

National Aeronautics and
Space Administration
Office of the Administrator
Washington, DC 20546-0001



May 10, 2005

The Honorable Richard Shelby
Chairman
Subcommittee on Commerce, Justice, and Science
Committee on Appropriations
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

The purpose of this letter is to submit to the Committee a comprehensive update to NASA's FY 2005 Operating Plan, last updated for urgent funding requirements for three programs within NASA's Science Mission Directorate by letter dated April 28, 2005. This letter also provides an update to the FY 2004 Operating Plan, last updated on December 23, 2004.

Aggregate NASA funding in this FY 2005 Operating Plan update is unchanged, at \$16,196.4 million. The following table displays a comparison of the FY 2005 budget from the President's request through all updates.

FY 2005 Operating Plan—May 2005 Update (in millions of dollars)

	NASA FY 2005 Budget <u>Request</u>	Initial FY 2005 Operating <u>Plan</u>	April FY 2005 Operating <u>Plan</u>	NASA <u>Changes</u>	May FY 2005 Operating <u>Plan</u>
<u>TOTAL NASA</u>	<u>16,244.0</u>	<u>16,196.4</u>	<u>16,196.4</u>		<u>16,196.4</u>
Science, Aeronautics & Exploration	7,760.0	7,680.8	7,680.8	-61.6	7,619.2
Exploration Capabilities	8,456.4	8,484.2	8,484.2	+61.6	8,545.8
Inspector General	27.6	31.3	31.3		31.3

First, and most importantly, I want to thank the Committee for providing NASA with additional flexibility in the FY 2005 appropriations bill to address the challenges in

executing NASA's FY 2005 budget. It is my pledge to keep the Committee fully informed regarding how the Agency spends the funds provided.

With this Operating Plan update, NASA is fully funding – within our FY 2005 budget – the \$762 million increase for returning the Space Shuttle safely to flight, consistent with the recommendations from the Columbia Accident Investigation Board (CAIB), over \$400 million in Congressionally-directed items, \$291 million for Hubble servicing, and over \$500 million in necessary programmatic cost increases. However, identifying the nearly \$2 billion in offsets needed to fund those items—including more than \$1 billion in this Operating Plan update—has created some difficult choices for the Agency. Given a choice, my preference as Administrator is to eliminate lower-priority programs rather than reducing all programs in the face of budget difficulties, to maintain efficient execution of the programs which remain. Delays and deferrals inevitably lead to increased life cycle costs and erode the overall performance of the Agency's programs. Thus, NASA must set clear priorities to remain within the budget which has been allocated.

Allow me to be as clear as possible on what the impact of these costs mean to other programs. The Agency has adopted a "go-as-you-can-pay" approach toward space exploration, so several NASA missions will need to be delayed, deferred, cancelled, or their objectives accomplished in other ways in order to ensure adequate funding for the clear directions and priorities in FY 2005 of the President and the Congress. We have tried to be sensitive to the priorities of the affected research communities and have listened carefully to their input. For example, we will seek to balance planetary science, Earth science, solar physics, and astronomy within the overall science program by revisiting our Mars exploration program strategy and mission sequence. Deferring the Mars Science Laboratory (MSL) two years to 2011 is an option in this review. (If the review concludes that MSL should remain on schedule for launch in 2009, reductions will be taken from other missions in formulation in future operating plan updates and/or the FY 2007 budget request.) In order to preserve the option to service the Hubble Space Telescope and provide for a safe deorbit, this Operating Plan defers work on more advanced space telescopes like the Space Interferometer Mission (SIM) and Terrestrial Planet Finder (TPF). These and other adjustments are discussed in greater detail in the Enclosures.

