



July 21, 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 an update to NASA's FY 2005 Operating Plan, last updated by letter dated May 10, 2005.

Aggregate NASA funding in this FY 2005 Operating Plan update is unchanged, at \$16,196.4 million, and aggregate funding for each appropriations account is unchanged. The following table displays a comparison at the appropriations account level, of the most recent Operating Plan with this Operating Plan update.

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

	May FY 2005 Operating Plan	July FY 2005 Operating Plan
<u>TOTAL NASA</u>	<u>16,196.4</u>	<u>16,196.4</u>
Science, Aeronautics & Exploration	7,619.2	7,619.2
Exploration Capabilities	8,545.8	8,545.8
Inspector General	31.3	31.3

Major changes in this Operating Plan include:

- As part of the rebalancing of the portfolio of the Science Mission Directorate, consistent with the President's FY 2006 budget amendment, funding adjustments within the Mars Exploration Program to focus on near-term requirements. Specifically, as a result of a review of the Mars Program architecture, this Operating Plan reflects funding adjustments to restore funds for the Mars Science Laboratory mission for a 2009 launch, and reallocation of funds within the Mars Program consistent with decisions to cancel the Mars Telecommunications Orbiter and the Optical Communications Technology Demonstration, as communicated in the FY 2006 budget amendment.
- Consistent with the President's FY 2006 budget amendment, which reflects the decision to pursue the Glory mission as a free flyer, a plan to definitize the contract for the Glory

spacecraft bus in FY 2005; contract definitization does not require any funding adjustments in this Operating Plan update.

- Funding adjustment to enable the extension of the EO-1 mission through FY 2006.
- Reallocation of funds within the Space Shuttle Program to address program requirements. FY 2005 Return to Flight (RTF) requirements are unchanged at \$762 million in this Operating Plan update; however, the Program may incur additional FY 2005 RTF costs pending requirements assessments following the initial RTF mission. Any increased costs will be reported, along with identification of offsets, in a future Operating Plan adjustment.

A comparison of the most recent FY 2005 Operating Plan with this Operating Plan update is provided in Enclosure 1. Additional minor program adjustments for FY 2005 are identified in Enclosure 2. Enclosure 3 provides a summary comparison at the Theme level, from the President's budget request through each of the FY 2005 Operating Plan updates. Enclosure 4 is an update to construction of facilities in the FY 2003 Operating Plan. Consistent with notification requirements called for under Section 605, Title VI, the FY 2005 Consolidated Appropriations Act (P.L. 108-447), a number of planned NASA office reorganizations are outlined in Enclosure 5.

In FY 2004 and FY 2005, Congress funded NASA's request for the Enterprise Engine under NASA's Innovative Technology Transfer Partnerships Program at \$5 million for each year. The President's FY 2006 request includes \$5 million annually through FY 2010. NASA is now implementing this venture capital fund, using the FY 2004 and FY 2005 resources, as appropriated. The goal of this venture capital fund is to sponsor young, privately-held companies developing innovative, multi-use technologies that will meet NASA's future mission needs, as well as better position these technologies for future commercial use. Because the effort is expected to benefit multiple Mission Directorates, funds for the venture capital fund will be managed at the Agency level, and, in the future, due to the cross-cutting nature of the objectives of the fund, it is NASA's plan to fund the effort within Corporate G&A.

I look forward to working with the Committee on the implementation of this FY 2005 Operating Plan update and the President's FY 2006 budget amendment.

