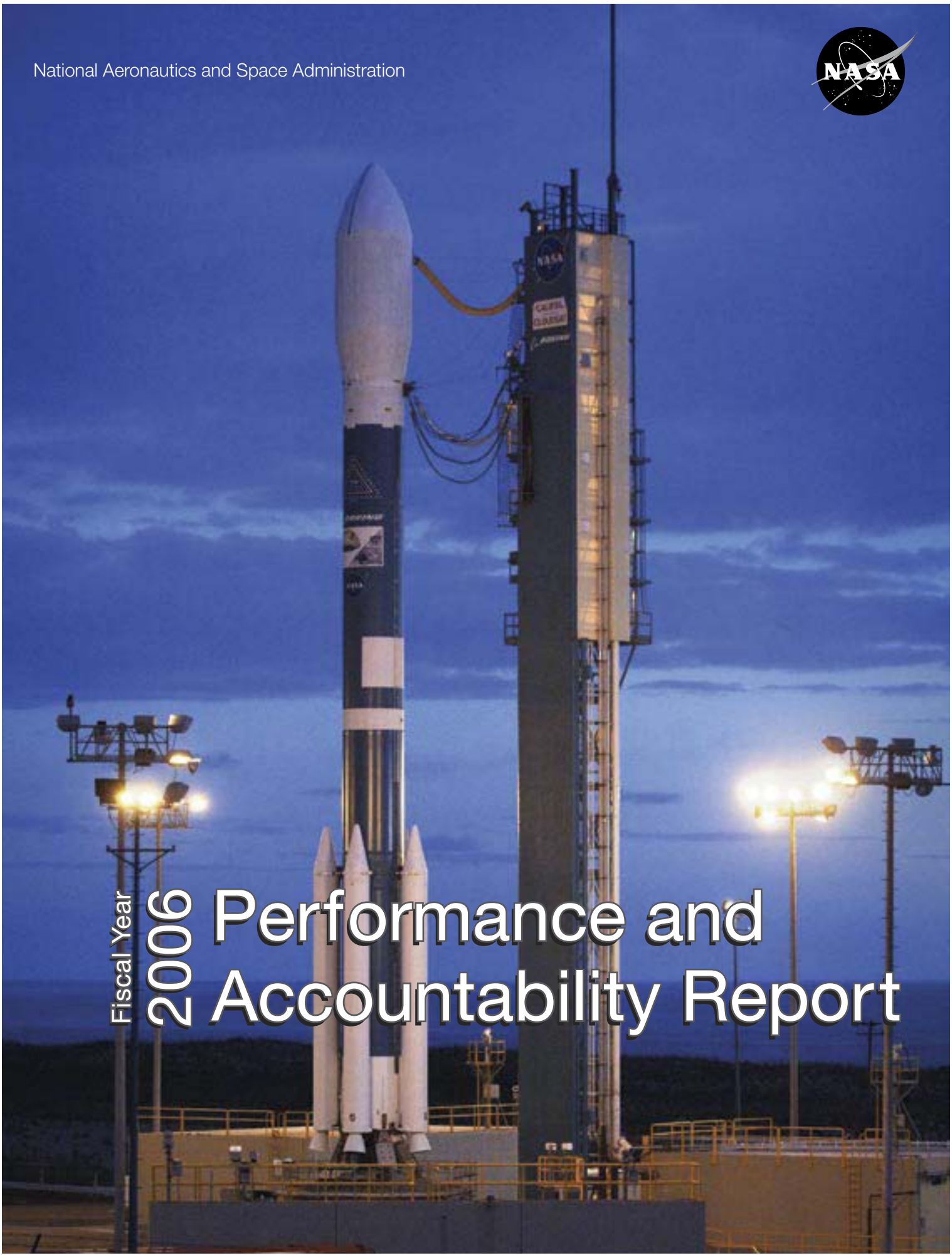
National Aeronautics and Space Administration



Fiscal Year 2006

Performance and Accountability Report

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Appendices

Previous page: Six hundred and fifty light-years away in the constellation Aquarius, a dead star about the size of Earth called the Helix Nebula is refusing to fade away peacefully. In death, it is spewing out massive amounts of hot gas and intense ultraviolet radiation, creating a spectacular object called a "planetary nebula." In this false-color image, NASA's Hubble and Spitzer Space Telescopes have teamed up to capture the complex structure of the object in unprecedented detail.

The dead star, called a white dwarf, can be seen at the center of the image as a white dot. The intense ultraviolet radiation being released by the white dwarf is heating and destabilizing the molecules in its surrounding environment. Very hot gases (blue) are in the center. As gases move away from the center, they transition from hot (yellow) to warm (red). A striking feature of the Helix is its collection of thousands of filamentary structures, or strands of gas. In this image, the filaments can be seen under the transparent blue gas as red lines radiating out from the center. Astronomers believe that the molecules in these filaments are able to stay cooler and more stable because dense clumps of materials are shielding them from ultraviolet radiation. (NASA/JPL–Caltech/ESA/J. Hora, Harvard–Smithsonian CfA/C.R. O'Dell, Vanderbilt Univ.)

Above: These images compare a visible-light image (inset) taken by the California Institute of Technology's Digitized Sky Survey with an infrared image taken by NASA's Spitzer Space Telescope. While the visible-light view shows hints of dusty pillars, the infrared view, dubbed "Mountains of Creation," reveals towering pillars of dust aglow with the light of embryonic stars (shown in white and yellow). The added detail in the Spitzer image reveals a dynamic region in the process of evolving and creating new stellar life. (Inset: DSS; Spitzer image: NASA/JPL–Caltech/L. Allen, Harvard–Smithsonian CfA)

Appendix A: Audit Follow-up Actions

The Inspector General Act Amendments

The *Inspector General Act of 1978* (as amended), requires that the head of each federal agency make management decisions on all audit recommendations issued by the Office of Inspector General (OIG) within a maximum of six months after the issuance of an audit report. The Act further requires that the head of each federal agency complete final action on each management decision required with regard to a recommendation in an OIG report within 12 months after issuance of a report.

The *Inspector General Act Amendments of 1988* (P.L. 100-504), require that federal agency heads report on the status of management decisions and final management action with regard to audit reports issued by the OIG. Under the *Reports Consolidation Act* (RCA) of 2000, NASA consolidates and annualizes all relevant information on final management decisions and final management action for inclusion in the annual Performance and Accountability Report (PAR). Following is NASA's submission in compliance with these requirements.

Report on Audit Follow-up

NASA management is committed to ensuring the timely resolution (management decision) and implementation of OIG audit recommendations and believes that audit follow-up is essential to improving the efficiency and effectiveness of NASA programs, projects, and operations. Therefore, NASA has implemented a comprehensive program of audit liaison, resolution, and follow-up to assure that OIG audit recommendations are resolved and implemented promptly.

NASA uses the Corrective Action Tracking System version 2.0 (CATS II), as the Agency's primary database for monitoring the status of OIG audit recommendations. CATS II is a Web-based application developed and managed by NASA.

NASA's program of audit follow-up is a joint effort between NASA management and the NASA OIG. Periodic reconciliations between the OIG's Office of Audits Central Information System (OACIS) and NASA's CATS system assure complete and accurate status reporting of open OIG audit reports and related recommendations.

During FY 2006, the Office of Infrastructure and Administration, Management Systems Division partnered with the NASA Office of Inspector General, Quality Assurance Directorate on a joint effort to conduct post-closure follow-up reviews to assess the efficiency and effectiveness of agency audit follow-up processes and to identify trends and/or systemic deficiencies. Reviewers derived their objectives from requirements outlined in the Office of Management and Budget's (OMB) Circular A-50, "Audit Follow-up," dated September 29, 1982. The scope of the work performed was limited to NASA OIG audit recommendations resolved and closed during the period January 1, 2000 through December 31, 2005. On September 11, 2006, the Management Systems Division issued its initial report on post-closure follow-up. The report concluded that while the work performed by the Management Systems Division did not support a conclusion as to the overall effectiveness and efficiency of NASA's audit follow-up system in its entirety, the system did assure the efficient, prompt, and proper resolution and implementation of corrective action on the recommendation included in the review. Furthermore, there was no indication of recurring deficiencies or systemic trends relating to the subject matter reviewed (NASA's foreign national management system).

