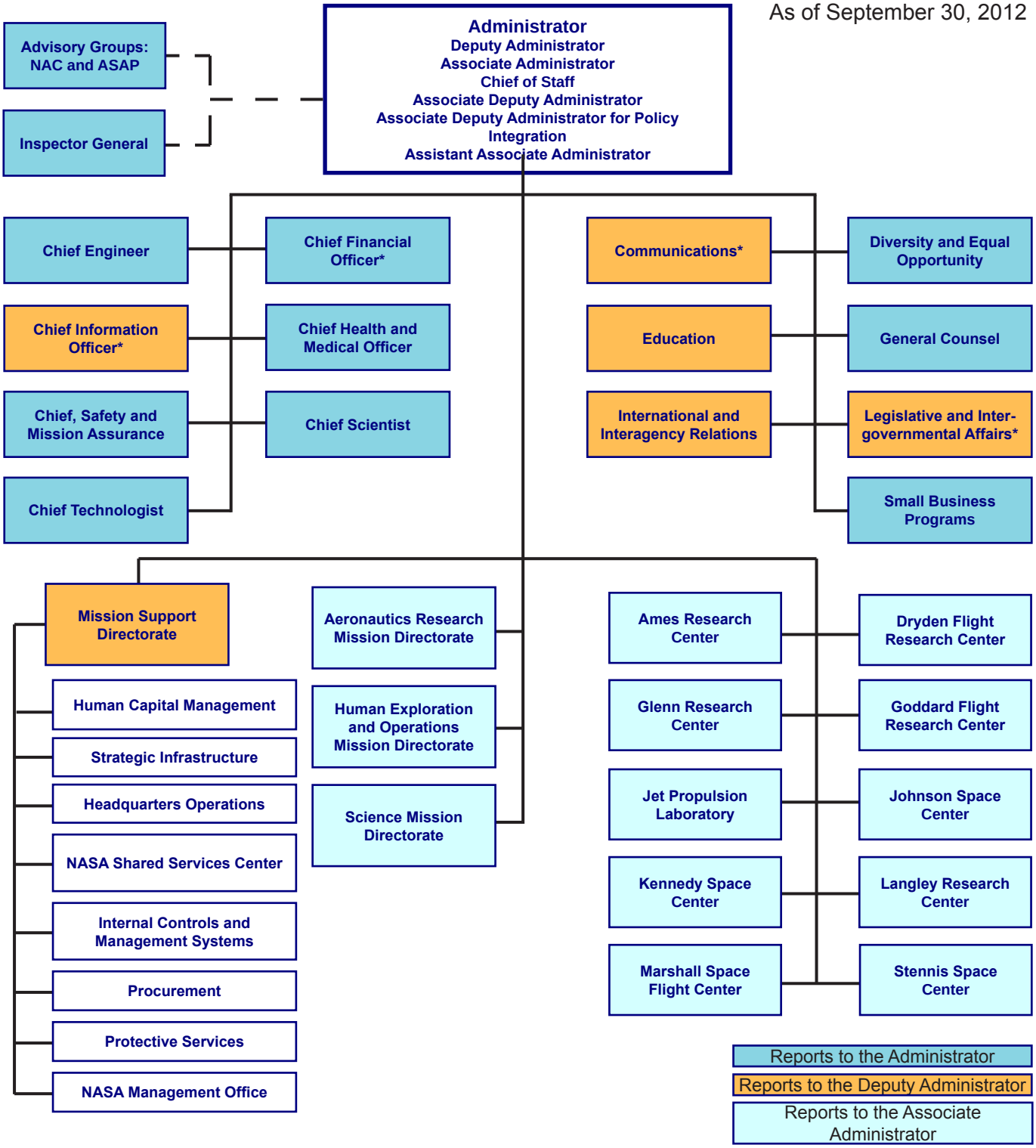
Office of the Chief Scientist (OCS) is the principal adviser to the Administrator and advocate on matters concerning Agency science programs, strategic planning, and the evaluation of related investments. OCS ensures scientific endeavors are aligned with and fulfill the Administration's science objectives.

The **Administrator's Staff Offices** support the Administrator's administrative responsibilities by providing a range of high-level guidance and support in critical areas like safety and mission assurance, technology planning, education, equal opportunity, information technology, financial administration, small business administration, international relations, and legislative and intergovernmental affairs.

Administratively, NASA is organized into one Headquarters Office located in Washington, DC, nine operating Centers located across the country, and the Jet Propulsion Laboratory , a federally funded research and development center operated under a contract with the California Institute of Technology. NASA works in partnership with academia, the private sector, state and local governments, other Federal agencies, and a number of international organizations to support and achieve its mission.

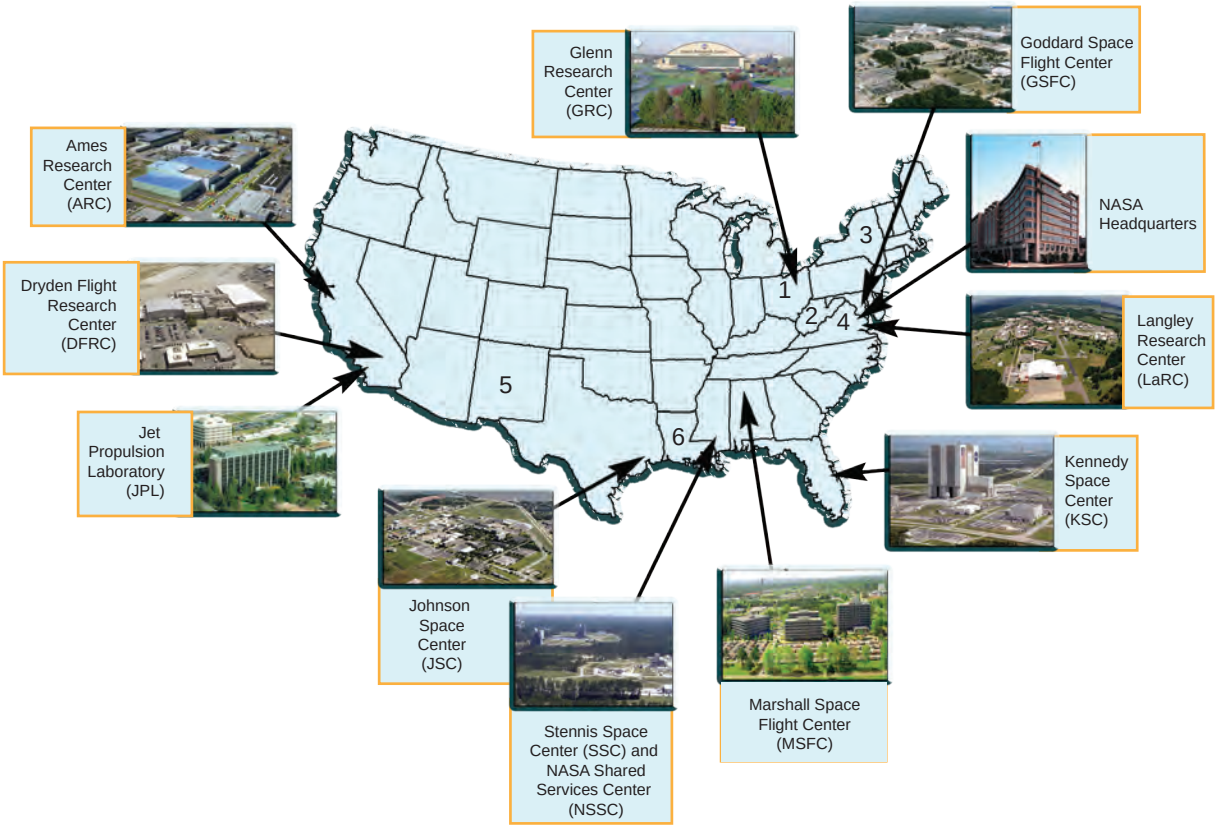
Organizational Structure

As of September 30, 2012



*Center functional office directors report to Agency functional Associate Administrators. Deputy and below report to Center leadership. Dashed lines indicate independent organizations that report to the Administrator. Visit http://www.nasa.gov/about/org_index.html for staff names and links to the associated offices.

Centers and Facilities Nationwide



Other NASA Facilities
(noted by numbers on map)

1) Plum Brook Station, Sandusky, OH managed by GRC
2) Software Independent Verification and Validation Facility, Fairmont, WV managed by GSFC
3) Goddard Institute for Space Studies, New York, New York managed by GSFC
4) Wallops Flight Facility, Wallops, VA managed by GSFC
5) White Sands Test Facility and Space Network, White Sands, NM managed by JSC
6) Michoud Assembly Facilities, New Orleans, LA managed by MSFC

Workforce

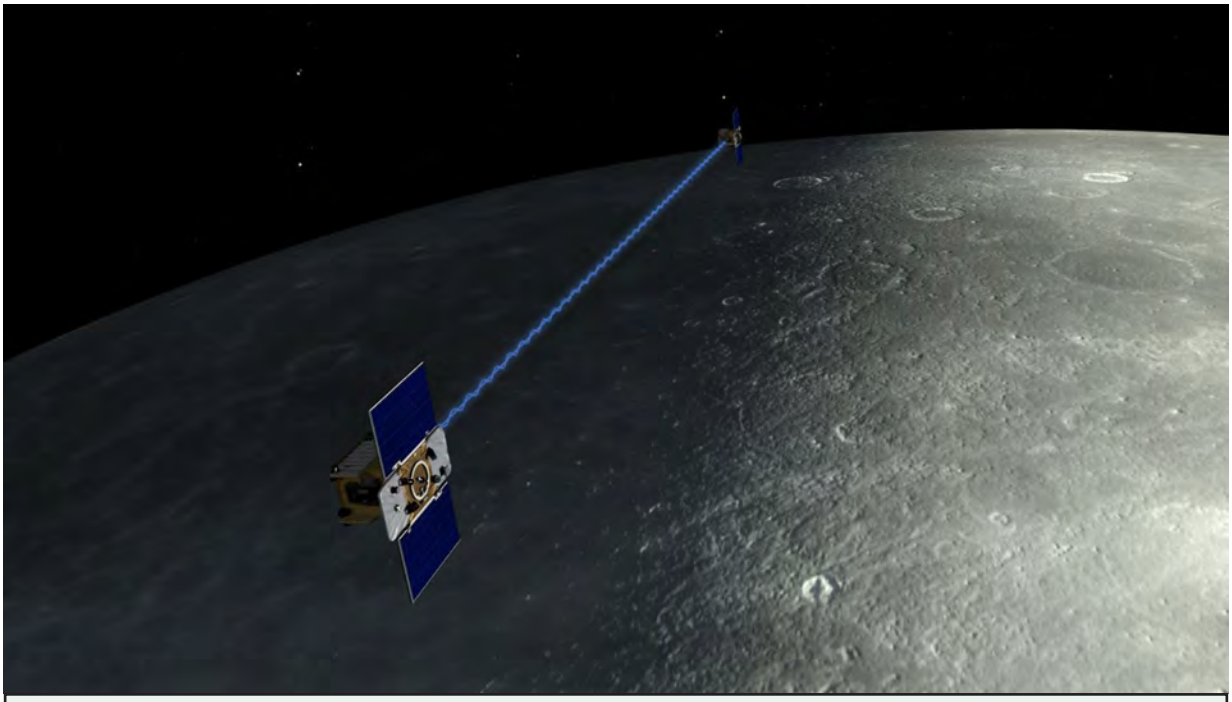
As of the end of FY 2012, NASA employed more than 18,500 civil servants, including full-time, part-time, term appointees, student and other non-permanent workers at nine Centers, Headquarters, and the NASA Shared Services Center. In addition, approximately 5,000 additional workers are employed at the Jet Propulsion Laboratory, operated by the California Institute of Technology. To see more information about workforce profile and distribution, visit the Workforce Information Cubes for NASA at http://wicn.nssc.nasa.gov/.

This year, the Office of Human Capital Management (OHCM) released a Workforce Plan that outlines the policies, procedures, and structures necessary for ensuring that critical workforce skills and capabilities are available and effectively used to implement the Agency's mission. The overarching goals of the 2012 Workforce Plan are to identify, acquire, and sustain the workforce necessary to conduct NASA's current and future missions. The Workforce Plan has five goals:

- **Workforce Goal 1**: Develop strategic human capital and position plan for mission success—analyze, develop policy, conduct organizational design and resource alignment to guide NASA's multi-sector workforce.
- **Workforce Goal 2**: Recruit and retain a highly qualified, diverse workforce—identify, recruit, and retain a diverse workforce with the right skills, at the right time, at the right place.
- **Workforce Goal 3**: Train and develop talent—Develop and conduct training and employee development initiatives that address today's and tomorrow's workforce requirements to enable mission success.
- **Workforce Goal 4**: Sustain a high-performing workforce—enable managers to sustain an environment conducive to workforce productivity, innovation and effectiveness.
- **Workforce Goal 5**: Enable efficient human capital services—develop effective human resources programs supported by comprehensive, timely, and reliable information.

OHCM will revise the Workforce Plan periodically to support NASA's evolving strategic direction, priorities, and workforce needs.

The Mars Science Laboratory (MSL) team in the MSL Mission Support Area react after learning the Curiosity rover has landed safely on Mars and images begin to arrive at the Jet Propulsion Laboratory, Sunday, August 5, 2012 in Pasadena, California. (Credit: NASA/Bill Ingalls)



From March 1 to May 29, 2012, the twin GRAIL spacecraft, Ebb and Flow, worked together to map the Moon's gravitational field. The mission entered its extended phase on August 30, 2012. Without the two spacecraft work in tandem, the mission could not have been completed. (Credit: NASA/JPL-Caltech/MIT)

Shared Values Shared Results

NASA's tradition of excellence is rooted on the four uncompromising shared core values of safety, integrity, teamwork, and excellence, as well as the firm belief that failure is not an option.

Safety: Constant attention to safety is the cornerstone of mission success. NASA is committed, individually and as a corporate team, to protecting the safety and health of the public, NASA team members, and the assets that the Nation entrusts to the Agency.

Integrity: NASA is committed to maintaining an environment of trust, built on honesty , ethical behavior, respect, and candor. Agency leaders enable this environment by exemplifying, encouraging, and rewarding a vigorous, open flow of communication on all issues, in all directions, and among all employees without fear of reprisal. Building trust through ethical conduct as individuals and as an organization is a necessary component of mission success.

Teamwork: The most powerful force behind NASA's mission success is a multi-disciplinary team of diverse, competent people across all NASA Centers and Headquarters. Teamwork at NASA embodies the belief that each team member brings unique experience and important expertise to project issues. This approach to teamwork improves the likelihood of identifying and resolving challenges to safety and mission success. NASA is committed to cultivating and sustaining an environment that fosters this approach to teamwork and processes that support equal opportunity, collaboration, continuous learning, and openness to innovation and new ideas.

Excellence: To achieve the highest standards in engineering, research, operations, and management in support of mission success, NASA is committed to nurturing an organizational culture in which individuals make full use of their time, talent, and opportunities to pursue excellence in both the ordinary and the extraordinary.

FY 2012 In Review

Photo: The Orion Ground Test Vehicle arrived at NASA's Kennedy Space Center Operations & Checkout (O&C) Facility on April 21. (Credit: NASA)

Mission Performance

Performance Overview

Congress, the Government Accountability Office (GAO), and the Office of Management and Budget (OMB) have recognized NASA for its culture of performance and data-driven performance management. In recent years, the Agency has worked hard to improve its performance management system to increase accountability, transparency, and oversight. NASA continues to add sophistication and discipline to this system, leading to more consistent performance results across NASA's missions and to make the best use of the resources entrusted to the Agency by the American people.

In FY 2012, NASA continued along the course it set with the 2011 Strategic Plan. At the heart of NASA's strategic goals remain the core missions of human space exploration, Earth and space science, aeronautics, and technology development. The 2011 Strategic Plan also marked another step in the evolution of NASA's performance management. The Agency set a new strategic goal to emphasize the importance of supporting the capabilities that enable NASA's missions. The plan also calls out education and outreach as fundamental Agency activities in support of NASA's Mission and Vision. These strategic additions to NASA's performance framework support more effective and holistic decision-making. Strategic Goals 5 and 6 allow NASA leaders to track organizational, institutional, and outreach performance beyond discreet program, projects, and space flight missions. This information makes data-driven decision-making possible across all of NASA's activities, and gives decision-makers the objective performance information they need to prioritize and balance funding between individual mission needs and the requirements of institutional and program capabilities that enable those missions. NASA's strategic goals are as follows:

- Strategic Goal 1: Extend and sustain human activities across the solar system.
- Strategic Goal 2: Expand scientific understanding of the Earth and the universe in which we live.
- Strategic Goal 3: Create the innovative new space technologies for our exploration, science, and economic future.
- Strategic Goal 4: Advance aeronautics research for societal benefit.
- Strategic Goal 5: Enable program and institutional capabilities to conduct NASA's aeronautics and space activities.
- Strategic Goal 6: Share NASA with the public, educators, and students to provide opportunities to participate in our Mission, foster innovation, and contribute to a strong national economy.

Using Agency rating criteria, NASA measures and communicates its progress toward achieving its performance goals (PGs), targets for the next three to five years, and annual performance goals (APGs) for FY 2012. NASA determines these ratings based on a series of internal assessments that are part of ongoing monitoring of NASA's program and project performance. External

entities, such as scientific peer review committees, aeronautics technical evaluation bodies, and the OMB, validate the ratings prior to publication in the Annual Performance Report (APR). This year, NASA will present its APR and final ratings with the FY 2014 Congressional Budget Justification in February 2013.

Rating Criteria for Performance Goals*

Rating	Performance Goal and High Priority Performance Goal (HPPG)
Green (On Track)	NASA achieved or expects to achieve the intent of the performance goal or high priority performance goal (HPPG) within the estimated timeframe. NASA achieved the majority of key activities supporting this performance goal or HPPG.
Yellow (At Risk)	NASA expects to achieve the intent of the performance goal or HPPG within the timeframe; however, there is at least one likely programmatic, cost, or schedule risk to achieving the performance goal or HPPG.
Red (Not on Track)	NASA does not expect to achieve this performance goal or HPPG within the estimated timeframe.
White (Canceled or Postponed)	NASA senior management canceled this performance goal and the Agency is no longer pursuing activities relevant to this performance goal or the program did not have activities relevant to the performance goal during the fiscal year.

*As part of the President's initiative to improve the performance of the Federal Government, NASA selected five HPPGs in the FY 2010, which have been retired as of FY 2012. NASA rates progress toward HPPGs using its performance goal criteria. Goals created for the next cycle of this initiative are designated as Agency Priority Goals, instead of HPPGs, and can be found on performance.gov.

Rating Criteria for Annual Performance Goals (APG)

Timeframe: When Will the APG Be Achieved	Rating Criteria for APG Types			Rating
	Single Milestone or Deliverable	Multiple Deliverables, Targeted Performance, and Efficiencies	On-going Activities, Services, or Management Processes	
Current FY as planned.	NASA achieved the event or the deliverable met the intent of the APG within the timeframe.	The program/project reached the stated numeric target.	The intended result of the program/project was achieved as defined by internally held success criteria.	**Green**
Achieve next FY (will not achieve this FY as planned).	NASA did not achieve this APG in the current fiscal year, but anticipates achieving it during the next fiscal year.			**Yellow**
Will not be achieved, but progress was made.	N/A	NASA failed to achieve this APG, but made significant progress as defined by reaching 80% of the target or other internally held success criteria.	The intended results of the program/project were not achieved in this fiscal year, but significant progress was accomplished, as defined by internally held success criteria.	
Will not be achieved.	NASA did not achieve the APG and does not anticipate completing it within the next fiscal year.	NASA achieved less than 80% of the target or other internally held success criteria.	Neither intended results nor significant progress were achieved. The progress toward the APG does not meet standards for significant progress for the internally held success criteria.	**Red**
Will not be achieved due to cancellation or postponement.	NASA senior management canceled this APG and the Agency is no longer pursuing activities relevant to this APG or the program did not have activities relevant to the APG during the fiscal year.			**White**

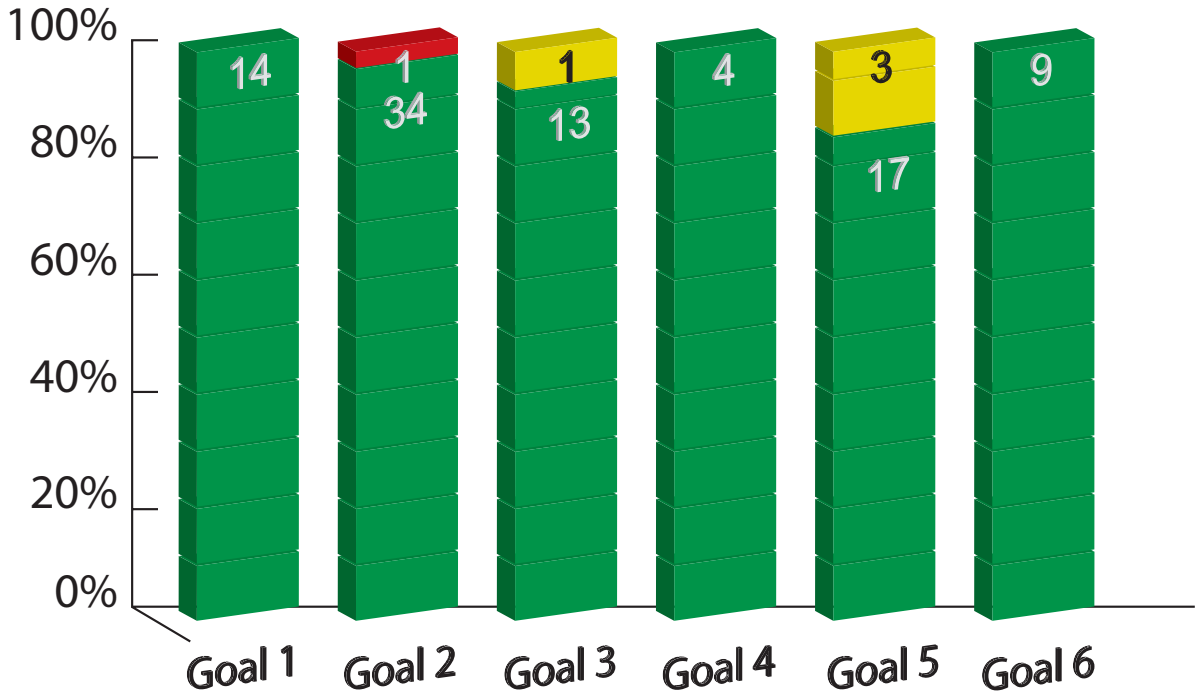
Performance Summary

In FY 2012, NASA reviewed progress toward 96 two-to five-year performance goals and 137 APGs. Prior to accessing these measures, the FY 2012 Performance Plan was updated to reflect changes due to both Congressional budget action and to correct inaccuracies found in several measures, which were not found prior to the measures' provision in the FY 2013 budget submission to the Congress (available at http://www.nasa.gov/news/budget/index.html).

The summary of NASA's preliminary assessment of progress by strategic goal is provided below. The Agency will release final ratings with APR in February 2013.

Performance Goals*

FY 2012 Performance Goal Ratings by Strategic Goal

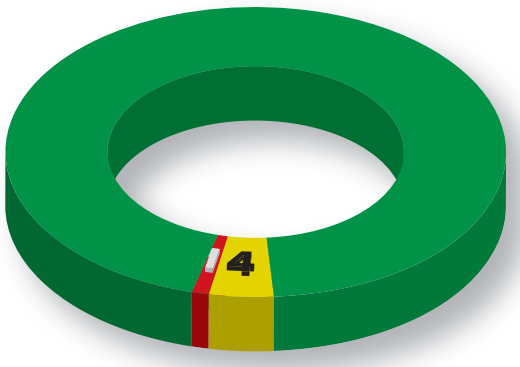


FY 2011

Performance Goals 108

FY 2012

Performance Goals 96

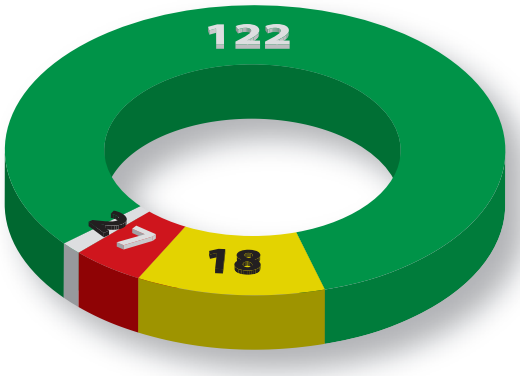


*These ratings reflect the preliminary year end assessment of progress. Final ratings will become available in February 2013.

Annual Performance Goals*

FY 2012 APG Ratings by Strategic Goal

FY 2011
APGs 149



FY 2012
APGs 137

*These ratings reflect the preliminary year end assessment of progress. Final ratings will become available in February 2013.

Spotlight: Mars Science Laboratory

Curiosity, NASA's Largest and Most Capable Rover Ever, Sent to Another Planet

NASA's Mars rover Curiosity drove about 70 feet (about 21 meters) on the mission's 21st Martian day, or sol (August 30, 2012), and then took images with its Navigation Camera that are combined into this scene, which includes the fresh tracks. The view is centered toward the west-northwest. (Credit: NASA/JPL-Caltech)

NASA's Mars Science Laboratory (MSL) mission set down a large, mobile laboratory—the rover Curiosity—at Gale Crater , using precision landing technology that makes many of Mars' most intriguing regions viable destinations for the first time. During the 23 months after its landing, Curiosity will analyze dozens of samples drilled from rocks or scooped from the ground as it explores with greater range than any previous Mars rover. Curiosity carries the most advanced payload of scientific gear ever used on Mars' surface, a payload more than 10 times as massive as those carried by earlier Mars rovers. Its assignment: Investigate whether conditions have been favorable for microbial life and for preserving clues in the rocks about possible past life.

NASA launched the Mars Science Laboratory spacecraft on November 26, 201 1. Mars rover Curiosity landed successfully on the floor of Gale Crater on August 6, 2012, Universal Time. Engineers designed the spacecraft to steer itself during descent through Mars' atmosphere with a series of S-curve maneuvers similar to those used by astronauts piloting NASA space shuttles. During the three minutes before touchdown, the spacecraft slowed its descent with a parachute, and then used small retrorockets mounted around the rim of an upper stage. In the final seconds, the upper stage acted as a sky crane, lowering the upright rover on a tether to the surface. Curiosity is about twice as long (about 3 meters or 10 feet) and five times as heavy as NASA's twin Mars Exploration Rovers, Spirit and Opportunity , launched in 2003. It inherited many design elements from them, including six-wheel drive, a rocker-bogie suspension system, and cameras mounted on a mast to help the mission's team on Earth select exploration targets and driving routes. Unlike earlier rovers, Curiosity carries equipment to gather samples of rocks and soil, process them, and distribute them to onboard test chambers inside analytical instruments.

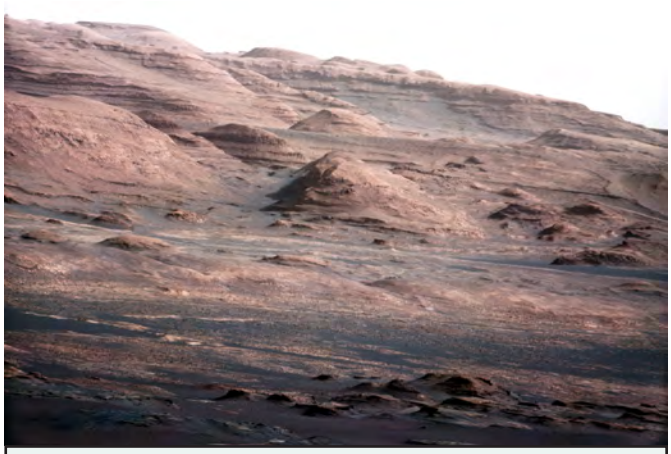
The overarching science goal of the mission is to assess whether the landing area has or ever had environmental conditions favorable to microbial life, both its habitability and its preservation. Curiosity landed near the foot of a layered mountain inside Gale Crater.

Layers of this mountain contain minerals that form in water and may also preserve organics, the chemical building blocks of life.

The portion of the crater floor where Curiosity landed has an alluvial fan likely formed by water-carried sediments. New observations from Curiosity of rounded pebbles embedded within rocky outcrops provide concrete evidence that a stream once ran vigorously across this area on Mars, creating the alluvial fan. This evidence—images of rocks containing ancient streambed gravels—is the first of its kind.

For the NASA MSL/Curiosity mission page, click here.

For the JPL MSL/Curiosity mission page, click here.



The image shows the layering in the base of Mount Sharp (the science destination for the Curiosity Rover) that made Gale Crater such an attractive science target for the Mars Science Laboratory Mission. The colors in this image have been enhanced to simulate the lighting conditions that exist on Earth, which was done to make comparisons with similar terrains easier. For scale, the conical mound in the foreground in the center of the image is approximately 1,000 feet (300 meters) across and 300 feet (100 meters) high. Mount Sharp is about 3 miles (5 kilometers) high. (Credit: NASA/JPL-Caltech/MSSS)

Link to a Watery Past

In this image from NASA's Curiosity Rover, a rock outcrop called Link pops out from a Martian surface that is elsew here blanketed by reddish-brown dust. The fractured Link outcrop has blocks of exposed, clean surfaces. Rounded gravel fragments, or clasts, up to a couple inches (few centimeters) in size are in a matrix of white material. Many gravel-sized rocks have eroded out of the outcrop onto the surface, particularly in the left portion of the frame. The outcrop characteristics are consistent with a sedimentary conglomerate, or a rock that was formed by the deposition of water and is composed of many smaller rounded rocks cemented together. Water transport is the only process capable of producing the rounded shape of clasts of this size.

The Link outcrop was imaged with the 100-millimeter Mast Camera on September 2, 2012, which was the 27th sol, or Martian day of operations.

The name Link is derived from a significant rock formation in the Northwest Territories of Canada, where there is also a lake with the same name.

Scientists enhanced the color in this version to show the Martian scene as it would appear under the lighting conditions we have on Earth, which helps in analyzing the terrain.

(Credit: NASA/JPL-Caltech/MSSS)

Strategic Goal 1:

Extend and sustain human activities across the Solar System.

For over 50 years, NASA has been tasked with developing the capabilities that will support the country's long-term human spaceflight and exploration efforts. With the help of domestic and international partners, NASA has embarked on a steady progression of activities and milestones that has prepared the Agency for the more difficult challenges ahead—expanding permanent human presence beyond low Earth orbit. NASA will pursue this goal through strategic investments and partnerships to drive advances in science and technology. To be successful, NASA will need equal and full participation from international partners and the commercial sector.

Commercial Partner Successfully Completes First Commercial Cargo Demonstration Mission

On May 31, 2012, Space Exploration Technologies (SpaceX) completed its final Commercial Orbital Transportation Services (COTS) demonstration mission, and became the first commercial resupply service mission provider to the InternationalSpace Station (ISS). This mission was a huge step toward allowing regular cargo carrying missions to the ISS by the U.S. private sector.

SpaceX conducted the historic flight within 11 months of the final space shuttle flight, minimizing the gap in the U.S. space station cargo transportation capability. The SpaceX Falcon 9 rocket lifted off from the Kennedy Space Center on May 22, 2012 and spent the first couple of mission days testing the Dragon spacecraft's ability to perform specific tasks while maintaining a safe distance about 1.5 miles below the space station.

Given the success of these demonstrations, NASA authorized SpaceX to approach the ISS on May 25. After closing to about 32 feet, Expedition 31 flight engineer Don Pettit of NASA used the space station's robotic arm to capture Dragon and berth it to the ISS. The station crew opened the hatch, unloaded new supplies, and then packed return cargo before closing the hatch and releasing the Dragon on May 31. The Dragon spacecraft splashed down off the coast of California that same day, and NASA confirmed that SpaceX had successfully completed all COTS demonstration mission objectives.

Successful completion of this demonstration mission, along with SpaceX's recent announce-

The SpaceX Dragon commercial craft is berthed to the Earth-facing side of the International Space Station's Harmony Node. (Credit: NASA)

ments of commercial launch agreements with other customers, indicate both goals of the COTS project—to enable the ability of NASA and commercial partner teams to develop complicated space systems that help NASA meet its needs, and to strengthen U.S. industrial capability and competitiveness—are being accomplished. Following the successful completion of this COTS demonstration mission, NASA will implement the Commercial Resupply Services contract for regular resupply mission to the ISS, beginning in FY 2013.

Other Key Achievements in FY12

In August 2012, NASA signed new agreements with three American commercial companies to facilitate industry's development of an integrated crew transportation system. These agreements will enable advances that could ultimately lead to the availability of commercial human spaceflight services for government and commercial customers. NASA's partners include Sierra Nevada Corporation, SpaceX, and The Boeing Company.

The six members of the Expedition 32 crew pose for a group portrait aboard the International Space Station (Credit: NASA)

ISS has successfully transitioned from assembly to full utilization, and continues to operate safely on orbit with six crew. NASA continues to work closely with the Center for the Advancement of Science in Space (CASIS), to manage the portion of the International Space Station that operates as a U.S. national laboratory.

The three programs managed by the Exploration Systems Division (ESD), the heavy-lift Space Launch System (SLS) booster, the Orion Multipurpose Crew Vehicle (MPCV), and the Ground Systems Development Operations (GSDO), continue to make appreciable progress. The Orion MPCV Program delivered the Exploration Test Flight 1 (EFT-1) crew module to Kennedy Space Center on July 2, 2012, in preparation for a Fiscal Year 2014 demonstration mission. The SLS and GSDO programs successfully completed several key Agency-wide reviews in a process that will lead to project confirmation.

The National Research Council's recent report, titled "Recapturing a Future for Space Exploration: Life and Physical Sciences," called on NASA to "reinvigorate its partnership with the life and physical sciences research community." NASA has taken several important steps in response. After nearly a decade of uncertainty about the future of animal research in space, NASA has reinitiated firm plans to conduct basic biological research with rodents on the ISS. NASA has also reestablished its program in atomic physics, with a new payload in development that is projected to create the coldest matter in the universe aboard the ISS by 2017.

Click here to read the National Research Council's report.

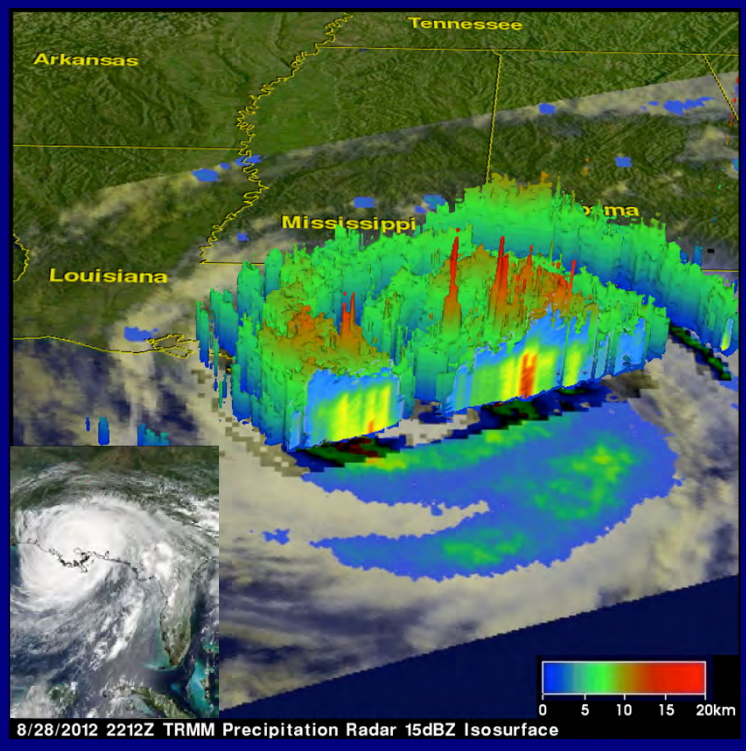
Strategic Goal 2:

Expand scientific understanding of the Earth and the universe in which we live.