Changes in this FY 2005 Operating Plan update include:

- Identification of offsets to fund the remaining \$287.2 million of the estimated \$762.0 million in emergent FY 2005 requirements for Return to Flight (RTF) and Columbia Accident Investigation Board (CAIB)-related activities; the initial Operating Plan funded \$474.8 million.
- Identification of offsets totaling \$423.0 million, after application of the across-the-board rescission directed in the FY 2005 Consolidated Appropriations Act (P.L. 108-447), to fund all Congressionally-directed items included in the Conference Report (House Report 108-792), which NASA is required to absorb

within the \$16,196.4 million appropriation, from funding for ongoing and planned Agency programs.

- Funding adjustments for a number of programmatic increases, within funding levels by Mission Directorate, resulting from requirements internal to specific programs and projects.
- Realignment of management and funding responsibility for several programs—Hubble servicing and de-orbit, the Robotic Lunar Exploration Program, and ISS Cargo/Crew Services—to clarify program authority and responsibility.
- Distribution of remaining Space Launch Initiative (SLI) Transition Activities funding to realign remaining civil service workforce and related support from legacy SLI programs to other Mission Directorate programs, as planned.
- Reassignment of a small number of Congressional interest items from one Mission Directorate to another, based upon program content.
- A net transfer of \$61.6 million from the Science, Aeronautics and Exploration appropriations account to the Exploration Capabilities appropriations account as a result of the transfer of funding to accommodate RTF requirements, preserve the option for Hubble servicing, and distribution of SLI transition funds.

A comparison of the most recent FY 2005 Operating Plan (April 28, 2005 update) with this Operating Plan update is provided in Enclosure 1. Congressional interest items are displayed in Enclosure 2, including the reassignments from one Mission Directorate to another, as noted above. Enclosure 3 provides a detailed explanation of the changes within the appropriations accounts. Enclosure 4 provides a summary comparison at the Theme level, from the President's FY 2005 budget request through each of the FY 2005 operating plan updates, summarizing the additions in this operating plan by the four categories of Shuttle RTF, Hubble servicing, unrequested Congressional interest items, and programmatic increases. Enclosure 5 displays a comparison of the most recent FY 2004 Operating Plan with the update provided in this letter. Enclosure 6 provides a detailed explanation of the changes in the FY 2004 Operating Plan update.

Several key features of NASA's May update to our FY 2005 Operating Plan are highlighted below.

Congressionally-Directed Items

Given the magnitude of the challenge to identify appropriations offsets to pay for Congressionally-directed items, NASA has endeavored since the initial Operating Plan to identify sources of funding for these items by Mission Directorate. As noted above, in this Operating Plan update, NASA has identified reductions within ongoing or planned programs to fund the total of \$426.0 million in Congressionally-directed items in the Conference Report. In identifying these reductions to fully fund Congressionally-directed items, NASA has made every effort to avoid impacts to missions in development and to avoid funding solutions that would result in program delays and increases in life cycle costs. Consequently, the Agency has made difficult decisions in some instances to discontinue programs. In addition, based upon the comprehensive review of needed

offsets for Congressionally-directed items as well as other priority requirements, including Return to Flight and a potential Hubble Space Telescope servicing, NASA determined that the earlier decision to identify offsets for the \$50.6 million in Education earmarks from non-Education sources was resulting in an unacceptable burden to the Mission Directorates, given the magnitude of the offsets they were already taking. Therefore, I have directed that offsets for Congressionally-directed items in Education be offset to the extent possible within the Education Program, consistent with the Conference Report and the approach being taken for offsetting unrequested Congressional items for all NASA's Mission Directorates.

The sources for the full \$426.0 million in offsets, \$423.0 million after application of the rescission, are identified in Enclosure 3. In summary, the offsets identified in this Operating Plan to pay for unrequested Congressional items are as follows:

• Space Science	-\$76 million
• Earth Science	-\$89 million
• Biological and Physical Research	-\$28 million
• Aeronautics	-\$88 million
• Exploration Systems	-\$94 million
• Education	-\$38 million
• Space Flight	-\$ 5 million
• Other	-\$ 5 million

NASA is releasing funds for Congressionally-directed items expeditiously, as proposals are received and evaluated. NASA is committed to working with FY 2005 earmark recipients to ensure that these directed activities contribute effectively to Agency priorities. Consistent with direction in the Conference Report, NASA will not charge general and administrative expenses "to Congressionally-directed spending on specific projects." The Agency will continue to charge full cost for all other programmatic direction included in the Conference Report.