Sincerely,



Michael D. Griffin
Administrator

5 Enclosures

	<u>FY05 May Op Plan</u>	<u>Changes</u>	<u>FY05 July Op Plan</u>
<u>TOTAL</u>	<u>16,196.4</u>	<u>0.0</u>	<u>16,196.4</u>
<u>SCIENCE, AERONAUTICS AND EXPLORATION</u>	<u>7,619.2</u>	<u>0.0</u>	<u>7,619.2</u>
<u>SPACE SCIENCE</u>	<u>4,014.8</u>	<u>3.8</u>	<u>4,018.6</u>
<u>SOLAR SYSTEM EXPLORATION (SSE)</u>	<u>1,155.7</u>	<u>-10.0</u>	<u>1,145.7</u>
<u>DEVELOPMENT</u>	<u>299.8</u>	<u>18.3</u>	<u>318.1</u>
MESSENGER DEVELOPMENT	0.0		0.0
DEEP IMPACT DEVELOPMENT	24.6		24.6
DAWN DEVELOPMENT	85.8	5.0	90.8
NEW HORIZONS/PLUTO DEVELOPMENT	189.3	13.3	202.6
<u>OPERATIONS</u>	<u>273.3</u>	<u>0.0</u>	<u>273.3</u>
<u>RESEARCH</u>	<u>399.3</u>	<u>0.0</u>	<u>399.3</u>
<u>TECHNOLOGY AND ADVANCED CONCEPTS</u>	<u>183.4</u>	<u>-28.3</u>	<u>155.1</u>
FUTURE DISCOVERY	32.8	-20.9	11.9
FUTURE NEW FRONTIERS	15.5	-7.4	8.1
IN-SPACE POWER & PROPULSION (ISP)	128.9		128.9
OTHER TECHNOLOGY	6.3		6.3
<u>MARS EXPLORATION</u>	<u>579.4</u>	<u>10.0</u>	<u>589.4</u>
<u>DEVELOPMENT</u>	<u>143.7</u>	<u>0.0</u>	<u>143.7</u>
MARS RECONNAISSANCE ORBITER DEV	143.7	0.0	143.7
<u>OPERATIONS</u>	<u>35.6</u>	<u>-10.1</u>	<u>25.5</u>
<u>RESEARCH</u>	<u>58.6</u>	<u>-0.6</u>	<u>58.0</u>
<u>TECHNOLOGY AND ADVANCED CONCEPTS</u>	<u>341.4</u>	<u>20.8</u>	<u>362.2</u>
MARS 2007 SCOUTS	111.8	2.3	114.2
MARS 2009 SCIENCE LABORATORY	100.4	23.9	124.3
2009 U.S. TELESAT	9.1	-1.3	7.8
OPTICAL COMM	46.0	-5.5	40.5
MARS PROGRAM PLANS & ARCHITECTURE & OTHER	62.1	1.3	63.4
OTHER TECHNOLOGY	12.0	0.0	12.0
<u>LUNAR EXPLORATION</u>	<u>52.0</u>	<u>0.0</u>	<u>52.0</u>
<u>TECHNOLOGY AND ADVANCED CONCEPTS</u>	<u>52.0</u>	<u>0.0</u>	<u>52.0</u>
LUNAR EXPLORATION	52.0		52.0
<u>ASTRONOMICAL SEARCH FOR ORIGINS (ASO)</u>	<u>1,098.2</u>	<u>0.0</u>	<u>1,098.2</u>
<u>DEVELOPMENT</u>	<u>398.0</u>	<u>-18.0</u>	<u>380.0</u>
HST DEVELOPMENT	231.3	-18.0	213.3
KEPLER DEVELOPMENT	95.2	0.0	95.2
SOFIA DEVELOPMENT	71.5	0.0	71.5
<u>OPERATIONS</u>	<u>29.2</u>	<u>0.0</u>	<u>29.2</u>
<u>RESEARCH</u>	<u>180.6</u>	<u>0.0</u>	<u>180.6</u>
<u>TECHNOLOGY AND ADVANCED CONCEPTS</u>	<u>490.4</u>	<u>18.0</u>	<u>508.4</u>
SIM	99.9	10.0	109.9
JAMES WEBB SPACE TELESCOPE (JWST)	286.9	8.0	294.9
TPF	40.6	0.0	40.6
KECK INTERFEROMETER	12.8	0.0	12.8
OTHER ASO TECH. & ADV CONCEPT	50.3	0.0	50.3