NASA is expanding the scientific understanding of Earth and the unive rse by pursuing the answers to profound science questions: How and why are Earth' s climate and environment changing? How do planets and life originate? How does the universe work, and what are its origin and destiny? Are we alone? Using the priorities set by the Nation's best scientific minds through the National Academies' decadal surveys in Earth science, heliophysics, planetary science, and astronomy and astrophysics, NASA develops missions of scientific exploration. NASA uses space observatories and space probes to view the Earth from space, observe and visit other bodies in the solar system, and gaze out into the galaxy and beyond. NASA analyzes the data gathered by these science missions to enhance humanity's understanding of its place in the universe

NASA Satellites Provide Forecasters with Timely Observations of Tropical Storm Isaac as it Drenches Gulf Coast States

Scientists used the data captured by NASA satellites to learn more about hurricanes and increase their predictability . NASA satellites provided forecasters with valuable data on rainfall rates within Tropical Storm Isaac as the storm tracked over Louisiana and Mississippi. Isaac supplied large quantities of rain, drawing its power from the warm waters of the Gulf of Mexico. NASA's Tropical Rain Measuring Mission (TRMM) satellite captured relevant and timely data for forecasters. For example, the



From TRMM's Precipitation Radar observations, scientists at NASA's Goddard Space Flight Center developed a three-dimensional view of rainfall within then Hurricane Isaac. The 3-D image showed that very powerful thunder - storms near Isaac's eye were reaching heights of almost 11 miles. Those tall thunderstorms near a hurricane's center release heat and contribu te to a hurri - cane's power.

The Moderate Resolution Imaging Spectroradiometer (MODIS) instrument onboard NASA's Aqua satellite captured this visible true color image of Hurricane Isaac on August 29 at 2:50 p.m. EDT after it had made its second landfall. (Credit: NASA Goddard/MODIS Rapid Response Team)

mission revealed that some areas within Isaac were dropping rainfall at a rate of 2.75 inches per hour.

The TRMM satellite twice flew directly above Hurricane Isaac as it began to pound Louisiana with strong winds and heavy rainfall. NASA provided the operational forecasters, in near-real time, an animated fly-by of Hurricane Isaac's rainfall and structure.

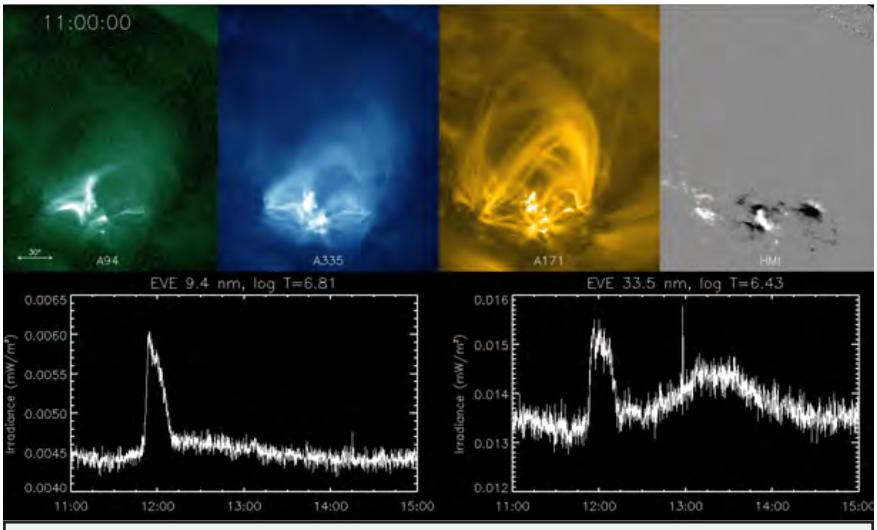
Click here to read more about the Tropical Rain Measuring mission, a joint mission between NASA and the Japanese space agency JAXA.

NASA Heliophysics System Observatory Captures Earth's Reaction to Solar Flares

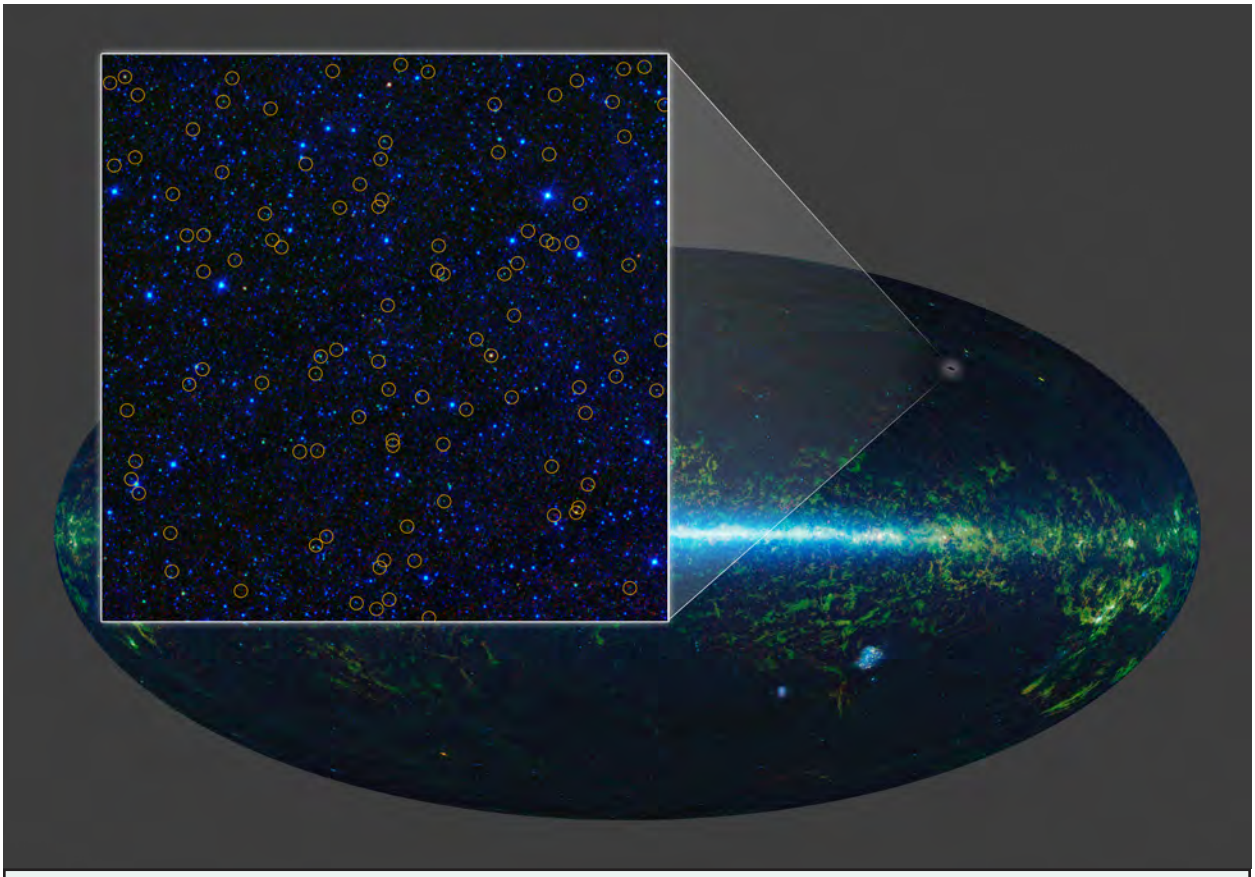
NASA maintains a fleet of research spacecraft that monitor the Sun's activity and its impacts on Earth and the solar system. Solar flares are one continually surprising solar phenomena observed by these satellites. When the energy from these flares impacts Earth's atmosphere, it alters the atmospheric structure. This can affect the reliability of technologies located in space, such as communications and global positioning satellites (GPS), and on the ground, such as electric power grids. Eruptive flares on the Sun are the largest explosive events in the solar system.

In March 2012, the Thermosphere, Ionosphere, Mesosphere, Energetics and Dynamics (TIMED) spacecraft and the Solar Dynamics Observatory (SDO) measured the impact of a powerful solar flare on the Earth's upper atmosphere. In direct response to the energy input from the flare, the upper atmosphere was observed to heat up. During the heating impulse, the thermosphere puffed up like a marshmallow held over a campfire, temporarily increasing the drag on low-orbiting satellites. Extra drag helps clear space junk out of Earth orbit, but it decreases the lifetime of useful satellites by bringing them closer to re-entry.

Other flare observations by SDO and the Ramaty High Energy Solar Spectroscopic Imager (RHESSI) revealed that a substantial fraction of flares, approximately 15 percent, have a pronounced "late phase" that can pump 40 percent more energy into space than previously realized. Solar Flares are intense bursts of highly energetic radiation caused by the release of magnetic energy associated with sunspot regions. NASA studies these bursts because radiation from space weather poses a danger to astronauts and spacecraft, and the energetic ultraviolet to X-ray emission from flares adds additional heat to the Earth's upper atmosphere. Observations like those from SDO and RHESSI help NASA understand the hazards of space weather to equipment and humans.



Observations by the instruments on the Solar Dynamics Observatory show the solar flaring and the surprising increase in extreme ultraviolet irradiance long after the impulsive flare phase. (Credit: NASA)



With its all-sky infrared survey, NASA's Wide-field Infrared Survey Explorer, or WISE, has identified millions of quasar candidates. Quasars are supermassive black holes with masses millions to billions times greater than our sun. The black holes "feed" off surrounding gas and dust, pulling the material onto them. As the material falls in on the black hole, it becomes extremely hot and extremely bright. This image zooms in on one small region of the WISE sky, covering an area about three times larger than the moon. The WISE quasar candidates are highlighted with yellow circles. (Credit: NASA/JPL-Caltech/UCLA)

Wide-Field Infrared Survey telescope (WISE) has Spotted Millions of "Supermassive" Black Holes

NASA's Wide-field Infrared Survey Explorer (WISE) mission has led to a bonanza of new-found supermassive black holes and extreme galaxies called hot DOGs, or dust-obscured galaxies. Images from the telescope have revealed millions of dusty black hole candi - dates across the universe and about 1,000 even dustier objects thought to be among the brightest galaxies ever found.

The latest findings are helping astronomers better understand how galaxies and the behe-moth black holes at their centers grow and evolve together. For example, the giant black hole at the center of our Milky W ay galaxy, called Sagittarius A*, has 4 million times the mass of our sun and has gone through periodic feeding frenzies where material falls towards the black hole, heats up, and irradiates its sur-roundings. Bigger central black holes, up to a billion times the mass of our sun, may even shut down star formation in galaxies. In two other WISE papers, researchers report finding what are among the brightest galaxies known, one of the main goals of the mission. So far , they have identified about 1,000 candidates. These extreme objects can pour out more than 100 trillion times as much light as our sun.

Fermi Gamma-Ray Space Observatory Observations of Dwarf Galaxies Provide New Insights on Dark Matter

While scientists still don't know what makes up the mysterious dark matter thought to dominate the universe, a new study of dwarf galaxies orbiting the Milky Way using NASA's Fermi Gamma-ray Space Telescope has chipped away at the possibilities, offering intriguing hints about the nature of dark matter.

Dark matter constitutes about 80 percent of the matter in our universe. By studying numerous dwarf galaxies—satellite systems that orbit our own Milky Way galaxy—NASA's Fermi Gamma-ray Space Telescope has produced some of the strongest limits yet on the nature of the hypothetical particles suspected of making up dark matter.

This dwarf spheroidal galaxy in the constellation Fornax is a satellite of our Milky Way and is one of 10 used in Fermi's dark matter search. The motions of the galaxy's stars indicate that it is embedded in a massive halo of matter that cannot be seen. (Credit: ESO/Digital Sky Survey 2)

Strategic Goal 3:

Create the innovative new space technologies for our exploration, science, and economic future.

For decades, NASA investment in space technology has helped make the United States the global leader in space exploration and has significantly contributed to the technology-based U.S. economy. NASA continues that legacy today through a balanced portfolio of technology development at various stages of technical maturity. NASA invests in revolutionary concepts that help develop the Nation's workforce and innovation community. NASA generates transformative and crosscutting technology breakthroughs that enable the Agency's missions and benefit the commercial sector. NASA creates new ideas and markets that strengthen the economy and contribute to U.S. technological global leadership.

Developing the Innovation Community

During FY 2012, NASA invested in a potentially revolutionary concept to robotically construct Lunar and Martian infrastructure using in-situ resources. This system is based on contour crafting and other state-of-the-art three-dimensional (3-D) printing technologies, and it has potential for safe and affordable landing pads, roads, and protective hangers on the Moon and Mars. Automated building technologies could also revolutionize construction on Earth, especially in dense urban environments and remote regions of the globe. NASA invests in revolutionary concepts, such as this university-led effort, not only to advance the technology state-of-the-art today, but also to develop new skills in the space technology workforce required for tomorrow's breakthroughs.

Click here for more information about in-situ resource utilization.

NASA helps develop the Nation's space technology workforce, in part, by investing in revolutionary concepts pursued by academic faculty and students. In FY 2012, one such student developed and characterized fast-burning solid fuels for hybrid rocket motors. The project resulted in a new casting procedure and experimental demonstration of enhanced fuel characteristics. While this project provides valuable data for the development of future propulsion systems, perhaps the greater value is in the professional development of the student researcher, who recently accepted a position as a Propulsion Development Engineer at a prominent aerospace firm. He directly credits his NASA fellowship for the opportunity.

Click here for more information about the student research.

Generating Transformative and Crosscutting Technology Breakthroughs

In July, NASA launched the Inflatable Reentry Vehicle Experiment (IRVE-3) by sounding rocket. This experiment represents a critical step in achieving rapid infusion of mission-capable hypersonic inflatable decelerator systems, and it demonstrates NASA's commitment to transformative technology breakthroughs. The IRVE-3 test showed that a space capsule can use an inflatable outer shell to slow and protect itself as it enters an atmosphere at hypersonic speed during planetary entry and descent.

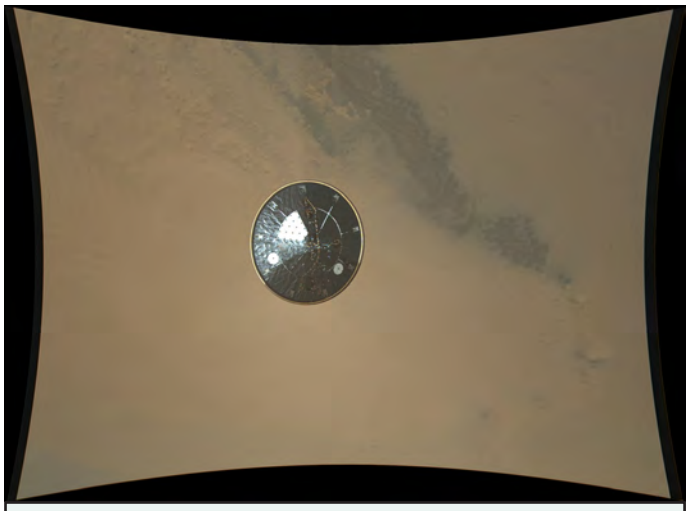
Click here for more information about IRVE-3.

Engineers check out the Inflatable Reentry Vehicle Experiment (IRVE-3) following the complete inflation system test under vacuum conditions in the Transonic Dynamics Tunnel at NASA's Langley Research Center in Hampton, Va.

(Credit: NASA Langley/ Sean Smith)

In August, the Mars Science Laboratory Entry, Descent and Landing Instrumentation (MEDLI) suite entered the Martian atmosphere installed in the heat shield of the MSL aeroshell. MEDLI successfully returned the most complete Mars entry data set in history. MEDLI provided atmospheric entry progress information to operators in real time and helped verify the MSL spacecraft aerodynamics, aerothermal environment, thermal protection system response, parachute performance, and guidance and control system performance during entry. NASA is now applying its MEDLI flight experience to the Exploration Flight Test-1 mission of the Multi-Purpose Crew Vehicle, solidifying expertise and saving valuable resources.

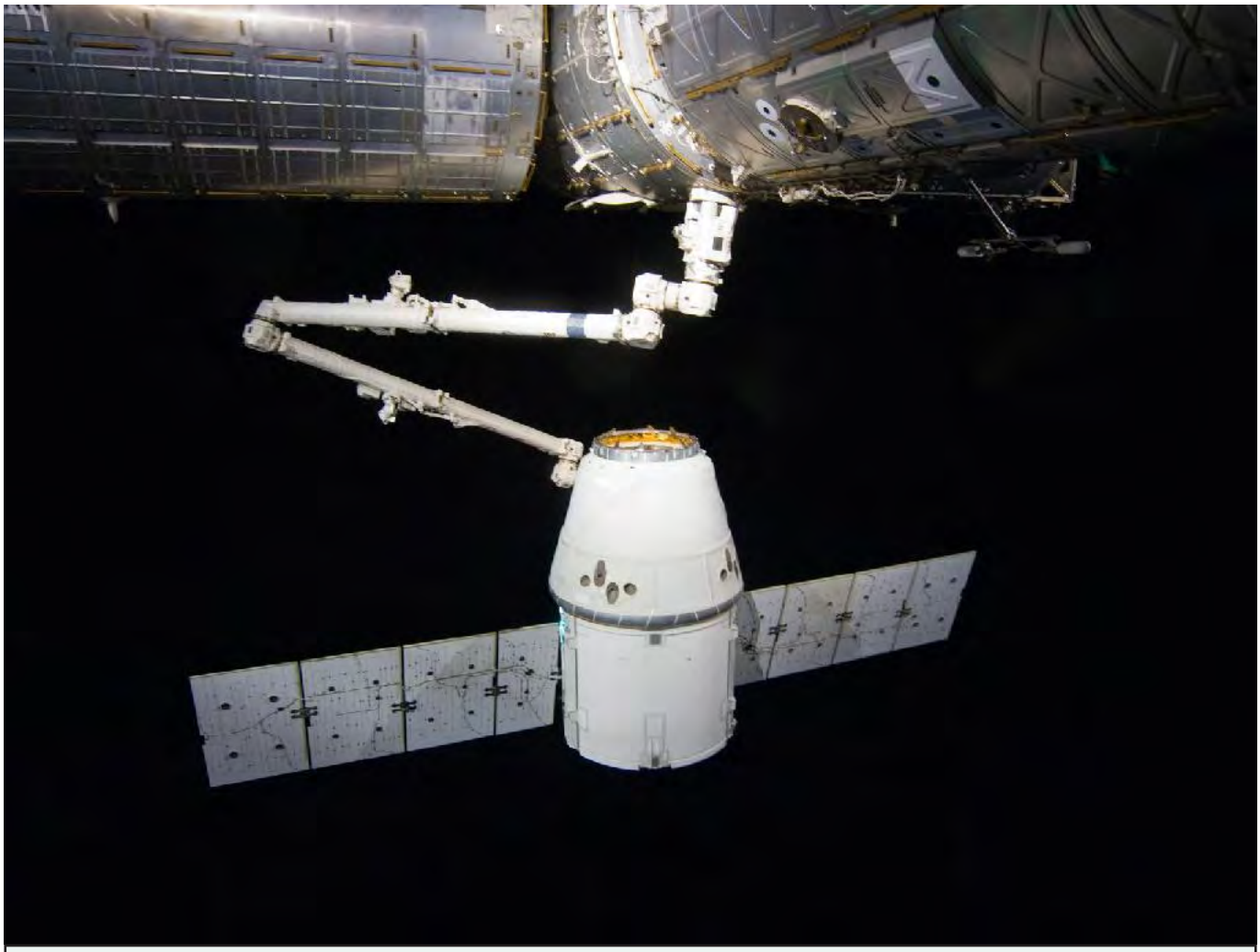
Click here for more information about MEDLI's successful use during the MSL landing.



Photographed by the Mars Descent Imager instrument (MARDI), the MEDLI instrument array is visible on the MSL heat shield as it drops away during descent to Mars. (Credit: NASA/JPL-Caltech/MSSS)

Creating New Ideas and Markets that Strengthen Our Economy

In May, technology developed through NASA's Small Business Innovative Research (SBIR) Program supported the docking of SpaceX' s Dragon spacecraft during the first commercial cargo mission to the International Space Station (ISS). The innovative 3-D Flash Lidar Video Camera, developed by Advanced Scientific Concepts, Inc. (ASC), generates a 3-D image using a two-dimens ional imaging array, generates 30 images a second, and provides a motion picture of an approaching scene with a single camera flash. ASC's system holds even greater potential for future automated docking and hazard avoidance applications. Accordingly, NASA continued to support the technology in FY 2012, focusing on embedded processing for even greater image enhancement. New, more advanced autonomous sys - tems have the potential to impact industries outside spaceflight, such as robotics and manufacturing, thereby creating new capabilities and markets

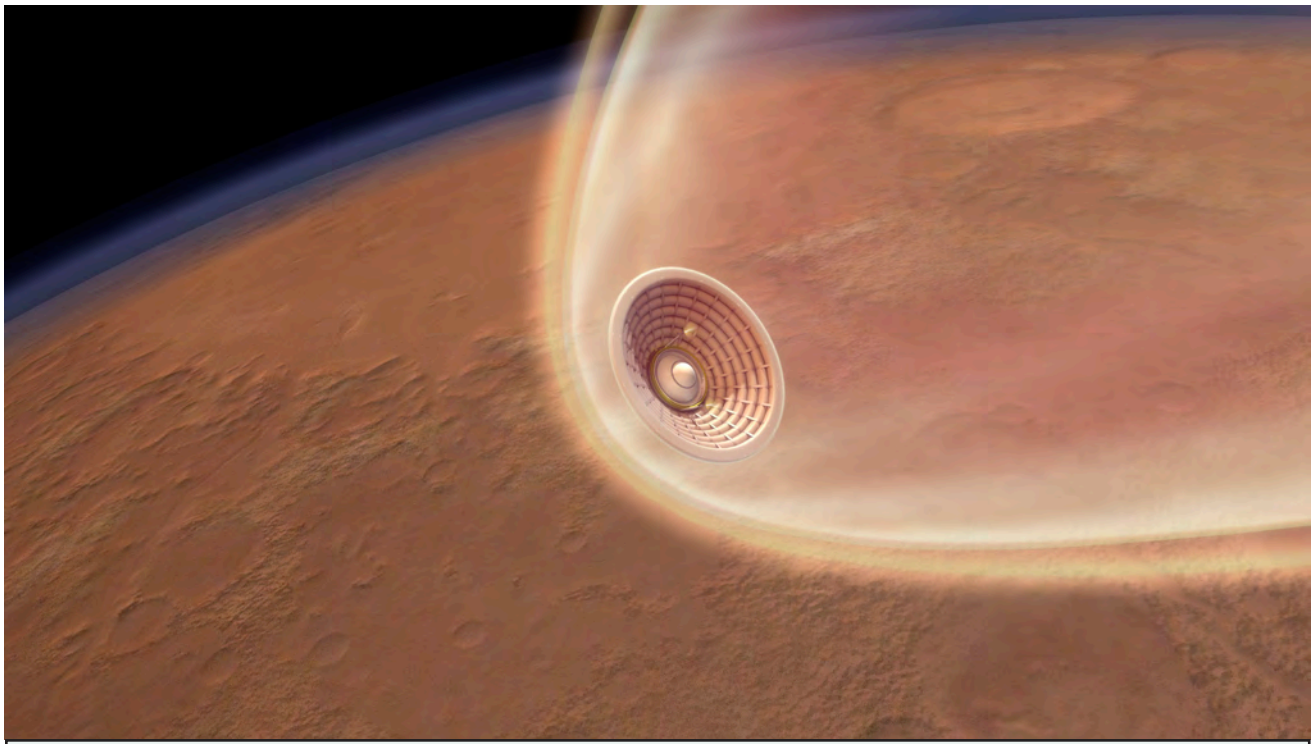


The SpaceX Dragon spacecraft docks to ISS with the help of a NASA SBIR-Developed 3D Camera. (Credit: NASA)

Other Key Achievements in FY12

- Operation of the first in-space humanoid dexterous manipulator (Robonaut 2) on the International Space Station;
- Advancement of woven thermal protection systems from innovative concept to game changing technology development;
- Initiation of the Edison Demonstration of Smallsat Networks (EDSN) project;
- Completion of the preliminary design review of the Solar Sail technology demonstration; and
- Support of student researchers through 80 Space Technology Research Fellowships.

Click here to learn more about how NASA drives advances in technology on NASA's Office of the Chief technologist.



When the technology is fully mature, inflatable reentry vehicles would allow for larger payloads than current launch vehicle designs can accommodate. For example, a rover larger than Curiosity could be sent to Mars. (Credit: NASA)

Strategic Goal 4:

Advance aeronautic research for societal benefits.

A key enabler for American commerce and mobility, U.S. commercial aviation is vital to the Nation's economic well-being. NASA's aeronautics research focuses on the most appropriate cutting-edge research and technologies to overcome a wide range of aeronautics challenges for America's current and future transportation system. As demands on the aviation transportation system grow, NASA is discovering ways to improve aviation safety and air traffic, and reduce fuel consumption, noise, and emissions.

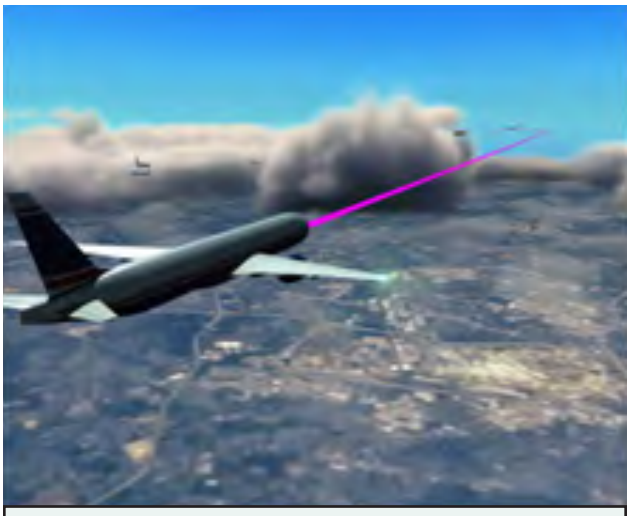
NASA Breakthrough Makes Flights More Time and Fuel Efficient in Bad Weather

The biggest cause of airline flight delays is hazardous weather. To help alleviate this problem, NASA developed and tested a new decision-support system called "Dynamic Weather Re-Route" that automatically finds alternative routes that help airlines save time and fuel for en-route aircraft.

Flight routes are based on predicted weather and established prior to aircraft departure. Because weather patterns and severity change over time, flight routes often become congested and inefficient which results in delays, wasted fuel, and sometimes hazardous conditions for aircraft and travelers. Air traffic controllers lack automation tools to generate new routes that save time and fuel once the aircraft are airborne.

Laboratory simulations and field tests of NASA's new Dynamic Weather Re-Route technology conducted with a U.S. air carrier have shown potential average savings in time of 10 minutes or in operating cost of $1,000 to $1,700 per flight impacted by severe weather. Additional testing is scheduled to take place in Fall 2012.

Click here for more information about the Aviation Systems Division.



The Dynamic Weather Re-Route capability allows airlines to safely avoid weather hazards and reduce fuel burn saving time and money. (Credit: NASA)

NASA Increases Understanding of Hazardous Ice Accumulation in Jet Engines

Aircraft flying through high altitude thunderstorms encounter high concentrations of ice crystals. Under certain conditions, these ice crystals may cause ice to form inside a jet engine in a way that can degrade its performance, potentially leading to engine power loss. To better understand the hazards of high altitude icing, NASA modeled the conditions an engine would encounter throughout a hypothetical flight. NASA's model incorporated the effects of ice accumulation, melting, and sublimation (conversion from solid to gaseous state)

NASA research into high altitude icing will help pilots avoid hazardous conditions and lead to improved engine design (Credit: NASA)

into a basic jet engine performance computer simulation. A study used the model to estimate the risk of engine icing in ice crystal conditions and the effect of the blockage on engine performance. Results showed that ice particle size is an important factor affecting engine icing. The distribution of ice particle sizes in clouds is currently unknown and is of high interest to NASA and its U.S. and international partners. Working with partners, NASA is conducting studies that further explore the atmospheric conditions leading to ice crystal icing and the ef fects of that icing on engine performance. Results from these studies will help aircraft remain clear of hazardous icing conditions and make aircraft engines more resilient if those conditions do occur

Click here for more information about engine ice research.

NASA Researches Ways to Make Aircraft More Fuel Efficient and Quiet

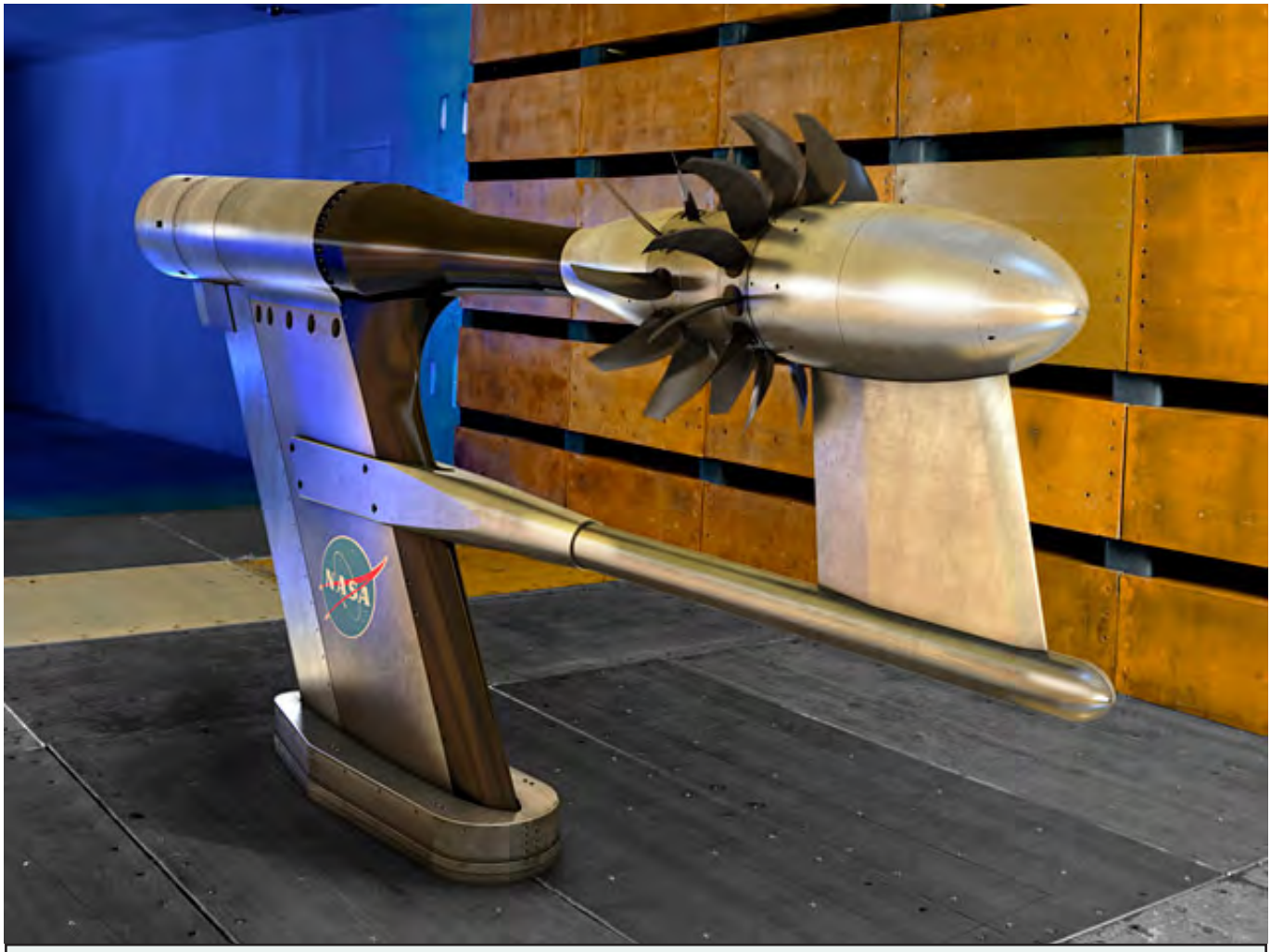
NASA continued research on future aircraft engine designs that aim to dramatically reduce the impact of the aviation industry on the environment by focusing on reduction of fuel burn, noise, and emissions. Two types of highly fuel efficient jet engine concepts were compared to determine their performance in reducing the rate of fuel consumption and noise. One of the systems, called an "Open Rotor", does not encase the engine fan blades in an engine housing, which is typical in traditional jet engine designs. The second system, referred to as an "Ultra High Bypass (UHB) Turbofan" is a much more fuel efficient version of the aircraft engine commonly used by airliners today. Research has validated that both engine concepts have the potential to dramatically reduce fuel burn. The Open Rotor shows greater potential, but at the price of increased noise production over the UHB concept. These results will provide data to the aviation industry and regulatory community to make informed decisions on future aircraft propulsion systems, with a continual emphasis on reducing their impact on the environment.

Click here or more information about open rotor technology.

Other Key Achievements in FY12

- NASA flight tests in low visibility conditions demonstrated the ability of "Synthetic and Enhanced Vision Systems" to provide improved safety, and validated the results of previous simulator studies.
- NASA successfully transitioned the "Efficient Descent Advisor" technology to the Federal Aviation Administration for inclusion in their 3D Path Arrival Management operational capability, enabling fuel-efficient descents in terminal airspace.
- NASA conducted successful wind tunnel testing of a low-noise aircraft design configuration called "Hybrid Wing Body" to assess its aerodynamic characteristics.

Click here for more information about NASA's Aeronautics Research.



Research on future aircraft engine designs, such as the “Open Rotor” aims to reduce the environmental impact of aviation. (Credit: NASA, GRC)

Strategic Goal 5:

Enable program and institutional capabilities to conduct NASA's aeronautic and space activities.

Diversity, sustainability, and innovation are keys to NASA's adaptability, and an integral part of NASA's mission success. NASA strives for an organizational culture and work environment that includes varying perspectives, education levels, skills, life experiences, and backgrounds to enable excellence and allow individual and the organization to maximize potential. The support and participation of everyone at NASA, including executive leadership, managers, supervisors, and employees, are critical components of successful implementation.

Diversity: Enhancing NASA's Inclusive Work Culture

NASA's Diversity and Inclusion Strategic Implementation Plan, spearheaded by the Offices of Diversity and Equal Opportunity (ODEO) and of Human Capital Management (OHCM), provides a blueprint for fully leveraging the Agency's diversity over the course of the next five years and beyond. As such, it offers innovative Agency guidelines and strategies designed to enhance the inclusiveness of NASA's work environments and further broaden the reach of NASA's education, recruitment, and small business efforts.

NASA developed an enhanced hiring program to refresh the Agency's talent pool. Key components of the program include the federal student employment initiative and an agency recruitment program. OHCM and ODEO, under the auspices of the Agency Diversity and Inclusion Plan, have partnered closely to enhance the Agency's recruitment strategies, allowing the Agency to reach a broader and more diverse talent pool through implementation of the new Pathways Program.

NASA's OHCM developed a human capital framework designed to create a workforce culture that builds on innovation. OCHM designed the Work from Anywhere campaign, an outreach effort to educate the NASA workforce on the flexible workplace policies already available that empower employees to engage effectively, in or out of the office. The NASA policies highlighted by the Work from Anywhere campaign remove geographical barriers to diversity in the Agency's workforce, allowing employees to work in locations away from NASA Centers.

NASA also continues to make great strides in advancing equal opportunity for all employees, as evidenced in the implementation of the Agency's Individuals with Disabilities plan. An Agency Stakeholders group meets regularly to address issues of access to electronic and information technology; NASA Centers recruit student interns with disabilities as part of Project Achieving Competence in Computing, Engineering, and Space Science (ACCESS); and Centers continue to improve the accessibility of facilities for individuals with disabilities.

In another key effort to advance equal opportunity, NASA developed procedures to provide the Agency's lesbian, gay, bisexual, transgender (LGBT) community with an avenue of redress parallel to the Equal Employment Opportunity complaints process. Current federal employment discrimination law does not protect sexual orientation and gender identity.

Sustainability: Contemporary Management Concepts that Keep NASA Running Smoothly

Sustainability concepts and thinking are inherent in NASA's mission, strategic goals, and overarching strategies. NASA's Office of Strategic Infrastructure has drafted the Strategic Sustainability Performance Plan which will guide NASA strategies for greenhouse gas and petroleum use reduction, water use efficiency, pollution prevention, waste reduction, and sustainable acquisition. In fact, NASA received a green rating on its most recent OMB scorecard by achieving a 12 percent reduction in petroleum use in its entire vehicle fleet compared to 2005 and is on track for a 20 percent reduction by 2015.