Reports Pending Final Management Decision Six Months or More After Issuance of a Final Report

As of September 30, 2006, there were no audit recommendations issued by the NASA Office of Inspector General for which a final management decision had not been made within six months of issuance of a final audit report.

Reports Pending Final Management Action One Year or More After Issuance of a Management Decision

As of September 30, 2006, the NASA OIG has issued a total of 13 audit reports containing 53 audit recommendations on which final management decisions have been made, but final management action is still pending. For comparative purposes, as of September 30, 2005, the NASA OIG issued 15 audit reports containing 40 audit recommendations on which final management decisions were made, but final management action was pending.

Delays in implementation of final management action stem from the development and implementation of NASA policy or procedural requirements or implementation of system changes. Management continues to address the recommendations put forth by the OIG, and the Agency is actively implementing those recommendations as expeditiously as possible.

OIG Audit and Inspection Reports Pending Final Management Action One Year or More after Issuance of a Management Decision
(As of September 30, 2006)

Report No./ Report Date	Report Title	No. Recommendations	
		Open	Closed
G00017 / 10-22-2001	Internet Based Space Craft Commanding	1	3
IGFS04 / 1-23-2003	Fiscal Year 2002 Financial Statement Audit Report (PAR)	1	9
IGFS03 / 01-18-2004	Fiscal Year 2003 Management Letter Comments (Financial)	2	6
IGFS02 / 01-28-2004	Fiscal Year 2003 Management Letter Comments (Information Technology)	7	64
IGFS01 / 01-28-2004	Audit of NASA's Fiscal Year 2003 Financial Statements (PAR)	5	13
IG-04-025 / 09-07-2004	NASA's Implementation of the Mission Critical Space System PRP	3	3
FSMEMO04 / 10-29-2004	Fiscal Year 2004 NASA Financial Statement Audit (Information Technology)	7	55
FSMEMO02 / 10-29-2004	Fiscal Year 2004 NASA Financial Statement Audit (Environmental Liability Comments)	18	0
FSMEMO01 / 10-29-2004	Fiscal Year 2004 NASA Financial Statement Audit (PAR)	4	8
IG-05-011 / 03-28-2005	Audit of Information Assurance Controls in the Flight Project Ground Data System at JPL	1	24
IG-05-013 / 03-30-2005	Review of IT Security Structure at NASA Centers	1	1
IG-05-016 / 05-12-2005	Audit of NASA's Information Technology Vulnerability Assessment Process	1	3
IG-05-025 / 09-16-2005	NASA's Performance Measure Data Under the *Federal Information Security Management Act* (FISMA)	2	3
13	**Totals**	**53**	**192**

Disallowed Costs and Funds Put to Better Use October 1, 2005 - September 30, 2006				
Category	Disallowed Costs		Funds Put to Better Use	
	Number	Value	Number	Value
A.) Audit reports with management decisions but without final action completed at the beginning of the reporting period.	25[1]	$0	0	$0
B.) Audit reports on which management decisions were made during the reporting period.	28	$0	1	$24,000
C.) Total audit reports pending final action during the reporting period (A + B).	53	$0	1	$24,000
D.) Audit reports on which final action was taken during the reporting period:				
1. Recoveries:				
(a) Offsets	0	$0	0	$0
(b) Collections	0	$0	0	$0
(c) Property	0	$0	0	$0
(d) Other	18	$0	0	$0
2. Write-offs.	0	$0	0	$0
3. Value of recommendations implemented.	0	$0	1	$24,000
4. Value of recommendations management decided should/could not be implemented.	0	$0	0	$0
E.) Audit reports pending final action at the end of the reporting period (C - D).	35	$0	1	$0

1. Restated beginning balance of audit reports with management decisions made, but without final action completed.

Appendix B: FY 2005 Performance Improvement Plan Follow-up

NASA is a research and development agency, therefore projects usually span years or even decades, and it is often difficult to assess annual progress. NASA reviews deficiencies reported in the annual performance plan and tracks the progress of remedial actions taken to correct these shortcomings.

The following table presents FY 2005 Annual Performance Goals (APGs) that were rated Yellow or Red, the plans and schedules to correct the goal as presented in the FY 2005 Performance Improvement Plan, and the results of FY 2006 follow-up actions. Further information on on-going projects is included in Part 2: Detailed Performance Data.

Objective	Performance Measure	Description	Rating	Explanation/ description of where a performance goal was not met	Why the goal was not met	Plans and schedules for achieving the goal
2	APG 5MEP4	Successfully complete the Preliminary Mission System Review (PMSR) for the 2009 Mars Science Laboratory (MSL) Mission.	Yellow	NASA postponed the Preliminary Mission System Review (PMSR) for the 2009 Mars Science Laboratory.	NASA decided to delay in order to complete independent cost estimates prior to the review. The mission schedule allowed for this delay with no impact.	The PMSR currently is scheduled for December 2005, with no impact to the mission launch date.
FY 2006 Follow-up						
NASA completed the Preliminary Mission System Review (PMSR) on December 7-9, 2005. The delay did not impact the mission launch date.						
2	APG 5MEP11	Successfully demonstrate progress in investigating the character and extent of prebiotic chemistry on Mars. Progress towards achieving outcomes will be validated by external review.	Yellow	The external expert review determined that NASA did not demonstrate sufficient progress in investigating the character and extent of prebiotic chemistry on Mars.	The external expert review determined that NASA did not demonstrate sufficient progress due to a lack of currently operating flight missions designed to address this Outcome.	As noted by the external review, the Mars Science Laboratory, scheduled for launch in 2009, will address this Outcome.
FY 2006 Follow-up						
As noted in the external review, the Mars Science Laboratory will address this Outcome. Launch is scheduled for fall 2009.						
2	APG 5MEP14	Successfully demonstrate progress in inventorying and characterizing Martian resources of potential benefit to human exploration of Mars. Progress towards achieving outcomes will be validated by external review.	Yellow	The external expert review determined that NASA did not demonstrate sufficient progress toward achieving this APG.	The external expert review determined that NASA did not make sufficient progress due to a lack of currently operating flight missions designed to address this Outcome.	As noted by the external review, the Mars Reconnaissance Orbiter, launched in August 2005, will address this Outcome.
FY 2006 Follow-up						
As noted in the external review, Mars Reconnaissance Orbiter (MRO) will address this science Outcome. NASA placed MRO in orbit during FY 2006 and the spacecraft is returning high resolution, low-altitude images to Earth.						