	FY05 May Op Plan	Changes	FY05 July Op Plan
STRUCTURE & EVOLUTION OF THE UNIVERSE	376.9	0.0	376.9
<u>DEVELOPMENT</u>	<u>140.6</u>	<u>0.0</u>	<u>140.6</u>
GLAST DEVELOPMENT	111.4	0.0	111.4
SEU SMALL DEVELOPMENT PROJECTS	26.1	-1.9	24.2
SWIFT	3.1	1.9	5.0
OPERATIONS	5.1	0.0	5.1
RESEARCH	207.1	0.0	207.1
<u>TECHNOLOGY AND ADVANCED CONCEPTS</u>	<u>24.1</u>	<u>0.0</u>	<u>24.1</u>
CONSTELLATION-X	9.7	0.0	9.7
LISA	13.7	0.0	13.7
OTHER SEU TECH. & ADV CONCEPTS	0.7	0.0	0.7
SUN-EARTH CONNECTION (SEC)	752.6	3.8	756.4
<u>DEVELOPMENT</u>	<u>330.8</u>	<u>10.1</u>	<u>340.9</u>
STEREO DEV	79.9	4.3	84.2
SOLAR DYNAMICS OBSERVATORY DEV	136.9	0.0	136.9
THEMIS	56.9	0.0	56.9
SEC SMALL DEVELOPMENT PROJECTS	57.1	5.8	62.9
OPERATIONS	23.7	0.0	23.7
RESEARCH	198.6	0.0	198.6
<u>TECHNOLOGY AND ADVANCED CONCEPTS</u>	<u>199.5</u>	<u>-6.3</u>	<u>193.2</u>
NEW MILLENNIUM PROGRAM	65.8		65.8
SOLAR-TERRESTRIAL PROBES (STP)	16.7	-0.5	16.2
LIVING WITH A STAR (LWS)	63.9		63.9
FUTURE EXPLORERS/OTHER	53.0	-5.8	47.2
<u>EARTH SCIENCE</u>	<u>1,538.8</u>	<u>-3.8</u>	<u>1,535.0</u>
EARTH SYSTEM SCIENCE	1,431.5	-2.3	1,429.2
<u>DEVELOPMENT</u>	<u>285.0</u>	<u>1.8</u>	<u>286.9</u>
EOS/AURA	9.1	-1.6	7.5
EP/CALIPSO	15.2	5.2	20.4
NPP (from Formulation)	138.4	-3.8	134.6
EP/CLOUDSAT	8.1	3.1	11.2
EOSDIS	50.1	0.9	51.1
EO/GIFTS	7.6	-2.0	5.6
OTHER DEVELOPMENT	56.4		56.4
OPERATIONS	316.8	-0.9	315.8
RESEARCH	544.5	0.3	544.8
TECHNOLOGY AND ADVANCED CONCEPTS	285.2	-3.5	281.7
EARTH SCIENCE APPLICATIONS	107.3	-1.5	105.8
RESEARCH	46.6	-1.5	45.1
TECHNOLOGY AND ADVANCED CONCEPTS	60.7	0.0	60.7