NASA is also promoting sustainability concepts throughout the Agency by implementing energy efficiency projects at three NASA Centers that will replace existing lighting and heating, ventilation, and air conditioning(HVAC) systems with higher efficiency systems, connect stand-alone HVAC equipment into central control systems for improved management of run hours and temperature setpoints, and retrocommission existing building electrical and mechanical systems to optimize system functionality considering current mission needs. When complete, these projects will reduce utility consumption and cost, reducing energy intensity and greenhouse gas emissions, and increasing high performance and sustainable buildings.

Innovation: NASA sets a New Standard for its Information Technology

NASA's Office of the Chief Information Officer (OCIO) created the Information Technology Laboratory Prototype Project (IT Labs) to help NASA make strategic investments in innovation. Information technology (IT) is not only a multi-faceted discipline, it is subject to constantly evolving technology. The IT Labs is an innovation incubator taking new ideas from the NASA community and developing them as part of a rapid, low-cost, low-risk process. Working with the OCIO Chief Technology Officer, IT Labs solicited proposals from across NASA. Thirty-six research candidates were submitted and NASA funded sixteen to proceed to execution. Candidates were assessed by a diverse group of reviewers, including the Center Technology Officers, OCIO Service Executives, and Agency Mission Partners. V ia labs.nasa.gov, the Agency OCIO shares the results of the program with all of NASA, enabling others to apply the lessons learned to their own projects, or collaborate on new efforts inspired by project results.

Strategic Goal 6:

Share NASA with the public, educators, and students to provide opportunities to participate in our Mission, foster innovation, and contribute to a strong national economy.

Public outreach, partnerships, and external assistance are important methods for communicating NASA's mission and inviting broad participation, allowing NASA to truly make space for all people. The Agency strives to include as many voices as possible. Fostering the interest of students in science, technology, engineering, and mathematics (STEM) education, particularly those who are traditionally underrepresented in STEM fields, aids greatly in meeting both National and Agency goals.

Reaching for New Heights

NASA's Office of Communications informs the public and engages them in NASA 's missions. The Office of Communications facilitates broad use of social media, NASA Television, nasa.gov, online streaming, media events, and exhibits, which enable NASA to broadly share its missions and activities with people around the country and around the world.

On the night of August 5, 2012, the world held its breath as the car-sized rover named Curi - osity began seven minutes of terror into the atmosphere of Mars. During the months that Curiosity traveled from Earth to Mars, NASA worked to not only make sure the rover landed safely, but also to inspire people to learn about and follow the mission.

Curiosity's landing gave NASA another unique event to share with the Nation and world. NASA hosted the first ever multi-center Social with in-person participants at seven NASA centers, and virtual viewers from around the world. The @MarsCuriosity Twitter account now has over a million followers. Millions of viewers watched the landing on NASA TV, UStream, and You-

The @MarsCuriosity Twitter feed has made over 1,200 Tweets and has more than 1,000,000 followers. From August 3 to 9, 2012, it gained 813,300 followers and was mentioned more than 195,000 times.

On September 17, 2012, Langley Research Center and the Virginia Air & Space Center (VASC) welcomed hundreds of boy scouts to earn their first ever robotics badge as part of a partnership between NASA and the Boy Scouts of America. (Credit: NASA/Sean Smith)

Tube. And thousands of people gathered in New York City to watch history in the making on the iconic big screens of Times Square.

Maximizing Outreach Through STEM Education Partnerships

Partners help NASA reach new and broader audiences in creative ways. NASA's Office of Education seeks to develop partnerships that have national impact and engage underrepresented and underserved audiences. Working with partners, the Office of Education strives to make effective and efficient use of the Agency's missions and educational resources to provide learners of all ages stimulating opportunities in STEM education. NASA enters into partnerships with innovative organizations that have wide ranging areas of expertise. The intent is to bring NASA STEM to learners and educators of all ages with varying interests and learning styles.

Reaching out to these broader audiences, NASA and its partners have developed eight NASA Summer of Innovation (SoI) themed camps. Thirty-hour, two-day, and one-day modules were outlined for each theme, allowing design flexibility for collaborators. They also awarded more than 200 SoI mini-grants, each with a maximum value of $2,500. The National Space Grant Foundation manages the 2012 SoI mini-grants for NASA, and the awardees selected included non-profit educational organizations, public and private schools, youth foundations, and science centers. The program engaged 3,380 educators in SoI professional development activities. The summer session reached 38,949 students who were largely from underrepresented or underserved populations, including 31% Hispanic, 26% African American, and 79% low-income students.

A 21st Century Approach to Equal Opportunity and Inclusion

NASA champions the spirit of inclusivity with its commitment to civil rights, and to assure that all have access to participate in the business of space. NASA conducts a vigorous program of civil rights compliance reviews of its grantees. NASA's Office of Diversity and Equal Opportunity continued its external technical assistance efforts on civil rights with the publication of a new resource tool for grantees, titled, "Title IX & STEM: A Guide to Conducting Self-Evaluations for Science, Technology, Engineering, and Mathematics Programs" (June 2012). NASA published an interactive version of this tool online in addition to traditional hard copy publication to maximize accessibility and use. The White House Council on Women and Girls activities commemorating the 40th anniversary of Title IX, held on June 20, 2012, recognized the publication, as well. NASA's external civil rights program continues to be acknowledged as a leader in the field by the Department of Justice Civil Rights Division, and external stakeholder organizations such as the Society of Women Engineers and the Association of Women in Science.

Financial Performance

Financial Overview

Over the years, NASA has made significant improvements to the integrity of its financial management systems, processes and reports, and the Agency overcame significant financial reporting challenges to achieve an unqualified audit opinion in 2011. In fiscal year 2012, NASA focused on maintaining the unqualified opinion while improving efficiencies and reducing costs. For example, in FY 2012 NASA achieved its administrative savings by reducing spending on travel, printing, supplies, and advisory services. These savings, which are associated with the Administration's management agenda to Promote Efficient Spending, enabled the Agency to increase funding for research and development contracts, facilities enhancements and grants. NASA is committed to effectively and efficiently managing funds appropriated by Congress to incur obligations for goods and services necessary to execute NASA mission goals within the apportionment limits from Office of Management and Budget (OMB) and in compliance with federal financial accounting standards.

NASA's financial values are a critical component of the Agency's effective financial management. The information provided in the next section reflect how NASA meets its financial values of ensuring financial stewardship, promoting effective resource management, ensuring the integrity of financial data, enhancing capabilities and delivering a positive customer experience.

NASA Financial Values

NASA's financial values provide the foundation for effective financial management. The values work together to deliver information that can be readily understood and used by NASA decision makers, governmental stakeholders and the American public. The sections below explain each of the values and describe key actions taken to integrate the values into NASA's financial processes to improve financial management and reporting.

Ensure Financial Stewardship

NASA is committed to financial management excellence that complies with applicable laws and regulations that demonstrates stewardship of budgetary resources while achieving its missions. In achieving financial management excellence, emphasis is placed on effective controls and accurate financial information that promote accountability, transparency, and compliance. In FY 2011 and continuing in FY 2012, the Agency accomplished the following selected initiatives:

- Strengthened internal controls and maintained financial data integrity by successfully completing OMB's Circular A-123 process reviews.
- Complied with applicable laws and regulations, such as the Chief Financial Officers' Act, Federal Financial Management Improvement Act, and financial management administrative

guidelines of the Treasury Department and OMB, including the new Schedule of Spending report required for FY 2012. These efforts enabled the accurate reporting of NASA financial results.

Promote Effective Resource Management

Resource management directly impacts how NASA uses its resources most effectively to deliver program results. Emphasis continues to be placed on resource management and utilization to meet growing mission demands as budget resource s decrease. During FY 2012, the following selected resource management and utilization initiatives were accomplished:

- Improved the analysis of unliquidated obligation balances to improve the quality and timeliness of decisions related to the use of those funds.
- Enhanced the analysis and monitoring of financial performance to develop options and recommendations for the most efficient use of budgetary resources.
- Increased the use of less resource-intensive meeting methods, such as: teleconferencing, WebEx, and video-conferencing, rather than face-to-face venues.
- Developed a performance measurement dashboard to provide timely, consistent, and reliable performance information to enable management decisions, support accountability, and meet legislative requirements. This tool supports the performance tracking/measurement process and analysis, provides accurate and comparative performance reports that provide a standard set of core information based on NASA's strategic framework, and provides flexibility to customize reports and analysis functions based on changes to the strategic framework.
- Expanded the eBudget dataset to contain quarterly , budgetary, and key decision points (KDP) for projects' cost and schedule data. This effort enhanced the eBudget tool to provide capability for importing and viewing data through the use of ad-hoc queries.

Ensure the Integrity of Financial Data

Reliable financial data supports accurate and useful financial reports that comply with applicable laws, regulations and guidance. NASA is committed to compliance with laws and regulations as well as maintaining effective internal controls. The following selected initiatives will be continued to ensure ongoing compliance and effective internal controls:

- Assessed the impact of new Treasury systems modernization initiatives, including the Government-wide Accounting (GWA) Central Accounting Reporting System and the Collection and Cash Management. These efforts positioned NASA as one of the federal agencies piloting the GWA and providing feedback to Treasury to ensure successful implementation. Currently, two NASA Centers are GWA reporters.
- Enhanced communication with trading partners for more effective monitoring and confirmation of intragovernmental balances.
- Assessed the impact of the new Government-wide Treasury Account Symbol Adjusted Trial Balance System (GTAS) reporting requirements. NASA is one of the federal agencies providing feedback to Treasury regarding the viability of GTAS data criteria. NASAimplemented the system capabilities of GTAS for the beginning of FY 2013 which includes functionality to meet future regulatory requirements.

Enhance Capabilities

Mission success, including financial management, depends on a diverse, highly skilled workforce, as well as efficient business processes. The following selected initiatives were enhanced to continue to develop the capabilities of the workforce and improve the effectiveness of NASA's business processes:

- Continued to provide training and development opportunities that strengthen critical knowledge, skills, and abilities in accounting, auditing, and financial and resources management.
- Provided opportunities for participation in external committees, such as those of fered by Department of Treasury, Office of Management and Budget, and Federal Accounting Standards Advisory Board which are held to address government-wide accounting and financial management issues.
- Implemented financial system enhancements to ensure that NASA remains in compliance with federal financial management standards.
- Developed systems solutions to meet the federal mandate that small businesses be paid within 15 days of receiving an invoice regardless of the payment terms (see Presidential Memo M-11-32 dated September 14, 201 1). This customization included new reports in NASA's financial system to provide success metrics on accelerated payments.
- Reviewed available electronic invoicing solutions and benchmarked with agencies currently utilizing these solutions to develop an approach for streamlining and reengineering NASA's Accounts Payable process. NASA successfully completed a pilot this fiscal year and is now finalizing the system solution to support implementation beginning in January 2013.

Deliver a Positive Customer Experience

Financial management supports diverse internal and external customers. The following selected initiatives were emphasized to ensure continued delivery of a positive customer experience:

- Enhanced capabilities for accurate cost-tracking and accounting for customer agreements with federal and non-fede ral entities, and responde d timely and accurately to customer inquiries.
- Prepared financial statements and reports that met the needs of internal and external customers for reliable and timely financial information.
- Enhanced analytical capabilities to support timely and accurate flow of financial information used by internal and external customers for decision making.
- Developed and communicated a comprehensive pricing policy to ensure compliant and consistent pricing based on the various types of agreements utilized to accomplish the mission of the Agency. Worked through an agency-wide team to capture process improvement opportunities for managing reimbursable activity across the Agency.
- Established a Communities of Practice framework to facilitate information sharing and benchmarking opportunities across various internal stakeholder communities.
- Improved clarity of the Agency's budget decision making processes and increased transparency of those decisions with internal stakeholders.

Financial Highlights

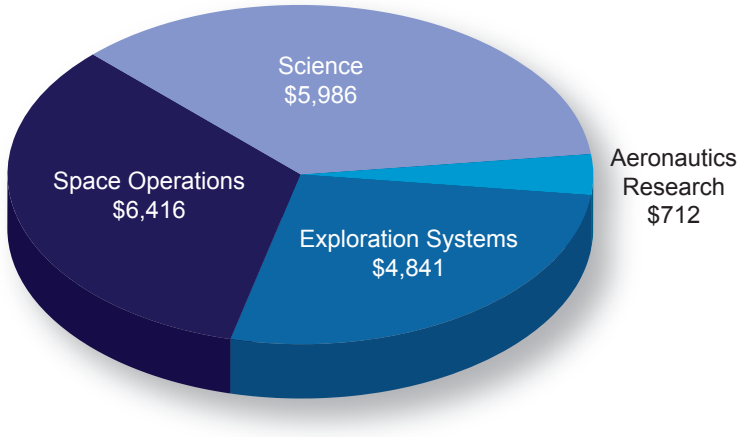
This section provides selected highlights of NASA's financial performance in the past fiscal year. The section is organized to provide a logical review of FY 2012 performance that explains the impacts of program and operational decisions and performance on financial results, where relevant and observable. Key components of this section include:

Results of Operations:	An overview of how NASA used its financial resources to support its programs and mission.
Sources of Funding:	An explanation of the type and amount of funds NASAreceived in FY 2012.
Balance Sheet:	A description of major changes in assets, liabilities and net position between FY 2012 and FY 2011.

Results of Operations

NASA's programs and activities are carried out through four Research and Development (R&D)/ Other Initiatives: Aeronautics Research, Exploration Systems, Science, and Space Operations. The Consolidated Statement of Net Cost presents NASA 's net costs by R&D/Other Initiatives, which is summarized in the chart below. The net cost of operations represents the gross costs incurred by NASA, less any revenue earned for work performed for other government organiza - tions and the public.

Net Cost by Research and Development and Other Initiatives



The accompanying table provides net cost comparisons for FY 2012 and FY 2011 across the four R&D/Other Initiatives.

R&D/Other Initiatives	2012	2011	% Change
Aeronautics Research			
Gross Costs	$ 821	$ 808	2%
Less: Earned Revenue	109	119	-8%
Net Costs	712	689	3%
Exploration Systems			
Gross Costs	$ 4,938	$ 4,791	3%
Less: Earned Revenue	97	68	43%
Net Costs	4,841	4,723	2%
Science			
Gross Costs	$ 7,371	$ 7,030	5%
Less: Earned Revenue	1,385	1,019	36%
Net Costs	5,986	6,011	0%
Space Operations			
Gross Costs	$ 6,899	$ 7,253	-5%
Less: Earned Revenue	483	58	733%
Net Costs	6,416	7,195	-11%
Net Cost of Operations			
Total Gross Costs	$ 20,029	$ 19,882	1%
Less: Total Earned Revenue	2,074	1,264	64%
Total Net Cost	**$ 17,955**	**$ 18,618**	-4%

NASA's net cost of operations for FY 2012 was $18.0 billion, a decrease of $663 million, or 4% compared to FY 2011. This decrease primarily represented reduced activity in FY 2012 for the International Space Station (ISS) and Space Shuttle Program (SSP) as explained below.

Gross costs were $20.0 billion, an increase of 1% from FY 2011 at the overall NASA level. The largest year-to-year changes at the mission area level were in the largest R&D/Other Initiatives, Science and Space Operations. Gross costs for Science grew by $341 million in FY 2012, bringing its total gross costs to $7.4 billion, the highest of the four R&D/Other Initiatives. The James Webb Space Telescope and Mars Exploration programs contributed to the increase in Science costs in FY 2012.

Space Operations experienced a reduction in gross costs of $354 million between FY 2011 and FY 2012, primarily related to decreases in the ISS and SSP programs. NASA completed construction of the ISS in FY 2011, which reduced the costs associated with new modules and module deliveries in FY 2012. The cost of on-going support for the ISS and the experiments performed on it partially off-set the reduction in construction costs. NASA's fleet of space shuttles were retired, which reduced the cost to maintain the orbiters and support flight operations.

After flying more than 130 missions in 30 years and performing numerous science and technology activities, the NASA Space Shuttle orbiters are being retired as national treasures. Various Shuttle artifacts are permanently displayed in museums and educational institutions so that the American public can share in the history and accomplishments of NASA's Space Shuttle Program. Retirement of the Shuttles effectively removes the orbiters themselves from NASA's accounting records.

Shuttle Name	Museum	Location
Shuttle Enterprise	Intrepid Sea, Air & Space Museum	New York City, NY
Shuttle Discovery	Smithsonian's National Air & Space Museum Steven F. Udvar-Hazy Center	Chantilly, VA
Shuttle Endeavour	California Science Center	Los Angeles, CA
Shuttle Atlantis	Kennedy Space Center Visitor's Complex	Merritt Island, FL

The public will be able to view the four orbiters at various locations throughout the U.S. The facilities chosen have a legacy of preserving space artifacts and providing access to U.S. and International visitors.

Hundreds of other shuttle artifacts have been allocated to museums and educational institutions. Donation of these items also reduces the balance of NASA's property, plant and equipment account.

Artifact	Museum(s)	Location
Shuttle Simulators	Alder Planetarium	Chicago, IL
	Evergreen Aviation & Space Museum	McMinnvile, OR
	Texas A&M Engineering Department	College Station, TX
Full Fuselage Trainer	Museum of Flight	Seattle, WA
Nose Cap Assembly and Crew Compartment Trainer	National Museum of the U.S. Air Force	Wright-Patterson Air Force Base, OH
Flight Deck Pilot and Commander Seats	NASA's Johnson Space Center	Houston, TX

In 2012, NASA fostered the development of commercial cargo and crew capabilities as part of the Space Operations mission area for continued support of the ISS. The Agency executed numerous mission programs through Commercial Resupply Services (CRS) contracts with various private companies for resupply missions to the ISS following the retirement of the space shuttles. These contract costs partially off-set reductions in construction costs for the ISS and depreciation costs for the donated Shuttle orbiters.

Earned revenue for Science increased by 36%. The increase in Science-related earned revenue was driven by an increase in reimbursable revenues related to activities with the National Oceanic and Atmospheric Administration (NOAA) on the Joint Polar Satellite Systems (JPSS) and Geostationary Operations Environmental Satellite (GOES) projects. The change in earned revenue for Space Operations was largely related to a reclassification of certain costs associated with NASA communications satellites in FY 2011.

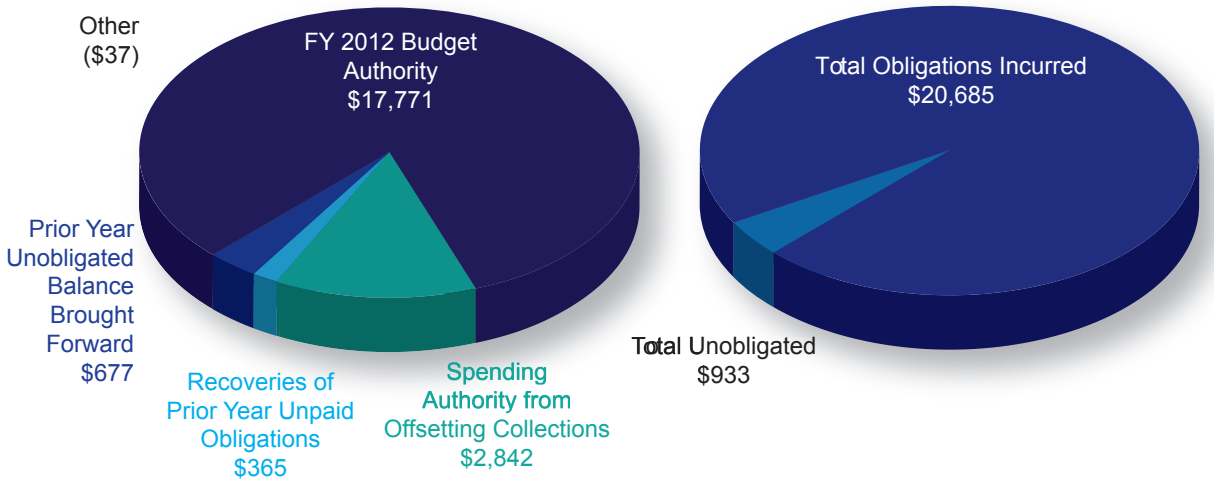
On a **net cost** basis, Space Operations, at $6.4 billion, remains NASA's largest R&D/Other Initiative despite a year-to-year reduction of $779 million. This reduction in Space Operations net costs, as noted above, was largely related to lower maintenance and flight support costs in the Space Shuttle program. The Balance Sheet section of this Financial Highlights section contains more information on these changes and their impacts.

The International Space Station's Canadarm2 installs SpaceX Dragon cargo craft to the Earth facing side of the Harmony node (Credit: NASA)

Sources of Funding

NASA received the majority of its funds to support operations through FY 2012 Congressional appropriations. The remaining funds were comprised primarily of available unobligated funds brought forward from the prior year and reimbursable agreements with other entities. Budgetary resources for FY 2012 totaled $21.6 billion, of which $677 million is the unobligated balance brought forward from FY 2011. The sources and uses of budgetary resources are summarized in the table below.

NASA Budgetary Resources
(In Millions of Dollars)



Line Item	2012	2011	% Change
FY 2012 Budget Authority	$ 17,771	$ 18,449	-4%
Spending Authority from Offsetting Collections	2,842	2,031	40%
Recoveries of Prior Year Unpaid Obligations	365	257	42%
Prior Year Unobligated Balance Brought Forward	677	615	10%
Other	(37)	(36)	3%
Total Budgetary Resources	**$ 21,618**	**$ 21,316**	**1%**
Total Obligations Incurred	20,685	20,639	0%
Total Unobligated	**$ 933**	**$ 677**	**38%**

New Budget Authority, which is 82% of total budgetary resources for FY 2012, was provided by Congress primarily in two-year appropriations. In FY 2012, new Budget Authority decreased $678 million from FY 2011.

Spending Authority from Offsetting Collections increased by $811 million, or 40%, in FY 2012. The majority (99%) of these funds are realized reimbursable income from other Federal agencies and public entities. These organizations provide funds to NASA to leverage NASA's capabilities, including the skills and experience of the Agency's personnel and the Agency's unique physical assets. The increase in reimbursable activity is related to activities with the National Oceanic and Atmospheric Administration for the Joint Polar Satellite System Program.

Recoveries of Prior Year Unpaid Obligations, which increased by $108 million, or 42% in FY 2012, are funds that were obligated in the prior year, but deobligated in the current year. The increase is primarily attributable to recoveries in the Space Operations for contracts that supported the Space Shuttle Transition and Retirement activities and the International Space Station Program.

Prior Year Unobligated Balance Brought Forward represents prior year funds that were not obligated and are made available for obligation in the current year. The funds in this category increased by approximately $62 million, or 10%, in FY 2012.

Obligations Incurred of $20.7 billion is the amount of available budgetary resources used in the R&D/Other Initiatives to accomplish the Agency's goals. There was no appreciable change in the amount of Obligations Incurred from FY 2011 to FY 2012.

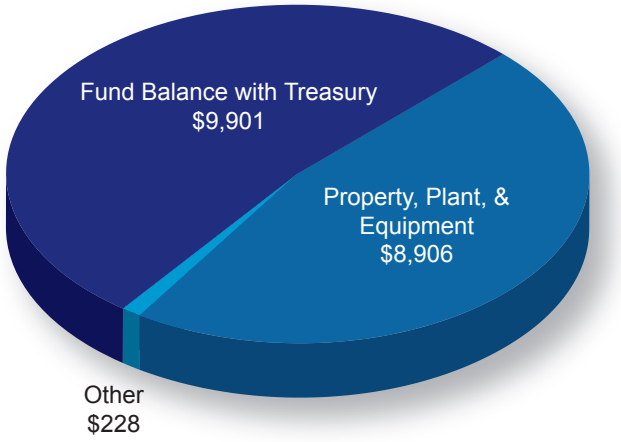
Other of ($37) million represents the amount of expired obligated and unobligated appropriation balances that are canceled as of September 30, 2012. There was no appreciable change in the amount of Other from FY 2011 to FY 2012.

Balance Sheet

Assets

Total assets for FY 2012 were $19.0 billion, a decrease of $307 million or 2% from FY 2011. The major categories of assets are summarized in the table below.

Assets
(In Millions of Dollars)



Line Item	2012	2011	% Change
Fund Balance with Treasury	$ 9,901	$ 9,395	5%
Property, Plant & Equipment	8,906	9,840	-9%
Other	228	107	113%
Total Assets	**$ 19,035**	**$ 19,342**	**-2%**

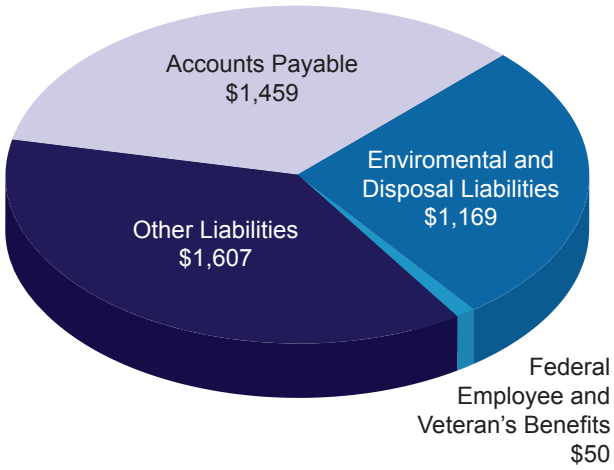
The largest category of assets was **Fund Balance with Treasury (FBWT)** which represents NASA's cash balance at the Department of Treasury. FBWT increased by $506 million, or 5%, from FY 2011.

Property, Plant and Equipment (PP&E), the next largest category of assets, decreasedby $934 million, or 9%, from FY 2011. Depreciation associated with the completed International Space Station was the primary contributing factor in the decrease in PP&E.

Liabilities

Total liabilities for FY 2012 were $4.3 billion, a decrease of $364 million from FY 2011. The major categories of liabilities are summarized in the table below.

Liabilities
(In Millions of Dollars)



Line Item	2012	2011	% Change
Other Liabilities	$ 1,607	$ 1,623	-1%
Accounts Payable	1,459	1,530	-5%
Environmental and Disposal Liabilities	1,169	1,445	-19%
Federal Employee and Veteran's Benefits	50	51	-2%
Total Liabilities	**$ 4,285**	**$ 4,649**	**-8%**

Other Liabilities primarily represents an estimate of contractor costs incurred but not yet paid, as well as accrued payroll and related costs; which decreased by $16 million.

Accounts Payable is the amount owed to other entities for goods and services received. It decreased by $71 million from FY 2011. This decrease is related to the liquidation of accounts payable in multiple programs.

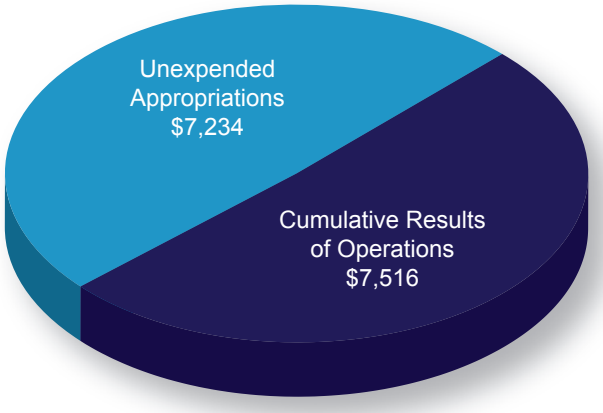
Environmental and Disposal Liabilities are estimates of cleanup costs for activities that create or could create public health or environmental hazard and cleanup costs associated with the removal, containment, and/or disposal of hazardous wastes. These liabilities decreased by $276 million, or 19%, in FY 2012 largely due to a decrease in outstanding liabilities related to cleaning up the Space Shuttle orbiters. Orbiters are cleaned prior to their donation to outside organizations, resulting in a change in classification from a liability to incurred cost.

Federal Employee and Veteran Benefits are amounts that the Department of Labor estimates on behalf of NASA for future worker's compensation liabilities for current employees. The estimate for future worker's compensation benefits includes the expected liability for death, disability, medical and miscellaneous costs for approved compensation cases, plus a component of claims incurred but not reported. There was no appreciated change in the amount of Federal Employee and Veteran Benefits from FY 2011 to FY 2012.

Net Position

Net Position, which is a summary indicator of financial condition, is the difference between assets and liabilities. It is comprised of Cumulative Results of Operations (CRO) and Unexpended Appropriations. It increased by $57 million over FY 2011.

Net Position
(In Millions of Dollars)



Line Item	2012	2011	% Change
Unexpended Appropriations	$ 7,234	$ 6,528	11%
Cumulative Results of Operations	7,516	8,165	-8%
Total Net Position	**$ 14,750**	**$ 14,693**	**0%**

Unexpended Appropriations were higher by $706 million, or 11%, for FY 2012 as compared to FY 2011. The increase is due to higher unexpended appropriations carried forward from FY 2011. The FY 2011 Continuing Resolution limited the availability of funds to NASA programs early in the fiscal year. This caused a delay in the execution of new contracts in FY 2011, which resulted in higher unexpended appropriations at the end of FY 2011 that was carried forward to FY 2012.

Cumulative Results of Operations were lower by $649 million, or 8%, for FY 2012 as compared to FY 2011.

Limitation of the Financial Statements

The principal statements have been prepared to report the financial position and results of operations of NASA, pursuant to the requirements of 31 U.S.C. 3515(b). While the statements have been prepared from the books and records of NASA in accordance with generally accepted accounting principles for Federal entities and the formats prescribed by the Office of Management and Budget (OMB), the statements are in addition to the financial reports used to monitor and control budgetary resources, which are prepared from the same books and records. The statements should be read with the realization that they are for a component of the U.S. Government, a sovereign entity.

Systems, Controls, and Legal Compliance

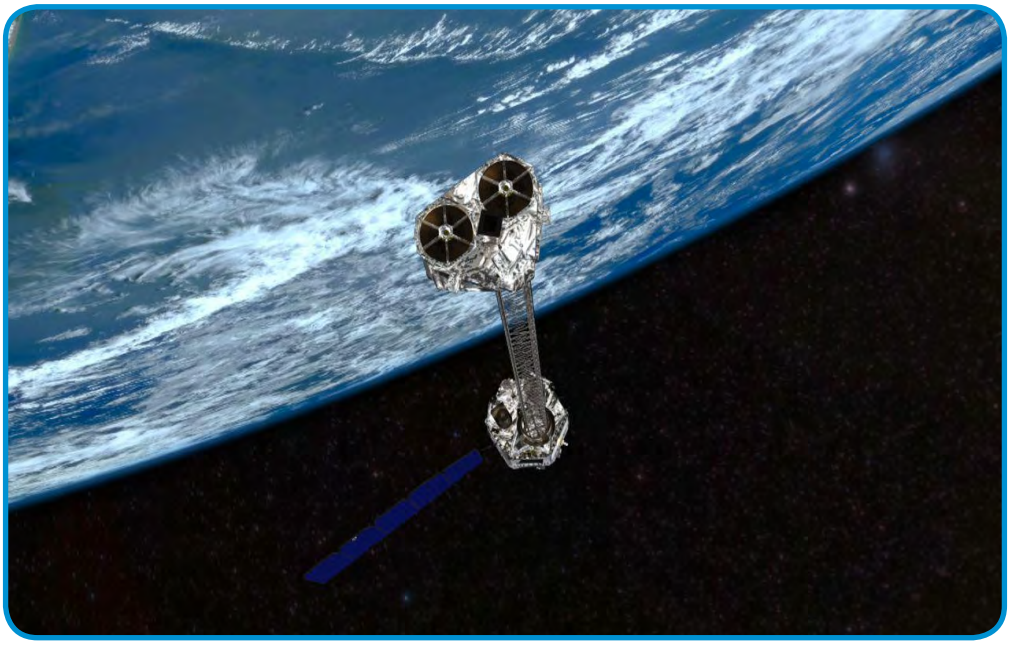


Photo: Artist's concept showing NASA's NuSTAR mission orbiting Earth. (Credit: NASA)

Management Assurances

Administrator's Statement of Assurance

November 15, 2012

NASA management is responsible for establishing and maintaining effective internal control and financial management systems that meet the objectives of the Federal Managers' Financial Integrity Act (FMFIA), the Federal Financial Management Improvement Act (FFMIA), as well as all other related laws and guidance. NASA is committed to a robust and comprehensive internal control program. We recognize that ensuring the effective, efficient, economical, and responsible use of the resources that have been provided to the Agency is not only good stewardship, but also the right approach to maximize our progress toward the realization of our mission goals. Integrity and ethical values are emphasized throughout the Agency and communicated both formally and informally through training, codification in policy, and through organizational norms and culture. As a result, managers and employees throughout the Agency are active on a daily basis in identifying or updating key control objectives, assessing risks, implementing controls or other mitigating strategies, conducting reviews, and taking corrective actions as necessary.

NASA conducted its Fiscal Year 2012 annual assessment of the effectiveness of internal controls over operations and compliance with applicable laws and regulations in accordance with FMFIA and the Office of Management and Budget (OMB) Circular A-123, Management's Responsibility for Internal Control. Based on the results of this evaluation, NASA can provide reasonable assurance that its internal controls over the effectiveness and efficiency of operations and compliance with applicable laws and regulations as of September 30, 2012, were operating effectively and no material weaknesses were found in the design or operation of the internal controls.

In addition, NASA's Office of the Chief Financial Officer performed an assessment of the effectiveness of internal controls over financial reporting in compliance with OMB Circular A-123, Appendix A-Internal Control over Financial Reporting. Based on the results of the evaluation, there were no material weaknesses identified in the design or operation of these controls. NASA provides reasonable assurance that internal controls over financial reporting are operating effectively, as of June 30, 2012. Finally, in accordance with the requirements of the FFMIA, we assessed the implementation and maintenance of NASA financial management systems. We found that these substantially comply with federal financial management systems requirements, applicable federal accounting standards, and the U.S. Government Standard General Ledger at the transaction level.

In conclusion, NASA makes an "unqualified statement of assurance" that its internal controls for FY 2012 were operating effectively.

NASA will continue its commitment to ensuring a sound system of internal control exists over operations, reporting and financial systems and will continue to monitor and enhance its quality assurance activities.

Charles F. Bolden, Jr.
Administrator

Financial Systems Strategies

SAP Core Financial (CF) serves as NASA's financial accounting system of record and is the foundation for NASA's business systems providing the core accounting functionality. Since its initial implementation, CF has been enhanced and expanded to demonstrate measurable progress toward achieving compliance with Federal Managers' Financial Integrity Act (FMFIA) and Federal Financial Management Improvement Act (FFMIA), and an unqualified financial audit opinion. CF includes the standard SAP modules of funds distribution, cost management, accounts payable, accounts receivable, purchasing, asset accounting, and standard general ledger. In addition, NASA's CF integrates with theAgency's FedTraveler system, an eGov initiative providing agency-wide travel processing. Lastly, NASA's Contract Management Module (CMM) / PRISM is used as a hub to modernize/standardize NASA's contract writing. It provides an integrated agency-wide procurement solution that interfaces with CF and promotes NASA's internal initiatives to optimize business operations. These systems, along with others, such as Business Warehouse/Cognos, eBudget, Metadata Manager and Bankcard all define the NASA Financial Management System investment.

There were no major Development/Maintenance/Enhancement (DME) projects during FY 2012; however, an eTravel-2 DME project is slated to begin in FY 2013. eTravel-2 will improve the end user travel experience and better position NASA to comply with requirements by the Federal Travel Regulation (FTR) for civilian Federal Government Travel. In FY 2013, NASA will also implement SAP's Governance Risk Compliance (GRC) toolset to improve access control and transaction logging capabilities across the enterprise solution set.

NASA's Financial Management System is an agency-wide solution for all Centers and installa - tions. Since 2003 the CF System has served as NASA's financial accounting system of record and is the foundation of NASA's ability to achieve its financial management objectives and management of the budget. During November 2006 NASA implemented a major update to CF in addition to the implementation of the CMM/PRISM solution. A further contribution to Enterprise Architecture improvements came with NASA's FedTraveler solution during 2009.

These system strategies allow NASA to effectively manage enterprise data and information per the Agency's vision for Enterprise Architecture. The CF System assists NASA in achieving its Enterprise Architecture target state goal of reducing duplicative systems and providing cost-effective and reliable applications to support NASA's mission.