Objective	Performance Measure	Description	Rating	Explanation/ description of where a performance goal was not met	Why the goal was not met	Plans and schedules for achieving the goal
2	APG 5SSE9	Successfully demonstrate progress in understanding why the terrestrial planets are so different from one another. Progress towards achieving outcomes will be validated by external review.	Yellow	The external expert review determined that NASA did not make sufficient progress toward achieving this APG.	The external expert review determined that NASA did not make sufficient progress due to the lack of flight missions planned to address this Outcome in general and Venus in particular.	NASA has included Venus investigations as an explicit target in the New Frontiers Program.
FY 2006 Follow-up						
NASA-funded investigators are participating in the European Space Agency's Venus Express mission. Venus Express, launched in November 2005, arrived at Venus in April and is currently orbiting the planet, studying its atmosphere in great detail. In addition, under the Discovery Program 2006 Announcement of Opportunity, NASA selected for concept study a return to Venus mission. "Vesper", the Venus Chemistry and Dynamics Orbiter, proposes to significantly advance our understanding of the atmospheric composition and dynamics of Venus, especially its photochemistry. Successful completion of the Phase A concept study would allow continuation into a Phase B full design effort.						
4	APG 5ASO4	Demonstrate James Webb Space Telescope (JWST) primary mirror technology readiness by testing a prototype in a flight-like environment.	Yellow	NASA has completed only partially testing of JWST primary mirror technology in a flight-like environment.	NASA tested the advanced mirror system demonstrator (ASMD) mirror to operating temperature, but not to flight-like mechanical loads.	NASA will test the prototype and flight spare engineering development units mirror segment to all flight conditions by summer 2006, bringing it to Technology Readiness Level 6.
FY 2006 Follow-up						
NASA completed testing of the JWST primary mirror by July 2006.						
4	Outcome 4.7	Tace the chemical pathwaysby which simple molecules and dust evolve into the organic molecules important for life.	Yellow	See 5ASO1 below.	See 5ASO1 below.	See 5ASO1 below.
4	APG 5ASO1	Deliver the SOFIA Airborne Observatory to Ames Research Center for final testing.	Red	SOFIA Airborne Observatory has not been delivered to Ames for final testing.	The SOFIA mission has experienced significant delays over the last several years from a variety of causes; the delay to completing the FY 2005 APG represents the effect of delays in prior years, acknowledged and explained in prior year's reports.	Delivery will occur in FY 2007.
FY 2006 Follow-up						
NASA restructured the program at Dryden Flight Research Center (DFRC) providing direct management of the SOFIA airborne system development and flight testing. DFRC will receive the system in FY 2007.						
5	APG 5SEU8	Successfully demonstrate progress in testing Einstein's theory of gravity and mapping space–time near event horizons of black holes. Progress towards achieving outcomes will be validated by external review.	Yellow	The external expert review determined that progress toward achieving this APG was significantly affected by the loss of the XRS-2 instrument on the Astro-E2/ Suzaku mission.	Progress toward achieving this APG was affected by the loss of the XRS-2 instrument on the Astro-E2/ Suzaku mission.	A Mishap Investigation Board is assessing the causes of the failure. NASA may try to obtain the XRS science in the future, but NASA must evaluate this effort as part of the normal budget prioritization process.
FY 2006 Follow-up						
The Mishap Investigation Board report is not complete; however, preliminary results show the cause of the malfunction was a design flaw in the cryogenic system. The investigation also identified several concerns with mission level system engineering, and limitations of the ground testing and review processes. The JAXA Mishap Investigation Board has concluded its work, and the NASA Mishap Investigation Board is close to delivering its final draft report. NASA will use recommendations to improve future international collaborations.						

Objective	Performance Measure	Description	Rating	Explanation/ description of where a performance goal was not met	Why the goal was not met	Plans and schedules for achieving the goal
5	APG 5SEU1	Complete the integration and testing of the Gamma-ray Large Area Space Telescope (GLAST) spacecraft bus.	Yellow	NASA did not complete integrating and testing the GLAST spacecraft bus.	Delays were due to schedule problems with GLAST's primary instrument, the Large Area Telescope (LAT). The LAT experienced both engineering design and electrical parts problems, which required a project schedule and cost rebaseline.	NASA will integrate and test the spacecraft bus in FY 2006. The rebaseline resulted in a delay to the launch date, from May 2007 to September 2007.
FY 2006 Follow-up						
NASA will complete integration and testing of the spacecraft bus in early FY 2007. The GLAST mission is scheduled to launch November 15, 2007.						
6	APG 5SSP2	Achieve an average of eight or fewer flight anomalies per Space Shuttle mission in FY 2005.	Red	There was one Space Shuttle mission in FY 2005: STS-114. For this mission, there were approximately 185 In-Flight Anomalies (IFAs) reported. This number is approximate since post-STS-114 hardware inspections and analyses continue; these results could generate additional IFAs as the process unfolds.	A key contributor to the unusually large number of IFAs for STS-114 was a change in the definition of an IFA made during the Return to Flight effort. The change is documented in NSTS 08126, Problem Reporting and Corrective Action (PRACA) System Requirements, which became effective on August 27, 2004. Prior to this change in definition, IFAs were a small subset of problems reported in the PRACA system; with this change, any PRACA-reportable item during the launch preparation and execution time-frame automatically becomes an IFA. This change was made as part of the overall improvement to the Space Shuttle Program's problem tracking, IFA disposition and was documented in NASA's Implementation Plan for Space Shuttle Return to Flight and Beyond. The Columbia Accident Investigation Board recommended anomaly resolution processes.	This performance goal has been eliminated for FY 2006.
FY 2006 Follow-up						
As stated in the FY 2005 Performance Improvement Plan, NASA eliminated this performance goal.						
8	APG 5ISS5	Obtain agreement among the International Partners on the final ISS configuration.	Yellow	The ISS International Partnership Heads of Agency did meet in January 2005 to endorse the Multilateral Coordination Board-approved ISS configuration. However, in May 2005, Administrator Griffin initiated a 60-day study on options for completing ISS assembly within the parameters of the Vision for Space Exploration. The decision based on the study requires NASA to reopen discussions with its partners. By the end of the fiscal year, NASA began discussions with the International Partners on the way forward.	In May 2005, NASA initiated the Shuttle/Station Configuration Options Team study. This team conducted a 60-day study of the configuration options for the ISS and assessed the related number of flights needed by the Space Shuttle before it retires, no later than the year 2010. The scope of the team study spans ISS assembly, operations, and use and considers such factors as international partner commitments, research utilization, cost, and ISS sustainability. Decisions based on the study have required that NASA reopen discussions with its International Partners.	NASA proposed that the ISS Multilateral Coordination Board convene in late October 2005 to discuss the proposed configuration and assembly sequence and that the board, in turn, task and oversee the work of the Space Station Control Board to assess the technical aspects of this new approach. Following these detailed discussions, the partnership will meet at the Heads of Agency level.
FY 2006 Follow-up						
International Partners at the Heads of Agency meeting approved final configuration on March 2, 2006.						

Objective	Performance Measure	Description	Rating	Explanation/ description of where a performance goal was not met	Why the goal was not met	Plans and schedules for achieving the goal
8	APG 5ISS2	Achieve zero Type-A (damage to property at least $1 M or death) or Type-B (damage to property at least $250 K or permanent disability or hospitalization of 3 or more persons) mishaps in FY 2005.	Yellow	Although there were no Type-A mishaps in FY 2005, NASA failed to achieve this APG due to the occurrence of one Type-B mishap.	The Precooler Assembly, part of the Environmental Control and Life Support System (ECLSS) flight hardware, was damaged during the tin plating process, damaging the protective braze layer. This breach rendered the assembly unrecoverable and will result in NASA requesting additional unit(s) from the ISS Program. The value of the loss is approximately $350 K. A Mishap Investigation Board is investigating the mishap.	NASA will review the ECLSS mishap investigation report for applicable lessons learned.
FY 2006 Follow-up						
NASA implemented lessons learned from the mishap. For FY 2006 there were no Type A or B mishaps in the ISS program.						
8	APG 5ISS4	Provide at least 80% of upmass, volume, and crew time for science as planned at the beginning of FY 2005.	Yellow	While NASA did not meet the 80% goal as planned at the beginning of the fiscal year on these metrics. NASA did meet 97% of the science objectives during Increment 10 (October 2004–March 2005) and expect a similar achievement for Increment 11 (March–October 2005). In addition, STS 114 delivered additional science capacity to the Station, bringing up the Human Research Facility-2 rack for the U.S. Destiny lab, deploying another set in an on-going material experiment, and flying three additional sortie experiments.	Due to the delay of Shuttle flight mission UF1 from March to July, the increase to three crewmembers was delayed from the scheduled date of May 2005 to a date to be determined in 2006, preventing achievement of the planned crew time and up-mass for science goal.	A second successful test flight of the Space Shuttle will enable NASA to meet the planned science up-mass and volume goals, as well as an increase to three crewmembers.
FY 2006 Follow-up						
NASA was unable to meet the original goal of regularly scheduled Shuttle flights throughout FY 2006 due to foam issues on the external tank. While these issues were resolved, NASA did not launch the Shuttle until July 2006—10 months after the start of FY 2006. Shuttle flight delays significantly reduced actual upmass and volume capabilities.						
11	APG 5LE1	Identify and define preferred human–robotic exploration systems concepts and architectural approaches for validation through lunar missions.	Yellow	NASA does not have complete results, only preliminary concepts. NASA's near-term focus is on lunar site selection and characterization, rather than human–robotic linkages.	The architecture and long-term linkages must flow from the Exploration Systems Architecture Study results, which was completed in August 2005.	NASA intends to complete this APG in the third quarter of FY 2006.
FY 2006 Follow-up						
NASA did not meet the schedule for achieving this goal. NASA will complete this APG in December 2006 as part of the Lunar Architecture activity with periodic updates every 2 years.						