	FY05 May Op Plan	Changes	FY05 July Op Plan
<u>BIOLOGICAL AND PHYSICAL RESEARCH</u>	<u>924.6</u>	<u>0.0</u>	<u>924.6</u>
BIOLOGICAL SCIENCES RESEARCH	374.0		<u>374.0</u>
DEVELOPMENT	3.1		3.1
OPERATIONS	86.4		86.4
RESEARCH	284.4		284.4
PHYSICAL SCIENCES RESEARCH	305.4		305.4
<u>DEVELOPMENT</u>	<u>29.0</u>		<u>29.0</u>
MATERIALS SCIENCE RESEARCH RACK - 1	13.3		13.3
FLUIDS & COMBUSTION FACILITY	15.7		15.7
LO TEMP MICROGRAVITY PHYSICS FACILITY			
OPERATIONS	72.7		72.7
RESEARCH	203.6		203.6
RESEARCH PARTNERSHIPS & FLIGHT SUPT	245.3		245.3
OPERATIONS	188.0		188.0
RESEARCH	57.3		57.3
<u>AERONAUTICS</u>	<u>962.0</u>	<u>0.0</u>	<u>962.0</u>
AERONAUTICS TECHNOLOGY	962.0		962.0
<u>TECHNOLOGY AND ADVANCED CONCEPTS</u>	<u>962.0</u>		<u>962.0</u>
<u>AVIATION SAFETY & SECURITY PROGRAM</u>	<u>183.0</u>		<u>183.0</u>
Vehicle Safety Technologies	76.9		76.9
System Safety Technologies	21.3		21.3
Weather Safety Technologies	41.6		41.6
A/C & Systems Vulnerability Mitigation	33.7		33.7
Other	9.5		9.5
<u>VEHICLE SYSTEMS PROGRAM</u>	<u>630.2</u>		<u>630.2</u>
Quiet Aircraft Technology	86.5		86.5
Ultra Efficient Engine Technology	93.7		93.7
Low Emissions Alternative Power	105.6		105.6
Efficient Aerodynamic Shapes & Integration	109.6		109.6
Integrated Tailored Aerostructure	56.0		56.0
Autonomous Robust Avionics	18.3		18.3
Flight & System Demonstration	131.0		131.0
Strategic Vehicle Architecture	29.5		29.5
<u>AIRSPACE SYSTEMS PROGRAM</u>	<u>148.8</u>		<u>148.8</u>
Small Aircraft Transportation System	16.9		16.9
Virtual Airspace Modeling & Simulation	26.6		26.6
Efficient Aircraft Spacing	36.9		36.9
Efficient Flight Path Management	11.3		11.3
Strategic Airspace Usage	12.4		12.4
Space-Based Technologies	14.6		14.6
Human Measures & Performance	14.8		14.8
Technical Integration	15.4		15.4
<u>EDUCATION PROGRAMS</u>	<u>178.9</u>	<u>0.0</u>	<u>178.9</u>
ACADEMIC PROGRAMS	108.2		108.2
MINORITY UNIV RESEARCH & EDUCATION	70.7		70.7

	FY05 May Op Plan	Changes	FY05 July Op Plan
<u>EXPLORATION CAPABILITIES</u>	<u>8,545.8</u>	<u>0.0</u>	<u>8,545.8</u>
<u>EXPLORATION SYSTEMS</u>	<u>1,431.4</u>	<u>0.0</u>	<u>1,431.4</u>
<u>HUMAN AND ROBOTIC TECHNOLOGY</u>	<u>1,009.5</u>		<u>1,009.5</u>
<u>TECHNOLOGY AND ADVANCED CONCEPTS</u>	<u>1,009.5</u>		<u>1,009.5</u>
TECHNOLOGY MATURATION	84.0		84.0
PROJECT PROMETHEUS	270.3		270.3
ADVANCED SPACE TECHNOLOGY	357.5		357.5
INNOVATIVE TECH TRANS PARTNERSHIPS (ITTP)	198.9		198.9
CENTENNIAL CHALLENGE	9.7		9.7
HUBBLE SERVICING MISSION	89.0		89.0
<u>TRANSPORTATION SYSTEMS</u>	<u>421.9</u>		<u>421.9</u>
<u>TECHNOLOGY AND ADVANCED CONCEPTS</u>	<u>421.9</u>		<u>421.9</u>
CREW EXPLORATION VEHICLE	421.9		421.9
SPACE LAUNCH INITIATIVE (SLI)	0.0		0.0
<u>SPACE FLIGHT</u>	<u>7,114.4</u>	<u>0.0</u>	<u>7,114.4</u>
<u>SPACE STATION</u>	<u>1,676.3</u>	<u>0.0</u>	<u>1,676.3</u>
<u>DEVELOPMENT</u>	<u>142.3</u>	<u>8.6</u>	<u>150.9</u>
ISS CORE DEVELOPMENT	101.8	8.6	110.4
ISS CAPABILITY UPGRADES	40.5		40.5
<u>OPERATIONS</u>	<u>1,534.0</u>	<u>-8.6</u>	<u>1,525.4</u>
SPACECRAFT OPERATIONS	676.1	-15.0	661.1
LAUNCH & MISSION OPERATIONS	495.5	9.0	504.5
OPERATIONS PROGRAM INTEGRATION	264.4	-2.6	261.8
ISS CARGO/CREW SERVICES	98.0		98.0
<u>SPACE SHUTTLE</u>	<u>4,964.2</u>	<u>0.0</u>	<u>4,964.2</u>
<u>DEVELOPMENT</u>	<u>56.1</u>	<u>-19.3</u>	<u>36.8</u>
SSME ADV HEALTH MANAGEMENT (AHM)	4.6	3.2	7.8
COCKPIT AVIONICS UPGRADE (CAU)	51.5	-22.5	29.0
<u>OPERATIONS</u>	<u>4,908.1</u>	<u>19.3</u>	<u>4,927.4</u>
PROGRAM INTEGRATION	802.0	8.2	810.2
GROUND OPERATIONS	1,104.0	1.6	1,105.6
FLIGHT OPERATIONS	407.0		407.0
FLIGHT HARDWARE	2,469.1	9.5	2,478.6
KSC Hurricane Damages	126.0		126.0
<u>SPACE & FLIGHT SUPPORT</u>	<u>473.9</u>	<u>0.0</u>	<u>473.9</u>
<u>DEVELOPMENT</u>	<u>75.4</u>		<u>75.4</u>
PLUMBROOK	30.1		30.1
ENVIRONMENTAL COMPLIANCE & RESTORATION	45.3		45.3
<u>OPERATIONS</u>	<u>398.5</u>		<u>398.5</u>
<u>INSPECTOR GENERAL</u>	<u>31.3</u>	<u>0.0</u>	<u>31.3</u>