Looking Forward

Artist's concept of NASA's Space Launch System initial crew vehicle launching from the Kennedy Space Center. (Credit: NASA)

Looking Forward

In fiscal year 2013, NASA will build on the successes achieved across 2012, as we continue evolving the Agency's space program. NASA and the Nation are embarking upon an ambitious exploration program that will incorporate new technologies and leverage proven capabilities, as we expand our reach out into the solar system. Successes such as the landing of the Curiosity Rover on Mars and the first demonstration of a resupply mission by a commercial provider, create a strong foundation for future endeavors. As the coming year unfolds, NASA will continue to conduct important research on the International Space Station, which continues to yield scientific benefits and provide key information about how humans may live and thrive in the harsh environment of space. Foundational to this research is the capability to bring supplies and crew to orbit, which will be enhanced in 2013 through more flights that deliver cargo from the commercial providers.

NASA will emphasize the work and contributions to the Nation that are realized from its scientific endeavors. After three years of preparation, the Landsat Data Continuity Mission will launch, and NASA will continue to make strides in the development of other key science missions such as the Global Precipitation Measurement Mission and the Mars Atmosphere and Volatile EvolutioN Mission. Development of the James Webb Space Telescope remains steadily on its new path, and is rapidly moving toward its completion and launch, planned in 2018. The Solar Dynamics Observatory, which launched on February 11, 2010, is expected to complete its prime science measurements, and bring back key findings about the Sun's dynamic processes. And on the Astrophysics front, the Fermi Gamma-ray Space Telescope, launched in 2008, will also finish its primary mission objectives; since the telescope's inception it has monitored more than a thousand galaxies.

NASA expects its innovative technology development to serve the Nation by underpinning future spacecraft advancements, supporting life in space, and enabling the next generation air transportation system. In 2013, NASA will make progress on concept developments, small satellite missions and technology demonstrators. As current and future work results in new capabilities, knowledge, and technologies, it is a core part of NASA's mission to share these advances with the Nation. Through this access, entrepreneurs, industry, academia, and other government agencies are encouraged to innovate in ways that can help address national and global needs and challenges. NASA will remain committed to addressing increased interest in science, technology, engineering, and mathematics (STEM) education, the Nation's economic vitality, and stewardship of Earth.

This is an exciting time for NASA—a time of opportunities to shape a promising future for the Nation's space program. As a foundational component of this journey, NASA will continue to focus on fiscal responsibility and long term affordability, and address any management challenge or risks that may pose a roadblock to future success. At the same time, incredible challenges lie ahead given the economic and fiscal environment in the United States. NASA will do its part to step up to these challenges through the effective and efficient use of the resources entrusted to the Agency.

Financials

Photo: Testing the Webb Telescope. (Credit: NASA/Chris Gunn)

Introduction to the Principal Financial Statements

Introduction to the Principal Financial Statements

The principal financial statements have been prepared to report the financial position and results of operations of the National Aeronautics and Space Administration (NASA), pursuant to the requirements of 31 U.S.C. 3515 (b). The statements have been prepared from the records of NASA in accordance with Generally Accepted Accounting Principles (GAAP) and the formats prescribed by the Office of Management and Budget (OMB) in Circular No. A-136, *Financial Reporting Requirements*. The statements are in addition to financial reports prepared by NASA in accordance with OMB and U.S. Department of the Treasury (Treasury) directives to monitor and control the status and use of budgetary resources, which are prepared from the same records. The statements should be read with the understanding that they are for a component of the U.S. Government, a sovereign entity. One important implication of this is that NASA has no authority to pay liabilities not covered by budgetary resources. Liquidation of such liabilities requires enactment of an appropriation. Comparative data for 2011 is included where applicable. The financial statements are the responsibility of management. The principal financial statements include:

Consolidated Balance Sheet provides information on assets, liabilities, and net position as of the end of the reporting period. Net position, which is a summary measure of the Agency's financial health at the end of the reporting period, is the difference between assets and liabilities.

Consolidated Statement of Net Cost reports net cost of operation by major programs and for the Agency as a whole for the reporting period. Net cost of operations, which is the cost to taxpayers for achieving the Agency mission, is gross cost of operation less exchange (i.e., earned) revenue.

Consolidated Statement of Changes in Net Position reports the beginning balance of net position, current financing sources and use of resources, unexpended resources (transactions that affect net position) for the reporting period, and ending net position for the current period.

Combined Statement of Budgetary Resources reports information on sources and status of budgetary resources for the reporting period. Information in this statement is reported on the budgetary basis of accounting which supports compliance with budgetary controls and controlling legislation.

Required Supplementary Stewardship Information provides information on NASA's Research and Development and Other Initiatives costs.

Required Supplementary Information contains a Combining Statement of Budgetary Resources and information on Deferred Maintenance.

Financial Statements, Notes, and Supplemental Information

National Aeronautics and Space Administration
Consolidated Balance Sheet
As of September 30, 2012 and 2011
(In Millions of Dollars)

	Audited 2012	Audited 2011
Assets (Note 2):		
Intragovernmental:		
Fund Balance with Treasury (Note 3)	$ 9,901	$ 9,395
Investments (Note 4)	17	17
Accounts Receivable (Note 5)	208	89
Total Intragovernmental	10,126	9,501
Accounts Receivable, Net (Note 5)	1	1
Property, Plant and Equipment, Net (Note 6)	8,906	9,840
Other Assets (Note 8)	2	-
Total Assets	**$ 19,035**	**$ 19,342**
Stewardship PP&E (Note 7)		
Liabilities (Note 9):		
Intragovernmental:		
Accounts Payable	$ 75	$ 99
Other Liabilities (Note 11)	85	111
Total Intragovernmental	160	210
Accounts Payable	1,384	1,431
Federal Employee and Veteran Benefits	50	51
Environmental and Disposal Liabilities (Note 10)	1,169	1,445
Other Liabilities (Note 11)	1,522	1,512
Total Liabilities	**4,285**	**4,649**
Commitments and Contingencies (Note 12)		
Net Position:		
Unexpended Appropriations	7,234	6,528
Cumulative Results of Operations	7,516	8,165
Total Net Position	**14,750**	**14,693**
Total Liabilities and Net Position	**$ 19,035**	**$ 19,342**

The accompanying notes are an integral part of this statement.

National Aeronautics and Space Administration
Consolidated Statement of Net Cost
For the Fiscal Years Ended September 30, 2012 and 2011
(In Millions of Dollars)

	Audited 2012	Audited 2011
Cost by Research and Development and Other Initiatives (Note 13):		
Aeronautics Research		
Gross Costs	$ 821	$ 808
Less: Earned Revenue	109	119
Net Costs	712	689
Exploration Systems		
Gross Costs	$ 4,938	$ 4,791
Less: Earned Revenue	97	68
Net Costs	4,841	4,723
Science		
Gross Costs	$ 7,371	$ 7,030
Less: Earned Revenue	1,385	1,019
Net Costs	5,986	6,011
Space Operations		
Gross Costs	$ 6,899	$ 7,253
Less: Earned Revenue	483	58
Net Costs	6,416	7,195
Net Cost of Operations		
Total Gross Costs	$ 20,029	$ 19,882
Less: Total Earned Revenue	2,074	1,264
Net Cost	**$ 17,955**	**$ 18,618**

The accompanying notes are an integral part of this statement.

National Aeronautics and Space Administration
Consolidated Statement of Changes in Net Position
For the Fiscal Years Ended September 30, 2012 and 2011
(In Millions of Dollars)

	Audited 2012	Audited 2011
Cumulative Results Of Operations:		
Beginning Balances	$ 8,165	$ 8,309
Budgetary Financing Sources:		
Appropriations Used	17,027	17,590
Nonexchange Revenue	2	13
Other Financing Sources:		
Donations and Forfeitures of Property	4	15
Transfers In/Out Without Reimbursement	100	676
Imputed Financing	176	193
Other	(3)	(13)
Total Financing Sources	17,306	18,474
Net Cost of Operations	(17,955)	(18,618)
Net Change	(649)	(144)
Cumulative Results of Operations	**7,516**	**8,165**
Unexpended Appropriations:		
Beginning Balance	6,528	5,706
Budgetary Financing Sources:		
Appropriations Received	17,800	18,485
Other Adjustments	(67)	(73)
Appropriations Used	(17,027)	(17,590)
Total Budgetary Financing Sources	706	822
Unexpended Appropriations	**7,234**	**6,528**
Net Position	**$ 14,750**	**$ 14,693**

The accompanying notes are an integral part of this statement.

National Aeronautics and Space Administration
Combined Statement of Budgetary Resources
For the Fiscal Years Ended September 30, 2012 and 2011
(In Millions of Dollars)

	Audited 2012	Audited 2011
Budgetary Resources:		
Unobligated Balance, Brought Forward, October 1	$ 677	$ 615
Recoveries of Prior Year Unpaid Obligations	365	257
Other Changes in Unobligated Balance	(37)	(36)
Unobligated Balance from Prior Year Budget Authority, Net	1,005	836
Appropriations	17,771	18,449
Spending Authority from Offsetting Collections	2,842	2,031
Total Budgetary Resources	**$ 21,618**	**$ 21,316**
Status of Budgetary Resources:		
Obligations Incurred	$ 20,685	$ 20,639
Unobligated Balance, End of Year:		
Apportioned	821	541
Unapportioned	112	136
Total Unobligated Balance, End of Year	933	677
Total Status of Budgetary Resources	**$ 21,618**	**$ 21,316**
Change in Obligated Balance:		
Unpaid Obligations Brought Forward, October 1	$ 9,526	$ 8,779
Uncollected Customer Payments from Federal Sources, Brought Forward, October 1	(851)	(822)
Obligated Balance, Start of Year (Net), As Adjusted	8,675	7,957
Obligations Incurred	20,685	20,639
Outlays (Gross)	(19,562)	(19,635)
Change in Uncollected Customer Payments from Federal Sources	(467)	(29)
Recoveries of Prior Year Unpaid Obligations	(365)	(257)
Obligated Balance, End of Year:		
Unpaid Obligations, End of Year (Gross)	10,284	9,526
Uncollected Customer Payments from Federal Sources, End of Year	(1,318)	(851)
Obligated Balance, End of Year (Net)	**$ 8,966**	**$ 8,675**
Budget Authority and Outlays, Net:		
Budge thority, Gross	$ 20,613	$ 20,480
Actua etting Collections	(2,375)	(2,002)
Chang Uncollected Customer Payments from Federal Sources	(467)	(29)
Budge thority, Net	$ 17,771	$ 18,449
Outla ross	$ 19,562	$ 19,635
Acuta etting Collections	(2,375)	(2,002)
Outla et	17,187	17,633
Distrit Offsetting Receipts	3	(16)
Agen utlays, Net	**$ 17,190**	**$ 17,617**

The accompanying notes are an integral part of this statement.

NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Reporting Entity

The National Aeronautics and Space Administration (NASA) is an independent agency established by Congress on October 1, 1958 by the National Aeronautics and Space Act of 1958. NASA was incorporated from its predecessor agency, the National Advisory Committee for Aeronautics, which provided technical advice to the United States (U.S.) aviation industry and performed aeronautics research. Today, NASA serves as the fulcrum for initiatives by the United States in civil space and aviation.

NASA is organized into four Research and Development and Other Initiatives (R&D/Other Initiatives):

- Aeronautics Research: conducts research which enhances aircraft performance, environmental compatibility, capacity, flexibility, and safety of the future air transportation system;
- Exploration Systems: develops new capabilities, supporting technologies and foundational research for affordable, sustainable human and robotic exploration;
- Science: explores the Earth, Moon, Mars, and beyond; charts the best route of discovery, and obtains the benefits of Earth and space exploration for society; and
- Space Operations: provides critical enabling technologies through the Space Shuttle, the International Space Station, and flight support.

NASA's administrative structure includes a Strategic Management Council, a Mission Support Council, and a Program Management Council to integrate strategic, tactical and operational decisions. A number of other committees support NASA's strategic focus and direction. The organizational structure enables NASA to implement the National Space Policy.

Operationally, NASA is organized into nine Centers, a Headquarters, NASA Shared Services Center, and the Jet Propulsion Laboratory to carry out the activities of the Agency. The Jet Propulsion Laboratory is a federally funded Research and Development center owned by NASA but managed by an independent contractor.

The accompanying financial statements include the accounts of all funds which have been established and maintained to account for the resources under the control of NASA management.

Basis of Accounting and Presentation

These consolidated financial statements are prepared in accordance with generally accepted accounting principles (GAAP) in the United States of America and accounting standards issued by the Federal Accounting Standards Advisory Board (FASAB) in format prescribed by the Office of Management and Budget (OMB) Circular No. A-136, *Financial Reporting Requirements*, Revised (August 2012). FASAB is recognized by the American Institute of Certified Public Accountants (AICPA) as the official accounting standards-setting body for United States government entities. The financial statements present the financial position, net cost of operations, changes in net position, and budgetary resources of NASA, as required by the Chief Financial Officers Act of 1990, Public Law (P.L.) 101-576, and the Government Management Reform Act (P.L. 101-356).

The financial statements should be read with the realization that they are for a component of the U.S. government, a sovereign entity. One important implication of this is that liabilities cannot be liquidated without legislation providing resources and legal authority to do so. The accounting structure of federal agencies is designed to reflect proprietary and budgetary accounting. Proprietary accounting uses the accrual method of accounting. Under the accrual method of accounting, revenues are

NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

Basis of Accounting and Presentation (continued)

recognized when earned and expenses are recognized when incurred, without regard to the timing of receipt or payment of cash. Budgetary accounting does not use the accrual method of accounting; it accounts for the sources and status of funds and thus facilitates compliance with legal controls over the use of federal funds.

Budgets and Budgetary Accounting

NASA follows federal budgetary accounting policies of OMB Circular No. A-11, *Preparation, Submission and Execution of the Budget*. To accomplish its mission, Congress funds NASA through nine main appropriations: Science, Aeronautics, Exploration, Space Operations, Education, Cross-Agency Support, Space Technology, Inspector General, and Construction and Environmental Compliance and Restoration. Reimbursements received under reimbursable service agreements cover the cost of goods and services NASA provides to other federal entities or the public.

Research and Development (R&D), Other Initiatives and Similar Costs

NASA makes substantial R&D investments for the benefit of the United States. NASA's R&D programs include activities to extend our knowledge of Earth, its space environment, and the universe; and to invest in new aeronautics and advanced space transportation technologies supporting the development and application of technologies. Following guidance outlined in the Federal Accounting Standards Advisory Board's (FASAB) Technical Release No. 7, NASA applies the Financial Accounting Standards Board's (FASB) Accounting Standards Codification (ASC) 730-10-25, *Research and Development - Recognition*, and FASB ASC 730-10-50 *Research and Development - Disclosure,* to its R&D projects.

Use of Estimates

The preparation of financial statements requires management to make assumptions and estimates affecting the reported amounts of assets and liabilities and disclosure of contingent liabilities as of the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Accordingly, actual results could differ from those estimates.

Fund Balance with Treasury

The U.S. Department of Treasury (Treasury) collects and disburses cash on behalf of federal agencies during the fiscal year. The collections include funds appropriated by Congress to fund the Agency's operations and revenues earned for services provided to other federal agencies or the public. The disbursements are for goods and services received in support of its operations and other liabilities. Fund Balance with Treasury (FBWT) is the balance of cash NASA has in its cash account with the Treasury. NASA's FBWT is comprised of balances in general funds, trust funds, and other types of funds.

NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

Investments in U.S. Government Securities

The NASA investments include the following Intragovernmental non-marketable securities:

(1) The Endeavor Teacher Fellowship Trust Fund (Endeavor Trust Fund) was established from public donations in tribute to the crew of the Space Shuttle Challenger. The Endeavor Trust Fund bi-annual interest earned is re-invested in short-term bills. P.L. 102-195 requires the interest earned from the Endeavor Trust Fund investments be used to create the Endeavor Teacher Fellowship Program.

(2) The Science, Space and Technology Education Trust Fund (Challenger Trust Fund) was established to advance science and technology education. The Challenger Trust Fund balance is invested in short-term bills and long-term bonds. P.L. 100-404 requires that a quarterly payment of $250,000 is sent to the Challenger Center from interest earned on the Challenger Trust Fund investments. In order to meet the requirement of providing funds to the Challenger Center, NASA invests the bi-annual interest earned in short-term bills with maturity that coincides with quarterly payments of $250,000 to beneficiaries. Interest received in excess of amount needed for quarterly payment to beneficiaries is invested in long-term bonds.

Accounts Receivable

The majority of NASA's accounts receivable is for intragovernmental reimbursements for cost of goods and services provided to other federal agencies; a small portion is for debts to NASA by non-federal government entities. Allowances for doubtful non-federal accounts are based on factors such as: aging of accounts receivable, debtors' ability to pay, payment history, and other relevant factors. Doubtful non-federal debts over 180 days are referred to Treasury for collection, wage garnishment or cross-servicing in accordance with the federal Debt Collection Improvement Act.

Operating Materials and Supplies

NASA does not maintain inventory stock for resale. It follows the Purchases method of accounting for operating materials and supplies under which it expenses operating materials and supplies when purchased, not when used.

Property, Plant and Equipment

NASA reports depreciation expense using the straight-line method over an asset's estimated useful life, beginning with the month the asset is placed in service. Property, plant and equipment (PP&E) with acquisition costs of $100,000 or more, a useful life of 2 years or more, and R&D assets that have alternative future use, is capitalized. PP&E that do not meet these capitalization criteria, including R&D assets that are not deemed to have alternative future use at the time of acquisition, are expensed. Capitalized costs include costs incurred by NASA to bring the property to a form and location suitable for its intended use. Certain of NASA's assets are held by government contractors. Under provisions of the Federal Acquisition Regulation (FAR), the contractors are responsible for the control and accountability of the assets in their possession. These government-owned, contractor-held assets are included within the balances reported in NASA's financial statements.

NASA has barter agreements with international entities; the assets and services received under these barter agreements are unique, with limited easement to only a few countries, as these assets are on the International Space Station (ISS). The intergovernmental agreements state that the parties will seek to minimize the exchange of funds in the cooperative program, including the use of barters to provide goods and services. As of September 30, 2012, NASA has received some assets from these

NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

Property, Plant and Equipment (continued)

parties in exchange for future services. The fair value is indeterminable; therefore, no value was ascribed to these transactions in accordance with FASB ASC 845-10-25 *Non-Monetary Transactions – Recognition* and ASC 845-10-50 *Non-Monetary Transactions – Disclosure*. The amounts reflected in NASA's financial reports for the ISS exclude components of the ISS owned or provided by other participants in the ISS. For example, the Cupola is a European Space Agency-built observatory module of the ISS.

Statement of Federal Financial Accounting Standards (SFFAS) No. 10, *Accounting for Internal Use Software* requires the capitalization of internally developed, contractor developed, and commercial off the shelf software. Capitalized costs for internally developed software include the full costs (direct and indirect) incurred during the software development stage only. For purchased software, capitalized costs include amounts paid to vendors for the software and material internal costs incurred by NASA to implement and make the software ready for use through acceptance testing. When NASA purchases software as part of a package of products and services (for example: training, maintenance, data conversion, reengineering, site licenses, and rights to future upgrades and enhancements), capitalized and non-capitalized costs of the package are allocated among individual elements on the basis of a reasonable estimate of their relative fair market values. Costs not susceptible to allocation between maintenance and relatively minor enhancements are expensed. Software in progress of being developed is not amortized until placed in service. NASA capitalizes costs for internal use software when the total projected cost is $1 million or more and the expected useful life of the software is 5 years or more.

Liabilities Covered by Budgetary Resources

As a component of a sovereign entity, NASA cannot pay for liabilities unless authorized by law and covered by budgetary resources. Liabilities covered by budgetary resources are those for which appropriated funds are available as of the balance sheet date. Examples of covered liabilities include accounts payable and employees' salaries. Budgetary resources include unobligated balances of budgetary resources at the beginning of the year, new budget authority, and spending authority from offsetting collections.

Liabilities and Contingencies Not Covered by Budgetary Resources

Liabilities not covered by budgetary resources are those for which congressional appropriation action is required to provide budgetary resources. Liabilities not covered by budgetary resources include certain environmental matters, legal claims, pensions and other retirement benefits, workers' compensation, annual leave, and closed appropriations.

Federal Employee and Veterans' Benefits

A liability was recorded for workers' compensation claims related to the Federal Employees' Compensation Act (FECA), administered by the U.S. Department of Labor. The FECA provides income and medical cost protection to covered federal civilian employees injured on the job, employees who have incurred a work-related occupational disease, and beneficiaries of employees whose death is attributable to a job-related injury or occupational disease. The FECA program initially pays valid claims and subsequently seeks reimbursement from the federal agencies employing the claimants. The FECA liability includes the actuarial liability for estimated future costs of death benefits, workers' compensation, and medical and miscellaneous costs for approved compensation cases.

NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

Personnel Compensation and Benefits

Annual Sick and Other Leave

Annual leave is accrued as it is earned; the accrual is reduced as leave is taken. Each year, the balance in the accrued annual leave account is adjusted to reflect current pay rates. To the extent current or prior year appropriations are not available to fund annual leave earned but not taken, funding will be obtained from future financing sources. Sick leave and other types of non-vested leave are expensed as taken.

Retirement Benefits

NASA employees participate in the Civil Service Retirement System (CSRS), a defined benefit plan, or the Federal Employees Retirement System (FERS), a defined benefit and contribution plan. For CSRS employees, NASA makes contributions of 7.0 percent of gross pay. For FERS employees, NASA makes contributions of gross pay of 11.9 percent to the defined benefit plan, 1.0 percent to a retirement saving plan (contribution plan), and matches employee contributions up to an additional 4.0 percent of gross pay. For those employees participating in FERS, a thrift savings plan is automatically established and NASA makes a mandatory contribution to this plan.

Insurance Benefits

SFFAS No. 5, *Accounting for Liabilities of the Federal Government* requires Government agencies to report the full cost of Federal Employee Health Benefits (FEHB), and the Federal Employees Group Life Insurance (FEGLI) Programs. NASA uses the applicable cost factors and data provided by the Office of Personnel and Management to value these liabilities.

NOTE 2. NON-ENTITY ASSETS

Non-entity assets are assets held by NASA but are not available for obligation by NASA.

(In Millions of Dollars)	2012	2011
Total Non-Entity Assets	$ -	$ 1
Total Entity Assets	19,035	19,341
Total Assets	**$ 19,035**	**$ 19,342**

NOTE 3. FUND BALANCE WITH TREASURY

Treasury processes cash receipts and disbursements for NASA. Those transactions are reconciled against NASA records. Fund Balance with Treasury (FBWT) is NASA's cash balance with the U.S. Treasury. The FBWT is comprised of balances in general funds, trust funds, and other types of funds. General Funds primarily consist of appropriated funds for NASA. Trust Funds include balances in the Endeavor Trust Fund; Challenger Trust Fund; and Gifts and Donations. Other types of funds include Working Capital Fund; General Receipt funds; and Budget Clearing and Suspense funds.

(In Millions of Dollars)	2012	2011
Fund Balances:		
General Funds	$ 9,779	$ 9,317
Trust Funds	2	3
Other Fund Types	120	75
Total	**$ 9,901**	**$ 9,395**

The Status of Fund Balance with Treasury is primarily the total fund balance as recorded in the general ledger for unobligated and obligated balances. Unobligated Balances - Available is the amount remaining in appropriation funds available for obligation in future fiscal years. Unobligated Balances - Unavailable is the amount remaining in appropriation funds used only for adjustments to previously recorded obligations. Obligated Balances - Not Yet Disbursed is the cumulative amount of obligations incurred for which outlays have not been made. Non-budgetary FBWT is comprised of amounts in other types of funds.

(In Millions of Dollars)	2012	2011
Status of Fund Balances with Treasury:		
Unobligated Balances		
Available	$ 821	$ 541
Unavailable	112	136
Obligated Balance Not Yet Disbursed	8,966	8,675
Non-Budgetary FBWT	2	43
Total	**$ 9,901**	**$ 9,395**

NOTE 4. INVESTMENTS

NASA's investments consist of non-marketable par value intragovernmental securities issued by Treasury's Bureau of the Public Debt. The trust fund balances are invested in Treasury securities, which are purchased at either a premium or discount, and redeemed at par value exclusively through Treasury's Federal Investment Branch. The effective-interest method was utilized to amortize premiums on bonds, and the straight-line method was utilized to amortize discounts on bills.

Interest receivable on investments was less than one-half million dollars. In addition, NASA did not have any adjustments resulting from the sale of securities prior to maturity or any change in value that is more than temporary.

2012

(In Millions of Dollars)	Cost	Amortization Method	Amoritzed (Premium) Discount	Interest Receivable	Investments, Net	Other Adjustments	Market Value Disclosure
Intragovernmental Securities:		Straight-Line					
Non-Marketable:		Effective-interest					
Par value	$ 19	0.115 – 6.602%	$ (2)	$ -	$ 17	$ -	$ 17
Total	**$ 19**		**$ (2)**	**$ -**	**$ 17**	**$ -**	**$ 17**

2011

(In Millions of Dollars)	Cost	Amortization Method	Amoritzed (Premium) Discount	Interest Receivable	Investments, Net	Other Adjustments	Market Value Disclosure
Intragovernmental Securities:		Straight-Line					
Non-Marketable:		Effective-interest					
Par value	$ 19	0.025 – 6.602%	$ (2)	$ -	$ 17	$ -	$ 17
Total	**$ 19**		**$ (2)**	**$ -**	**$ 17**	**$ -**	**$ 17**

NOTE 5. ACCOUNTS RECEIVABLE, NET

The Accounts Receivable balance represents net valid claims by NASA to cash or other assets of other entities. Intragovernmental Accounts Receivable represents reimbursements due from other federal entities for goods and services provided by NASA on a reimbursable basis. Accounts Receivable Due from the Public is the total of miscellaneous debts due to NASA from employees and/or smaller reimbursements from other non-federal entities. A periodic evaluation of public accounts receivable is performed to estimate any uncollectible amounts based on current status, financial and other relevant characteristics of debtors, and the overall relationship with the debtor. An allowance for doubtful accounts is recorded, for Accounts Receivable Due from the Public, in order to bring Accounts Receivable to its Net Realizable Value in accordance with SFFAS No. 1, *Accounting for Selected Assets and Liabilities*. The total allowance for doubtful accounts during both FY 2012 and FY 2011 was less than one–half million dollars.

	2012		
(In Millions of Dollars)	**Accounts Receivable**	**Allowance for Uncollectible Accounts**	**Net Amount Due**
Intragovernmental	$ 208	$ -	$ 208
Public	1	-	1
Total	**$ 209**	**$ -**	**$ 209**

	2011		
(In Millions of Dollars)	**Accounts Receivable**	**Allowance for Uncollectible Accounts**	**Net Amount Due**
Intragovernmental	$ 89	$ -	$ 89
Public	1	-	1
Total	**$ 90**	**$ -**	**$ 90**

NOTE 6. PROPERTY, PLANT AND EQUIPMENT, NET

NASA reports depreciation expense using the straight-line method over an asset's estimated useful life, beginning with the month the asset is placed in service. Property, plant and equipment (PP&E) with acquisition costs of $100,000 or more, a useful life of 2 years or more, and R&D assets that have alternative future use, is capitalized. PP&E that do not meet these capitalization criteria, including R&D assets that are not deemed to have alternative future use at the time of acquisition, are expensed. Capitalized costs include costs incurred by NASA to bring the property to a form and location suitable for its intended use. Certain of NASA's assets are held by government contractors. Under provisions of the Federal Acquisition Regulation (FAR), the contractors are responsible for the control and accountability of the assets in their possession. These government-owned, contractor-held assets are included within the balances reported in NASA's financial statements. There is no known restriction to the use or convertibility of NASA PP&E.

NOTE 6. PROPERTY, PLANT AND EQUIPMENT, NET (continued)

PP&E net, as reported on the Consolidated Balance Sheet, is reflected by major class in the table below:

	2012				
(In Millions of Dollars)	**Depreciation Method**	**Useful Life**	**Cost**	**Accumulated Depreciation**	**Book Value**
Space Exploration PP&E					
International Space Station	Straight-line	5–20 years	$ 12,369	$ (8,430)	$ 3,939
Space Shuttle	Straight-line	5–20 years	1,456	(1,456)	—
Assets Under Construction		N/A	1,590	—	1,590
Total			**15,415**	**(9,886)**	**5,529**
General PP&E					
Land			122	—	122
Structures, Facilities and Leasehold Improvements	Straight-line	15–40 years	8,878	(6,616)	2,262
Institutional Equipment	Straight-line	5–20 years	1,484	(1,239)	245
Construction in Process		N/A	710	—	710
Internal Use Software and Development	Straight-line	5 years	292	(254)	38
Total			**11,486**	**(8,109)**	**3,377**
Total Property, Plant and Equipment			**$ 26,901**	**$ (17,995)**	**$ 8,906**

	2011				
(In Millions of Dollars)	**Depreciation Method**	**Useful Life**	**Cost**	**Accumulated Depreciation**	**Book Value**
Space Exploration PP&E					
International Space Station	Straight-line	5–20 years	$ 12,465	$ (7,325)	$ 5,140
Space Shuttle	Straight-line	5–20 years	5,516	(5,516)	—
Assets Under Construction		N/A	1,337	—	1,337
Total			**19,318**	**(12,841)**	**6,477**
General PP&E					
Land			122	—	122
Structures, Facilities and Leasehold Improvements	Straight-line	15–40 years	8,669	(6,480)	2,189
Institutional Equipment	Straight-line	5–20 years	1,410	(1,116)	294
Construction in Process		N/A	719	—	719
Internal Use Software and Development	Straight-line	5 years	226	(187)	39
Total			**11,146**	**(7,783)**	**3,363**
Total Property, Plant and Equipment			**$ 30,464**	**$ (20,624)**	**$ 9,840**

NOTE 7. STEWARDSHIP PP&E

Federal agencies are required to classify and report heritage assets in accordance with SFFAS No. 29, *Heritage Assets and Stewardship Land*.

Stewardship PP&E have physical characteristics similar to those of general PP&E (G-PP&E) but differ from G-PP&E because their value is more intrinsic and not easily determinable in dollars. The only type of stewardship PP&E owned by NASA are Heritage Assets.

Heritage Assets are G-PP&E which possess one or more of the following characteristics:

- historical or natural significance
- cultural, educational, or aesthetic value
- significant architectural characteristics

Dollar value and useful life of heritage assets are not easily determinable. There is no minimum dollar threshold for designating a G-PP&E as heritage asset, and depreciation expense is not taken on these assets. For these reasons, heritage assets are reported in physical units, rather than with assigned dollar values. In accordance with SFFAS No. 29, the cost of acquisition, improvement, reconstruction, or renovation of heritage assets is expensed in the period incurred.

Heritage assets that are used in day-to-day government operations and have a heritage function are considered "multi-use" heritage assets. Such assets are accounted for as general property, plant and equipment and are capitalized and depreciated in the same manner as other general property, plant and equipment. As of September 30, 2012, NASA had 73 buildings and structures that are considered to be multi-use heritage assets. The value associated with these multi-use heritage assets is reflected in the G-PP&E values reported in Note 6.

When a G-PP&E is designated as heritage asset, its cost and accumulated depreciation are removed from the books. They remain on the record as heritage assets, except where there is legal authority for transfer or sale at which time they are removed from being a heritage asset. Heritage assets are withdrawn when they become inactive or reclassified as multi-use heritage assets. Heritage assets are generally in fair condition suitable for display.

NASA currently has three major classes of heritage assets: Buildings and Structures; Air and Space Displays and Artifacts; and Art and Miscellaneous Items. The first two categories of heritage assets support NASA's mission by providing the public with tangible examples of assets which were built and deployed to support NASA's mission. These real life assets enhance the public's understanding of NASA's numerous programs. Typically the Buildings and Structures have been designated as National Historic Landmarks.

The third category of heritage assets, Art and Miscellaneous Items, is mainly comprised of items created by artists who have contributed their time and talent to record their impressions of the U.S. Aerospace Program in paintings, drawings, and other media. These works of art not only provide a historic record of NASA projects, but they support NASA's mission by giving the public a new and fuller understanding of advancements in aerospace.

NOTE 7. STEWARDSHIP PP&E (continued)

The following table depicts NASA's heritage assets inventory:

	2011	Additions	Withdrawals	2012
Buildings and Structures	13	-	5	8
Air and Space Displays and Artifacts	481	172	18	635
Art and Miscellaneous Items	1,005	6	1	1,010
Total Heritage Assets	**1,499**	**178**	**24**	**1,653**

	2010	Additions	Withdrawals	2011
Buildings and Structures	16	3	6	13
Air and Space Displays and Artifacts	525	8	52	481
Art and Miscellaneous Items	1,019	1	15	1,005
Total Heritage Assets	**1,560**	**12**	**73**	**1,499**

NOTE 8. OTHER ASSETS

The Other Assets balance represents general PP&E assets that NASA determines are no longer needed and are awaiting disposal, retirement, or removal from services. These amounts are recorded at estimated net realizable value.

(In Millions of Dollars)	2012	2011
Removed from Service and Pending Disposal	$ 2	$ -
Total	**$ 2**	**$ -**

NOTE 9. LIABILITIES NOT COVERED BY BUDGETARY RESOURCES

Liabilities not covered by budgetary resources are liabilities for which congressional action is needed before budgetary resources can be provided. They include certain environmental matters (see Note 10, Environmental and Disposal Liabilities for more information), annual leave, workers' compensation under the Federal Employees' Compensation Act (FECA) administered by the Department of Labor, cancelled appropriations, legal claims, and pensions and other retirement benefits.

The present value of the FECA actuarial liability estimate at year-end was calculated by the Department of Labor using a discount rate of 3.14% in FY 2012 and 4.03% in FY 2011. This liability includes the estimated future costs for claims incurred but not reported or approved as of the end of each year. NASA has recorded Accounts Payable related to cancelled appropriations for which there are contractual commitments to pay. These payables will be funded from appropriations available for obligation at the time a bill is processed, in accordance with P.L. 101-510, National Defense Authorization Act.

(In Millions of Dollars)	2012	2011
Intragovernmental Liabilities:		
Other Liabilities		
Workers' Compensation	$ 13	$ 13
Accounts Payable for Cancelled Appropriations	-	4
Total Intragovernmental	13	17
Public Liabilities:		
Accounts Payable		
Accounts Payable for Cancelled Appropriations	34	38
Federal Employee and Veterans Benefits		
Actuarial FECA Liability	50	51
Environmental and Disposal Liabilities	1,169	1,445
Less: Environmental and Disposal Liabilities- Funded	37	226
Other Liabilities		
Unfunded Annual Leave	207	215
Total Liabilities Not Covered by Budgetary Resources	**1,436**	**1,540**
Total Liabilities Covered by Budgetary Resources	**2,849**	**3,109**
Total Liabilities	**$ 4,285**	**$ 4,649**

NOTE 10. ENVIRONMENTAL AND DISPOSAL LIABILITIES

(In Millions of Dollars)	2012	2011
Environmental Liabilities	$ 1,169	$ 1,445
Total Environmental Cleanup	**$ 1,169**	**$ 1,445**

Environmental and Disposal Liabilities represents cleanup costs resulting from:

- Operations that include facilities obtained from other governmental entities that have resulted in contamination from waste disposal methods, leaks and spills;
- Other past activity that created a public health or environmental risk, or
- Total cleanup costs associated with the removal, containment, and/or disposal of hazardous wastes or material and/or property that have been deferred until operation of associated property, plant and equipment (PP&E) ceases either permanently or temporarily.

Federal, state, and local statutes and regulations require environmental cleanup. Some of these statutes include: the Comprehensive Environmental Response, Compensation, and Liability Act; the Resource Conservation and Recovery Act; the Nuclear Waste Policy Act of 1982; as well as state and local laws.

NASA assesses the likelihood of required cleanup as probable, reasonably possible or remote. If the likelihood of required cleanup is probable and the cost can be reasonably estimated, a liability is recorded in the financial statements. If the likelihood of required cleanup is reasonably possible, the estimated cost of cleanup is disclosed in the notes to the financial statements. If the likelihood of required cleanup is remote, no liability is recorded or estimate disclosed.

If site-specific engineering estimates for cleanup are not available, NASA employs parametric modeling software to estimate the total cost of cleaning up known contamination at these sites for current and future years. The estimates calculated by the parametric models may be classified as probable or reasonably possible.

Consistent with SFFAS No. 6, *Accounting for Property, Plant, and Equipment*, NASA estimates the anticipated environmental disposal cleanup costs for current and planned capital PP&E. NASA recognizes and records in its financial statements an environmental cleanup liability for those in-service PP&E with a probable and measurable environmental cleanup liability.