Objective	Performance Measure	Description	Rating	Explanation/ description of where a performance goal was not met	Why the goal was not met	Plans and schedules for achieving the goal
11	APG 5LE2	Identify candidate architectures and systems approaches that can be developed and demonstrated through lunar missions to enable a safe, affordable, and effective campaign of human–robotic Mars exploration.	Red	NASA's near-term focus has been lunar exploration; extensibility to Mars needs further work.	NASA deferred linkage to Mars in order to re-allocate resources for Constellation Systems development.	Although the schedule is unclear, NASA does not anticipate completing this APG before FY 2007.
FY 2006 Follow-up						
NASA does not anticipate completing APG 5LE2 before FY 2007.						
11	APG 5LE6	Identify preferred approaches for development and demonstration during lunar missions to enable transformational space operations capabilities.	Yellow	NASA has conducted limited analysis of space operations.	NASA's near-term focus for robotic exploration is on site selection and characterization. NASA will derive linkage to transformational operations from the Exploration Systems Architecture Study results and architecture development.	NASA intends to complete this APG in the third quarter of FY 2006.
FY 2006 Follow-up						
NASA did not meet the schedule for achieving this goal. This APG will be complete in December 2006 as part of the Lunar Architecture activity with periodic updates every 2 years.						
11	APG 5HRT12	Establish three partnerships with U.S. industry and the investment community using the Enterprise Engine concept.	Yellow	NASA did not form any partnerships with industry or the investment community using the Enterprise Engine concept in FY 2005.	Not applicable.	The program was restructured and is in place for FY 2006.
FY 2006 Follow-up						
In August 2006, NASA executed a Space Act Agreement with a nonprofit entity, Red Planet Capital, for the establishment and management of NASA's strategic venture. Red Planet Capital received initial funding from NASA in September 2006. NASA is looking at investment opportunities.						
12	APG 5AT5	Demonstrate 70% reduction NOx emissions in full-annular rig tests of candidate combustor configurations for large subsonic vehicle applications. (Vehicle Systems)	Red	NASA originally funded three companies to demonstrate 70% NOx reduction, but only one successful annular rig test is needed to meet this APG's minimum success exit criteria. The curtailment of FY05 funding and the earmarks have severely impacted the UEET Project, including the Low-NOx Combustor DDR milestone that was planned for completion during the second quarter of 2005. One contractor (P&W) did complete DDR of their concept in February 2005 and is continuing with testing as remaining UEET funds run out.	Because of NASA's decision to levy Propulsion 21 earmark entirely against the UEET Project, stop-work orders were issued.	GE will continue low-NOx combustion work under the Propulsion 21 funding, but their schedule for DDR will slip into FY 2006. The P&W funding situation will be monitored. Final termination decisions and notices are pending.
FY 2006 Follow-up						
NASA terminated work towards this milestone during the restructuring of the Vehicle Systems Program into the Fundamental Aeronautics Program.						

Objective	Performance Measure	Description	Rating	Explanation/ description of where a performance goal was not met	Why the goal was not met	Plans and schedules for achieving the goal
12	APG 5AT22	Using laboratory data and systems analysis, complete selection of the technologies that show the highest potential for reducing takeoff/landing field length while maintaining cruise Mach, low speed controllability, and low noise.	Yellow	This APG was not completed in FY 2005 due to substantially limited FY 2005 discretionary procurement budget that was caused by the requirement to fund Congressional Special Interest items. The work is expected to be completed in FY 2006. Limited internal studies are on-going.	NASA did not fund any external trade studies in FY 2005.	Progress toward achieving this detail is pending changes of Demonstration focus with the Vehicle Systems Program in FY 2006.
FY 2006 Follow-up						
Work towards this milestone ended during the restructuring of the Vehicle Systems Program into the Fundamental Aeronautics Program.						
12	APG 5AT20	Complete flight demonstration of a second generation damage adaptive flight control system. (Vehicle Systems)	Yellow	Although NASA is making good progress toward developing second-generation flight software, a reduction of $1.25 M in procurement funds, for Congressional Special Interest items, will impact completion of the APG. The result is a delayed software delivery schedule and the delayed start of the second-generation flight demonstration.	This APG was not met due to a $1.25 M reduction in available procurement funds.	NASA will reduce the scope of the flight demonstration to limited flight envelope testing. NASA will not demonstrate the full capability of the damage adaptive control system. However, NASA made signficant progress and plans to achieve the APG, based on the new scope, within the first quarter of FY 2006.
FY 2006 Follow-up						
The F-15 837 team conducted 17 flights during FY06 to validate the ability of a second generation damage adaptive flight control system to improve aircraft handling qualities with a simulated failure. This APG has been successfully completed.						
15	APG 5SEC1	Complete Solar Terrestrial Relations Observatory (STEREO) instrument integration.	Yellow	NASA completed over 90% of Instrument integration for STEREO. All U.S. instruments have been integrated on both spacecraft. Two Heliospheric Imager (HI) instruments being provided by an international partner muar be integrated. The HI-A instrument has been delivered to the spacecraft, but technical problems have delayed integration until early October 2005. HI-B delivery is planned for November 2005.	The international partner encountered numerous technical problems associated with the Heliospheric Imager instruments, resulting in significant schedule slips.	The mission team is using schedule workarounds, weekend work, and double shifts to minimize schedule delays. An HI mass model is being used on the "B" spacecraft so that observatory testing can proceed. The STEREO launch readiness date of April 2005 is unlikely due to these HI instrument delays.
FY 2006 Follow-up						
NASA completed integration of both instruments in November and December 2005. STEREO launched on October 25, 2006.						
17	APG 5ISS7	Baseline a strategy and initiate procurement of cargo delivery service to the ISS.	Yellow	NASA completed the strategy, but has not initated procurement.	NASA is still awaiting detailed requirements from the Exploration Requirements Transition Team (expected in December).	NASA plans to initiate procurement by the second quarter of FY 2006.
FY 2006 Follow-up						
NASA signed Space Act Agreements in FY 2006 for two companies to demonstrate commercial orbital transportation services capability. Once demonstrated, NASA plans to competitively purchase cargo delivery services.						