SCIENCE MISSION DIRECTORATE

Solar System Exploration

-\$10M, Offsets and other Changes:

- +\$18.3M, Development
 - +\$5.0M, Dawn
 - Cost growth driven by technical problems, including Manufacturing issues with the ion propulsion system; industry-wide problems with Flight-Programmable Gate Arrays (FPGAs) requiring parts replacements on several key components; and (most recently) failure of both the qualification and flight spare units of the xenon propellant tank.
 - Total lifecycle cost is \$371.4M, compared to \$366.4M (May Op Plan).
 - +\$13.3M, New Horizons
 - \$7.6M of this increase is a rephasing with no impact to life cycle cost. It is needed to meet earlier-than-expected funding requirement at DOE/Idaho National Lab for RTG integration work, allowing the mission to retain its January 2006 launch schedule.
 - Balance of the increase (+\$5.7M) is to ensure that the launch approval process is completed on time to support the January 2006 launch, and additional overtime required to resolve issues discovered during environmental testing.
 - Total lifecycle cost is \$675.8M, compared to \$670.1M (April Op Plan).
- -\$28.3M, Technology and Advanced Concepts
 - -\$7.4M, New Frontiers
 - This reduction is consistent with the April operating plan and the selection of the JUNO mission. Funds are available because the JUNO mission does not require as much FY05 money as NASA had set aside for the selection.
 - -\$20.9M, Discovery
 - This reduction is consistent with the Moon Mineralogy Mapper (M3) selection. Funds are available because the M3 mission does not require as much FY05 money as NASA had set aside for the selection.

Mars Exploration

+\$10M, Offsets and other Changes:

- The May operating plan reduced the Mars Program based upon a rebalancing of the science portfolio and an initial review of the revised program architecture. The operating plan also noted that NASA was going to reassess and refine the Mars Program architecture. The additional time to refine the future plans has shown that the reduction was too large. The

restoration of \$10M is necessary to address maintaining MSL schedule as well as other adjustments, and is reflected in the following adjustments to the Mars Program elements.