Probable Environmental and Disposal Liabilities

In FY 2012, NASA recorded a decrease of $276 million of environmental and disposal liabilities to reflect the estimated total cost of environmental cleanup on known hazardous conditions bringing the total to $1,169 million, which includes anticipated cleanup at disposal for Space Shuttle and PP&E. The amount recorded in FY 2011 was $1,445 million. The majority of the decrease is due to changes in liabilities from disposal-related cleanup costs for Shuttle PP&E. Estimates change for various reasons but primarily because of the availability of updated or new information on the extent of contamination.

NOTE 10. ENVIRONMENTAL AND DISPOSAL LIABILITIES (continued)

Reasonably Possible Environmental and Disposal Liabilities

In addition to the probable cleanup costs for known hazardous conditions recognized in the financial statements, there are other potential remediation sites where the likelihood of required cleanup for known hazardous conditions is reasonably possible. Remediation costs at certain sites classified as reasonably possible were estimated to be $1 million for FY 2012 and 2011.

With respect to environmental remediation that NASA believes is reasonably possible but not estimable, NASA believes that either the likelihood of NASA liability is less than probable but more than remote or the regulatory drivers and/or technical data that exist are not reliable enough to calculate an estimate.

Other Information

The current proposed decommissioning approach for the ISS is to execute a controlled targeted deorbit to a remote ocean location. This is consistent with the approach used to deorbit other space vehicles such as Russian's Progress, Europe's Automated Transfer Vehicle (ATV) and Japan's H-II Transfer Vehicle (HTV). The target reliability for this decommissioning approach is calculated at 99 percent. Based on past experience with the re-entry of satellites, larger portions or fragments of the ISS would be expected to survive the thermal and aerodynamic stresses of re-entry. The debris footprint associated with the deorbit of the ISS would be targeted for remote ocean regions. The disposal of satellites and vehicles into broad ocean areas with a controlled deorbit has left little evidence of their re-entry. Any hazardous materials on board the ISS would be removed or jettisoned prior to the decommissioning. As a result, only residual quantities, if any, of hazardous, toxic, and radioactive materials would remain prior to the decommissioning. These would be expected to vaporize during the re-entry. Any remaining contamination in the ISS debris field would not be expected to have a substantive impact on marine life. Therefore, the probability of NASA incurring environmental cleanup costs related to the ISS is remote and, in accordance with SFFAS 5 & 6, no estimate for such costs has been developed or reported in these financial statements.

NASA maintains numerous structures and facilities, some of which are known to contain asbestos. Current accounting pronouncements do not require the recording of a contingent liability resulting from future asbestos remediation efforts.

NOTE 11. OTHER LIABILITIES

Other Liabilities are comprised of intragovernmental liabilities and liabilities with public entities. Other Accrued Liabilities primarily consist of the accrual of contractor costs for goods and services. The period of performance for contractor contracts typically spans the duration of NASA programs, which could be for a number of years prior to final delivery of the product. In such cases, NASA records a cost accrual throughout the fiscal year as the work is performed. Other Liabilities also includes federal employee payroll and benefit liabilities, including unfunded annual leave and funded sick leave that has been earned but not taken, and salaries and wages that have been earned but are unpaid.

	2012		
(In Millions of Dollars)	**Current**	**Non-Current**	**Total**
Intragovernmental Liabilities:			
Advances From Others	$ 61	$ -	$ 61
Workers' Compensation	5	8	13
Employer Contributions and Payroll Taxes	7	-	7
Liability for Non-Entity Assets	1	-	1
Other Accrued Liability	3	-	3
Total Intragovernmental	**77**	**8**	**85**
Unfunded Annual Leave	-	207	207
Accrued Funded Payroll	43	-	43
Advances from Others	90	-	90
Employer Contributions and Payroll Taxes	4	-	4
Liability for Deposit and Clearing Funds	2	-	2
Other Accrued Liabilities	1,176	-	1,176
Total from the Public	**1,315**	**207**	**1,522**
Total Other Liabilities	**$ 1,392**	**$ 215**	**$ 1,607**

	2011		
(In Millions of Dollars)	**Current**	**Non-Current**	**Total**
Intragovernmental Liabilities:			
Advances From Others	$ 80	$ -	$ 80
Workers' Compensation	6	7	13
Employer Contributions and Payroll Taxes	7	-	7
Liability for Deposit and Clearing Funds	6	-	6
Liability for Non-Entity Assets	1	-	1
Other Accrued Liability	4	-	4
Total Intragovernmental	**104**	**7**	**111**
Unfunded Annual Leave	-	215	215
Accrued Funded Payroll	44	-	44
Advances from Others	33	-	33
Employer Contributions and Payroll Taxes	4	-	4
Liability for Deposit and Clearing Funds	37	-	37
Other Accrued Liabilities	1,179	-	1,179
Total from the Public	**1,297**	**215**	**1,512**
Total Other Liabilities	**$ 1,401**	**$ 222**	**$ 1,623**

NOTE 12. COMMITMENTS AND CONTINGENCIES

NASA is a party in various administrative proceedings, court actions (including tort suits), and claims. For cases, management and legal counsel believe it is probable that the outcomes will result in a loss to NASA, contingent liabilities are recorded. There were certain cases reviewed by legal counsel where the probable future loss is remote and as such no contingent liability has been recorded in connection with these cases.

There are certain other contracts which may contain provisions regarding contingent obligations to fund accumulated unfunded employee benefit plans upon contract termination. Currently, these potential liabilities are not measurable.

NOTE 13. INTRAGOVERNMENTAL COST AND EXCHANGE REVENUE

Intragovernmental costs and revenue are exchange transactions made between NASA and other federal government entities. Costs and revenue with the Public result from transactions between NASA and other non-federal entities.

(In Millions of Dollars)	2012	2011
Aeronautics Research		
Intragovernmental Costs	$ 75	$ 60
Public Cost	746	748
Total Aeronautics Research Costs	821	808
Less:		
Intragovernmental Earned Revenue	87	101
Public Earned Revenue	22	18
Total Aeronautics Research Earned Revenue	109	119
Total Aeronautics Research Net Cost	**$ 712**	**$ 689**
Exploration Systems		
Intragovernmental Costs	$ 250	$ 228
Public Cost	4,688	4,563
Total Exploration Systems Costs	4,938	4,791
Less:		
Intragovernmental Earned Revenue	76	48
Public Earned Revenue	21	20
Total Exploration Systems Earned Revenue	97	68
Total Exploration Systems Net Cost	**$ 4,841**	**$ 4,723**
Science		
Intragovernmental Costs	$ 478	$ 400
Public Cost	6,893	6,630
Total Science Costs	7,371	7,030
Less:		
Intragovernmental Earned Revenue	1,350	985
Public Earned Revenue	35	34
Total Science Earned Revenue	1,385	1,019
Total Science Net Cost	**$ 5,986**	**$ 6,011**
Space Operations		
Intragovernmental Costs	$ 325	$ 401
Public Cost	6,574	6,852
Total Space Operations Costs	6,899	7,253
Less:		
Intragovernmental Earned Revenue	398	(20)
Public Earned Revenue	85	78
Total Space Operations Earned Revenue	483	58
Total Space Operations Earned Net Cost	**$ 6,416**	**$ 7,195**
Net Cost of Operations	**$ 17,955**	**$ 18,618**

NOTE 14. APPORTIONMENT CATEGORIES OF OBLIGATIONS INCURRED: DIRECT VS. REIMBURSABLE OBLIGATIONS

Category A consists of amounts requested to be apportioned annually and distributed for each calendar quarter in the fiscal year. Category B consists of amounts requested to be apportioned on a basis other than calendar quarters, such as time periods other than quarters, activities, projects, objects, or a combination thereof.

(In Millions of Dollars)	2012	2011
Direct Obligations:		
Category A	$ 1	$ 1
Category B	18,155	18,601
Reimbursable Obligations:		
Category B	2,529	2,037
Total Obligations Incurred	**$ 20,685**	**$ 20,639**

NOTE 15. EXPLANATION OF DIFFERENCES BETWEEN THE STATEMENT OF BUDGETARY RESOURCES (SBR) AND THE BUDGET OF THE U.S. GOVERNMENT

The FY 2014 *Budget of the United States Government* (President's Budget) presenting the actual amounts for the year ended September 30, 2012 has not been published as of the issue date of these financial statements. The FY 2014 President's Budget is scheduled for publication in 2013 on the OMB website.

NASA reconciled the amounts of the FY 2011 column on the SBR to the actual amounts for FY 2011 in the FY 2013 President's Budget for budgetary resources, obligations incurred, distributed offsetting receipts, and net outlays as presented below.

(In Millions of Dollars)	Budgetary Resources	Obligations	Distributed Offsetting Receipts	Net Outlays
Combined Statement of Budgetary Resources	$ 21,316	$ 20,639	$ 16	$ 17,617
Included on SBR, not in President's Budget				
Expired Accounts	(256)	(120)	-	-
Distributed Offsetting Receipts	-	-	(16)	17
Budget of the United States Government	**$ 21,060**	**$ 20,519**	**$ -**	**$ 17,634**

The difference between the SBR and the President's Budget represents expired accounts and distributed offsetting receipts reported on the SBR but not in the President's Budget.

NOTE 16. UNDELIVERED ORDERS AT THE END OF THE PERIOD

Undelivered Orders at the end of the period totaled $7.7 billion and $6.8 billion as of September 30, 2012 and September 30, 2011, respectively.

NOTE 17. RECONCILIATION OF NET COST TO BUDGET

SFFAS No.7, *Accounting for Revenues and Other Financing Concepts for Reconciling Budgetary and Financial Accounting,* requires a reconciliation of proprietary and budgetary accounting information. Accrual-based measures used in the Statement of Net Cost differ from the obligation-based measures used in the Statement of Budgetary Resources. This reconciliation shows the relationship between the net obligations derived from the Statement of Budgetary Resources and net costs of operations derived from the Statement of Net Cost by identifying and explaining key items that affect one statement but not the other. Prior year balances have been reclassified to comply with the current year's presentation and disclosure.

(In Millions of Dollars)	2012	2011
Resources Used to Finance Activities		
Budgetary Resources Obligated		
Obligations Incurred	$ 20,685	$ 20,639
Less: Spending Authority from Offsetting Collections and Recoveries	3,207	2,288
Obligations Net of Offsetting Collections and Recoveries	17,478	18,351
Less: Offsetting Receipts	(6)	4
Net Obligations	17,484	18,347
Other Resources		
Donations & Forfeitures of Property	4	15
Transfers In/Out Without Reimbursements	100	676
Imputed Financing from Costs Absorbed by Others	176	193
Net Other Resources Used to Finance Activities	280	884
Total Resources Used to Finance Activities	**17,764**	**19,231**
Resources Used to Finance Items Not Part of the Net Cost of Operations		
Change in Budgetary Resources Obligated for Goods, Services, and Benefits Ordered But Not Yet Provided	(440)	(823)
Resources that Fund Expenses Recognized in Prior Periods	(294)	(4)
Budgetary Offsetting Collections and Receipts that Do Not Affect the Net Costs of Operations—Other	(6)	5
Resources that Finance the Acquisition of Assets	(1,113)	(2,317)
Other Resources or Adjustments to Net Obligated Resources that Do Affect Net Cost of Operations	(4)	(690)
Total Resources Used to Finance Items Not Part of the Net Cost of	**(1,857)**	**(3,829)**
Total Resources Used to Finance the Net Cost of Operations	**$ 15,907**	**$ 15,402**

NOTE 17. RECONCILIATION OF NET COST TO BUDGET (continued)

(In Millions of Dollars)	2012	2011
Components of Net Cost that Will Not Require or Generate Resources in the Current Period		
Components Requiring or Generating Resources in Future Periods		
Increases in Annual Leave Liability	$ -	$ 2
Increases in Environmental and Disposal Liability	-	404
Other	-	4
Total Components of Net Cost that Will Require or Generate Resources in Future Periods	-	410
Components Not Requiring or Generating Resources		
Depreciation	1,443	1,206
Revaluation of Assets or Liabilities	(8)	(1)
Other	613	1,601
Total Components of Net Cost of Operations that Will Not Require or Generate Resources	2,048	2,806
Total Components of Net Cost of Operations that Will Not Require or Generate Resources in the Current Period	**2,048**	**3,216**
Net Cost of Operations	**$ 17,955**	**$ 18,618**

National Aeronautics and Space Administration

Required Supplementary Stewardship Information
Fiscal Years 2012, 2011, 2010, 2009, and 2008

Stewardship Investments: Research and Development and Other Initiatives

NASA's programs and activities are carried out through four Research and Development and Other Initiatives (R&D/Other Initiatives): Aeronautics Research, Exploration Systems, Science, and Space Operations. Each R&D/Other Initiative costs is presented by the applicable NASA themes, which are described in the note. To provide a complete analysis of NASA costs, both R&D and non-R&D costs are presented. Non R&D costs are associated with NASA activities such as Education and Outreach, Space Operations Programs. Descriptions for the work associated with these costs are also presented.

Research and Development and Other Initiative Costs by Theme

(In Millions of Dollars)	2012	2011	2010	2009	2008
Research and Development Costs					
Basic					
Aeronautics Research:					
Aeronautics Indirect Cost *	$ -	$ 1	$ 1	$ -	$ -
Subtotal	$ -	$ 1	$ 1	$ -	$ -
Exploration Systems:					
Human Exploration Capability	$ -	$ -	$ -	$ -	$ -
Exploration Research and Development	-	-	-	18	29
Exploration Indirect Cost *	3	5	5	1	1
Subtotal	$ 3	$ 5	$ 5	$ 19	$ 30
Science					
Earth Science	$ 329	$ 304	$ 306	$ 325	$ 294
Planetary Science	263	264	257	266	238
Astrophysics	194	198	194	149	103
Heliophysics	81	85	85	62	51
Science Indirect Cost *	4	7	7	17	46
Subtotal	$ 871	$ 858	$ 849	$ 819	$ 732
Space Operations					
International Space Station	$ 303	$ 258	$ 363	$ -	$ -
Space and Flight Support	-	1	-	-	-
Space Operation Indirect Cost *	4	8	9	3	2
Subtotal	$ 307	$ 267	$ 372	$ 3	$ 2
Total Basic Expenses	**$ 1,181**	**$ 1,131**	**$ 1,227**	**$ 841**	**$ 764**

Research and Development and Other Initiative Costs by Theme (continued)

(In Millions of Dollars)	2012	2011	2010	2009	2008
Applied					
Aeronautics Research:					
Aeronautics	$ 444	$ 429	$ 464	$ 465	$ 472
Aeronautics Indirect Cost *	-	4	3	3	3
Subtotal	$ 444	$ 433	$ 467	$ 468	$ 475
Exploration Systems:					
Exploration Research and Development	$ 72	$ 124	$ 152	$ 169	$ 159
Exploration Indirect Cost *	3	28	26	21	17
Subtotal	$ 75	$ 152	$ 178	$ 190	$ 176
Science					
Earth Science	$ 38	$ 38	$ 41	$ 40	$ 39
Science Indirect Cost *	4	36	31	26	24
Subtotal	$ 42	$ 74	$ 72	$ 66	$ 63
Space Operations					
International Space Station	$ 1,483	$ 1,260	$ 1,773	$ -	$ -
Space and Flight Support	-	5	-	-	-
Space Operation Indirect Cost *	4	40	42	34	29
Subtotal	$ 1,487	$ 1,305	$ 1,815	$ 34	$ 29
Total Applied Expenses	**$ 2,048**	**$ 1,964**	**$ 2,532**	**$ 758**	**$ 743**
Development					
Aeronautics Research:					
Aeronautics Indirect Cost *	$ 1	$ 1	$ 2	$ 1	$ -
Subtotal	$ 1	$ 1	$ 2	$ 1	$ -
Exploration Systems:					
Human Exploration Capability	$ 1,638	$ 2,431	$ 3,197	$ 1,478	$ 1,468
Exploration Research and Development	155	185	227	253	239
Commercial Spaceflight	-	-	-	122	-
Exploration Indirect Cost *	2	11	11	5	5
Subtotal	$ 1,795	$ 2,627	$ 3,435	$ 1,858	$ 1,712
Science					
Earth Science	$ 609	$ 665	$ 536	$ 420	$ 307
Planetary Science	491	738	704	627	643
Astrophysics	144	406	480	552	72
James Webb Space Telescope	308	-	-	-	-
Heliophysics	284	288	284	207	151
Science Indirect Cost *	3	14	13	118	598
Subtotal	$ 1,839	$ 2,111	$ 2,017	$ 1,924	$ 1,771
Space Operations					
Space and Flight Support	$ -	$ 4	$ -	$ -	$ -
Space Operation Indirect Cost *	2	16	18	8	7
Subtotal	$ 2	$ 20	$ 18	$ 8	$ 7
Total Development Expenses	**$ 3,637**	**$ 4,759**	**$ 5,472**	**$ 3,791**	**$ 3,490**
Total Research and Development	**$ 6,866**	**$ 7,854**	**$ 9,231**	**$ 5,390**	**$ 4,997**

National Aeronautics and Space Administration

Required Supplementary Stewardship Information
Fiscal Years 2012, 2011, 2010, 2009, and 2008
Stewardship Investments: Research and Development and Other Initiatives

Non-Research and Development and Other Initiative Costs by Theme

(In Millions of Dollars)	2012	2011	2010	2009	2008
Non-Research and Development Cost					
Aeronautics Research:					
Aeronautics	$ 92	$ 110	$ 83	$ 144	$ 150
Aeronautics Indirect Cost *	284	263	263	215	154
Subtotal	$ 376	$ 373	$ 346	$ 359	$ 304
Exploration Systems:					
Human Exploration Capability	$ 1,157	$ 239	$ 184	$ 1,672	$ 1,624
Exploration Research and Development	124	76	101	151	260
Commercial Spaceflight	415	423	98	-	-
Exploration Other	(2)	-	10	4	22
Exploration Indirect Cost *	1,371	1,269	1,349	1,259	987
Subtotal	$ 3,065	$ 2,007	$ 1,742	$ 3,086	$ 2,893
Science					
Earth Science	$ 590	$ 543	$ 677	$ 800	$ 1,083
Planetary Science	472	432	374	429	512
Astrophysics	340	385	414	299	188
Heliophysics	245	223	231	283	419
Science Other	(1)	4	17	88	243
Science Indirect Cost *	2,973	2,400	2,046	1,898	1,381
Subtotal	$ 4,619	$ 3,987	$ 3,759	$ 3,797	$ 3,826
Space Operations					
Space Shuttle	$ 928	$ 1,774	$ 3,215	$ 3,277	$ 3,394
International Space Station	1,612	1,805	786	2,148	1,582
Space and Flight Support	(159)	708	825	804	687
Space Operation Indirect Cost *	2,722	1,374	2,663	4,796	1,748
Subtotal	$ 5,103	$ 5,661	$ 7,489	$ 11,025	$ 7,411
Total Non-Research and Development Expenses	**$ 13,163**	**$ 12,028**	**$ 13,336**	**$ 18,267**	**$ 14,434**
Total Expenses	**$ 20,029**	**$ 19,882**	**$ 22,567**	**$ 23,657**	**$ 19,431**

*Indirect Costs represents R&D and Non-R&D costs incurred by the Agency for various activities that support the Agency's Research and Development and Other Initiatives. These activities relate to the areas of Construction and Environmental Compliance and Restoration, Space Technology, Education, Innovative Partnerships Program, Institutional Investments, Congressionally Directed items, Management and Operations, and the Office of Inspector General.

STEWARDSHIP INVESTMENTS: Research and Development and Other Initiatives (continued)

NASA makes substantial research and development investments for the benefit of the nation. These amounts are expensed as incurred in determining the net cost of operations.

NASA's R&D/Other Initiatives programs include activities to extend our knowledge of Earth, its space environment, and the universe, and to invest in new aeronautics and advanced space transportation technologies that support the development and application of technologies critical to the economic, scientific, and technical competitiveness of the United States.

Investment in R&D/Other Initiatives refers to those expenses incurred to support the search for new or refined knowledge and ideas and for the application or use of such knowledge and ideas for the development of new or improved products and processes with the expectation of maintaining or increasing national economic productive capacity or yielding other future benefits.

Research and Development and Other Initiatives: Theme Descriptions

INITIATIVE: AERONAUTICS RESEARCH

Theme: Aeronautics

Aeronautics develops technologies to improve aircraft and air system safety, security and performance; reduce aircraft noise and emissions; and increase the capacity of the National Airspace System (NAS). Programs include Aviation Safety, Airspace Systems Program, Fundamental Aeronautics, Aeronautics Test Program, and Integrated Systems Research.

INITIATIVE: EXPLORATION SYSTEMS

Theme: Human Exploration Capability

The Human Exploration Capability (HEC) Theme develops the launch and spaceflight vehicles that will provide the initial capability for crewed exploration missions beyond low Earth orbit (LEO). Programs include Multi-Purpose Crew Vehicle and Space Launch System.

Theme: Exploration Research and Development

The Exploration Research and Development (ERD) Theme's technology development efforts contribute toward advances in U.S. high technology products and services. Programs include Human Research Program and Advanced Exploration Systems.

Theme: Commercial Spaceflight

The Commercial Spaceflight Theme creates incentives for commercial providers to develop and operate safe, reliable, and affordable commercial systems to transport crew and cargo to and from the ISS and LEO. This approach will provide assured access to the ISS, strengthen America's space industry, and provide a catalyst for future business ventures to capitalize on affordable access to space. Programs include Commercial Cargo and Commercial Crew.

INITIATIVE: SCIENCE

Theme: Earth Science

The Earth Science Theme studies the dynamic Earth system to trace effect to cause, connect variability and forcing with response, and vastly improve national capabilities to predict climate, weather, natural hazards, and conditions in the space environment. Programs include Earth Science Research, Earth Systematic Missions, Earth System Science Pathfinder, Earth Science Multi-Mission Operations, Earth Science Technology, and Applied Sciences.

Theme: Planetary Science

The Planetary Science Theme advances scientific knowledge of the origin and history of the solar system, including the history of life and whether it evolved beyond Earth. Programs include Planetary Science Research, Lunar Quest Program, Discovery, New Frontiers, Mars Exploration, Outer Planets, and Technology.

Theme: Astrophysics

The Astrophysics Theme seeks to understand the cycles of matter and energy that formed, evolve, and govern the universe, and how they created the unique conditions that support life. Where are we from? Are we alone? NASA searches for answers to these questions looking far away, towards the beginning of time, to see galaxies forming, and close to home, in search of planetary systems like Earth around nearby stars. Programs include Astrophysics Research, Cosmic Origins, Physics of the Cosmos, Exoplanet Exploration, and Astrophysics Explorer.

Theme: James Webb Space Telescope

The James Webb Space Telescope (JWST) Theme represents a program and flagship mission that is an essential contributor to NASA's goals for astrophysics research. In FY 2012, this program became its own theme, separate from the Astrophysics theme. By being able to look back into the history of the universe, to see the first light from the first stars, JWST will enable the study of how galaxies, stars and planetary systems came into being, how they evolve, and ultimately how they end their lives. Additionally, the mission will make discoveries that will help scientists understand how matter, energy, space, and time behave under the extraordinarily diverse conditions of the cosmos, and the characteristics of planetary systems orbiting other stars.

Theme: Heliophysics

The Heliophysics Theme studies the science of the Sun-Solar System Connection to: (1) understand the Sun and its effects on Earth, the solar system, and the space environmental conditions that will be experienced by explorers, and (2) demonstrate technologies that can improve future operational systems. Programs include Heliophysics Research, Living with a Star, Solar Terrestrial Probes, Heliophysics Explorer, and New Millennium.

INITIATIVE: SPACE OPERATIONS

Theme: Space Shuttle

Thirty-nine years ago, NASA was charged with developing the world's first reusable space transportation system, a powerful vehicle with the versatility to revolutionize how people access and operate in near-Earth space. In FY 2011, the Space Shuttle retired, marking the end of its chapter in the history of space exploration.

Theme: International Space Station

The International Space Station Theme supports the operations of a research facility in low Earth orbit as one of NASA's steps in achieving human exploration beyond Earth. The ISS provides a multi-disciplinary, cutting edge, unique research platform to pursue microgravity and engineering research and technology-development test bed applications. The ISS is a critical step in developing, testing, and validating the next generation of space technologies and operational processes needed to explore beyond low Earth orbit. In 2011, NASA completed assembly of and signed a Cooperative Agreement with the Center for the Advancement of Science in Space (CASIS) to serve as an independent, nonprofit research management organization to develop and manage the U.S. portion of the ISS to be operated as a National Laboratory. CASIS be a single point of contact for US (non-NASA) researchers and will be responsible for developing and managing a diversified research and development portfolio and maximizing the value of the ISS by stimulating its use as a National Laboratory.

Theme: Space and Flight Support

The Space and Flight Support Theme encompasses the 21st Century Launch Complex, Space Communications and Navigation, Human Space Flight Operations, Launch Services, and Rocket Propulsion Testing.

National Aeronautics and Space Administration

Required Supplementary Information

Combining Schedule of Budgetary Resources

For the Fiscal Year Ended September 30, 2012

(In Millions of Dollars)	Space Operations Mission	Science Mission	Exploration Mission	Aeronautics Mission	Cross-Agency Mission	Education Mission	Office of Inspector General	American Recovery and Reinvestment Act	Space Technology Mission	Construction and Environmental Compliance and Restoration	Other	Total
Budgetary Resources:												
Unobligated Balance, Brought Forward, October 1	$ 130	$ 83	$ 189	$ 12	$ 42	$ 28	$ 3	$ 2	$ —	$ 109	$ 79	$ 677
Recoveries of Prior Year Unpaid Obligations	180	58	59	6	29	3	—	1	—	5	24	365
Other Changes in Unobligated Balance		—	—	—		—	—	—	—	—	(37)	(37)
Unobligated Balance from Prior Year Budget Authority, Net	**310**	**141**	**248**	**18**	**71**	**31**	**3**	**3**	**—**	**114**	**66**	**1,005**
Appropriation	4,192	5,074	3,716	569	3,003	136	38	—	548	495		17,771
Spending Authority from Offsetting Collections	10	—	—	—	2,557	—	1	—	—	2	272	2,842
Total Budgetary Resources	**$ 4,512**	**$ 5,215**	**$ 3,964**	**$ 587**	**$ 5,631**	**$ 167**	**$ 42**	**$ 3**	**$ 548**	**$ 611**	**$ 338**	**$ 21,618**
Status of Budgetary Resources:												
Obligations Incurred	$ 4,404	$ 5,142	$ 3,868	$ 569	$ 5,248	$ 146	$ 39	$ 1	$ 534	$ 439	$ 295	$ 20,685
Unobligated Balance, End of Year:									—			
Apportioned	64	63	92	17	370	18	1		14	172	10	821
Unapportioned	44	10	4	1	13	3	2	2	—	—	33	112
Total Unobligated Balance, End of Period	**108**	**73**	**96**	**18**	**383**	**21**	**3**	**2**	**14**	**172**	**43**	**933**
Total Status of Budgetary Resources	**$ 4,512**	**$ 5,215**	**$ 3,964**	**$ 587**	**$ 5,631**	**$ 167**	**$ 42**	**$ 3**	**$ 548**	**$ 611**	**$ 338**	**$ 21,618**
Change in Obligated Balance:												
Obligated Balance, Start of Year (Net), As Adjusted	$ 2,013	$ 2,764	$ 1,712	$ 259	$ 1,086	$ 187	$ 4	$ 55	$ —	$ 460	$ 135	8,675
Obligations Incurred	4,404	5,142	3,868	569	5,248	146	39	1	534	439	295	20,685
Outlays (Gross)	(4,486)	(4,778)	(3,575)	(566)	(5,051)	(152)	(38)	(45)	(242)	(383)	(246)	(19,562)
Change in Uncollected Customer Payments from Federal Sources	5	—	—	—	(482)	—	—	1	—	—	9	(467)
Recoveries of Prior Year Unpaid Obligations	(180)	(58)	(59)	(6)	(29)	(3)	—	(1)	—	(5)	(24)	(365)
	1,756	**3,070**	**1,946**	**256**	**772**	**178**	**5**	**11**	**292**	**511**	**169**	**8,966**
Obligated Balance, End of Year:												
Unpaid Obligations, End of Year (Gross)	1,756	3,070	1,946	256	2,086	178	5	11	292	511	173	10,284
Uncollected Customer Payments from Federal Sources, End of Year		—	—	—	(1,314)	—	—		—	—	(4)	(1,318)
Obligated Balance, End of Period (Net)	**$ 1,756**	**$ 3,070**	**$ 1,946**	**$ 256**	**$ 772**	**$ 178**	**$ 5**	**$ 11**	**$ 292**	**$ 511**	**$ 169**	**$ 8,966**
Budget Authority and Outlays, Net:												
Budget Authority, Gross	$ 4,202	$ 5,074	$ 3,716	$ 569	$ 5,560	$ 136	$ 39	$ —	$ 548	$ 497	$ 272	$ 20,613
Actual Offsetting Collections	(15)	—	—	—	(2,075)	—	(1)	(1)	—	(2)	(281)	(2,375)
Change in Uncollected Customer Payments from Federal Sources	5	—	—	—	(482)	—	—	1	—	—	9	(467)
Budget Authority, Net	**4,192**	**5,074**	**3,716**	**569**	**3,003**	**136**	**38**	**0**	**548**	**495**	**0**	**17,771**
Outlays, Gross	4,486	4,778	3,575	566	5,051	152	38	45	242	383	246	19,562
Actual Offsetting Collections	(15)	—	—	—	(2,075)	—	(1)	(1)	—	(2)	(281)	(2,375)
Outlays, Net	**4,471**	**4,778**	**3,575**	**566**	**2,976**	**152**	**37**	**44**	**242**	**381**	**(35)**	**17,187**
Distributed Offsetting Receipts	—	—	—	—	—	—	—	—	—	—	3	3
Agency Outlays, Net	**$ 4,471**	**$ 4,778**	**$ 3,575**	**$ 566**	**$ 2,976**	**$ 152**	**$ 37**	**$ 44**	**$ 242**	**$ 381**	**$ (32)**	**$ 17,190**

National Aeronautics and Space Administration

Required Supplementary Information

Combining Schedule of Budgetary Resources

For the Fiscal Year Ended September 30, 2011

(In Millions of Dollars)	Space Operations Mission	Science Mission	Exploration Mission	Aeronautics Mission	Cross-Agency Mission	Education Mission	Office of Inspector General	American Recovery and Reinvestment Act	Space Technology Mission	Construction and Environmental Compliance and Restoration	Other	Total
Budgetary Resources:												
Unobligated Balance, Brought Forward, October 1	$ 154	$ 61	$ 145	$ 34	$ 23	$ 5	$ 2	$ 2	$ —	$ 85	$ 104	$ 615
Recoveries of Prior Year Unpaid Obligations	50	58	42	6	41	3	—	8	—	10	39	257
Other Changes in Unobligated Balance	2	—	—	—	1	—	—	—	—	—	(39)	(36)
Unobligated Balance from Prior Year Budget Authority, Net	**206**	**119**	**187**	**40**	**65**	**8**	**2**	**10**	**—**	**95**	**104**	**836**
Appropriation	5,321	4,919	3,929	534	3,130	146	36	—	—	433	1	18,449
Spending Authority from Offsetting Collections	5	—	—	—	1,937	—	1	—	—	6	82	2,031
Total Budgetary Resources	**$ 5,532**	**$ 5,038**	**$ 4,116**	**$ 574**	**$ 5,132**	**$ 154**	**$ 39**	**$ 10**	**$ —**	**$ 534**	**$ 187**	**$ 21,316**
Status of Budgetary Resources:												
Obligations Incurred	$ 5,401	$ 4,955	$ 3,927	$ 561	$ 5,090	$ 126	$ 37	$ 8	$ —	$ 425	$ 109	$ 20,639
Unobligated Balance, End of Year:									—			
Apportioned	89	79	188	12	30	27	—	1	—	109	6	541
Unapportioned	42	4	1	1	12	1	2	1	—	—	72	136
Total Unobligated Balance, End of Period	**131**	**83**	**189**	**13**	**42**	**28**	**2**	**2**	**—**	**109**	**78**	**677**
Total Status of Budgetary Resources	**$ 5,532**	**$ 5,038**	**$ 4,116**	**$ 574**	**$ 5,132**	**$ 154**	**$ 39**	**$ 10**	**$ —**	**$ 534**	**$ 187**	**$ 21,316**
Change in Obligated Balance:												
Obligated Balance, Start of Year (Net), As Adjusted	$ 1,713	$ 2,560	$ 1,258	$ 207	$ 1,042	$ 224	$ 6	$ 319	$ —	$ 302	$ 326	$ 7,957
Obligations Incurred	5,401	4,955	3,927	561	5,090	126	37	8	—	425	109	20,639
Outlays (Gross)	(5,058)	(4,693)	(3,431)	(502)	(4,912)	(161)	(39)	(281)	—	(257)	(301)	(19,635)
Change in Uncollected Customer Payments from Federal Sources	7	—	—	—	(93)	—	—	17	—	—	40	(29)
Recoveries of Prior Year Unpaid Obligations	(50)	(58)	(42)	(6)	(41)	(3)	—	(8)	—	(10)	(39)	(257)
	2,013	**2,764**	**1,712**	**260**	**1,086**	**186**	**4**	**55**	**—**	**460**	**135**	**8,675**
Obligated Balance, End of Year:												
Unpaid Obligations, End of Year (Gross)	2,018	2,764	1,712	260	1,919	186	4	56	—	460	147	9,526
Uncollected Customer Payments from Federal Sources, End of Year	(5)	—	—	—	(833)	—	—	(1)	—	—	(12)	(851)
Obligated Balance, End of Period (Net)	**$ 2,013**	**$ 2,764**	**$ 1,712**	**$ 260**	**$ 1,086**	**$ 186**	**$ 4**	**$ 55**	**$ —**	**$ 460**	**$ 135**	**$ 8,675**
Budget Authority and Outlays, Net:												
Budget Authority, Gross	$ 5,326	$ 4,919	$ 3,929	$ 534	$ 5,067	$ 146	$ 37	$ —	$ —	$ 439	$ 83	$ 20,480
Actual Offsetting Collections	(12)	—	—	—	(1,844)	—	(1)	(17)	—	(6)	(122)	(2,002)
Change in Uncollected Customer Payments from Federal Sources	7	—	—	—	(93)	—	—	17	—	—	40	(29)
Budget Authority, Net	**5,321**	**4,919**	**3,929**	**534**	**3,130**	**146**	**36**	**—**	**—**	**433**	**1**	**18,449**
Outlays, Gross	5,058	4,693	3,431	502	4,912	161	39	281	—	257	301	19,635
Actual Offsetting Collections	(12)	—	—	—	(1,844)	—	(1)	(17)	—	(6)	(122)	(2,002)
Outlays, Net	**5,046**	**4,693**	**3,431**	**502**	**3,068**	**161**	**38**	**264**	**—**	**251**	**179**	**17,633**
Distributed Offsetting Receipts	—	—	—	—	—	—	—	—	—	—	(16)	(16)
Agency Outlays, Net	**$ 5,046**	**$ 4,693**	**$ 3,431**	**$ 502**	**$ 3,068**	**$ 161**	**$ 38**	**$ 264**	**$ —**	**$ 251**	**$ 163**	**$ 17,617**

DEFERRED MAINTENANCE AND REPAIRS

Deferred maintenance and repairs are maintenance and repair activities not performed when they should have been or were scheduled to be and which, therefore, are put off or delayed for a future period. NASA's buildings, facilities and other structures which include heritage assets remain in fair to good condition. Heritage assets support NASA's mission and enhance the public's understanding of NASA's numerous programs.

NASA uses a Deferred Maintenance parametric estimating method (DM method) in order to conduct a consistent condition assessment of its facilities, buildings and other structures (including heritage assets). This method measures NASA's current real property asset condition and documents real property deterioration. The DM method produces both a cost estimate of deferred maintenance and repairs, and a Facility Condition Index (FCI). Both measures are indicators of the overall condition of NASA's facilities. The facilities condition assessment methodology involves an independent, rapid visual assessment of nine different systems within each facility to include: structure, roof, exterior, interior finishes, HVAC, electrical, plumbing, conveyance, and program support equipment. The DM method is designed for application to a large population of facilities; results are not necessarily applicable for individual facilities or small populations of facilities. Under this methodology, NASA defines acceptable operating conditions in accordance with standards comparable to those used in private industry and the aerospace industry.