Objective	Performance Measure	Description	Rating	Explanation/ description of where a performance goal was not met	Why the goal was not met	Plans and schedules for achieving the goal
Efficiency Measure	APG 5SSP4	Complete all development projects within 110% of the cost and schedule baseline.	Yellow	Deployment of the Space Shuttle main engine Advanced Health Monitoring System (AHMS) slipped 21 months. Deployment to the fleet is now scheduled for July 2006. The project remains within overall budget.	Work on AHMS was interrupted to support testing and processing of Shuttle main engines for return to flight. The July 2006 date could also be delayed due to the effects of Hurricane Katrina on main engine testing facilities and delays in liquid hydrogen production and shipments to the Stennis Space Center in Mississippi.	Processing of the main engines for return to flight is complete, and testing facilities at the Stennis Space Center are coming back online after Hurricane Katrina. NASA is working with local and national distributors to secure shipments of liquid hydrogen fuel to complete AHMS certification testing.
FY 2006 Follow-up						
NASA completed AHMS testing and certification on August 9, 2006. NASA will install the first AHMS controller in monitoring mode on one of the three main engines of the Space Shuttle Discovery for STS-116, which is scheduled to launch in December, 2006. AHMS will be fully deployed on all Space Shuttle main engines starting with STS-117 in 2007. The project remains under its budget of $55 million.						
Efficiency Measure	APG 5AT28	This Theme will complete 90% of the major milestones planned for FY 2005.	Red	The Aviation Safety and Security Program was able to meet all its FY 2005 objectives by deferring the start of the aviation security technology developments that would support out-year goals. However, the magnitude of the change was significantly higher for both the Aviation Systems and Vehicle Systems Programs. As a result of canceled procurements, NASA only accomplished about 60% of the originally planned milestones in these two programs.	The funding of Congressional Special Interest items required approximately 1/3 of the funding planned for acquisitions associated with the accomplishment of program/project milestones. As a result, NASA did not accomplish the planned activities.	Not applicable.
FY 2006 Follow-up						
ARMD successfully completed all the major FY 2005 milestones that were not canceled.						
Efficiency Measure	APG 5SSE15	Complete all development projects within 110% of the cost and schedule baseline	Yellow	The Deep Impact mission was not launched within 110% of its cost and schedule baselines.	Deep Impact did not meet its original launch readiness date of January 2004, and exceeded the cost baseline by 26%. Performance problems with the new, state-of-the-art spacecraft computers delayed their delivery for integration and test, which drove further delays to the spacecraft integration and test schedule, slipping the spacecraft delivery beyond the original launch date.	Deep Impact was successfully launched on January 12, 2005.
FY 2006 Follow-up						
As stated in the FY 2005 Performance Improvement Plan, Deep Impact successfully launched on January 12, 2005.						

Objective	Performance Measure	Description	Rating	Explanation/ description of where a performance goal was not met	Why the goal was not met	Plans and schedules for achieving the goal
Efficiency Measure	APG 5ASO14	Deliver at least 90% of scheduled operating hours for all operations and research facilities.	Yellow	The FUSE mission did not meet the 90% threshold for operating hours. (All other Theme missions met the threshold.)	On December 26, 2004, the z-axis reaction wheel assembly failed. This was the third of four assemblies to fail on the mission.	The project started a recovery effort immediately to recover control of the spacecraft. Because the spacecraft was designed to use a minimum of 2 reaction wheel assemblies, an entire motion control software had to be developed and tested, with final on-orbit tests in late June 2005. Science observations resumed on July 10, 2005.
FY 2006 Follow-up						
As stated in the FY 2005 Performance Improvement Plan Science, observations resumed on July 10, 2005.						
Efficiency Measure	APG 5SEC14	Complete all development projects within 110% of the cost and schedule baseline.	Red	The Cloudsat and CALIPSO missions were not completed within 110% of their cost and schedule baselines.	The CALIPSO and CloudSat missions are currently estimated to exceed baseline cost by more than 30% and schedule baselines by approximately 50%. The delays and associated costs resulted from a number of factors, including instrument problems on both missions. Delays have also resulted from external factors, such as co-manifest complexities, international partner deliveries, and significant launch vehicle-driven delays.	Cloudsat and CALIPSO are scheduled for launch in early FY 2006.
FY 2006 Follow-up						
CALIPSO and CloudSat launched from Vandenberg Air Force Base on April 28 2006.						
Efficiency Measure	APG 5SEC15	Deliver at least 90% of scheduled operating hours for all operations and research facilities.	Yellow	The TOPEX/Poseidon mission did not meet the 90% threshold for operating hours. (The other Earth–Sun missions met the threshold, with the majority experiencing no loss at all.)	TOPEX does not have a working tape recorder, creating a limiting factor for TOPEX science. NASA expected the three recorders to fail after a decade of service on orbit. Despite this, TOPEX continues to provide vital science even though some subsystems no longer are available.	The most important aspect of science collections has to do with measurement of long-term variations of ocean surface topology. Intermittent interruptions, while undesirable, do not impact major science goals. NASA is compensating through real-time downlinking via the TDRSS communication satellite, where possible.
FY 2006 Follow-up						
The TOPEX spacecraft experienced a mission ending failure in October 2005, during its 13th year of operation, when a second (out of four) momentum control wheel failed. An earlier failure had left the spacecraft with no backup capability. JPL worked on the problem for several weeks trying to regain operability of the wheel without success. NASA issued instructions to terminate the mission, and JPL completed decommissioning operations in January 2006.						

Appendix C: OMB Program Assessment Rating Tool (PART) Recommendations

The Program Assessment Rating Tool (PART) is an evaluation tool developed by the White House Office of Management and Budget (OMB) to assess the effectiveness of federal programs. PART provides a rigorous and interactive method to assess program planning, management, and performance toward quantitative, outcome-oriented goals. NASA submits one-third of the Agency's program portfolios (known as Themes) to OMB each year, resulting in a complete Agency assessment every three years.

Since FY 2002, NASA and OMB have been conducting PART reviews of the Agency's programs. In FY 2006, OMB reviewed two new Agency Themes, Constellation Systems and Advanced Business Systems, and reassessed the Solar System Exploration Theme. The improvement plan and follow-up actions for these assessments will be finalized later this year.

NASA managers use the PART findings to support future decisions for program structure and planning, and NASA tracks these findings, summarized in the table below, as actions throughout NASA's strategy, budget, and performance planning cycles.

NASA and OMB continue to work together to assure that performance measures reflected in PART are consistent with the performance measures included in the Agency's annual performance plan and annual Performance and Accountability Report.

Stategic Goal 1		
Program (Theme)	Calendar Year Reviewed	Rating
Space Shuttle	2005	Adequate
Program Performance Improvement Plan		**Follow-up**
• Plan to retire the Shuttle by the end of the decade, when its role in assembling the International Space Station is complete.		• Completed
• Return the Shuttle safely to flight and continue using it to support the Space Station.		• Action taken, but not completed
• Develop outcome-oriented short and long-term measures for the Space Shuttle Program.		• Completed
• Develop outcome-oriented measures to assess the effectiveness of the transition between the Space Shuttle and exploration programs.		• Action taken, but not completed
• Improve NASA's financial management system to eliminate the Agency's four ongoing material weaknesses and to comply with the *Federal Financial Management Improvement Act of 1996.*		• Action taken, but not completed