- -\$10.1M, Operations
 - -\$2.0M, Mars Odyssey
 - Eliminates reserves that will not be required for these operations in FY05, and reduces uncosted carryover. No programmatic impact.
 - Total lifecycle cost is \$725.0M, compared to \$727.0M (April Op Plan).
 - -\$6.1M, Mars Exploration Rovers
 - Consistent with current costing on the mission. No impact on extension of rovers to end of this fiscal year. Efficiencies during extended operations are being achieved sooner than anticipated.
 - -\$1.6M, Mars Multi-Mission
 - Eliminates reserves that will not be required for these operations in FY05. No impact expected, assuming prompt funding availability at the start of FY06.
 - -\$0.4M, Mars Global Surveyor
 - Consistent with current costing on the mission. No impact on extension of mission to September 2006.
- -\$0.6M, Research
 - -\$ 2.2M, Mars Research and Analysis
 - Lower carryover into FY 06 with no impact to on-going Mars research activities.
 - +\$ 1.6M, Mars Data Analysis
 - Restore May Op Plan reduction in order to have adequate carryover into FY 2006.
- +\$20.8M, Technology and Advanced Concepts
 - +\$ 2.3M, Phoenix
 - Additional funds to address requirements related to entry/descent/landing (EDL).
 - +\$23.9M, Mars Science Laboratory (MSL)
 - The Mars Exploration Program strategy has been completed and it has been decided to restore MSL to a 2009 Launch. This funding supports the 2009 launch date.
 - -\$ 1.3M, Mars Telecommunications Orbiter (MTO)
 - Adjusts funding profile consistent with decision to cancel MTO reflected in FY 2006 budget amendment.
 - -\$ 5.5M, Optical Communication Technology Demonstration
 - Adjusts funding profile consistent with decision to cancel Optical Communication Technology Demonstration as reflected in the FY 2006 Budget Amendment.
 - +\$ 1.3M, Mars Program Plans and Architecture
 - Restores MSL study funds.

Astronomical Search for Origins

\$0.0, Offsets and other Changes:

- -\$18.0M, Development
 - -\$18.0M, Hubble Space Telescope (HST)
 - Reduction to HST carryover; no programmatic impact.
 - In combination with \$89M expended by Exploration Systems, NASA is spending \$302.3M on HST development activities this year.
- +\$18.0M, Technology & Advanced Concepts
 - +\$8.0M, James Webb Space Telescope (JWST)
 - Restores portion of funding removed in last op plan. Required to ensure adequate carryover into FY 2006.
 - +\$10.0M, Space Interferometry Mission (SIM)
 - Restores portion of funding removed in last op plan.

Structure and Evolution of the Universe

\$0.0, Offsets and other Changes:

- \$0.0M, Development
 - +\$1.9M, SWIFT
 - Final assessment (closeout) of development costs after successful launch.
 - -\$1.9M, ASTRO-E II
 - Reduces reserves that will not be required for this project in FY05. No programmatic impact.

Sun-Earth Connection

+\$3.8M, Offsets and other Changes:

- +\$10.1M, Development
 - +\$4.3M, STEREO
 - Additional funding to cover a two month launch delay from February 2006 to April 2006 (due to late delivery of instruments).
 - Total lifecycle cost is \$469.5M, compared to \$465.2M (May Op Plan).
 - +\$5.8M, SEC Small Development Projects
 - +\$5.8M, AIM. Rephasing with no programmatic impact.
- -\$6.3M, Technology and Advanced Concepts
 - -\$5.8, IBEX

- Project start-up later than planned has reduced funding required for FY05.
- -\$0.5, Solar Terrestrial Probes (STP)
 - To realign funding within STP program for STEREO due to launch delay.

Earth System Science

-\$2.3M Offsets and other Changes:

- +\$1.8M, Development
 - -\$1.6M, AURA
 - Launch vehicle requirements less than planned.
 - Total lifecycle cost is \$812.9M, compared to \$814.5M (FY06 IBPD).
 - -\$3.8M, NPP
 - Reduces reserves that will not be required for this project in FY05. No programmatic impact.
 - +\$5.2M, Calipso
 - Launch delay from July 2005 (May Op Plan) to September 2005 due to technical issues such as the Solar Array Drive, as well as launch range conflicts with other high-priority missions (Mars Reconnaissance Orbiter and a national security mission).
 - Lifecycle cost increased \$193.5M, compared to \$188.3M (May Op Plan).
 - +\$3.1M, Cloudsat
 - Launch delay from July 2005 (May Op Plan) to September 2005 due to CALIPSO technical issues (CloudSat is launching on the same vehicle as CALIPSO).
 - Lifecycle Cost increased \$172.1M, compared to \$169.0M (May Op Plan).
 - +\$0.9M, EOSDIS
 - Accounting transfer of ReaSoN CAN Alaska SAR Facility requirements from Operations to retain all ReaSoN CAN activities in the same account.
 - -\$2.0M, Gifts
 - Reflects reassessment of required closeout costs.
- -\$0.9M, Operations
 - -\$0.9M, Alaska SAR Facility
 - Accounting transfer of ReaSoN CAN Alaska SAR Facility requirements to EOSDIS, to retain all ReaSoN CAN activities in the same account.
- +\$0.3M, Research
 - -\$2.3, Research and Analysis
 - Transferred to Suborbital Science Program to enable high priority research on in-situ and remote sensing studies of the upper troposphere and lower stratosphere.