There has been no significant change in our deferred maintenance and repair estimate this year. The agency-wide FCI, based on the ratings obtained during the condition assessment site visits, remains unchanged from the previous fiscal year. The FCI values for the majority of individual Centers and sites varied less than 0.5, validating the relative stability of the Centers and sites despite the continued aging and deterioration of older facilities. Evaluation of the facility conditions by building type (Real Property Classification Code/DM Category) indicates that the Agency continues to focus maintenance and repair on direct mission-related facilities. Higher condition ratings are reported for Launch Facilities, potable water facilities, launch, communication, tracking, and fuel facilities agency-wide. Lower condition ratings occur for infrastructure, site related systems, and static test stands.

Deferred Maintenance Method	2012	2011
Facility Condition Index (FCI)	3.7	3.7
Target Facility Index	3.8	3.8
Deferred Maintenance Estimate (Active and Inactive Dollars) (In Millions of Dollars)	$ 2,330	$ 2,472

National Aeronautics and
Space Administration

Office of Inspector General
Washington, DC 20546-0001

November 15, 2012

TO: Charles F. Bolden, Jr.
Administrator

Elizabeth Robinson
Chief Financial Officer

FROM: Paul K. Martin
Inspector General

SUBJECT: Audit of the National Aeronautics and Space Administration's Fiscal Year 2012 Financial Statements (Report No. IG-13-003; Assignment No. A-12-013-00)

The Office of Inspector General contracted with the independent public accounting firm PricewaterhouseCoopers LLP (PwC) to audit NASA's financial statements in accordance with the Government Accountability Office's *Government Auditing Standards* and the Office of Management and Budget's Bulletin No. 07-04, "Audit Requirements for Federal Financial Statements," as amended.

The audit resulted in an unqualified opinion on NASA's fiscal year (FY) 2012 financial statements (Enclosure 1). An unqualified opinion means that the financial statements present fairly, in all material respects, the financial position and the results of the entity's operations in conformity with U.S. generally accepted accounting principles.

PwC also issued its reports on internal control and compliance with laws and regulations (Enclosures 2 and 3, respectively). For FY 2012, PwC identified one significant deficiency related to the environmental liability estimation process. During the audit, PwC identified no instances of significant noncompliance with applicable laws and regulations.

In fulfilling our responsibilities under the Chief Financial Officers Act of 1990, we monitored the progress of the audit, reviewed PwC's reports and related documentation, inquired of PwC's representatives, and ensured that PwC met contractual requirements. Our review was not intended to enable us to express, and we do not express, an opinion on NASA's financial statements; conclusions about the effectiveness of internal controls over financial reporting; or compliance with certain laws and regulations, including, but not limited to, the Federal Financial Management Improvement Act of 1996.

PwC is responsible for each of the enclosed reports and the conclusions expressed therein. Our review disclosed no instances where PwC did not comply in all material respects with the Government Accountability Office's *Government Auditing Standards*.

Please contact us if you have any questions about the enclosed reports.

3 Enclosures

Report of Independent Auditors

To the Administrator and the Inspector General
of the National Aeronautics and Space Administration

We have audited the accompanying consolidated balance sheet of the National Aeronautics and Space Administration (NASA) as of September 30, 2012 and September 30, 2011, and the related consolidated statements of net cost and changes in net position, and the combined statement of budgetary resources for the years then ended. These financial statements are the responsibility of NASA's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States of America, the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States, and Office of Management and Budget (OMB) Bulletin No. 07-04, *Audit Requirements for Federal Financial Statements*, as amended. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of NASA at September 30, 2012 and September 30, 2011, and its consolidated net cost of operations and changes in net position, and the combined budgetary resources for the years then ended, in conformity with accounting principles generally accepted in the United States of America.

The accompanying Management's Discussion and Analysis (MD&A) on pages 1 through 52, Required Supplementary Information (RSI) on pages 86 through 88, and Required Supplementary Stewardship Information (RSSI) on pages 80 through 85 are required by accounting principles generally accepted in the United States of America to supplement the basic financial statements. Such information, although not part of the basic financial statements, is required by the Federal Accounting Standards Advisory Board and OMB Circular A-136, *Financial Reporting Requirements,* who considers it to be an essential part of financial reporting for placing the basic financial statements in the appropriate operational, economic, or historical context. We have applied certain limited procedures to the information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquires, the basic financial statements, and other knowledge we have obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Our audits were conducted for the purpose of forming an opinion on the consolidated and combined financial statements of NASA taken as a whole. The Other Accompanying Information on pages i through viii and pages 97 through 138 is presented for purposes of additional analysis and is not a required part of the consolidated or combined financial statements. The information is the responsibility of management and was derived from and relates direct to the underlying accounting and other records used to prepare the financial statements. Such information has not been subjected to the auditing procedures applied in

PricewaterhouseCoopers LLP, 1800 Tysons Boulevard, McLean, VA 22102
T: (703) 918 3000, F: (703) 918 3100, www.pwc.com/us

the audit of the consolidated and combined financial statements and, accordingly, we express no opinion on it.

In accordance with *Government Auditing Standards,* we have also issued a report dated November 15, 2012, on our consideration of NASA's internal control over financial reporting and a report dated November 15, 2012, on its compliance and other matters for the year ended September 30, 2012. The purpose of those reports is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal control over financial reporting or on compliance. Those reports are an integral part of an audit performed in accordance with *Government Auditing Standards* and should be read in conjunction with this report in considering the results of our audit.

PricewaterhouseCoopers LLP

November 15, 2012

Report of Independent Auditors on Internal Control

To the Administrator and Inspector General
of the National Aeronautics and Space Administration

We have audited the financial statements of the National Aeronautics and Space Administration (NASA) as of and for the year ended September 30, 2012, and have issued our report thereon dated November 15, 2012. We conducted our audit in accordance with auditing standards generally accepted in the United States of America, the standards applicable to financial audits contained in *Government Auditing Standards,* issued by the Comptroller General of the United States, and Office of Management and Budget (OMB) Bulletin No. 07-04*, Audit Requirements for Federal Financial Statements,* as amended. The management of NASA is responsible for establishing and maintaining effective internal control over financial reporting.

In planning and performing our audit, we considered NASA's internal control over financial reporting as a basis for designing our auditing procedures for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of NASA's internal control. Accordingly, we do not express an opinion on the effectiveness of NASA's internal control over financial reporting.

We limited our control testing to those controls necessary to achieve the following OMB control objectives that provide reasonable, but not absolute assurance, that: (1) transactions are properly recorded, processed, and summarized to permit the preparation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and to safeguard assets against loss from unauthorized acquisition, use, or disposition; and (2) transactions are executed in compliance with laws governing the use of budget authority, government-wide policies and laws identified in Appendix E of OMB Bulletin No. 07-04, and other laws and regulations that could have a direct and material effect on the financial statements.

We did not test all internal controls relevant to the operating objectives broadly defined by the Federal Managers' Financial Integrity Act of 1982.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct misstatements on a timely basis.

A material weakness is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of NASA's financial statements will not be prevented, or detected and corrected on a timely basis.

A significant deficiency is a deficiency or a combination of deficiencies in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance. We identified a deficiency in internal control over financial reporting that we consider to be a significant deficiency. The deficiency noted below involves the environmental liability estimation process.

PricewaterhouseCoopers LLP, 1800 Tysons Boulevard, McLean, VA 22102
T: (703) 918 3000, F: (703) 918 3100, www.pwc.com/us

Environmental Liability Estimation Process

NASA has recorded a total Environmental Liability in the amount $1,169 million within its balance sheet. NASA calculates an environmental liability associated with the following sub-categories of projects/assets: 1) Restoration Projects, 2) Property, Plant & Equipment (PP&E) - excluding Space Assets, and 3) Space Assets. In fiscal year 2012, NASA's management invested resources to develop and update policies and procedures to accurately estimate and report this liability. The progress made by NASA during fiscal year 2012 included the development of a Space Assets environmental liability policy and the inclusion of clean-up costs regardless of the amount for PP&E. The results of our tests have identified that additional improvements related to NASA's environmental liability policies or procedures are needed. Specifically, we noted the following:

1. Environmental Liability Policies and the Application of these Policies.
    - Inconsistencies in the application of the restoration project environmental liability policy: NASA's key control in determining the accuracy and completeness of the environmental liability associated with Restoration Projects is the joint review process. As stipulated within the restoration project environmental liability policy, a joint review is conducted annually to validate the environmental liability estimates. During our observation of the joint review process, we noted the joint review monitoring controls are not completed at the same level of precision as the restoration control activities. As such, errors which occurred at the control activity level were not detected during the joint review process. In addition, we noted inconsistencies with the application and interpretation of the restoration control activities across NASA's various Centers.
    - Inconsistencies in the application of the PP&E environmental liability policy: As it relates to the PP&E, we noted that NASA continues to update and improve the control activities used to estimate this liability. However, we noted that the controls developed or being developed to estimate the liability for permitted facilities, which are facilities that have local, state or Federal requirements for environmental cleanup, differ from those used to estimate the liability for non-permitted facilities. While there may be some differences between these categories of PP&E, substantive differences have not been identified and documented to support the rationale for differing accounting policies. Finally, NASA's current approach does not clearly specify the timing of when the environmental liability associated with the PP&E items should be recognized.
    - Incomplete space assets environmental liability policy: NASA developed an environmental liability policy for Space Assets. However, this policy did not specify the control activities to ensure that the liability is calculated in accordance with the applicable accounting standards and related reporting guidance. The policy guidance did not specify the type of documentation to be developed and maintained to support the Space Asset environmental liability. In addition, the existing policy guidance does not outline the monitoring controls to be used by NASA to ensure the accuracy and completeness of the environmental liability for the Space Assets.
2. Analyses Supporting the Environmental Liability Estimates.
    - Lack of analyses and/or support related to the methods and assumptions used to develop the PP&E environmental liability estimate: NASA was unable to provide supporting documentation for key assumptions or methodologies used to calculate the PP&E portion of the liability. In addition, they did not provide documentation to support the assumption that the population of items tested by NASA to develop the "per unit" liability cost factor was representative of the full PP&E population.

In addition, during the year NASA completed a data call to receive updated information from each Center and facility regarding the inventory and the associated environmental liability for their PP&E items. Two locations did not provide the supporting documentation associated with their PP&E items.

- Lack of analyses and/or support related to the methods and assumptions used to develop the space assets environmental liability estimate: NASA's environmental liability estimates for its Space Assets include estimates related to future clean-up costs associated with the space shuttle and other space assets. NASA was unable to provide supporting documentation for key assumptions or the overall methodology used to calculate the environmental liability associated with this portion of the liability. For example, NASA's documentation did not support the determination to assign the same liability cost factor to those space assets classified as "highly hazardous" and those space assets classified as "moderately hazardous".

3. Interpretation of Accounting Standards related to the Recording of Environmental Liabilities.

   During our review of the environmental liability estimates prepared by NASA, we noted that the funded portion of the environmental liability associated with the Space Assets was excluded from its financial statements. This treatment is inconsistent with related accounting standards and Treasury reporting guidelines which requires all environmental liabilities – unfunded and funded – to be reported in the financial statements.

We recommend that NASA perform the following for their environmental liability sub-categories/ assets:

- Update or redesign the control activities or the monitoring controls used to ensure that the accuracy and completeness of the Restoration calculations is completed at an appropriate level of detail. In addition, the updated or redesigned controls should ensure the consistent implementation and interpretation of the policies and procedures associated with the Restoration Project estimates across each of the Centers.

- Develop and maintain documentation to support the methodologies and assumptions used to estimate the liability for PP&E assets. This would include, but not be limited to, the estimation methodologies for both permitted and non-permitted facilities; the methodology used to complete representative sampling of PP&E items; the "cost factors" applied to real property to calculate the associated environmental liability; and, a full inventory of all permitted and non-permitted items from all NASA Centers. NASA should update their policy to document the timing of when the environmental liability associated with the PP&E items should be recognized.

- Update the applicable environmental liability policy for Space Assets to include procedures to appropriately calculate the liability in accordance with the applicable accounting standards and to describe management's process to review this estimate. Develop and maintain documentation to support the rationale for the methods and assumptions used to estimate the liability for Space Assets. Finally, NASA should ensure future environmental liability estimates include not only the unfunded portion, but the funded portion of the liability.

We have discussed our findings and recommendations with NASA's management. Management will provide a corrective action plan to address the findings identified in this report. We have not performed additional procedures to validate the corrective actions.

We did note other matters involving the internal control and its operation that we will communicate to NASA in a separate letter

Our consideration of internal control over financial reporting was for the limited purpose described in the second paragraph of this report and was not designed to identify all deficiencies in internal control over financial reporting that might be deficiencies, significant deficiencies or material weaknesses and therefore, there can be no assurance that all deficiencies, significant deficiencies, or material weaknesses have been identified. We did not identify any deficiencies in internal control that we consider to be material weaknesses, as defined above.

This report is intended solely for the information and use of NASA management, NASA OIG, OMB and Congress, and it is not intended to be and should not be used by anyone other than these specified parties.

PricewaterhouseCoopers LLP

November 15, 2012

Report of Independent Auditors on Compliance and Other Matters

To the Administrator and the Inspector General
of the National Aeronautics and Space Administration

We have audited the financial statements of the National Aeronautics and Space Administration (NASA) as of and for the year ended September 30, 2012 and have issued our report thereon dated November 15, 2012. We conducted our audit in accordance with auditing standards generally accepted in the United States of America, the standards applicable to financial audits contained in *Government Auditing Standards,* issued by the Comptroller General of the United States, and Office of Management and Budget (OMB) Bulletin No. 07-04, *Audit Requirements for Federal Financial Statements*, as amended. The management of NASA is responsible for compliance with laws and regulations.

As part of obtaining reasonable assurance about whether NASA's financial statements are free of material misstatement, we performed tests of its compliance with certain provisions of laws and regulations including laws governing the use of budgetary authority, government-wide policies and laws identified in Appendix E of OMB Bulletin No. 07-04 and other laws and regulations, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. Under the Federal Financial Management Improvement Act of 1996 (FFMIA), we are required to report whether NASA's financial management systems substantially comply with the Federal financial management systems requirements, applicable Federal accounting standards, and the United States Government Standard General Ledger at the transaction level. To meet this requirement, we performed tests of compliance with FFMIA section 803(a) requirements.

We limited our tests of compliance to the provisions of the laws and regulations cited in the second paragraph of this report. Providing an opinion on compliance with those provisions was not an objective of our audit, and, accordingly, we do not express such an opinion.

The results of our tests of compliance disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards* or OMB Bulletin No. 07-04 and no instances of substantial noncompliance that are required to be reported under FFMIA.

The report is intended solely for the information and use of the management of NASA, Office of Inspector General (OIG), OMB, the Government Accountability Office, and Congress and is not intended to be and should not be used by anyone other than these specified parties.

PricewaterhouseCoopers LLP

November 15, 2012

PricewaterhouseCoopers LLP, 1800 Tysons Boulvard, McLean, VA 22102
T: (703) 918 3000, F: (703) 918 3200, www.pwc.com/us

Management's Response to Independent Auditors Report

November 15, 2012

Office of the Chief Financial Officer

TO: Inspector General

FROM: Deputy Chief Financial Officer (Finance)

SUBJECT: Management Response to Report of Independent Auditors

I am pleased to accept your audit report on the Consolidated Financial Statements of the National Aeronautics and Space Administration (NASA) for FY 2012 and FY 2011. The Agency's efforts and achievements toward improved financial management are clearly reflected in the audit opinion. For the second year in a row, NASA has received an unqualified opinion on its financial statements. The Agency continues to have no material weaknesses for the third consecutive year, and resolved a prior year significant deficiency related to information technology controls. Further, we are able to report that NASA continues to be in substantial compliance with the Federal Financial Management Improvement Act.

I recognize the need to continue our efforts to resolve the repeat significant deficiency related to NASA's environmental liability estimation process. We will continue to work with the Office of Inspector General (OIG) and NASA's independent auditor to remediate this deficiency.

I appreciate the efforts and leadership of NASA's OIG and of the auditors under contract to the OIG to audit NASA's financial statements. Please convey my sincere appreciation and thanks to your team for the professionalism and cooperation exhibited during this audit.

Pamela D. Hanes

Other Accompanying Information

Photo: Spotlights bounce off the clouds over Space Launch Complex 41 on Cape Canaveral Air Force Station as NASA's Radiation Belt Storm Probes lift off the pad at 4:05 a.m. EDT aboard a United Launch Alliance Atlas V rocket. (Credit: NASA/Ben Smegelsky and Gary Thompson)

National Aeronautics and
Space Administration

Office of Inspector General
Washington, DC 20546-0001

November 8, 2012

TO: Charles F. Bolden, Jr.
Administrator

FROM: Paul K. Martin
Inspector General

SUBJECT: 2012 Report on NASA's Top Management and Performance Challenges

As required by the Reports Consolidation Act of 2000, this memorandum provides our views of the top management and performance challenges facing NASA for inclusion in the Agency's fiscal year (FY) 2012 Performance and Accountability Report.

In deciding whether to identify an issue as a top challenge, we consider the significance of the issue in relation to the Agency's mission; its susceptibility to fraud, waste, and abuse; whether the underlying causes are systemic in nature; and the Agency's progress in addressing the challenge. We previously provided a draft copy of our views to NASA officials and considered all comments received when finalizing this report.

For 2012, we identified the following top management and performance challenges facing NASA:

- The Future of U.S. Human Space Flight
- Project Management
- Infrastructure and Facilities Management
- Acquisition and Contract Management
- Information Technology Security and Governance

This year we noted that declining budgets and fiscal uncertainties have compounded the difficulty of meeting these challenges. Perhaps more than any other factor, these fiscal pressures will present NASA leaders with difficult choices in the year ahead.

During FY 2013, the OIG will conduct audit and investigative work that focuses on NASA's continuing efforts to meet these challenges. Please contact us if you have questions.

Enclosure

NASA's Top Management and Performance Challenges
November 2012

Introduction

Fiscal year (FY) 2012 ended on a high note for NASA with the successful landing of the rover Curiosity on the surface of Mars in August. Over the next several years, Curiosity will explore the Red Planet in an effort to determine if it has ever been able to support life. Earlier in the year, NASA achieved a major milestone toward its goal of fostering the development of a commercial space transportation capability to low Earth orbit with the successful test flight of the Space Exploration Technologies Corporation's (SpaceX) Dragon spacecraft to the International Space Station (ISS), followed in October by the first actual commercial resupply mission.

The year was not without challenges, however. For example, due to cost overruns in the James Webb Space Telescope and other projects, NASA had to reprogram funds away from several Agency initiatives. This resulted in developmental delays in some ongoing projects and cancellation of other planned projects, including the ExoMars/Trace Gas Orbiter missions to Mars.[1]

Moreover, the congressional decision to provide NASA's Commercial Crew Program (CCP) with less than half the funding requested by the President in FY 2012 extended to 2017 the earliest date that NASA expects to obtain commercial crew transportation services to the ISS, which is significant if NASA is unable to maintain and utilize the Station beyond its currently scheduled retirement date of 2020. In addition, as a result of the lower-than-expected funding level, the Agency delayed its planned transition from using Space Act Agreements to using Federal Acquisition Regulation (FAR)-based contracts for developing these systems. This decision heightened concern in some quarters about the ultimate ability of the commercial companies to meet NASA safety requirements.

Finally, declining budgets and fiscal uncertainties remained at the forefront of the Agency's decision-making processes this past year. Like the rest of the Federal Government, NASA began FY 2013 under a 6-month continuing resolution (CR) that funds the Agency at FY 2012 levels. Overshadowing the effects of the CR, however, is the possibility of an early January 2013 sequestration that would reduce NASA's anticipated budget by approximately $1.5 billion. Even if this looming cut is averted, NASA is likely to face constrained budgets for the foreseeable future.

Against this rather bleak budgetary backdrop, we have identified five overarching issues we believe pose the top management and performance challenges to NASA leadership:

- Future of U.S. Human Space Flight
- Project Management

[1] This joint project between the European Space Agency and NASA consisted of missions scheduled for launch in 2016 and 2018.

- Infrastructure and Facilities Management
- Acquisition and Contract Management
- Information Technology Security and Governance

In deciding whether to identify an issue as a top challenge, we considered the significance of the issue in relation to the Agency's mission; its susceptibility to fraud, waste, and abuse; whether the underlying causes are systemic in nature; and the Agency's progress in addressing the challenge. Several of these challenges – specifically project management, infrastructure and facilities management, and acquisition and contract management – are long-standing concerns likely to remain top challenges for the foreseeable future. However, with focused and sustained efforts we believe that NASA can make significant strides in addressing all of the challenges we have identified.

1. Future of U.S. Human Space Flight

NASA's Space Shuttle era, which began with the maiden voyage of Columbia on April 12, 1981, ended after 135 missions when Atlantis landed at Kennedy Space Center on July 21, 2011. In the ensuing year, NASA delivered the four retired orbiters to their permanent homes for public display. NASA's current spaceflight activities are focused on maximizing the productivity of the ISS, encouraging development of commercial companies seeking to provide cargo and crew transportation to the ISS, and developing new systems and technologies for exploration beyond low Earth orbit. Moving each of these programs forward in a "flat" or diminishing budget environment will be a significant challenge for the Agency.

International Space Station. The ISS is currently scheduled to be retired in 2020, although NASA is conducting studies to see if the $60 billion facility can safely be inhabited and productively utilized until 2028. Whatever its remaining life span, a major focus for the Agency is ensuring the most effective use of the ISS.

One of the most significant factors affecting utilization of the ISS is the amount of time the crew can commit to research. Although NASA has increased average crew research time from 23.9 hours per week in 2010 to 35 hours per week in 2012, the Agency is unlikely to be able to raise that figure given current constraints on crew size.[2] The ISS was designed to support a seven-member crew. However, because at present the only means of transportation to and from the ISS is the Russian Soyuz, which has a three-person capacity, only six crew members can safely be aboard at one time to allow for evacuation in case of an emergency. This limitation on crew size will exist until at least 2017, the earliest date at which NASA's commercial partners are expected to be ready to fly manned, higher-capacity missions to the ISS.

[2] NASA, "Consolidated Operations and Utilization Plan (COUP) 2010, Covering the period 2010-2015" (April 26, 2011). Dan Hartman, Manager, Operations Integration, ISS Program Office, "International Space Station Program Status," July 23, 2012, NASA Advisory Committee, Human Exploration and Operations Subcommittee, http://www.nasa.gov/pdf/672214main_1-Hartman_July12_NAC_Final_508.pdf (accessed October 8, 2012).

The other limitation to full utilization is the ability to transport materials and supplies to and from the ISS. SpaceX's Dragon flew a successful demonstration mission to the ISS in May 2012 and began actual resupply missions in October 2012. NASA's other commercial cargo partner, Orbital Sciences Corporation (Orbital), is slated to perform the first demonstration flight of its Antares rocket in December 2012, with a demonstration flight to the ISS with the Cygnus capsule in spring 2013. Although both systems are capable of delivering cargo to the ISS, only Dragon is capable of returning cargo and research experiments to Earth. In fact, other than the very limited capability of Soyuz, Dragon is the only system since the retirement of the Space Shuttles with any "downmass" capability.

In August 2011, NASA entered into a cooperative agreement with the Center for the Advancement of Science in Space (CASIS) initially worth $15 million per year to manage the non-NASA science activities on the national laboratory portion of the ISS. CASIS, a non-profit organization, is responsible for ensuring that the laboratory is available to the broadest possible cross section of U.S. scientific, technological, and industrial communities. Part of its job is to select the experiments that will be conducted on the national laboratory.

CASIS issued its first public solicitation in June 2012 with the goal of enabling research in the areas of protein crystallization and the life sciences. However, during its first year of operation CASIS encountered a variety of start-up challenges, including the resignation of its executive director, and as of October 2012, did not have a permanent Board of Directors. In the months and years ahead, NASA must ensure that CASIS forms an effective management team; develops a varied research and development portfolio based on national needs for basic and applied research; establishes a marketplace to help match research with funding; and stimulates interest in using the national laboratory for research and technology demonstrations and as a platform for science, technology, engineering, and mathematics education.

NASA also needs to continue encouraging use of the ISS by other U.S. Government agencies, other nations, and the commercial sector while seeking partnerships and cost-sharing arrangements to supplement Agency funding of ISS research and operations. The Office of Inspector General (OIG) expects to issue a report examining NASA's efforts to ensure full utilization of the ISS early next year.

Commercial Launch Providers. Beginning in 2006, NASA entered into a series of Space Act Agreements designed to stimulate development by U.S. industry of transportation systems capable of providing safe and reliable cargo and crew services to the ISS and low Earth orbit. NASA initiated two activities to manage its investments in this area: the Commercial Orbital Transportation Services (COTS) Program and the Commercial Crew Program (CCP). Both programs use Space Act Agreements to support the development of commercial transportation capabilities and FAR-based contracts to certify the capabilities and to procure crew and cargo services to and from the ISS. The availability of domestic crew and cargo capability will enable the United States to transport its own astronauts to the ISS rather than relying on Russian vehicles and provide needed redundancy in cargo and crew transportation systems to the ISS.

NASA has invested $750 million over the past 7 years in its effort to encourage development of cargo transportation by private companies. Two companies, SpaceX and Orbital, are under contract to resupply the ISS through 2016. As noted above, SpaceX flew its first successful

demonstration flight in May 2012, during which its Dragon spacecraft berthed with the ISS, and its first resupply mission occurred in October 2012. The first demonstration flight of Orbital's Antares rocket and Cygnus space freighter to the ISS is currently scheduled for late spring 2013, with the company's first resupply mission coming as early as 3 months later.

With respect to the development of commercial crew transportation services, in June 2011 we reported on a series of challenges NASA faces in certifying and acquiring those services from commercial entities: (1) modifying the Agency's existing safety and human-rating requirements for commercially developed systems; (2) managing its acquisition strategy for commercial crew transportation services; (3) implementing the appropriate insight/oversight model for commercial partner vehicle development; (4) relying on an emerging industry and uncertain market conditions to achieve cost savings; and (5) managing the relationship between commercial partners, the Federal Aviation Administration, and NASA.[3]

Although challenges remain, NASA has made progress in addressing several of these issues over the past year. For example, in November 2011 NASA updated and published detailed berthing and docking requirements for cargo and crew delivery systems, and in December 2011 the Agency finalized more than 280 specific safety and human-rating requirements for its CCP. With these requirements in hand, the Agency's commercial partners will have greater insight into what will be required of their systems to attain NASA certification. The documents also provide the Agency's methodology for insight and oversight into whether contractors are meeting the program's requirements. Specifically, NASA embedded teams of NASA employees known as "Partner Integration Teams" with the commercial partners to acquire insight into their development efforts while a separate review board will provide more formal guidance, feedback, and an assessment of the partners' activities.

In August 2012, NASA awarded a third round of Space Act Agreements totaling $1.11 billion to three companies to further the development of their commercial crew systems.[4] These Commercial Crew Integrated Capability (CCiCap) awards were made to Boeing Corporation ($460 million); SpaceX ($440 million); and Sierra Nevada Corporation ($212.5 million).[5] These awards deviated from the acquisition strategy the Agency announced in September 2011, whereby NASA planned to enter into firm-fixed-price contracts with one or more companies that would result in a complete end-to-end design compliant with NASA Crew Transportation System requirements. The award was to be followed by a separate solicitation for competitively awarded contracts to develop, test, evaluate, and certify a company's vehicles. However, when Congress appropriated substantially less than the Agency requested for its CCP in FY 2012 ($406 million versus $850 million), NASA changed course and decided to award a third round of Space Act Agreements rather than move to a FAR-based fixed-price contract.

[3] NASA OIG, "NASA's Challenges Certifying and Acquiring Commercial Crew Transportation Services" (IG-11-22, June 20, 2011).

[4] The first two rounds of Agreements consisted of $50 million in Commercial Crew Development 1 (CCDev 1) awards to five commercial partners and $300 million in CCDev 2 awards to four partners.

[5] Nasa.gov, "NASA's Commercial Crew Program Progressing for Future of U.S. Human Spaceflight," *Commercial Space Transportation*, August 8, 2012, http://www.nasa.gov/exploration/commercial/crew/ccicap-announcement.html (accessed October 8, 2012).

Both Congress and NASA's Aerospace Safety Advisory Panel (ASAP) have voiced concerns about the Agency's continued reliance on Space Act Agreements in connection with its commercial crew efforts.[6] At a September 2012 congressional hearing, the ASAP Chairman noted that unlike with traditional FAR-based contracts, when using Space Act Agreements NASA cannot dictate specific requirements to the commercial companies, thereby heightening the risk that the companies will ultimately not be able to deliver vehicles that satisfy NASA safety and performance requirements. NASA, however, believes it can ensure that commercial passenger vehicles will meet its requirements by utilizing a two-phase process. In Phase 1, currently scheduled for February 2013, NASA plans to award two to four fixed-price contracts worth up to $10 million for design acceptance and certification plans for the contractors' crew transportation systems. In Phase II, scheduled for May 2014, NASA plans to award one or two fixed-price contracts for the development, test, evaluation, and certification of the contractors' crew transportation system. This strategy anticipates at least one operational crew transportation system would be certified by NASA for crew transportation missions to the ISS by 2017.

Further complicating NASA's commercial crew effort is the uncertainty surrounding the Federal budget in light of the 6-month CR that essentially holds the Agency to a $406 million funding level for its CCP. At the September 2012 House hearing, NASA's Associate Administrator for Human Exploration and Operations told Congress that if the CCP is not funded at approximately $830 million per year for FYs 2014–2017, the Program will face significant schedule delays that will push the first commercial crew launch beyond 2017.

At the same time NASA is fostering the development of commercial cargo and crew capabilities, it has been directed to develop its own launch system and crew vehicle to carry astronauts beyond Earth's orbit. Developing all of these capabilities simultaneously continues to present significant management challenges for NASA leaders.

NASA Launch System and Crew Vehicle. The new heavy-lift rocket under development – the Space Launch System (SLS) – will have an initial capacity of 70 metric tons and eventually be capable of lifting 130 metric tons. As such, the rocket will be capable of more than double the lift capacity of any operational launch vehicle that exists today and America's most powerful since the Saturn V rockets that carried Apollo astronauts to the Moon.

The Multi-Purpose Crew Vehicle (MPCV), which is being developed using an existing contract and is based on design requirements for the canceled Constellation Program's Orion Crew Exploration Vehicle, will be mounted atop the SLS. The MPCV will serve as the crew vehicle for missions beyond low Earth orbit.

The NASA Authorization Act of 2010 set a goal for NASA to achieve operational capability for the SLS and MPCV by December 31, 2016. In November 2011, NASA reported that the Reference Design Vehicles for the SLS and MPCV would be unable to meet all requirements and schedule goals contained in the Authorization Act. Instead, NASA expects to launch an uncrewed test flight of SLS and MPCV in 2017 and the first crewed flight in 2021. NASA also

[6] September 14, 2012, hearing before the Committee on Science, Space, and Technology Subcommittee on Space and Aeronautics, U.S. House of Representatives.

reported that it plans to conduct a crewed launch once every 2 years thereafter.[7] In the decades that follow, NASA plans to undertake crewed and robotic missions to destinations beyond low Earth orbit, such as a near-Earth asteroid, the Moon, or Mars. However, no final decisions have been made concerning specific missions and destinations.

NASA's management challenge in this area will be to concurrently develop a launch system and crew vehicle and modify the necessary supporting ground systems while meeting the NASA Administrator's mandate that exploration systems be affordable, sustainable, and realistic. In particular, establishing realistic long-term budgets for the SLS, MPCV, and associated ground support programs will be difficult, as evidenced by an August 2011 independent cost assessment that concluded NASA's estimates are reasonable for near-term budget planning but do not support establishment of long-term budgets or detailed baselines.[8]

Part of the challenge NASA faces in developing long-term budgets is the relative immaturity of the SLS Program. For example, in September 2012 we reported that although the Agency's planned modification to adapt the Ares I Mobile Launcher for use on the SLS was technically feasible and the most cost-effective option for the initial versions of the new rocket, NASA will need to continually assess the modifications as the program evolves and the SLS vehicles become larger and more powerful.[9] We found NASA's ability to identify the technical risks and accurately estimate future operating costs of modifying the Mobile Launcher throughout the SLS Program life cycle is significantly affected by both the relative immaturity of the SLS Program and the evolvable nature of the SLS vehicles.

NASA's development efforts have also been impacted by the expectation of continued constrained budgets for the foreseeable future. For example, the MPCV Program is anticipating a "flat" budget profile for at least the next 10 years with no increases for inflation. As a result, NASA has adopted an incremental approach in developing the MPCV under which Program officials will concentrate initially on systems needed to meet the specific mission objectives for each test flight rather than working on all MPCV systems concurrently. The OIG is currently examining NASA's efforts to develop the MPCV and will continue to examine NASA's launch and crew transportation development efforts in the years to come.

2. Project Management

Over its 50 year history, NASA has been at the forefront of science and space exploration and responsible for numerous scientific and technological discoveries and innovations. However, in addition to their significant scientific and technological achievements, many NASA projects share another less positive trait – they cost significantly more to complete and take much longer

[7] NASA, "Final Report Regarding NASA's Space Launch System and Multi-Purpose Crew Vehicle Pursuant to Section 309 of the NASA Authorization Act of 2010 (P.L. 111-267)" (November 2011).

[8] Booz Allen Hamilton, "Independent Cost Assessment of the Space Launch System, Multi-Purpose Crew Vehicle and 21st Century Ground Systems Programs, Final Report," August 19, 2011, http://www.nasa.gov/pdf/581582main_BAH_Executive_Summary.pdf (accessed November 5, 2012).

[9] NASA OIG, "NASA's Plans to Modify the Ares I Mobile Launcher in Support of the Space Launch System" (IG-12-022, September 25, 2012).

to launch than originally planned. In this era of constrained Federal budgets, NASA's ability to deliver projects on time and within budget is more important than ever if the Agency is to maintain a robust portfolio of science and space projects.

Over the past year, the OIG conducted an extensive review examining NASA's project management practices in an effort to identify the primary challenges to the Agency achieving its cost, schedule, and performance goals.[10] The core of our fact-finding consisted of interviews of 85 individuals from both inside and outside of the Agency, including the current and former Administrators, Associate Administrators, Center Directors, and project managers and staff.

Key Challenges to Meeting Cost, Schedule, and Performance Goals. Cost increases and schedule delays on its projects are a long-standing issue for NASA. A 2004 Congressional Budget Office study that compared the initial and revised budgets of 72 Agency projects between 1977 and 2000 reported a 61 percent increase between the projects' initial and revised budgets.[11] Similarly, the Government Accountability Office (GAO) has consistently reported on cost growth and schedule delays in NASA's major projects. For example, in its 2012 assessment of 21 large-scale projects, GAO reported an average development cost growth of 47 percent or $315 million, much of which was attributable to the James Webb Space Telescope (JWST). The current "poster child" for NASA's persistent difficulties in controlling cost and schedule growth, JWST has gone from an original life-cycle cost baseline estimate of $5 billion and a launch date of June 2014 to a projected cost of $8.8 billion and a launch date of October 2018.[12]

As GAO noted, cost and schedule increases on large projects like JWST can have a cascading effect on NASA's entire portfolio. To illustrate, in FY 2012 NASA moved $156 million from other Science Mission Directorate projects and the Cross Agency Support account to cover cost increases in the JWST Project.[13] In addition, several other missions including the Wide-Field Infrared Survey Telescope have been postponed to make funding available for JWST.[14] Moreover, NASA announced in February 2012 that it was pulling out of an agreement with the European Space Agency on two future Mars missions and planned to reevaluate its Mars exploration strategy to accommodate a more restricted funding profile.

In our September 2012 report, we identified four factors that appear to present the greatest challenges to successful project outcomes at NASA:

- **NASA's Culture of Optimism.** Permeating all levels of NASA from senior management to frontline engineers, a culture of optimism is essential to overcoming the

[10] NASA OIG, "NASA's Challenges to Meeting Cost, Schedule, and Performance Goals" (IG-12-021, September 27, 2012).

[11] A Congressional Budget Office Study, "A Budgetary Analysis of NASA's New Vision for Space Exploration," September 2004.

[12] GAO, "NASA: Assessments of Selected Large-Scale Projects" (GAO-12-207SP, March 1, 2012).

[13] NASA's Cross-Agency Support account funds support activities necessary to ensure the operation and administration of the Agency such as human capital management, security, and maintenance of real property assets that cannot be directly aligned to a specific program or project requirement.