Strategic Goal 2		
Program (Theme)	Calendar Year Reviewed	Rating
International Space Station	2004	Moderately Effective
Program Performance Improvement Plan		Follow-up
• Develop alternatives to the Space Shuttle for resupplying the International Space Station.		• Action taken, but not completed
• Hold program managers accountable for cost, schedule and performance results, and demonstrate that the program is achieving its annual performance goals.		• Action taken, but not completed
Strategic Goal 3A / 3B		
Program (Theme)	Calendar Year Reviewed	Rating
Earth-Sun System	2005	Moderately Effective
Program Performance Improvement Plan		Follow-up
• Report for major missions on the following: estimated mission life cycle cost upon entering development; key schedule milestones associated with each mission phase for those missions formally approved for formulation; mission cost and schedule progress achieved in each phase before entering the next; and any plans to re-baseline life-cycle cost and schedule.		• Action taken, but not completed
• Assess the obstacles to improving the hand-off of NASA's research and development to other federal agencies and implement to the extent possible organizational and system fixes to ensure results.		• Completed
• Assure that the priorities developed in the National Research Council's forthcoming Earth science decadal survey are reflected to the extent feasible in the program's portfolio.		• Action taken, but not completed
Strategic Goal 3C		
Program (Theme)	Calendar Year Reviewed	Rating
Solar System Exploration	2006	Effective
Program Performance Improvement Plan		Follow-up
• To Be Determined		• Not Applicable
Strategic Goal 3D		
Program (Theme)	Calendar Year Reviewed	Rating
Astronomy and Astrophysics Research	2004	Effective
Program Performance Improvement Plan		Follow-up
• Report for major missions on the following: estimated mission life cycle cost upon entering development; key schedule milestones associated with each mission phase for those missions formally approved for formulation; mission cost and schedule progress achieved in each phase before entering the next; and any plans to re-baseline life-cycle cost and schedule.		• Action taken, but not completed
Strategic Goal 3E		
Program (Theme)	Calendar Year Reviewed	Rating
Aeronautics Technology	2004	Moderately Effective
Program Performance Improvement Plan		Follow-up
• Continue performing regular program reviews to ensure funding of projects that are relevant and effective.		• Completed
• Strengthen priority research areas identified by NASA, in consult with the NRC and external partners.		• Completed
• Restructure the program to better focus on projects that have a federal role.		• Completed
• Develop technical metrics and demonstrate quantitative progress against those metrics.		• Completed
• Define new Aeronautics Performance Measures applicable to the refocused FY 2006 Aeronautics Program.		• Action taken, but not completed
• Preserve the Wind Tunnel infrastructure at the Research Centers which are deemed either mission-critical and/or a unique national asset.		• Completed

Strategic Goal 3F		
Program (Theme)	Calendar Year Reviewed	Rating
Human Systems Research and Technology	2005	Adequate
Program Performance Improvement Plan		**Follow-up**
• Establish a risk mitigation process for the Bioastronautics Roadmap deliverables for Human Space Exploration. Develop a critical path analyses for each deliverable including schedule and resource requirements.		• Action taken, but not completed
• Develop measures to ensure directed research is fully peer reviewed using the Non-Advocate Review Process.		• Action taken, but not completed
• Streamline the NASA Research Announcement to reduce time between solicitation and selection. Develop metrics to analyze progress.		• Action taken, but not completed
Strategic Goal 4		
Program (Theme)	Calendar Year Reviewed	Rating
Constellation Systems	2006	Adequate
Program Performance Improvement Plan		**Follow-up**
• To Be Determined		• Not Applicable
Cross Agency Support Program		
Program (Theme)	Calendar Year Reviewed	Rating
Education Program	2004	Adequate
Program Performance Improvement Plan		**Follow-up**
• Continue to perform regular program reviews to assure that only effective, relevant programs are funded.		• Completed
• Require all programs to report annually on accomplishments and make these data available to the public.		• Action taken, but not completed
• Require programs to perform self-evaluations including, as appropriate, solicitations of student feedback and collections of longitudinal data on student career paths.		• Action taken, but not completed
• Fill the Agency's workforce needs by making a stronger effort to consider eligible Education program participants for and facilitate their entry into jobs at NASA.		• Action taken, but not completed
• Develop appropriate performance measures, baselines, and targets.		• Action taken, but not completed
• Develop a new education investment framework, with ensuing implementation plan, in support of the Agency's strategic direction and the Vision for Space Exploration.		• Action taken, but not completed
Cross Agency Support Program		
Program (Theme)	Calendar Year Reviewed	Rating
Advanced Business Systems	2006	Moderately Effective
Program Performance Improvement Plan		**Follow-up**
• To Be Determined		• Not Applicable
Multiple Goals		
Program (Theme)	Calendar Year Reviewed	Rating
Space and Flight Support	2004	Adequate
Program Performance Improvement Plan		**Follow-up**
• Continue to fund the program at an essentially flat level, but strive to improve the program's results by increasing efficiency.		• Action taken, but not completed
• Develop a plan to independently review all of the major program elements to support improvements and evaluate effectiveness and relevance.		• Completed
• Develop better measures that will help to drive program improvement.		• Action taken, but not completed
• Remove Environmental Remediation from the Space and Flight Support portfolio and make it a part of NASA's corporate general and administrative costs.		• Completed

Appendix D: Source Information

Sources for NASA Performance Ratings

The following table provides information on the source of each Annual Performance Goals rating (Red, Yellow, Green, White). The sources are usually in the form of a link to a Web site that has supporting data available, a citiation to a journal or other published reference that supports the rating, or a point of contact at NASA who can provide information on how the rating was determined. The links provided were functional as of November 1, 2006.

APG Number	Source for NASA FY 2006 Performance Rating
Strategic Goal 1	
Outcome 1.1	
6SSP1	Bill Hill, Assistant Associate Administrator for Space Shuttle, Office of Safety and Mission (OSMA). 1) Assurance Open Investigations Being Tracked by HQ OSMA.
Strategic Goal 2	
Outcome 2.1	
6ISS1	Benjamin Jimenea, Space Operations Mission Directorate, International Space Station.
6ISS3	Benjamin Jimenea, Space Operations Mission Directorate, International Space Station.
6ISS4	Benjamin Jimenea, Space Operations Mission Directorate, International Space Station.
Strategic Goal 3A	
Outcome 3A.1	
6ESS1	Martha Maiden, Earth Science Program Executive, Science Mission Directorate.
6ESS20	Jack Kaye, Earth Science Associate Director for Research, Science Mission Directorate.
6ESS3	Lou Schuster, Earth Science Program Executive, Science Mission Directorate.
6ESS4	Amy Walton, Earth Science Technology Program Manager, Science Mission Directorate.
6ESS5	Martha Maiden, Earth Science Program Executive, Science Mission Directorate.
6ESS6	Martha Maiden, Earth Science Program Executive, Science Mission Directorate.
6ESS7	Jack Kaye, Earth Science Associate Director for Research, Science Mission Directorate.
Outcome 3A.4	
6ESS22	Budget of the United States Government Fiscal Year 2007, available at http://www.whitehouse.gov/omb/budget/
Outcome 3A.5	
6ESS23	Jennifer Kearns, Science Mission Directorate Program Analyst.
Outcome 3A.7	
6ESS21	Applications Implementation Working Group (AIWG) at Goddard Space Flight Center http://aiwg.gsfc.nasa.gov