- +\$3.8M, Suborbital Science Program
 - Aircraft research platform enhancements for the WB-57F.
 - Enables high priority research on in-situ and remote sensing studies of the upper troposphere and lower stratosphere.
- -\$1.2M, Radarsat
 - UAVSAR requirements transferred to Technology, reduction in investment in new Radarsat data analysis.
- -\$3.5M, Technology
 - +\$1.2M, Advanced Technology Initiatives
 - +\$1.2M UAVSAR requirements transferred from Research.
 - -\$4.7M, Missions In Formulation
 - -\$7.2M, LDCM
 - Refinement of current year requirements have identified additional funds available for rephasing, payback of these funds to LDCM has been identified in the outyears.
 - +\$1.0M, EO-1
 - Mission extension to FY 2006, when EO-1 may be managed as a partial gapfiller to Landsat.
 - -\$0.6M, Future ESSP Support
 - Reduces reserves that will not be required for this project in FY05. No programmatic impact.
 - -\$2.3M, Aquarius
 - Reduces reserves that will not be required for this project in FY05. No programmatic impact.
 - +\$5.0M, OCO
 - Forward funding of early FY 2006 launch vehicle to support progress payment schedule.
 - -\$0.6M, Hydros.
 - Reduces reserves that will not be required for this project in FY05. No programmatic impact.
 - Consistent with the FY 2006 budget amendment that provides funding for a standalone Glory mission, funding in this Operating Plan remains at the original level of the President's FY 2005 budget request, and enables continued development of instruments as well as a stand-alone spacecraft bus. In this regard, NASA has made a determination to definitize the contract for the VCL spacecraft bus as the bus to be used for the Glory mission after reviewing an analysis of alternatives.

Earth Science Applications

Offsets and other Changes:

- -\$1.5M, Earth Science Applications - Research
 - -\$1.5M, Fellowships and New Investigations

- Transferred to Suborbital Science Program to enable high priority research on in-situ and remote sensing studies of the upper troposphere and lower stratosphere. No impact to ongoing activities.

EXPLORATION SYSTEMS MISSION DIRECTORATE

Human and Robotic Technology

-\$0.0M, Offsets and Other Changes

- Within available unobligated Advanced Space Technology Program resources, \$5.0M is being provided to maintain and build on the capabilities developed in the course of pursuing potential robotic servicing of the Hubble Space Telescope and stimulate the development of solutions for space robotic capabilities that will be needed to support the Vision for Space Exploration. NASA intends to further build on these capabilities by conducting a competition to establish an Institute for Space Robotics (ISR) in FY 2006, managed by the Goddard Space Flight Center. NASA is considering a potential division of funding responsibility for future annual funding for ISR, to be determined, between the Exploration Systems Mission Directorate (ESMD) and the Science Mission Directorate (SMD), given the program requirements and benefits anticipated for both Mission Directorates.
- Within Exploration Systems funding identified Hubble Space Telescope (\$89.0M) in the initial Operating Plan, as part of the overall \$291.0M for HST servicing and deorbit efforts now managed by SMD, \$3.9M is being identified for modification of Building 10 at the Goddard Space Flight Center (GSFC) to establish a robotics clean room capability. Building 10 is the focal point facility for support of Agency robotic efforts, including handling of large dexterous systems. Establishment of a robotic clean room capability within Building 10 will take advantage of the robotic technology and expertise resident at GSFC, maintain momentum developed over the past 18 months in examination of robotic servicing options for the HST, and establish a strong foundation for robotic requirements for the Vision for Space Exploration, including advancement of dexterous robotics technologies and robotic applications for multiple present and future program applications. Near-term facility utilization includes evaluation of smart EVA tools for HST Shuttle servicing; simulation, test, and evaluation of a soft capture system for HST; evaluation of rendezvous and capture scenarios for Orbital Express, in cooperation with DARPA; and evaluation of next generation robotic arm design. Longer-term facility utilization is anticipated to include: a spectrum of advanced robotic applications.