[14] The Wide-Field Infrared Survey Telescope is a NASA observatory designed to settle essential questions in both exoplanet and dark energy research.

extraordinary technical challenges inherent in the development of unique, first-of-their-kind space systems. However, this same optimism can sometimes prevent managers and leaders from making critical assessments of requirements, budgets, and schedules to determine what a project can realistically accomplish within a set budget and timetable.

- **Underestimating Technical Complexity.** Project managers we interviewed cited the technical complexity inherent in NASA projects as a major challenge to achieving cost and schedule goals. In our judgment, five factors explain the inherently uncertain nature of estimating costs for the type of space technologies NASA develops: (1) unique, first-of-their-kind technologies; (2) interdependent technologies and complex integration issues; (3) increased testing needs; (4) limited quantities; and (5) shrinking industrial base and reduced quality of parts.

- **Funding Instability.** Funding instability includes situations in which a project receives less money than planned or where funds are disbursed on a schedule different than planned. Such instability may result from presidential, congressional, or Agency-directed actions and can cause work to be delayed and development risks to be identified late in the project life cycle, which in turn can lead to cost increases and schedule delays.

- **Limited Opportunities for Project Managers' Development.** Interviewees stated that the limited number of small and mid-size projects in NASA's current portfolio allows too few opportunities for Agency personnel to gain experience managing a project's cost, schedule, and technical performance efforts. In addition, they expressed concern that an increased reliance on contractors to design and build projects has led to a decline in Agency personnel with development experience. Finally, they stated that NASA engineers are primarily operating as overseers of work performed by contractors rather than gaining experience with in-house builds of instruments and spacecraft.

Given the anticipated funding challenges for all Federal agencies in the years ahead, changes to the way NASA develops and manages its projects are imperative. At the same time, the Agency is undergoing considerable changes in mission focus, with the end of the Space Shuttle Program and the first steps on a new path toward human space exploration. Collectively, these factors both necessitate and provide an opportunity for the Agency to reset itself and take steps toward meaningful change in the way its projects are developed and managed.

Project Management Principles and Tools. To execute projects within established cost and schedule estimates, NASA needs to maximize the use of sound project management principles and tools in projects both large and small. To its credit, NASA has taken several steps in the last few years aimed at curbing cost growth and schedule delays. For example, in response to a 2007 GAO report highlighting NASA's lack of emphasis on cost controls and program outcomes, the Agency issued a Corrective Action Plan that established a definition of success that includes completing all development projects within 110 percent of cost and schedule baselines and meeting Level 1 requirements for 90 percent of the major development projects in its portfolio.[15]

[15] "NASA Plan for Improvement in the GAO High-Risk Area of Contract Management," dated October 31, 2007, and updated through January 31, 2008. A Level 1 requirement is a project's fundamental and basic set of requirements levied by the Program or Headquarters.

NASA hopes to achieve the Corrective Action Plan's criteria for success by FY 2013, implementing the policies and processes on new projects while tracking and reporting the measures for existing projects.[16]

The Agency also has implemented a cost and schedule analysis methodology that produces what is known as the Joint Cost and Schedule Confidence Level to assist managers with cost and schedule estimating while enabling the Agency to evaluate more accurately whether projects have an executable plan as they proceed into implementation. NASA believes that this analysis has helped projects such as the Gravity Recovery and Interior Laboratory, Juno, and the Mars Atmosphere and Volatile Evolution meet cost and schedule goals.[17]

Moreover, NASA's new program and project management policy requires that project plans document decisions to either build or procure items based on NASA's in-house capabilities, maintenance of core competencies, cost, and best overall value to NASA. Project plans must also include baseline and threshold values for the performance metrics to be achieved at each Key Decision Point and mission success criteria associated with the program-level requirements that, if not met, trigger consideration of a Termination Review.[18] Furthermore, project plans are required to document how the project will periodically report cost and schedule performance and provide a mitigation and corrective action plan in the event the project exceeds development cost estimates. More recently, NASA appears to be holding project managers more accountable for meeting cost cap agreements as evidenced by its decision in May 2012 to terminate the Gravity and Extreme Magnetism Small Explorer mission because development costs were likely to exceed the agreed-upon budget.

Apart from those positive actions, NASA was not fully utilizing at least one important tool in its arsenal – its Lessons Learned Information System (LLIS). Since 1994, LLIS has been NASA's principal mechanism for collecting and sharing lessons learned from Agency programs and projects.[19] The information in LLIS is drawn from individuals, directorates, programs, projects, and supporting organizations and personnel across NASA and is one component of NASA's larger knowledge management and sharing system. Sharing lessons learned can reduce risk, improve efficiency, promote validated processes, and improve performance in ongoing and future NASA projects. In a March 2012 OIG report, we documented that NASA's project managers did not routinely use LLIS to search for lessons identified by other projects or routinely contribute new information to LLIS. Specifically, we found inconsistent policy direction and implementation for the Agency's overall lessons learned program; disparate levels

[16] NASA's current set of major development projects were all underway prior to implementation of the Corrective Action Plan. These projects will gradually be completed (NASA's typical timeline for development is 4 years) and replaced with projects that will be fully subject to the Plan.

[17] The Gravity Recovery and Interior Laboratory mission launched on September 10, 2011, to study the Moon's interior. Juno launched on August 5, 2011, to investigate the origin and evolution of Jupiter and is scheduled to arrive at the planet in July 2016. The Mars Atmosphere and Volatile Evolution mission is scheduled to launch in late 2013 to investigate the Martian atmosphere.

[18] NASA Procedural Requirements (NPR) 7120.5E, "NASA Space Flight Program and Project Management Requirements," August 14, 2012.

[19] LLIS is an online, automated database. The public can access LLIS at http://llis.nasa.gov/llis/search/home.jsp (accessed October 8, 2012).

of funding for LLIS activities across NASA Centers; deficient monitoring of critical Center-based LLIS activities; and lack of definition in NASA's overall strategy for knowledge management, lessons learned, and LLIS. Consequently, LLIS had been underutilized by project managers and marginalized in favor of other NASA knowledge sharing system components.

3. Infrastructure and Facilities Management

NASA is the ninth largest Federal Government property holder, controlling a network of approximately 4,900 buildings and structures that support Agency research, development, and flight activities. In total, the assets occupy 46 million square feet and their current replacement value is estimated at more than $30.8 billion. The 2010 Authorization Act requires NASA to develop a strategy for the most efficient retention, sizing, and distribution of facilities and other infrastructure consistent with the Agency's mission. In a time of constrained Federal budgets and transition from the Space Shuttle era, successfully implementing this directive is among the most pressing challenges facing Agency management.

Maintenance, Repair, and Use of Aging Facilities. NASA officials report that more than 80 percent of the Agency's facilities are 40 or more years old and beyond their design life. Under its current policy, NASA is required to maintain these facilities either in an operational status or, if they are not being used, in sufficient condition that they do not pose a safety hazard. However, NASA has not been able to fully fund required maintenance costs for these facilities and in 2011 estimated its deferred maintenance costs at $2.47 billion.[20]

NASA has struggled for years with managing its backlog of deferred maintenance projects. The Aerospace Safety Advisory Panel cited the condition of NASA's facilities and infrastructure as an area of concern in its 2011 annual report, and in 2010 the National Research Council cited a "steady and significant decrease in NASA's laboratory capabilities, including equipment, maintenance, and facility upgrades" that require more maintenance than funding permits.

The challenge for NASA leadership in this area is to address the backlog of essential maintenance projects so that facilities will be available when needed to support future missions. Continuing to delay essential maintenance projects poses a threat to the safety of personnel and equipment and likely will result in higher repair costs in the future.

Reducing Unneeded and Duplicative Infrastructure. One way NASA could reduce its facilities maintenance costs is to reduce the amount of underutilized and duplicative infrastructure in its inventory. In the 1990s, GAO issued several reports on NASA's infrastructure challenges and noted that the Agency was building new facilities faster than it was consolidating or closing older ones, resulting in duplication of capabilities. More recently, GAO reported that over 10 percent of NASA's real property assets were either underutilized or not being used at all.[21] In 2008, NASA's own Program Analysis and Evaluation Office identified

[20] NASA, "Deferred Maintenance Assessment Report: FY11 NASA-Wide Standardized Deferred Maintenance Parametric Estimate (Full Assessment)," October 1, 2011.

[21] GAO, "Federal Real Property: Progress Made Toward Addressing Problems, but Underlying Obstacles Continue to Hamper Reform" (GAO-07-349, April 13, 2007).

203 facilities that had no future mission requirement yet were still listed in the NASA inventory. Finally, an August 2011 OIG audit found numerous NASA facilities that had not been utilized, some for as long as 10 years.[22]

The challenge for NASA leadership in this area is to reduce unneeded and duplicative property in light of the key missions, technologies, and programs the Agency intends to pursue over the next 20 to 30 years and the facilities it will need for those pursuits. In this effort, NASA must move beyond its traditionally conservative approach of "keep it in case we need it" in managing its facilities. Fundamental to the success of any such effort will be improving the quality of the Agency's data regarding its real property assets. To this point, our August 2011 OIG report found that the data in NASA's primary system for compiling and analyzing its real property assets were unreliable metrics for evaluating utilization, mission dependency, and condition of the Agency's real property assets largely because NASA Centers used inadequate processes to gather and update this information.

To its credit, NASA has begun to take positive steps toward addressing its infrastructure challenges. For example, in 2011 NASA developed its first integrated, Agency-wide real property master plan, which it intends to use to coordinate resources across the Agency by linking real property needs with projected funding. However, in December 2011 we reported that the Center master plans the Agency was using to develop this integrated plan contained deficiencies that may limit the plan's usefulness in making strategic real property decisions.[23] Developing an integrated Agency master plan in an uncertain budget environment is a significant challenge for NASA. Nonetheless, as noted in our report, better Center master plans will help NASA develop a more comprehensive Agency master plan, which in turn will enable the Agency to make better strategic decisions regarding its real property assets.

In addition to its Agency-wide master planning effort, NASA is taking further action to better identify and assess the Agency's strategic capabilities and the real property assets that will be needed to support those capabilities.[24] For example, the Agency has strengthened central authority over infrastructure decisions and initiated efforts to improve data management and better assess technical capability needs across the Agency. To assist in the Agency's efforts to reduce its real property, the OIG is conducting an audit examining NASA's efforts to identify and reduce unneeded and duplicative test stands, wind tunnels, vacuum chambers, airfields, and Space Shuttle-related infrastructure.

Leased Space at NASA Centers. Leasing offers the Agency another means to help address the maintenance costs of its aging and underutilized facilities. However, Federal law and policy prohibits NASA (and other Government agencies) from leasing facilities for which it has no current or future mission-related use. For these facilities, NASA should consider other options, such as demolition or transferring the property to the General Services Administration for sale or

[22] NASA OIG, "NASA Infrastructure and Facilities: Assessment of Data Used to Manage Real Property Assets" (IG-11-024, August 4, 2011).

[23] NASA OIG, "NASA's Infrastructure and Facilities: An Assessment of the Agency's Real Property Master Planning" (IG-12-008, December 19, 2011).

[24] NASA defines a capability as the necessary infrastructure, equipment, workforce and other direct costs required to accomplish a given mission requirement.

transfer to another entity. The challenge for NASA is to use leasing when appropriate to generate revenue to offset facilities operations and maintenance costs while not using it as a way to hold on to facilities the Agency does not need. Leasing property under the latter scenario frustrates the Agency's efforts to reduce its real property footprint and can divert effort and resources from its core missions.

An August 2012 OIG review found that NASA lacks clear guidance to ensure that property identified for leasing was not excess to the Agency's needs.[25] We also determined that NASA lacked a complete inventory of space available for lease as well as an effective marketing program to attract potential tenants. In addition, we found internal control weaknesses that limit NASA's ability to ensure that leases provide the best value to the Agency and are fair to its partners and potential partners. Absent better controls and improved guidance, NASA will be hard-pressed to maximize the potential of its leasing program to help reduce the cost of maintaining underutilized facilities while meeting its obligation to ensure that leasing does not become a substitute for disposing of excess property.

One tool available to NASA is Enhanced-Use Leasing (EUL), which allows the Agency to retain the proceeds it derives from leasing underutilized real property rather than turning them over to the U.S. Treasury. In FY 2003, Congress granted EUL authority to Ames Research Center and Kennedy Space Center. Using this authority, Kennedy entered into an EUL with a Florida utility for a 60-acre site that supports a solar farm that generates 1 percent of the Center's power needs. Under subsequent legislation, all Centers may enter into EULs in which they receive either cash payments or in-kind consideration related to the development of renewable energy production facilities.

4. Acquisition and Contract Management

Approximately 81 percent of NASA's $18.5 billion FY 2011 budget was spent on contracts to procure goods and services and provide funding to grant and award recipients. As the President and Congress work to reduce Federal spending and the country's budget deficit, NASA is likely to face constrained funding levels for the foreseeable future. Accordingly, it is critical that NASA work to ensure that the billions of dollars of taxpayer funds entrusted to it are spent wisely. However, systemic weaknesses in NASA's internal controls related to acquisition and contracting continue to create challenges for the Agency. The OIG will continue to focus resources on this issue to identify fraud, waste, and abuse by contractors and awardees as well as weaknesses in the Agency's system of internal controls.

[25] NASA OIG, "NASA's Infrastructure and Facilities: An Assessment of the Agency's Real Property Leasing Practices" (IG-12-020, August 9, 2012).

Contract Management. Given the large amount of taxpayer funds NASA spends on contract awards, managers are constantly challenged to ensure that the Agency pays contractors in accordance with contract terms and receives fair value for its money. During the past year, the OIG continued to uncover fraud and overcharging by NASA contractors. Specifically, as a result of our investigative work in the past year:

- A Government contractor and its parent company agreed to pay $3.3 million to settle allegations that they included unallowable costs in calculating overhead rates for NASA and national defense-related contracts.

- Another Government contractor agreed to pay $617,789 to settle allegations that it submitted inflated invoices for engineering and technical services it provided to Dryden Flight Research Center.

- A Texas business owner pleaded guilty and was sentenced to 3 years' probation for making a false statement concerning space vehicle parts his business supplied to NASA for use on the ISS. The investigation found that the business owner had certified that ratchets his company produced met contract specifications when he knew they did not.

The OIG's audit work during the past year also identified weaknesses in NASA contract management. For example, we examined whether research funded by NASA Research Announcements (NRAs) advanced the Agency's aeronautics research goals and whether award costs were allowable and properly supported.[26] Although we found that these NRA awards advanced the Agency's aeronautics research goals, we also found that 18 of the 43 awards we reviewed (42 percent) contained approximately $2.4 million in questioned costs: $22,114 in unallowable fees, and $2,405,635 in unsupported costs.[27] Based on our sample results, we estimated that the NRA awards made by the Aeronautics Research Mission Directorate from May 2006 through January 2011 contained $25.2 million in unallowable or unsupported costs.

In another audit, we reviewed NASA's compliance with the Duncan Hunter National Defense Authorization Act of 2009 and found contract files lacking documentation related to acquisition plans and rationales supporting the type of contracts selected.[28] We also identified several instances where the contracting officer's technical representative was not timely assigned and cases where NASA had not validated the adequacy of the contractor's accounting system – both critical to management and oversight of contractor performance. Recently, we initiated an audit

[26] NRAs are solicitations that announce research opportunities and provide a formal mechanism for corporations, universities, and research institutions to submit project ideas. From 2006 to 2010, NASA spent approximately $1.3 billion on NRA awards, of which approximately $435 million was spent by the Aeronautics Research Mission Directorate.

[27] NASA OIG, "NASA's Use of Research Announcement Awards for Aeronautics Research" (IG-12-011, April 30, 2012)

[28] The Act requires OIGs to report on their agencies use of cost-reimbursement contracts and level of compliance with applicable FAR rules related to the appropriate documentation for the award, use, and management of those contracts. See NASA OIG, "Final Memorandum on NASA's Compliance with Provisions of the Duncan Hunter National Defense Authorization Act of 2009 – Management of Cost-Reimbursement Contracts" (IG-12-014, March 14, 2012).

of NASA's Strategic Sourcing Program to determine whether the Program has been effectively implemented and whether it has resulted in cost savings for NASA.

One area in which NASA continues to be particularly challenged with regard to safeguarding against fraud is its Small Business Innovation Research (SBIR) program. NASA awarded approximately $190 million to small businesses under this program during FY 2011 to stimulate technological innovation, increase participation by small businesses in federally funded research and development, and increase private sector commercialization of innovations derived from federally funded research and development efforts. In multiple investigations and audits over the years, the OIG has identified significant fraud, waste, and abuse in NASA's SBIR program. For example, this past year an OIG investigation resulted in the suspension of a technology firm and two of its principals from participation in Federal procurements for failing to disclose that the principals were primarily employed by a university when they submitted proposals to participate in the NASA and Navy SBIR programs.

Moving forward, the OIG will continue to closely monitor the Agency's SBIR activities and work collaboratively with the Agency to improve performance in this area.

Grant Management. NASA faces the ongoing challenge of ensuring that the approximately $500 million in grants it awards annually are administered appropriately and that recipients are accomplishing stated goals. The Agency makes these awards to facilitate research and development projects; to fund scholarships, fellowships, or stipends to students and teachers; and to fund educational research performed by educational institutions or other non-profit organizations.

Over the past 5 years, the OIG conducted 40 grant fraud investigations resulting in three prosecutions and $12.5 million in restitution and recoveries. As a result of one recent investigation, the Department of Justice filed a civil complaint under the False Claims Act alleging that a NASA grant recipient improperly spent over $3.75 million in grant funds intended for research purposes on construction of a building.

In September 2011, the OIG reported that NASA did not have an adequate system of controls in place to ensure proper administration and management of its grant program and that as a result some grant funds were not being used for their intended purposes.[29] Following this report, we conducted three audits examining whether specific NASA grants are being used for their intended purpose and whether associated costs are allowable, reasonable, and in accordance with applicable laws, regulations, guidelines, and terms of the grants.[30] Although we did not find any evidence of fraud or abuse in these audits, we did identify a number of internal control deficiencies and improvements needed in NASA's grant oversight and management. For example, we determined that the Philadelphia College Opportunity Resources for Education, a not-for-profit organization that provides college scholarships to high school seniors, had charged

[29] NASA OIG, "NASA's Grant Administration and Management" (IG-11-026, September 12, 2011).

[30] NASA OIG, "Audit of NASA Grants Awarded to the Alabama Space Science Exhibit Commission's U.S. Space and Rocket Center" (IG-12-016, June 22, 2012); NASA OIG, "Audit of NASA Grants Awarded to the Philadelphia College Opportunity Resources for Education" (IG-12-018, July 26, 2012); and NASA OIG, "Audit of NASA Grant Awarded to HudsonAlpha Institute for Biotechnology" (IG-12-019, August 3, 2012).

$60,511 in unallocable or unallowable expenditures and failed to maintain appropriate time and attendance documentation to support personnel charges totaling $156,409.

NASA is faced with the challenge of conducting active oversight of grant recipients within resource and staffing limitations. Consequently, we will continue to focus resources in this area as the Agency works to enhance its grant management processes.

5. Information Technology Security and Governance

NASA's portfolio of information technology (IT) assets includes more than 550 information systems that control spacecraft, collect and process scientific data, and enable NASA personnel to collaborate with colleagues around the world. Hundreds of thousands of NASA personnel, contractors, academics, and members of the public use these IT systems daily and NASA depends on them to carry out its essential operations. Overall, NASA spends more than $1.5 billion annually on its IT-related activities, $58 million of that for IT security. Although many NASA IT systems contain data that may be widely shared, some systems house sensitive information which, if lost or stolen, could result in significant financial loss, adversely affect national security, or significantly impair our Nation's competitive technological advantage.

Over the past 5 years, we have issued 21 audit reports containing 69 IT-related recommendations. In addition, OIG investigators have conducted more than 16 separate investigations of breaches of NASA networks, several of which have resulted in the arrests or convictions of foreign nationals in China, Great Britain, Italy, Nigeria, Portugal, Romania, Turkey, and Estonia.

IT Security Weaknesses. Through our audits and investigations, we have identified systemic and recurring weaknesses in NASA's IT security program that adversely affect the Agency's ability to protect the information and information systems vital to its mission. For example, NASA has been slow to implement full-disk encryption on notebook computers and other mobile computing devices it provides to its employees, potentially exposing sensitive information to unauthorized disclosure when such devices are lost or stolen. Between April 2009 and April 2011, NASA reported the loss or theft of 48 Agency mobile computing devices, which resulted in the unauthorized release of sensitive information including Social Security numbers, export-controlled data on NASA's Constellation and Orion programs, and third-party intellectual property. Although NASA has selected an enterprise solution for encrypting data on its mobile computing devices and hopes to complete implementation by March 31, 2013, until this process is complete, sensitive data on the Agency's mobile computing and portable data storage devices will remain at high risk for loss or theft.

We also found that NASA continues to experience challenges as it moves from a compliance-focused "snapshot" approach for measuring the security of its IT systems to using tools and techniques to perform real-time security control monitoring. Although NASA has made progress implementing such a continuous monitoring program, the Agency needs to: (1) create and maintain a complete, up-to-date record of IT components connected to Agency networks; (2) define the security configuration baselines that are required for its system components and develop an effective means of assessing compliance with those baselines; and (3) use best

practices for vulnerability management on all its IT systems. Only by making improvements in each of these areas can NASA ensure that its continuous monitoring program will adequately protect Agency IT assets.

The CIO's inability to ensure that NASA's mission computer networks implement key IT security controls continues to put these critical IT assets at risk of compromise. Through our work we have found that Agency mission networks do not consistently implement key IT security controls. For example, the Agency has not yet implemented two recommendations from a May 2010 OIG audit report to monitor its mission networks for the presence of critical software patches and technical vulnerabilities.[31] Moreover, our detailed control tests of mission networks in 2010 and 2011 identified several high-risk technical vulnerabilities on systems that provide mission support to spacecraft. Until NASA implements measures to better protect its mission networks, they will remain at risk of compromise, which could have a severe adverse effect on NASA operations, assets, or personnel.

Attacks on IT Infrastructure. In 2010 and 2011, NASA reported 5,408 computer security incidents resulting in the installation of malicious software on or unauthorized access to its computers. Such incidents disrupt Agency operations and can result in the loss or theft of sensitive data from NASA systems. NASA remains a target both because of the large size of its networks and because its information is highly sought after by criminals attempting to steal technical data or further other criminal activities. Moreover, NASA has increasingly become a target of a sophisticated form of cyber attack known as advanced persistent threats (APTs). The individuals or nations behind these APTs are typically well organized and well funded and often target high-profile organizations like NASA. Our investigation of a recent APT attack at the Jet Propulsion Laboratory (JPL) involving Chinese-based Internet protocol addresses has confirmed that the intruders gained full system access to numerous JPL systems and sensitive user accounts. With full system access the intruders could: (1) modify, copy, or delete sensitive files; (2) add, modify, or delete user accounts for mission-critical JPL systems; (3) upload hacking tools to steal user credentials and compromise other NASA systems; and (4) modify system logs to conceal their actions.

In an effort to improve the Agency's capability to detect and respond to these evolving threats, in November 2008 NASA consolidated its Center-based computer security incident detection and response programs into a single, Agency-wide computer security incident handling capability called the Security Operations Center (SOC). In an August 2012 audit, we found that establishment of the SOC had improved NASA's computer security incident handling capability by providing continuous incident detection coverage for all NASA Centers.[32] Moreover, the SOC's communication processes, including weekly conference calls and security bulletins, were effective for sharing security incident and threat information with responders across the Agency. Finally, we found that NASA implemented an effective information system that enables Agency-wide management and reporting of IT security incidents.

[31] NASA OIG, "Review of the Information Technology Security of [a NASA Computer Network]" (IG-10-013, May 13, 2010).

[32] NASA OIG, "Review of NASA's Computer Security Incident Detection and Handling Capability" (IG-12-017, August 7, 2012).

However, we also found that NASA's computer systems and networks remain at high risk for loss of sensitive data because the Agency's network firewalls and the SOC's intrusion detection capability are ineffective for either detecting or preventing APTs from bypassing the Agency's firewalls and perimeter defenses. Moreover, even after NASA fixes the vulnerability that permitted the attack to succeed, the attacker may covertly maintain a foothold inside NASA's system for future exploits. The increasing frequency of APTs heightens the risk that key Agency networks may be breached and sensitive data stolen. We made three recommendations in our report for enhancing the Agency's capability to detect and prevent these types of sophisticated cyber attacks and to improve overall SOC availability. The Agency is in the process of implementing these recommendations.

NASA IT Governance. Achieving the Agency's IT security goals will require sustained improvements in NASA's overarching IT management practices and governance. Effective IT governance is the key to accommodating the myriad interests of internal and external stakeholders and making decisions that balance compliance, cost, risks, and mission success. Effective IT governance also helps ensure that public funds are efficiently spent by coordinating spending across NASA when purchasing IT products and services.

Federal law and NASA policy designate the Agency Chief Information Officer (CIO) as the official responsible for developing IT security policies and procedures and implementing an Agency-wide IT security program. However, we have found that the CIO has limited ability to direct NASA's Mission Directorates to fully implement CIO-recommended or mandated IT security programs.

NASA's IT assets generally fall into two categories: (1) the "institutional" systems and networks the Agency uses to support such administrative functions as budgeting and human resources and (2) the "mission" systems and networks that support the Agency's aeronautics, science, and space programs such as the Mission Operations Directorate at Johnson Space Center, the Huntsville Operations Center at Marshall Space Flight Center, and the Deep Space Network at JPL. While the CIO has a complete inventory of and the authority to implement the Agency's IT security program for NASA's institutional IT assets, the CIO cannot fully account for or ensure that NASA's mission IT assets comply with applicable IT security policies and procedures.

IT assets on NASA's mission computer networks are funded by the related Mission Directorate, which is responsible for IT security, including the authority for risk determination and risk acceptance. Moreover, IT staff responsible for implementing security controls on mission IT assets report to officials in the Mission Directorate, not the NASA CIO. Thus, the CIO does not have the authority to ensure that NASA's IT security policies are consistently followed across the Agency.

We are currently conducting a review examining NASA's IT governance structure and anticipate making recommendations for improvement.

FY 2012 Inspector General Act Amendments Report

Background

The Inspector General Act Amendments of 1988 (P.L. 100-504), require that each agency head submit semi-annual reports to Congress on the actions taken in response to Office of Inspector (OIG) audit, evaluation, and inspection reports. Consistent with the Reports Consolidation Act of 2000 (P.L. 106-531), the National Aeronautics and Space Administration (NASA) consolidates and annualizes the required semi-annual Inspector General Act Amendments reporting elements for inclusion in its Agency Financial Report (AFR).

Required agency reporting under the 1988 amendments consists of:

1. Disclosure of OIG reports containing findings with monetary benefits (i.e., disallowed costs and funds put to better use):

    - for which management decisions were made during the reporting period (FY 2012);
    - for which final management decisions have been made, but final management action is pending;
    - for which final management action was taken during the reporting period, and;
    - for which no final management action was taken during the reporting period.

2. Disclosure of OIG recommendations pending final management action more than one year after the issuance of the associated audit report.

In addition to above statutory requirements, the Office of Management and Budget (OMB) has issued specific action requirements to federal agencies in their Circular No. A-50, "Audit Follow-up." These requirements include among other things that federal agencies ensure that final management decisions on audit recommendations are reached within six months after an OIG audit report is issued and that related corrective actions associated with the final management decision begin as soon as possible.

The following definitions are provided to enhance the readability of NASA's FY 2012 Inspector General Act Amendments Report:

Final Management Decision is reached when management evaluates the OIG's findings and recommendations, and determines whether or not to implement a proposed recommendation. If the final management decision is to implement an audit recommendation, a related corrective action plan is developed.

Final Management Action is the point in time when corrective action, taken by management in conjunction with a final management decision, is completed.

Corrective Action consists of remediation efforts on the part of management which are intended to mitigate an audit finding.

Questioned Costs are costs identified by the OIG as being potentially unallowable or unallowable because of: a) a purported violation of law, regulation, contract, grant, cooperative agreement, or other device governing the incurrence of cost; b) a finding that, at the time of the audit, such cost is not supported by adequate documentation, or; c) a finding that the cost incurred for the intended purpose is unnecessary or unreasonable.

Disallowed Costs are questioned costs that management has sustained or agreed should not be charged to the Government.

Funds Put to Better Use **(FPTBU)** represent potential cost savings that could be realized through the implementation of an audit recommendation.

NASA's Audit Follow-up Program

NASA's audit follow-up program is an integral component of the Agency's integrated internal control framework, and is a key element in terms of improving the overall efficiency and effectiveness of NASA's operations and activities. NASA is committed to ensuring timely and responsive final management decisions along with timely and complete final management action on all audit recommendations issued by the NASA OIG. In this regard, NASA has implemented a comprehensive program of audit follow-up intended to ensure that audit recommendations issued by the OIG are resolved and implemented in a timely, responsive, and effective manner.

NASA has designated the Office of Internal Controls and Management Systems (OICMS) as the Agency's office of primary responsibility for policy formulation, oversight, and functional leadership of NASA's audit follow-up program. OICMS implements related program activities through an agency-wide network of Audit Liaison Representatives (ALRs), who, in turn, are responsible for executing program activities at the operating level. This network of ALRs, in conjunction with OICMS' oversight, provides the functional structure to support NASA's audit follow-up program. Program activities are tracked, monitored and reported through the utilization of NASA's Audit and Assurance Information Reporting System (AAIRS). AAIRS is a web-based tracking and reporting tool utilized by OICMS and NASA ALRs to monitor key activities and milestones associated with audits performed by the OIG.

In accordance with requirements delineated in OMB Circular A-50, "*Audit Follow-up*," OICMS monitors audit recommendations issued by the OIG to ensure that a final management decision is reached within six months of the issuance of a final audit report. A final management decision consists of agreeing to implement an OIG recommendation, agreeing to implement a portion of an OIG recommendation, or declining to implement an OIG recommendation. In those instances where agreement between the OIG and NASA management cannot be reached, a final management decision will be sought from NASA's Audit Follow-up Official (AFO) within six months of the issuance of a final audit report.

Once a final management decision has been made to either implement or partially implement an OIG audit recommendation, corrective action on the part of management is pursued as rapidly as possible, in accordance with provisions of OMB Circular A-50. In some instances the corrective action associated with a final management decision spans multiple fiscal years due to factors such as the complexity of the planned corrective action, or unforeseen delays in the formulation, review and approval of NASA policies, procedural requirements, or regulations. NASA management continues to aggressively pursue the implementation of agreed-upon corrective action relating to audit recommendations issued by the OIG, in spite of inherent or unforeseen delays in the implementation of associated corrective action.

FY 2012 Audit Follow-up Results

The Inspector General Act Amendments of 1988 require that heads of federal agencies report on actions taken, or remaining to be taken, in response to OIG audit reports containing monetary findings. The amendments also require that management disclose those OIG audit reports for which a final management decision had been made in a prior reporting period, but where final management action is still pending. In addition to the statutory reporting requirements delineated in the Inspector General Act Amendments of 1988, OMB Circular A-50, requires that final management decisions on OIG audit recommendations be made within six months of the issuance of a final audit report. NASA's reporting in conjunction with the requirements of the Inspector General Act Amendments of 1988 and OMB Circular A-50 follows:

1. OIG Audit Reports with Monetary Findings

Prior year (FY 2011) carry-over of OIG audit reports with monetary findings consisted of three audit reports with OIG identified questioned costs (potentially disallowed costs) totaling $4,816,615, along with and two audit reports with OIG identified funds put to better use (potential cost savings) totaling $93,800,000. During FY 2012, management dispositioned in-full (e.g., recovered, collected, wrote-off, offset, etc.), the entirety of prior year OIG identified questioned costs and prior year OIG identified funds put to better use.

During FY 2012, the OIG issued four audit reports with identified questioned costs totaling $25,546,032, and two audit reports with identified funds put to better use in the amount of $4,313,759. Of the $25,546,032 in OIG identified questioned costs, management dispositioned $25,284,545. The balance of FY 2012 OIG identified questioned costs in the amount of $261,487[1] were pending management's disposition at September 30, 2012. The entirety of FY 2012 OIG identified funds put to better use ($4,313,759) was dispositioned in-full prior to September 30, 2012 (see Table 1).

[1] $216,920: Audit of NASA Grants Awarded to the Philadelphia College Opportunity Resources for Education (IG-12-018, dated July 26, 2012), and $44,567: Audit of NASA Grant Awarded to the HudsonAlpha Institute for Biotechnology (IG-12-019, dated August 31, 2012).

Table 1: Audit Reports with Monetary Benefits (Disallowed Costs and Funds Put to Better Use) *For the Year Ended September 30, 2012*					
	Category	Disallowed Costs		Funds to be Put To Better Use	
		Number of Reports	(Dollars)	Number of Reports	(Dollars)
Line 1	Audit reports with monetary benefits issued in FY 2011 that required disposition by management in FY 2012 (prior year carry-over)	3	$4,816,615	2	$93,800,000
Line 2	Plus: Audit reports with monetary benefits issued in FY 2012 that required disposition by management during FY 2012	4	$25,546,032	2	$4,313,759
Line 3	Total audit reports with monetary benefits (prior year and current year) that required disposition by management in FY 2012 [line 1 + 2]	7	$30,362,647	4	$98,113,759
Line 4	Audit reports with monetary benefits on which management disposition was completed during FY 2012	5	$30,101,160	4	$98,113,759
Line 5	Audit reports with monetary benefits still pending disposition by management at the end of FY 2012 [line3-4] (carry-over into FY 2013)	2	$261,487	0	$0

2. OIG Audit Recommendations Open More Than One Year After Report Issuance

As of September 30, 2012, there were 15 OIG audit reports issued in prior fiscal years containing a total of 38 audit recommendations pending final management action more than one year after the issuance of the related OIG audit report (see Table 2). Although these 38 recommendations remain open more than one year after issuance of the respective audit reports, NASA management continues to aggressively pursue related corrective actions. For the majority of these recommendations (20), outstanding corrective actions consist of the implementation of various management oversight, internal monitoring, and compliance review activities. For the balance of these recommendations (18), outstanding corrective actions consist of the completion of policy development and policy revision activities.

By way of comparison, for the fiscal year ended September 30, 2011, there were 15 OIG audit reports containing 33 recommendations on which final management decisions were made but final management action was still pending. For the five year period ended September 30, 2012, the number of OIG audit recommendations pending final management action one year or more after issuance of a final audit report has ranged between 33 and 42.