APG Number	Source for NASA FY 2006 Performance Rating
Strategic Goal 3B	
Outcome 3B.1	
6ESS11	Barbara Giles, Heliophysics Discipline Scientist, Science Mission Directorate. 1) N. Schwadron, D. McComas, C. DeForest. 2006. Relationship between Solar Wind and Coronal Heating: Scaling Laws from Solar X-Rays. The Astrophysical Journal, Volume 642, Issue 2. 2) S. Lefebvre and A. Kosovichev. 2005. Changes in the Subsurface Stratification of the Sun with the 11-Year Activity Cycle. The Astrophysical Journal. Volume 633. Part 2.
6ESS12	Barbara Giles, Heliophysics Discipline Scientist, Science Mission Directorate. 1) D. McComas, H. Elliott, J. Gosling, R. Skoug. 2006. Ulysses observations of very different heliospheric structure during the declining phase of solar activity cycle 23. Geophysical Research Letters. Volume 33. 2) K. Than. 2006. Voyager 2 Detects Odd Shape of Solar System's Edge. http://www.space.com/scienceastronomy/060523_heliosphere_shape.html
6ESS14	Barbara Giles, Heliophysics Discipline Scientist, Science Mission Directorate. 1) G. Hurford, S. Krucker, R. Lin, R. Schwartz, G. Share, D. Smith. 2006. The Astrophysical Journal, Volume 644. 2) F. Cattaneo, N. Brummell, K. Cline. 2006. What is a flux tube? On the magnetic field topology of buoyant flux structures. Monthly Notices of the Royal Astronomical Society. Volume 365. 3) C. Chaston, V. Genot, J. Bonnell, C. Carlson, J. McFadden, R. Ergun, et. al. 2006. Ionospheric erosion by Alfvén waves. Journal of Geophysical Research. Volume 111.
6ESS15	Barbara Giles, Heliophysics Discipline Scientist, Science Mission Directorate. 1) T. Phan, J. Gosling, M. Davis, R. Skoug, M. Oieroset, R. Lin, et. al. 2006. A magnetic reconnection X-line extending more than 390 Earth radii in the solar wind. Nature. Volume 439. 2) K. Trattner, et al. 2006. ESA. Cambridge University Press, SP-598 (K. Trattner, et al., submitted to Journal Geophysical Research. 3) D. Wendel, P. Reiff, A. Fazakerley, E. Lucek, M. Goldstein. 2006. Magnetic Structure and Electron Flow at a Northward Interplanetary Magnetic Field Reconnection Line. Geophysical Research Letters.
6ESS17	Jennifer Kearns, Science Mission Directorate Program Analyst.
6ESS18	Jennifer Kearns, Science Mission Directorate Program Analyst. 1) D. Brown, E. Hupp. 2006. NASA Selects Teams for Space Weather Mission and Studies. NASA Press Release 06-286.
Outcome 3B.2	
6ESS10	Barbara Giles, Heliophysics Discipline Scientist, Science Mission Directorate. 1) S. Petelina, D. Degenstein, E. Llewellyn, N. Lloyd, C. Mertens, M. Mlynczak, J. Russell III. 2005. Thermal conditions for PMC existence derived from Odin/OSIRIS and TIMED/SABER data. Geophysical Research Letters. Volume 32. 2) Kozyra et al., in Recurrent Magnetic Storms: Corotating Solar Wind Streams, AGU Geosciences Monograph, in press 2006.
6ESS13	1) Geophysical Research Letters. 2006. GL026161R. 2) H. Xie, N. Gopalswamy, P. Manoharan, A. Lara, S. Yashiro, S. Lepri. 2006. Long-lived geomagnetic storms and coronal mass ejections. Journal of Geophysical Research. Volume 111. 3) Demars, Schunk. 2006. Thermospheric Response to ion heating in the dayside cusp. Journal of Atmospheric and Solar-Terrestrial Physics. 4) L. Gardner, R. Schunk. 2006. Ion and neutral polar winds for northward interplanetary magnetic field conditions, Journal of Atmospheric and Solar-Terrestrial Physics. Volume 68. 5) M. Denton, J. Borovsky, R. Skoug, M. Thomsen, B. Lavraud, M. Henderson, R. McPherron, J. Zhang, M. Liemohn. 2006. Geomagnetic storms driven by ICME- and CIR-dominated solar wind. Journal of Geophysical Research.Volume 111. 6) J. Borovsky, M. Denton. 2006. Differences between CME-driven storms and CIR-driven storms. Journal of Geophysical Research. Volume 111.
6ESS16	Jennifer Kearns, Science Mission Directorate Program Analyst.
6ESS19	Solar Sentinels: Report of the Science and Technology Definition Team. http://sentinels.gsfc.nasa.gov
6ESS8	Barbara Giles, Heliophysics Discipline Scientist, Science Mission Directorate. 1) D. Brown, E. Hupp, B. Steigerwald, N. Neal-Jones. 2006. NASA Aids in Resolving Long Standing Solar Cycle Mystery. NASA Press Release 06-087. http://www.nasa.gov/home/hqnews/2006/mar/HQ_06087_solar_cycle.html 2) M. Dikpati, G. De Toma, P.A. Gilman. 2006. Predicting the strength of solar cycle 24 using a flux-transport dynamo-based tool. Geophysical Research Letters. Paper 33. 3) I. Gonzalez-Hernandez, D.C. Braun, S.M. Handsome, F. Hill, C.A. Lindsey, P.H. Scherrer. 2006. Farside Helioseismic Holography: Recent Advances. American Astronomical Society. SPD meeting 37:5.

APG Number	Source for NASA FY 2006 Performance Rating
6ESS9	Barbara Giles, Heliophysics Discipline Scientist, Science Mission Directorate. 1) X. Li, D. Baker, T. O'Brien, L. Xie, Q. Zong. 2006. Correlation between the inner edge of outer radiation belt electrons and the innermost plasmapause location. Geophysical Research Letters. Volume 33.
Strategic Goal 3C	
Outcome 3C.1	
6SSE10	Phil Crane, Planetary Discipline Scientist, Science Mission Directorate. 1) Canup, Ward. 2006. A common mass scaling for satellite systems of gaseous planets. Nature. http://www.gps.caltech.edu/7Embrown/planetlila/index.html
6SSE11	Phil Crane, Planetary Discipline Scientist, Science Mission Directorate. 1) T. Cravens, I. Robertson, J. Waite Jr., R. Yelle, W. Kasprzak, C. Keller. 2006. Composition of Titan's ionosphere. Geophysical Research Letters. Volume 33. 2) M. Trainer, A. Pavlov, H. DeWitt, J. Jimenez, C. McKay, O. Toon, M. Tolbert. (Prepraration for submission 2006). Organic Haze on Titan and the Early Earth. Meteoritics and Planetary Science. Volume 41. 3) D. Glavin, J. Dworkin. 2006. Investigation of isovaline enantiomeric excesses in CM meteorites using liquid chromotography–time of flight–mass spectrometery. Astrobiology. Volume 6. 4) M. Klussmann, et al. 2006. Thermodynamic control of asymmetric amplification in amino acid crystals. Nature. Volume 441. 5) H. Busemann, et al. 2006. Interstellar chemistry recorded in organic matter from primitive meteorites. Science. Volume 312. 6) D. Glavin, et al. 2006. Amino acid analyses of Antarctic CM2 meteorites using liquid chromotography–time of flight–mass spectrometery. Meteoritics and Planetary Science. Volume 41.
6SSE26	E. Hupp, M. Fellows, W. Jeffs. 2006. NASA's Stardust Findings May Alter View of Comet Formation. NASA Press Release 06-091. http://stardust.jpl.nasa.gov/news/status/060313.html
6SSE27	Jennifer Kearns, Science Mission Directorate Program Analyst.
6SSE28	Jennifer Kearns, Science Mission Directorate Program Analyst.
6SSE7	Phil Crane, Planetary Discipline Scientist, Science Mission Directorate. 1) Canup, Ward. 2006. A common mass scaling for satellite systems of gaseous planets, Nature. Volume 15. 2) Raymond et al. 2006. Icarus.183-265.
6SSE8	Phil Crane, Planetary Discipline Scientist, Science Mission Directorate. 1) E. Hupp, M. Fellows, W. Jeffs. 2006. NASA's Stardust Findings May Alter View of Comet Formation. NASA Press Release 06-091. http://stardust.jpl.nasa.gov/news/status/060313.html
Outcome 3C.2	
6SSE12	Phil Crane, Planetary Discipline Scientist and Michael Meyer, Mars Exploration Program Lead Scientist (Science Mission Directorate).
6SSE13	Phil Crane, Planetary Discipline Scientist and Michael Meyer, Mars Exploration Program Lead Scientist (Science Mission Directorate). 1) M. Trainer, A Pavlov, H. DeWitt, J. Jimenez, C. McKay, O. Toon, M. Tolbert. In preparation for submission 2006.Organic Haze on Titan and the Early Earth. Proceedings of the National Academy of Sciences. 2) A. Pavlov, T. Feng, O.Toon. In preparation for submission 2006. Consequences of the slow hydrogen escape in the prebiotic atmosphere. Geophysical Research Letters. 3) A. Pavlov, T. Feng, O. Toon. In preparation for submission 2006. Methane runaway in the early atmosphere. Geophysical Research Letters. 4) H. Bean, F. Anet, I. Gould, N. Hud. 2006. Glyoxylate as a Backbone Linkage for a Prebiotic Ancestor of RNA. Origins of Life and Evolution of Biospheres. Volume 36. 5) J. Ferry, C. House. 2006. The Stepwise Evolution of Early Life Driven by Energy Conservation. Molecular Biology and Evolution. Volume 23.
6SSE14	Phil Crane, Planetary Discipline Scientist and Michael Meyer, Mars Exploration Program Lead Scientist (Science Mission Directorate). 1) T. Harrison, J. Blichert-Toft, W. Muller, M. McCulloch, S. Mojzsis, P. Holden. In preparation for submission, 2006. Heterogeneous Hadean Hafnium: Evidence of continental crust by 4.5 Ga. Nature. 2) R. Summons, A. Bradley, L. Jahnke, J. Waldbauer. 2006. Steroids, Triterpenoids and Molecular Oxygen. Philosophica Transactions Royal Society. Volume 361.