Space Shuttle Return to Flight

NASA will return the Space Shuttle to flight as soon and as safely as possible, complete assembly of the ISS, and retire the Space Shuttle by 2010.

As identified in the initial FY 2005 Operating Plan, emergent FY 2005 RTF and CAIB-related funding requirements are estimated to be \$762.0 million. The initial FY 2005 Operating Plan provided \$474.8 million in FY 2005 for RTF requirements that had been approved for implementation by the Program Requirements Change Board and verified by the RTF Planning Team at that time. The \$474.8 million was accommodated through redirection of resources from the Shuttle Service Life Extension Program (-\$170.0 million), International Space Station (-\$160.0 million), Exploration Systems (-\$46.0 million), and Space Launch Initiative Transition (-\$98.8 million).

This FY 2005 Operating Plan update identifies offsets for the remaining \$287.2 million in emergent FY 2005 RTF and CAIB-related activities, accommodated through reductions as outlined in Enclosure 3, as follows:

- Space Science (-\$20.0 million);
- Earth Science (-\$35.0 million);
- Biological and Physical Research (-\$73.0 million);
- Exploration Systems (-\$158.0 million); and,
- Space and Flight Support (-\$1.2 million).

NASA will continue to closely monitor Shuttle costs, and expects to establish updated RTF and CAIB-related estimates for FY 2005 and beyond following the RTF flight planned for this summer. Current estimates could change based on the results of the two RTF missions and associated lessons learned. NASA will communicate revised estimates for RTF and CAIB-related estimates as soon as they are available, and will continue to keep the Committee apprised through updates of NASA's Implementation Plan for Space Shuttle Return to Flight and beyond.

Program Realignment

I have made a determination to realign the management responsibility of three programs to clarify program authority and responsibility.

- Management responsibility for a potential Shuttle servicing mission for the Hubble Space Telescope (HST) and de-orbit of HST is consolidated within the Science Mission Directorate. Additional detail regarding HST follows.
- Management responsibility for the Robotic Lunar Exploration Program (RLEP) is realigned to the Exploration Systems Mission Directorate because RLEP is on the critical path for informing critical design and operations decisions related to the new Exploration Architecture for human missions to the moon. NASA recognizes the synergy for both science and exploration represented by the RLEP and will continue to maximize the benefits. The Lunar Reconnaissance Orbiter (LRO) program will continue to be managed and developed as planned by the Goddard Space Flight Center (GSFC).
- Management responsibility for ISS Crew and Cargo Services is realigned to the Exploration Systems Mission Directorate. NASA continues to assess its future requirements for crew and cargo transportation in support of the ISS and future human exploration. ESMD will be developing the CEV to be capable of ferrying the next generation of astronauts to the Space Station, Moon, and Mars. The ISS requires cargo transportation to supplement the Space Shuttle and to conduct operations after retirement of the Space Shuttle, and future human exploration will require cargo transportation separate from the CEV. Realignment is based on these common requirements.

- ISS operations, including the international relationships, as well as acquisition of existing commercial launch services will remain the responsibility of the Space Operations Mission Directorate. ESMD will be responsible for developing and acquiring new ISS crew and cargo capabilities. The two Directorates will work together on strategies for meeting their respective requirements.

The budget for these activities will be the responsibility of the new management organizations, although funding is still shown in the original organization to avoid making structural changes to the FY 2005 budget in the year of execution.

Hubble Space Telescope

NASA's initial FY 2005 Operating Plan included \$175.0 million to support FY 2005 Hubble Space Telescope (HST) expenses to date, near-term design work required to safely de-orbit HST, ongoing assessment of alternative servicing options, and to support efforts to reach the Preliminary Design Review (PDR) milestone.