Table 2: Summary of OIG Audit Reports Pending Final Management Action One Year or More After Issuance of a Final Report *(As of September 30, 2012)*				
Report No.		**No. of Recommendations**		
(Report Date)	**Report Title**	**Open**	**Closed**	**Total**
IG-05-016 (5/12/2005)	***NASA's Information Technology Assessment Process***[2]	1	3	4
IG-09-003 (11/13/2008)	***Review of NASA Stolen Property at GSFC and MSFC***	1	4	5
IG-09-017 (7/28/2009)	***Review of the Space Flight Awareness Honoree Launch Conference Event***	1	0	1
IG-10-013 (5/13/2010)	***Review of the Information Technology Security of the Internet Protocol Operational Network (IONet)***	2	0	2
IG-10-015 (6/18/2010)	***Review of NASA's Microgravity Flight Services***	1	2	3
IG-10-016 (7/6/2010)	***NASA's Astronaut Corps: Status of Corrective Actions Related to Health Care Activities***	1	1	2
IG-10-018 (8/5/2010)	***Audit of Cybersecurity Oversight of NASA's Enterprise Document Management System***	1	14	15
IG-10-019 (9/14/2010)	***Information Technology Security: Improvements Needed in NASA's Continuous Monitoring Processes***	2	0	2
IG-10-024 (9/16/2010)	***Review of NASA's Management and Oversight of Its Information Technology Security Program***	2	1	3
IG-11-004 (12/13/2010)	***Review of the Jet Propulsion Laboratory's Occupational Safety Program***	6	9	15
IG-11-016 (3/15/2011)	***Preparing for the Space Shuttle Program's Retirement: Review of NASA's Controls over Public Sales of Space Shuttle Property***	4	3	7
IG-11-017 (3/28/2011)	***Inadequate Security Practices Expose Key NASA Network to Cyber Attack***	3	0	3
IG-11-023 (8/10/2011)	***NASA's Payments for Academic Training***	6	0	6
IG-11-024 (8/4/2011)	***NASA Infrastructure and Facilities: Assessment of Data Used to Manage Real Property Assets***	1	2	3
IG-11-026 (9/12/2011)	***NASA's Grant Administration and Management***	6	3	9
15	**Totals**	**38**	**42**	**80**

3. Final Management Decisions Not Made Within Six Months of a Report Date

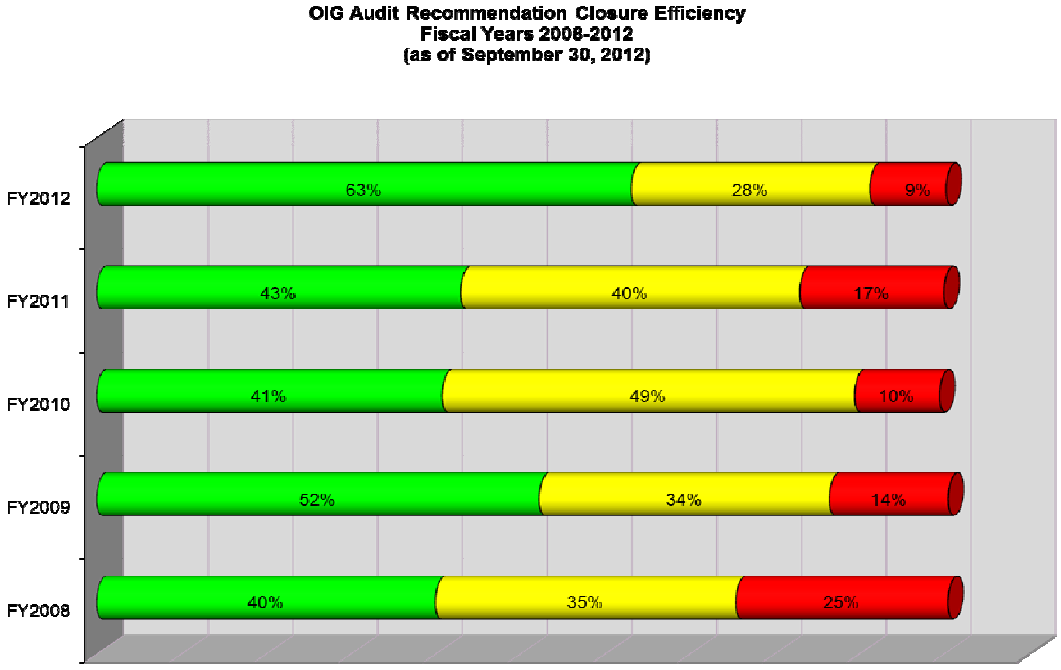
During FY 2012, the OIG issued 22 reports containing 197 recommendations addressed to NASA which required a final management decision within six months of the respective final report dates. For the fiscal year ended September 30, 2012, NASA reports no outstanding final management decisions pending more than six months after the issuance of a final OIG audit report. For comparative purposes, for the fiscal year ended September 30, 2011, NASA similarly reported no outstanding final management decisions pending more than six months after the issuance of a final OIG audit report. Furthermore, for the five-year period ended September 30, 2012, no final management decision on any OIG audit recommendation was made more than six months after issuance of a final OIG audit report.

4. Audit Recommendation Closure Efficiency

[2] Final management action was completed on September 27, 2012. As of September 30, the recommendation was pending OIG review for closure.

During FY 2012, a total of 103 OIG-issued audit recommendations (including 80 recommendations issued in prior fiscal years) were closed based on the implementation of final management action. Of the 103 recommendations closed in FY 2012, 63 percent (65 recommendations) were closed within one year of the issuance of the associated audit report, while 91 percent (94 recommendations) were closed within two years of the issuance of the associated audit report (see Table 3).

For comparative purposes, during FY 2011, a total of 72 OIG-issued audit recommendations (including 41 recommendations issued in prior fiscal years) were closed based on the implementation of final management action. Of the 72 recommendations closed in FY 2011, 43 percent (31 recommendatios) were closed within one year of the issuance of the associated audit report, while 83 percent (60 recommendations) were closed within two years of the issuance of the associated audit report. For the five year period ended September 30, 2012, an average of 48 percent of OIG-issued audit recommendations were closed within one year of the final issance of the assocated audit report, while an average of 85 percent of OIG-issued audit recommendations were closed within two years of the issuance of the associated audit report.



	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Closed < 1 year after report	40%	52%	41%	43%	63%
Closed > 1 < 2 years after report	35%	34%	49%	40%	28%
Closed > 2 years after report	25%	14%	10%	17%	9%

Table 3

Although NASA faces myriad challeges in the pursuit of implementing corrective actions associated with OIG audit recommendations in an efficient and effective manner, NASA management remains committed to the improvement of Agency operations and activities as identified by the OIG in their audit reports and associated recommendations.

Improper Payments Information Act (IPIA) Assessment

Improper Payment Compliance

NASA is dedicated to reducing fraud, waste, and abuse by adequately reviewing and reporting programs susceptible to improper payments in accordance with the Office of Management and Budget (OMB) Circular A-123 *Management's Responsibility for Internal Control*, Appendix C, *Requirements for Effective Measurement and Remediation of Improper Payments*. To improve the integrity of the Federal government's payments and the efficiency of its programs and activities, Congress enacted the Improper Payments Information Act (IPIA) of 2002 (Public Law No. 107-300). The IPIA contains requirements in the areas of improper payment identification and reporting. It requires agency heads to annually review all programs and activities, identify those that may be susceptible to significant improper payments, estimate annual improper payments in susceptible programs and activities, and report the results of their improper payment activities.

On July 22, 2010, the President signed into law the Improper Payments Elimination and Recovery Act (IPERA; Pub. L. No. 111-204). IPERA amended the IPIA and generally repealed the Recovery Auditing Act (Section 831, Defense Authorization Act, for FY 2002; Pub. L. No. 107-107). Subsequently, OMB issued Memorandum M-11-16 modifying Circular A-123 Appendix C, Part I and Part II (which was issued in August 2006 as OMB Memorandum M-06-23). OMB Memorandum M-11-16 requires each Executive branch agency to:

- Review all of its programs and activities to identify those susceptible to significant improper payments. IPERA defines significant improper payments as gross annual improper payments (i.e., the total amount of overpayments plus underpayments) in the program exceeding (1) both 2.5 percent of program outlays and $10,000,000 of all program or activity payments made during the fiscal year reported or (2) $100,000,000 (regardless of the improper payment percentage of total program outlays).
- Obtain a statistically valid estimate of the annual amount of improper payments in programs and activities for those programs that are identified as susceptible to significant improper payments.
- Implement a plan to reduce improper payments.
- Report estimates of the annual amount of improper payments in programs and activities and progress in reducing them.

The IPIA* defines an improper payment as any payment that should not have been made or that was made in an incorrect amount (including overpayments and underpayments) under statutory, contractual, administrative, or other legally applicable requirements. It includes any payment to an ineligible recipient, any payment for an ineligible service, any duplicate payment, payments for services not received, and any payment that does not account for credit for applicable

*IPIA as used hereafter, refers to IPIA, as amended by IPERA

discounts. Moreover, when an agency's review is unable to discern whether a payment is proper as a result of insufficient or lack of documentation, this payment must also be considered an improper payment.

Throughout the past five years, NASA has diligently met IPIA program compliance by launching OMB-compliant risk assessments, updating NASA payment process documentation, selecting OMB-compliant statistical samples for testing, drafting comprehensive test procedures, reporting results in the annual Agency Financial Report (AFR) or Performance and Accountability Report (PAR) and documenting the IPIA review process and results in comprehensive work papers.

During FY 2012, NASA continued its efforts to improve the integrity of its payments and the efficiency of its programs by updating the annual risk assessment. The risk assessment identified 44 programs in scope and covered $18.5 billion in FY 2011 disbursements. Once the programs were evaluated, NASA identified the following ten programs to further evaluate their susceptibility to improper payments:

- Center Management and Operations
- Institutions and Management
- International Space Station (ISS)
- James Webb Space Telescope
- Mars Exploration
- Multi-purpose Crew Vehicle
- Reimbursable-Science Mission Directorate (RMB-SCMD*) Programmatic
- Space Communications and Navigation (SCaN)
- Space Launch System
- Space Shuttle Program

*SAP Identifier; refers to the SMD program used hereafter

Total disbursements related to these programs amounted to approximately $11.96 billion in FY 2011. As in previous years, with the assistance of contractor support, NASA performed an improper payment review of each program in accordance with Appendix C of OMB Circular A-123. NASA evaluated approximately 1,600 transactions for approximately $2.2 billion and found no improper payments. Although the test results indicate that the programs evaluated are not susceptible to a high risk of improper payments, NASA will continue to monitor payments and take appropriate corrective action for any identified improper payments.

Improper Payments Information Act Reporting Details

To conduct the FY 2012 IPIA assessment, NASA adhered to the established improper payment methodology, considered lessons learned from past IPIA assessments, and adhered to the NASA Risk Assessment methodology. In order to satisfy the IPIA requirements, the following tasks and activities were executed:

- Updated the FY 2011 risk assessment;
- Selected a statically valid sample of payments;
- Conducted a test of all transactions selected in the sample and extrapolated the results to make a valid estimate; and,
- Reported on the details of testing and findings (if any) of the Improper Payment Program (IPP).

I. Risk Assessment

NASA's risk assessment methodology was developed using criteria established for determining levels of risk and evaluating all major programs against these criteria. Risk factors included conditions related to financial processing and internal controls, internal and external monitoring and assessments, human capital risk, programmatic risk, and the nature of programs and payments.

In FY 2012, NASA performed a comprehensive qualitative and quantitative risk assessment to identify programs susceptible to high risk of significant improper payments. NASA's risk assessment methodology is illustrated in Table 1 below, along with a brief summary of steps and results.

Table 1: NASA's Risk Assessment Methodology and Results

Determine Scope	Identify Programs Eligible for Assessment	Analyze Risk Conditions	Prepare Risk Assessment
• Identified 143 distinct programs encompassing $19.6 B in FY 2011 disbursements • Estimated maximum error rate of program disbursements at 12.5% • Set materiality level of programs in-scope at >$80M	• Identified 44 programs within assessment scope encompassing $18.5 B in FY 2011 disbursements • Included non-programmatic disbursements such as Institutions & Management	• Evaluated FY 2011 audit reports, findings and recommendations • Evaluated trends in internal control results • Evaluated risk conditions including control environment, human capital risk and nature of payments.	• Updated risk assessment based on information gathered from NASA financial management reports and independent reviews • Populated Risk Assessment matrix with initial feedback • Identified 6 programs susceptible to improper payments based on risk ratings • Expanded scope with additional 4

Determine Scope	Identify Programs Eligible for Assessment	Analyze Risk Conditions	Prepare Risk Assessment
			programs in accordance with NASA's 3-yr. baseline Risk Strategy

(1) Determine Scope

To determine the scope of programs subject to the Risk Assessment, NASA prepared an initial selection based on the FY 2011 total disbursements; identifying 143 distinct programs. NASA generated and provided the disbursement totals for each program from its financial management system. The aggregate disbursement total was validated against NASA's SF-133, *Report on Budget Execution and Budgetary Resources*.

(2) Identify Programs Eligible for FY 2012 Assessment

A review of the 143 distinct programs was made to determine whether or not they met the materiality thresholds for review. The materiality of disbursements is derived from an estimated error rate of 12.5 percent of program disbursements. Using this estimate, the materiality level of programs in scope was set at greater than $80 million. As a result of the materiality threshold analysis it was determined that 44 programs met the in scope criteria.

(3) Analyze Risk Conditions

The control environment, internal and external monitoring, human capital risk, programmatic risk, and nature of program payment risk factors were analyzed during the risk assessment. NASA also reviewed documents, including the NASA Office of Inspector General (OIG) Report *NASA's Efforts to Identify, Report, and Recapture Improper Payments* (Report No. IG-12-015, (Assignment No. A-11-020-00)). Among other documents, NASA also examined the FY 2011 report regarding the assessment of Internal Control over Financial Reporting. Once this review and analysis was complete, the FY 2012 Risk Assessment was updated to reflect the NASA programs found susceptible to improper payments.

(4) Prepare Risk Assessment

The programs identified for the FY 2012 IPP review are: Center Management and Operations; Institutions and Management; ISS; James Webb Space Telescope; Mars Exploration; Multi-purpose Crew Vehicle; RMB-SMD Programmatic; SCaN; Space Launch System, and; Space Shuttle. Table 2 below provides the FY 2012 programs susceptible to improper payments. A score greater than 3.00 is deemed "high risk" per the NASA Risk Assessment Methodology.

Table 2: NASA Programs Identified as Susceptible to Improper Payments

Program	Determined Risk After Testing in FY 2010	Determined Risk After Testing in FY 2011	FY 2012 Risk Assessment Rating	Tested in FY 2012
Center Management and Operations	N/A	N/A	3.14	Yes
Institutions and Management[1]	N/A	*Low*	2.98	Yes
International Space Station (ISS)	N/A	*Low*	3.14	Yes
James Webb Space Telescope	N/A	N/A	3.10	Yes
Mars Exploration[1]	N/A	*Low*	2.74	Yes
Multi-purpose Crew Vehicle	N/A	N/A	3.26	Yes
RMB-SMD Programmatic[1]	N/A	*Low*	2.20	Yes
Space Communications and Navigation (SCaN)[1]	*Low*	*Low*	2.74	Yes
Space Launch System	N/A	N/A	3.26	Yes
Space Shuttle	N/A	*Low*	3.14	Yes

[1]Certain programs identified as low risk were subject to testing in the FY 2012 IPP so that these programs complete at least three consecutive years of testing in accordance with NASA's 3-year baseline risk strategy.

II. Statistical Sampling

For each program selected for testing, NASA developed a statistically valid random sample of program payments, in accordance with OMB guidelines. NASA constructed a stratified, random sample to yield an estimate with a 90 percent confidence level with a margin of error of plus or minus 2.5 percent for each program. The sample was drawn from the universe of disbursements that occurred from October 1, 2010 through September 30, 2011. For each selected program undergoing an improper payment review, NASA developed samples for the following payment types: vendor payments; grant drawdowns; letter of credit contracts; government purchase card transactions; and travel expenditures. NASA expanded the scope of its IPP review in FY 2012 to include grant transactions. Additionally, NASA reviewed letter of credit transactions, the bulk of which are contract payments to the Jet Propulsion Laboratory (JPL). The letter of credit (LOC) is a method of payment that NASA uses for nonprofit

organizations and universities that receive grants, cooperative agreements and advance payment contracts with NASA. The LOC method allows the grantees to draw funds directly from the Department of Health and Human Services (DHHS) Payment Management System (PMS) whereby grantees can draw funds for their immediate cash needs. The LOC process eliminates delays in payment that could be experienced using the invoice payment method.

Figure 1 below illustrates the net outlays for each program selected.

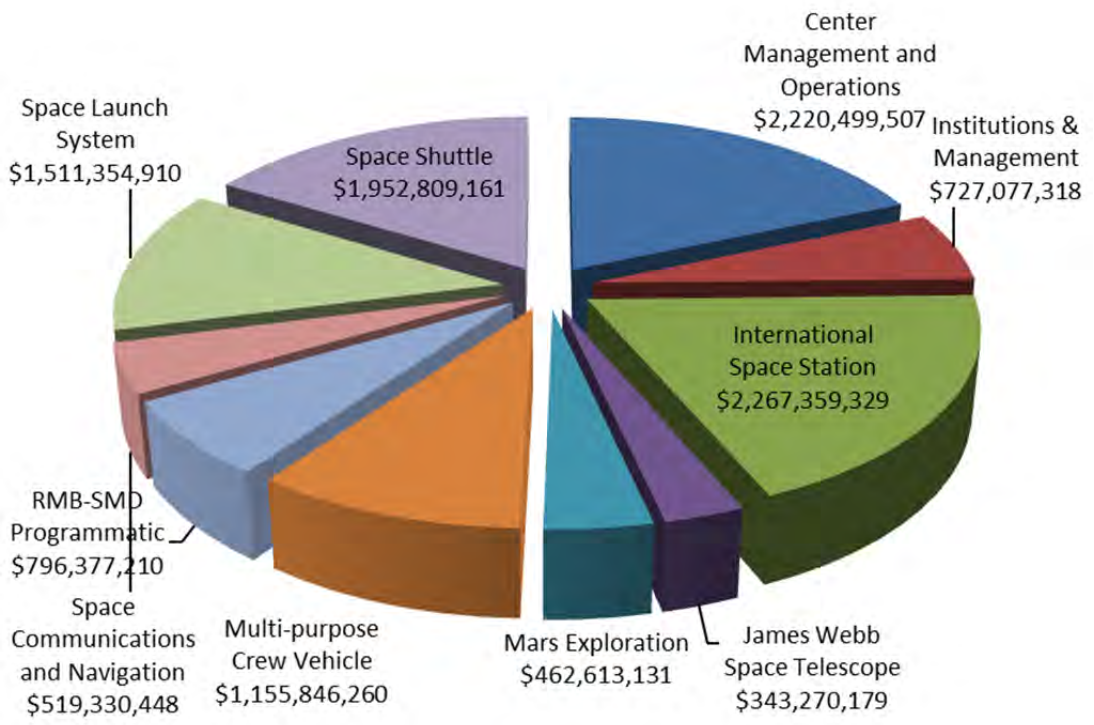


Figure 1: Net Outlays for Programs Susceptible to a High Risk of Improper Payments

A random sample was selected for each of the ten programs identified as susceptible to risk of significant improper payments. A total number of 1,613 payment transactions for a total of $2.2 billion were selected for FY 2012 IPP testing. Table 3 lists the number of transactions and net dollar value tested for each program:

Table 3: Samples by Program

Program	Vendor Payments	Grants & LOC	Travel	Purchase Card	Total Tested
Center Management and Operations					
Dollars	$34,091,962	$428,519	$6,107	$1,350	$34,527,938
Transactions	118	13	11	15	157
Institutions and Management					
Dollars	$206,587,219	$345,740	$0	$4,496	$206,937,455
Transactions	177	24	0	4	205
International Space Station					
Dollars	$794,242,070	$(57,807)	$2,705	$0	$794,186,968
Transactions	159	2	3	0	164
James Webb Space Telescope					
Dollars	$158,705,435	$817,582	$0	$30	$159,523,047
Transactions	37	44	0	1	82
Mars Exploration					
Dollars	$40,448,769	$192,346,396	$31	$0	$232,795,196
Transactions	22	210	2	0	234
Multi-purpose Crew Vehicle					
Dollars	$20,706,315	$46,318	$2,450	$2,322	$20,757,405
Transactions	120	14	3	6	143
RMB-SMD Programmatic					
Dollars	$54,275,576	$45,390,344	$0	$6	$99,665,926
Transactions	28	73	0	1	102
Space Communications and Navigation					
Dollars	$115,847,517	$66,065,475	$0	$156	$181,913,148
Transactions	41	68	0	2	111
Space Launch System					
Dollars	$293,020,238	$3,130,379	$634	$20	$296,151,271
Transactions	239	35	3	1	278
Space Shuttle					
Dollars	$151,709,517	$(287,033)	$955	$40	$151,423,479
Transactions	130	4	2	1	137
TOTAL					
Dollars	**$1,869,634,618**	**$308,225,913**	**$12,882**	**$8,420**	**$2,177,881,833**
Transactions	**1,071**	**487**	**24**	**31**	**1,613**

III. Conclusion

Although NASA found no improper payments, NASA will continue to monitor payments and take appropriate corrective action as needed. NASA attributes much of the positive results to the centralized procurement and payment activities conducted at the NASA Centers and the NASA Shared Services Center (NSSC). Centralized processing provides a sound internal control environment that mitigates the risk of improper payments across the entire Agency. Table 4 below shows the total payments by population, sample amount, and annual estimate of improper payments by program.

Table 4: Total Payments by Population, Sample Amount and Annual Estimate of Improper Payments by Program

Program	Population (Net Outlays)	Sample	FY 2012 Estimate of Improper Payments	FY 2012 Estimate of Improper Payments
Center Management and Operations	$ 2,220,499,507	$ 34,527,938	0.00%	$0
Institutions and Management	727,077,318	206,937,455	0.00%	0
International Space Station	2,267,359,329	794,186,968	0.00%	0
James Webb Space Telescope	343,270,179	159,523,047	0.00%	0
Mars Exploration	462,613,131	232,795,196	0.00%	0
Multi-purpose Crew Vehicle	1,155,846,260	20,757,405	0.00%	0
RMB-SMD Programmatic	796,377,210	99,665,926	0.00%	0
Space Communications and Navigation	519,330,448	181,913,148	0.00%	0
Space Launch System	1,511,354,910	296,151,271	0.00%	0
Space Shuttle	1,952,809,161	151,423,479	0.00%	0
Total	**$11,956,537,453**	**$2,177,881,833**	0.00%	**$0**

Table 5: Improper Payment Reduction Outlook (in millions)

Program	FY 2011 Outlays	FY 2011 IP	FY 2011 IP	FY 2012 Outlays	FY 2012 IP	FY 2012 IP	FY 2012 Over-Payment	FY 2012 Under-Payment	FY 2013 Est. Outlays	FY 2013 IP	FY 2013 IP	FY 2014 Est. Outlays	FY 2014 IP	FY 2014 IP	FY 2015 Est. Outlays	FY 2015 IP	FY 2015 IP
Center Management and Operations	$2,220.5	0%	$0	$2,204.1	0%	$0	$0	$0	$2,093.3	0%	$0	$2,093.3	0%	$0	$2,093.3	0%	$0
Institutions and Management	$727.1	0%	$0	$727.1	0%	$0	$0	$0	$727.1	0%	$0	$727.1	0%	$0	$727.1	0%	$0
International Space Station	$2,267.3	0%	$0	$2,829.9	0%	$0	$0	$0	$3,007.6	0%	$0	$3,177.6	0%	$0	$3,170.9	0%	$0
James Webb Space Telescope	$343.3	0%	$0	$518.6	0%	$0	$0	$0	$627.6	0%	$0	$659.1	0%	$0	$646.6	0%	$0
Mars Exploration	$462.6	0%	$0	$587.0	0%	$0	$0	$0	$360.8	0%	$0	$227.7	0%	$0	$188.7	0%	$0
Multi-purpose Crew Vehicle	$1,155.8	0%	$0	$1,200.0	0%	$0	$0	$0	$1,024.9	0%	$0	$1,028.2	0%	$0	$1,028.2	0%	$0
RMB-SMD Programmatic	$796.4	0%	$0	$1,533.9	0%	$0	$0	$0	$1,489.1	0%	$0	$1,674.0	0%	$0	$1,674.0	0%	$0
Space Communications and Navigation	$519.3	0%	$0	$445.5	0%	$0	$0	$0	$655.6	0%	$0	$570.7	0%	$0	$577.3	0%	$0
Space Launch System	$1,511.3	0%	$0	$1,502.6	0%	$0	$0	$0	$1,340.0	0%	$0	$1,429.3	0%	$0	$1,429.3	0%	$0
Space Shuttle	$1,952.8	0%	$0	$556.2	0%	$0	$0	$0	$70.6	0%	$0	$0	0%	$0	$0	0%	$0

Recapture Audit

On July 22, 2010, the President signed into law the Improper Payments Elimination and Recovery Act (IPERA; Pub. L. No.111-204). IPERA requires all federal agencies to conduct payment recapture audits. NASA continues to perform recapture audits as part of its overall program to ensure effective internal control over payments for each program and activity that expends $1 million or more annually if conducting such audits would be cost-effective. In FY 2012 NASA completed its recapture audit of FY 2010 disbursements.

In accordance with the amended Office of Management and Budget (OMB) Circular A-123, Appendix C guidance, agencies may determine to exclude classes of contracts and contract payments from recapture audit activities if the agency determines that the recapture audits are inappropriate or not a cost-effective method for identifying and recovering improper payments. NASA employs the Defense Contract Audit Agency (DCAA), at significant expense, to perform auditing procedures on cost-type contracts. Performing a separate recapture audit on these cost-type contracts would be duplicative and not cost-effective. In addition, the contractual terms of NASA's cost-type contracts provides for audit access only by the DCAA. Increasing audit access would require contract modifications for existing contracts, which would likely result in increased costs. Consequently, NASA does not consider it cost-effective to conduct payment recapture audits for cost-type contracts. Consequently NASA does not include cost-type contracts in its assessment for recapture audits.

NASA engages an industry leading contracting firm to perform recapture auditing under a contingency contract. This year, the FY 2010 disbursements review was completed and the results are listed in the table below. Currently, the recapture audit of FY 2011 disbursements is underway.

Payment Recapture Audit Reporting

Program or Activity	Type of Payment	Amount Subject to Review for Reporting FY2010	Actual Amount Reviewed and Reported FY2010	Amount Identifed for Recovery FY2010	Amount Recovered FY2010	% of Amount Recovered out of Amount Identified FY2010	Amount Outstanding FY2010	% of Amount Outstanding out of Amount Identified FY2010	Amount Determined Not to be Collectable FY2010	% of Amount Determined Not to be Collectable out of Amount Identified FY2010	Amounts Identified for Recovery (2009 + PYs)	Amounts Recovered (2009 + PYs)	Cumulative Amounts Identified for Recovery (2010 + PYs)	Cumulative Amounts Recovered (2010 + PYs)	Cumulative Amounts Outstanding (2010 + PYs)	Cumulative Amounts Determined Not to be Collectable (2010 + PYs)
NASA	Fixed Price Contract	$4,215,197,938	$4,215,197,938	$7,335	$3,525	48%	$3,810	52%	$3,810	52%	$237,893	$218,556	$245,228	$222,081	$23,147	$23,147*

*NASA considers these four (4) claims totaling $23,147 as uncollectible as they have been forwarded to the US Treasury.

Payment Recapture Audit Targets

Type of Payment	CY Amount Identified	CY Amount Recovered	CY Recovery Rate (Amount Recovered/Amount Identified)	CY + 1 Recovery Rate Target	CY + 2 Recovery Rate Target	CY + 3 Recovery Rate Target
Fixed Price Contracts	$7,335	$3,525	48%	91%*	91%*	91%*

*Recovery Rate Target is based on the cumulative amounts recovered/cumulative amounts identified, but no less than 90%.

Aging of Outstanding Overpayments

Type of Payment	CY Amount Outstanding (0-6 months)	CY Amount Outstanding (6 months to 1 year)	CY Amount Outstanding (over 1 year)
Fixed Price Contracts	**$0**	**$3,810**	**$0**

Disposition of Recaptured Funds

Type of Payment	Agency Expenses to Administer the Program	Payment Recapture Auditor fees	Financial Management Improvement Activities	Original Purpose	Office of Inspector General	Returned to Treasury
Fixed Price Contracts	**$0***	**$881****	**$0**	**$0**	**$0**	**$0**

***NASA believes these administrative costs to be marginal and currently has not accumulated a cost figure.**
****Recapture Auditor Fees for FY2010 only.**

Overpayments Recaptured Outside of Payment Recapture Audits

Source of Recovery	Amount Identified	Amount Recovered (CY)	Amount Identified (PY)	Amount Recovered (PY)	Cumulative Amount Identified (CY+PYs)	Cumulative Amount recovered (CY+PYs)
N/A*	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

***There are no overpayments recaptured outside of the payment recapture audit to report during this period.**

NASA has taken steps through Improper Payment reviews and recapture audits to continue holding Agency managers accountable for reducing and recovering improper payments. The recapture audit process is monitored by the Office of the Chief Financial Officer to ensure compliance with NASA's Recapture Audit Guidance. In addition, all collection and disbursement functions are centralized which ensures consistent application of the control environment and reduction of improper payments risk. NASA has the infrastructure and information technology in place to reduce improper payments. There are no statutory or regulatory barriers limiting NASA's ability to reduce improper payments.

Schedule of Spending

(In Millions of Dollars)	2012	2011
Section I: What Money is Available to Spend?		
Total Resources	$ 21,618	$ 21,316
Less Amount Available but Not Agreed to be Spent	821	541
Less Amount Not Available to be Spent	112	136
Total Amounts Agreed to be Spent	**$ 20,685**	**$ 20,639**
Section II: How was the Money Spent?		
Space Operations Mission		
Personnel compensation and benefits	$ 368	$ 453
Contractual services and supplies	4,033	4,508
Acquisition of assets	31	37
Grants and fixed charges	17	6
Other	5	2
Total Spending	4,454	5,006
Science Mission		
Personnel compensation and benefits	$ 315	$ 303
Contractual services and supplies	3,532	3,582
Acquisition of assets	55	73
Grants and fixed charges	559	557
Other	1	6
Total Spending	4,462	4,521
Exploration Mission		
Personnel compensation and benefits	$ 433	$ 441
Contractual services and supplies	3,058	2,946
Acquisition of assets	23	44
Grants and fixed charges	80	91
Other	1	4
Total Spending	3,595	3,526
Aeronautics Mission		
Personnel compensation and benefits	$ 195	$ 201
Contractual services and supplies	303	336
Acquisition of assets	23	18
Grants and fixed charges	27	23
Other	1	2
Total Spending	549	580
Cross-Agency Mission		
Personnel compensation and benefits	$ 1,211	$ 1,348
Contractual services and supplies	3,478	3,131
Acquisition of assets	111	168
Grants and fixed charges	68	94
Other	10	57
Total Spending	4,878	4,798
Education Mission		
Personnel compensation and benefits	$ 7	$ 3
Contractual services and supplies	28	33
Grants and fixed charges	129	146
Total Spending	164	182

SCHEDULE OF SPENDING (continued)

Section II: How was the Money Spent? (ctd.)	2012	2011
Office of Inspector General		
Personnel compensation and benefits	$ 32	$ 33
Contractual services and supplies	6	6
Acquisition of assets	-	1
Total Spending	38	40
Space Technology Mission		
Personnel compensation and benefits	$ 103	$ -
Contractual services and supplies	124	-
Acquisition of assets	3	-
Grants and fixed charges	2	-
Total Spending	232	-
Construction and Environmental Compliance and Restoration		
Personnel compensation and benefits	$ 160	$ -
Contractual services and supplies	218	140
Acquisition of assets	-	115
Total Spending	378	255
Other		
Personnel compensation and benefits	$ 19	$ 17
Contractual services and supplies	760	651
Acquisition of assets	29	54
Grants and fixed charges	3	4
Other	1	1
Total Spending	812	727
Total Spending	19,562	19,635
Amounts Remaining to be Spent	1,123	1,004
Total Amounts Agreed to be Spent	**$ 20,685**	**$ 20,639**
Section III: Who did the Money go to?		
Federal	$ 1,319	$ 1,203
Non-Federal	19,366	19,436
Total Amounts Agreed to be Spent	**$ 20,685**	**$ 20,639**

Summary of Financial Statement Audit and Management Assurances

The following tables summarize the Agency's FY 2012 Financial Statement Audit and Management Assurances. Table 1 summarizes the status of prior year--FY 2011 material weaknesses identified, if any by the Financial Statement Auditor. Table 2 summarizes the status of prior year material weaknesses, if any identified by NASA Management.

Table 1: Summary of Financial Statement Audit

Audit Opinion	Unqualified
Restatement	No

Material Weaknesses	Beginning Balance	New	Resolved	Consolidated	Ending Balance
None	0	0	0	0	0
Total Material Weaknesses	**0**	**0**	**0**	**0**	**0**

Table 2: Summary of Management Assurances

Effectiveness of Internal Control Over Financial Reporting (FMFIA 2)

Statement of Assurance: Unqualified

Material Weaknesses	Beginning Balance	New	Resolved	Consolidated	Reassessed	Ending Balance
None	0	0	0	0	0	0
Total Material Weaknesses	**0**	**0**	**0**	**0**	**0**	**0**

Effectiveness of Internal Control Over Operations (FMFIA 2)

Statement of Assurance: Unqualified

Material Weaknesses	Beginning Balance	New	Resolved	Consolidated	Reassessed	Ending Balance
None	0	0	0	0	0	0
Total Material Weaknesses	**0**	**0**	**0**	**0**	**0**	**0**

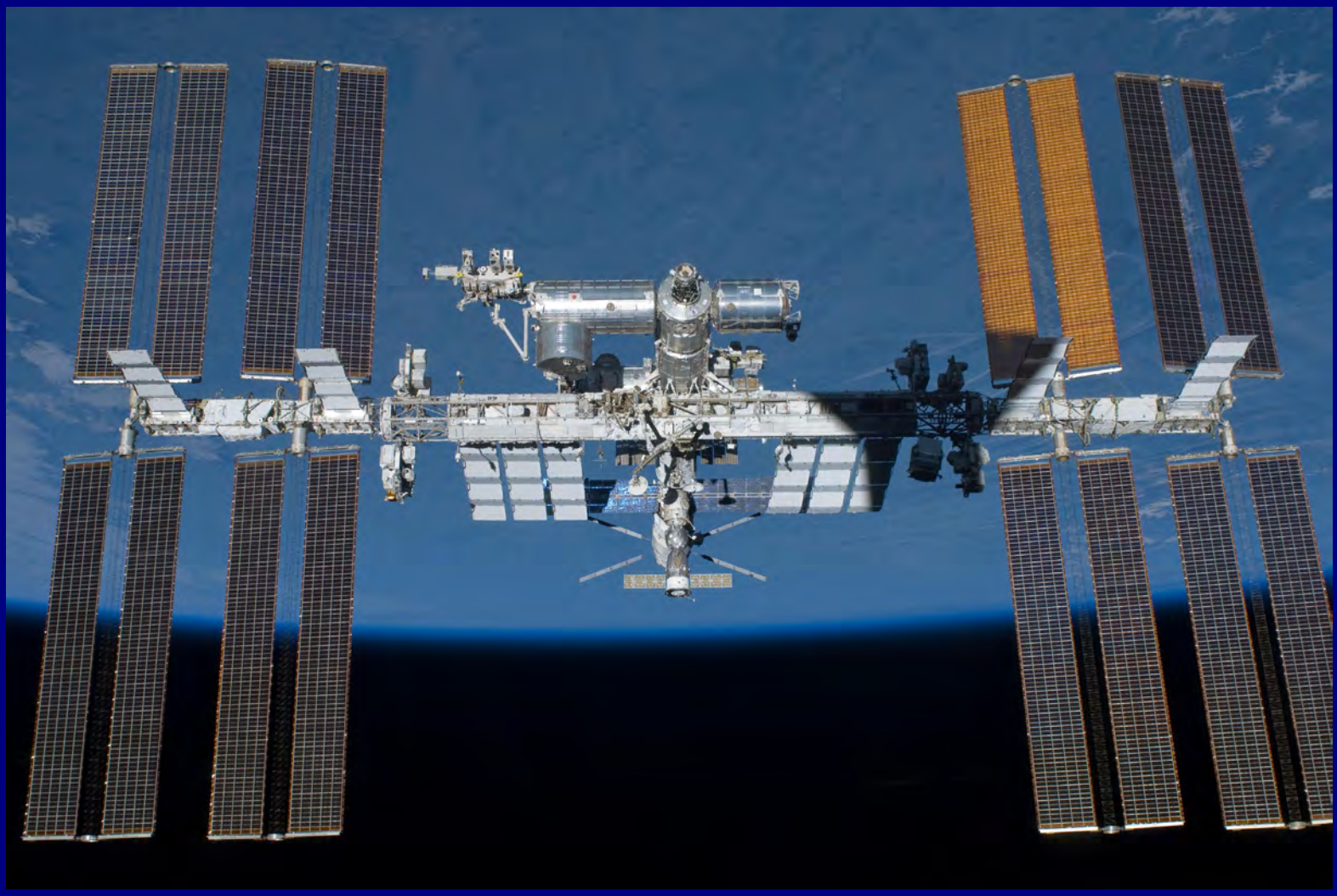
Conformance With Financial Management System Requirements (FMFIA 4)

Statement of Assurance: Systems conform.

Non-Conformances	Beginning Balance	New	Resolved	Consolidated	Reassessed	Ending Balance
Total non-conformances	**0**	**0**	**0**	**0**	**0**	**0**

Compliance With Federal Financial Management Improvement Act (FFMIA)

	Agency	Auditor
Overall Substantial Compliance	Yes	Yes
1. System Requirements met?		Yes
2. Accounting Standards met?		Yes
3. USSGL at Transaction Level met?		Yes



NASA Headquarters
Washington, DC 20546

NP-2012-11-911-HQ