APG Number	Source for NASA FY 2006 Performance Rating
6SSE15	Phil Crane, Planetary Discipline Scientist and Michael Meyer, Mars Exploration Program Lead Scientist (Science Mission Directorate). 1) R. Greeley, et al. 2006. Gusev crater: Wind-related features and processes observed by the Mars Exploration Rover Spirit. Journal of Geophysical Research. Volume 111. 2) M. Litvak, I. Mitrofanov, A. Kozyrev, A. Sanin, V. Tret'yakov, W. Boynton, et al. 2006. Comparison between polar regions of Mars from HEND/Odyssey data. Icarus. Volume 180. 3) Smith, et al. 2006. One Martian Year of Atmospheric Observations Using MER Mini-TES Journal of Geophysical Research. 4) N. Spanovich, et al. 2006. Surface and near-surface atmospheric temperatures for the Mars Exploration Rover landing sites. Icarus. Volume 180. Issue 2. 5) A. Sprague, W. Boynton, K. Kerry, D. Janes, S. Nelli, J. Murphy, et. al. 2006. Mars atmospheric argon: tracer for understanding Martian circulation and dynamics. Journal of Geophysics Research. In press.
6SSE16	Phil Crane, Planetary Discipline Scientist and Michael Meyer, Mars Exploration Program Lead Scientist (Science Mission Directorate). 1) R. Arvidson, et al. 2006. Overview of the Spirit Mars Exploration Rover Mission to Gusev Crater: Landing site to Backstay Rock in the Columbia Hills. Journal of Geophysical Research. Volume 111. 2) N. Cabrol, et al. 2006. Aqueous processes at Gusev crater inferred from physical properties of rocks and soils along the Spirit traverse. Journal of Geophysical Research. Volume 111. 3) D.W. Ming, et al. 2006. Geochemical and mineralogical indicators for aqueous processes in the Columbia Hills of Gusev crater, Mars Journal of Geophysical Research. Volume 111. 4) S. Squyres, et al. 2006. Two Years Before the Mast: Continuing Observations by the Opportunity Rover at Meridiani Planum, Mars. Science.
6SSE17	Phil Crane, Planetary Discipline Scientist and Michael Meyer, Mars Exploration Program Lead Scientist (Science Mission Directorate). 1) R. Arvidson, et al. 2006. Overview of the Spirit Mars Exploration Rover Mission to Gusev Crater: Landing site to Backstay Rock in the Columbia Hills. Journal of Geophysical Research. Volume 111. 2) R. Arvidson, et al. Submitted 2006. Nature and Origin of the Hematite-Bearing Plains of Terra Meridiani Based on Analyses of Orbital and Mars Exploration Rover Data Sets. Journal of Geophysical Research. 3) W. Boynton, et al. In Review 2006. Concentration of H, Si, Cl, K, Fe, and Th in the Low and Mid Latitude Regions of Mars. Journal of Geophysical Research. 4) D. Ming, et al. 2006. Geochemical and mineralogical indicators for aqueous processes in the Columbia Hills of Gusev crater, Mars Journal of Geophysical Research. Volume 111. 5) K. Misawa, C. Shih, Y. Reese, D. Bogard, L. Nyquist. 2006. Rb– Sr, Sm–Nd and Ar–Ar isotopic systematics of Martian dunite Chassigny. Earth and Planetary Science Letters. Volume 246. 6) S. Squyres, et al. 2006. Rocks of the Columbia Hills. Journal of Geophysical Research. Volume 111.
6SSE18	Phil Crane, Planetary Discipline Scientist and Michael Meyer, Mars Exploration Program Lead Scientist (Science Mission Directorate).
6SSE19	Phil Crane, Planetary Discipline Scientist and Michael Meyer, Mars Exploration Program Lead Scientist (Science Mission Directorate).
6SSE25	Jennifer Kearns, Science Mission Directorate Program Analyst.
6SSE9	Phil Crane, Planetary Discipline Scientist and Michael Meyer, Mars Exploration Program Lead Scientist (Science Mission Directorate).
Outcome 3C.3	
6SSE20	Michael Meyer, Mars Exploration Program Lead Scientist, Science Mission Directorate. 1) R Arvidson, et al. 2006. Overview of the Spirit Mars Exploration Rover Mission to Gusev Crater: Landing site to Backstay Rock in the Columbia Hills. Journal of Geophysical Research. Volume 111.
Outcome 3C.4	
6SSE21	Michael Meyer, Mars Exploration Program Lead Scientist, Science Mission Directorate.
6SSE22	Michael Meyer, Mars Exploration Program Lead Scientist, Science Mission Directorate.
6SSE23	E. Hupp, G. Webster. 2006. NASA's New Mars Orbiter Returns Test Images. NASA Press Release 06-106. http://www.nasa.gov/home/hqnews/2006/mar/HQ_06106_MRO_test_images.html
6SSE5	Michael Meyer, Mars Exploration Program Lead Scientist, Science Mission Directorate.
6SSE6	Michael Meyer, Mars Exploration Program Lead Scientist, Science Mission Directorate. 1) J. Sunshine, et. al. 2006. Exposed Water Ice Deposits on the Surface of Comet 9P/Tempel 1. Science. Volume 311.

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(321) 867-5000
Hours: 8:00-6:00 EST
http://www.nasa.gov/centers/kennedy/home/index.html

NASA Langley Research Center (LaRC)
Hampton, VA 23681-2199
(757) 864-1000
Hours: 7:00-5:00 EST
http://www.nasa.gov/centers/langley/home/index.html

NASA George C. Marshall Space Flight Center (MSFC)
Huntsville, AL 35812-0001
(265) 544-2121
Hours: available 24 hours
http://www.nasa.gov/centers/marshall/home/index.html

NASA John C. Stennis Space Center (SSC)
NASA Public Affairs
IA10
Stennis Space Center, MS 39529-6000
(228) 688-2211
Hours: 6:00-6:00 CST
http://www.nasa.gov/centers/stennis/home/index.html

NASA Wallops Flight Facility (WFF)
Goddard Space Flight Center
Wallops Island, VA 23337-5099
(757) 824-1000
Hours: 8:00-5:00 EST
http://www.wff.nasa.gov

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Back cover: Lights of vehicles and service structures pierce the fog as Space Shuttle *Atlantis* approaches Launch Pad 39B on August 2, 2006. *Atlantis* launched on September 9, beginning mission STS-115 to International Space Station (ISS). During the mission, the six Shuttle crewmembers delivered cargo and continued ISS construction. (NASA)

National Aeronautics and Space Administration

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