Based on analysis of the relative risks immediately following the loss of Columbia, NASA decided not to proceed with a Shuttle servicing mission. NASA's decision not to service the Hubble was a very difficult one, given the Hubble's record of spectacular successes. That decision was made at a time when significant uncertainty remained, regarding the technical solutions and risks associated with return to flight. After the two successful Space Shuttle flights needed to achieve our return to flight objectives, NASA will have learned a great deal more regarding the risks and operations of the vehicle than was known when the previous decision was made. I am committed to reassess this earlier decision, after return to flight, based on the relative risks to the Space Shuttle as well as the costs and benefits to our Nation's astronomy program. As a result, we are continuing our efforts to preserve the option for a Shuttle servicing mission for Hubble in advance of that decision. Consistent with this ongoing activity, this FY 2005 Operating Plan update has fully funded the \$291 million identified in the Conference Report accompanying the FY 2005 Consolidated Appropriations bill, and has consolidated the funding and management responsibility within the Science Mission Directorate. NASA will use the balance of the FY 2005 funds to maintain options for servicing and deorbit of HST. NASA has also begun the analysis of how a de-orbit module for the Hubble Space Telescope could be added to the manifest of such a Space Shuttle servicing mission. I will make a decision regarding a Shuttle servicing mission for Hubble following the first two successful Return to Flight missions. In the interim, the agency will keep all stakeholders apprised as this work progresses.

Exploration Systems

I have initiated an Exploration Systems Architecture Study, to be completed by mid-July to support a number of key near-term decisions for NASA, the White House, and Congress. We will keep Congressional Committees informed as this study effort progresses. This architecture study will focus on four primary areas.

- Complete assessment of the top-level Crew Exploration Vehicle (CEV) requirements and plans to enable the CEV to provide crew transport to the ISS and to accelerate the development of the CEV and crew-launch system to reduce the gap between Shuttle retirement and CEV initial operating capability (IOC);
- Definition of top-level requirements and configurations for crew and cargo launch systems to support the lunar and Mars exploration programs.
- Development of a reference lunar exploration architecture concept to support sustained human and robotic lunar exploration operations.
- Identification of key technologies required to enable and significantly enhance these reference exploration systems and a reprioritization of near-term and far-term technology investments.

Biological and Physical Research

As reported in the initial FY 2005 Operating Plan, NASA has been engaged in an ongoing Zero Base Review of the Biological and Physical Research (BPR) portfolio to ensure that future investments are aligned with exploration objectives and that biological and physical research planned for the ISS is driven by the unique capabilities of the ISS. The objective of the review is to prioritize our needs for each phase of the planned exploration strategy, and to rebalance the research portfolio accordingly.

The Zero Base Review has been completed. The Review employed a methodical, disciplined process to align research tasks to exploration requirements, and was informed by NASA medical policies and the National Academies-reviewed Bioastronautics Roadmap. The review identified critical research priorities to reduce risk for long-duration human spaceflight, and has given NASA confidence that a significant part of ongoing BPR research directly supports the Vision. However, certain tasks will be discontinued, others will be augmented, and still new ones will be started in order to fill critical research gaps in high priority areas identified during the review. These high-priority areas include space radiation health and shielding, advanced environmental control and monitoring, advanced extra-vehicular activities, human health and countermeasures, advanced life support, exploration medical care, and space human factors. The highest priorities for research on ISS have been identified as medical research with human subjects and microgravity validation of environmental control and life support technologies. Lower-priority tasks, which are now subject to reduced funding, include basic research using model organisms (such as cells or rodents), and fundamental research in physics, material science, or basic combustion – with no direct link to exploration requirements. Many of the changes identified in this Operating Plan update reflect the results of this study, including phasing out research in an orderly manner to avoid undue hardship to grantees, industry, or Centers.

Additional refinement to the research and development portfolio may take place in the future as a result of an ongoing study to determine the appropriate definition of ISS complete that is also compatible with a Shuttle retirement by 2010.

Project Prometheus

This Operating Plan reflects funding adjustments in Project Prometheus consistent with the President's FY 2006 request that defers the Jupiter Icy Moons Orbiter demonstration. The technology and capabilities being developed by the Prometheus Nuclear Systems and Technology Theme are critical for enabling the power and propulsion needs of the Vision for Space Exploration. As part of the Agency's effort to define an Exploration Systems Architecture, NASA will examine alternative nuclear systems, including surface nuclear power, nuclear thermal, and nuclear electric systems. NASA will restructure Project Prometheus for space-qualified nuclear systems to support human and robotic missions with clear priorities focused on near-term needs. We expect to make program decisions to focus our nuclear technology efforts on our highest priorities for the near-term applications as part of the Exploration Architecture study, to be completed this summer.

Workforce and NASA's Field Centers

While competitive processes are crucial to maintaining NASA at the "cutting edge" of science and technology, we must acknowledge that the NASA Centers and other Federal research and development laboratories exist, and have existed for decades, precisely because industrial competition does not serve to accomplish all of our national goals. In order to accomplish the national goals set forth by the President and Congress, NASA must set realistic priorities with limited resources. NASA centers will have an important role in definition of the architecture and requirements for exploration beyond low Earth orbit, and for the systems engineering and integration functions in building the systems of that architecture. We will continue to assess the skill-mix that we require, the number of people we require, where they will be, and how we are organizing ourselves to fulfill our obligations to the President and Congress. To begin to create some of the workforce flexibility necessary for the future, NASA has offered voluntary separation incentives (buyouts) to employees in positions identified with excess competencies.

Earlier this fiscal year, the Agency conducted buyouts at five NASA Centers in a continuing effort to meet our objective to rebalance and reshape the workforce with the competencies necessary to meet the challenges of our mission. As we move forward, the mix of skills required for past programs is not completely aligned with what we need for future missions. To begin reshaping the workforce, NASA's Ames Research Center, Glenn Research Center, Langley Research Center, Dryden Flight Research Center, and Marshall Space Flight Center offered voluntary separation incentives (buyouts) to their employees in positions identified with excess competencies. Voluntary early retirement authority also is available to complement the buyout offer. Although 325 employees accepted the buyout offer, the level of voluntary attrition was not sufficient to allow NASA to rebalance fully its competencies to the extent necessary to ensure optimum staffing in key areas.

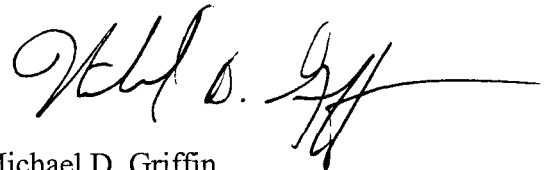
A second round of buyouts was offered this spring to an expanded population across the NASA Centers and Headquarters. Primarily, the Agency is offering buyouts to

employees in positions in competencies no longer needed or needed in smaller numbers. To date, 240 employees have taken advantage of the Round 2 buyout offer, with another 80 separations planned over the next several months.

In addition to "regular" buyouts, incentives are being offered to create placements for employees in excess competency areas. Johnson, Kennedy, Goddard, and Headquarters are opening buyout opportunities to a broad range of employees. Managers then locate an employee at another Center whose position is in the surplus competency, and if a good match is found, a job offer is made and the transfer and buyout is approved. This phase of buyouts is ongoing through the end of the fiscal year. We hope to achieve several dozen buyout/placements through this process.

I look forward to working with the Committee on the implementation of this FY 2005 Operating Plan update.

Cordially,

A handwritten signature in black ink, appearing to read "Michael D. Griffin", with a long horizontal line extending to the right.

Michael D. Griffin
Administrator

6 Enclosures