Modifications of Building 10 will include installation of walls, crane, ceiling, and light controls in order to provide the proper laboratory environment for the various robotic systems under development and test in the facility, and installation of a separate air conditioning system to protect nearby facilities from contamination. These modifications of Building 10 will also provide physical security and personnel safety with respect to larger robotic systems on the lab floor space.

SPACE OPERATIONS MISSION DIRECTORATE

Space Station

Offsets and other NASA Changes: \$0.0M

- +\$8.6M, Development
 - +\$8.6M, ISS Core Development
 - Realignment of award fee, budgeted in Spacecraft Operations, earned for development activities.
- -\$8.6M, Operations
 - -\$15.0M, Spacecraft Operations
 - -\$8.6M realignment of Boeing award fee, budgeted in Spacecraft Operations, to ISS Core Development. Boeing fee is budgeted in Spacecraft Operations until it is earned.
 - -\$6.4M realignment of program funding to Launch and Mission Support to cover USA integration work on the SFOC contract.
 - No programmatic impacts.
 - +\$9.0M, Launch and Mission Support
 - Funding for integration activities accomplished through the SFOC contract. No new content.
 - -\$2.6M, Operations Program Integration
 - Realigning of program funding to Launch and Mission Support to cover USA integration work on the SFOC contract.
 - No programmatic impacts.

Space Shuttle

Offsets and other Changes: \$0.0M

- -\$19.3M, Development
 - -\$22.5M, Cockpit Avionics Upgrade (CAU)
 - Due to favorable contract termination negotiations, funds have become available for other program requirements.
 - +\$3.2M, SSME Advanced Health Management (AHM)
 - +\$3.2M, Technical issues on controller hardware and software development. Project remains within the baseline life cycle costs.
- +\$19.3M, Operations
 - +\$8.2M, Program Integration
 - +\$8.7M, Construction of Facilities (CoF) projects to support implementation of the ET Thermal Protection System (TPS) mock-up and spray center and production processing facility modifications at Michoud Assembly Facility (MAF). This is an increase to the CoF budget from \$26.8M to \$35.5M for FY 2005.

- -\$19.8M, realigning funds from Program Integration for workforce that were transferred from SLI transition in the initial Operating Plan. At the time of the initial Operating Plan (December 21, 2004), the specific projects for the redistributed workforce were TBD. This is an accounting adjustment to reallocate the funding to the budget line that is funding the workforce. No program impact.
- +\$19.3M, from CAU for the implementation of the ascent debris radar and additional analysis required for the RTF and CAIB recommendations.

- +\$1.6M, Ground Operations
 - Realigning funds from Program Integration for workforce that was transferred from SLI transition in the initial Operating Plan. At the time of the initial Operating Plan (December 21, 2005), the specific projects for the redistributed workforce was TBD. This is an accounting adjustment to reallocate the funding to the budget line that is funding the workforce. No program impact.

- +\$0.0M, Flight Operations
 - +\$0.8M Institutional CoF minor revitalization to replace obsolete fire protection systems in the Shuttle Mission Control Center.
 - -\$0.8M other accounting adjustments.

- +\$9.5M, Flight Hardware,
 - +\$18.2M Realigning funds from Program Integration for workforce that was transferred from SLI transition in the initial Operating Plan. At the time of the initial Operating Plan (December 21, 2005), the specific projects for the redistributed workforce was TBD. This is an accounting adjustment to reallocate the funding to the budget line that is funding the workforce. No program impact.
 - -\$8.7M, redirecting funds from ET to Program Integration to support the CoF construction requirements for the ET TPS mock-up and spray center and production processing facility modifications at MAF.

NASA FY 2005 Operating Plan Summary

FY 2005 Operating Plan
Enclosure 3
July 2005 Update

(\$ in millions)	FY05 Operating Plan Trace				July Op Plan Update			
	FY05 Pres. Budget Req.	FY05 Initial Op Plan	FY05 April Op Plan	FY05 May Op Plan	Increases	Offsets	Net Change	July Op Plan
Science, Aero & Explor.	7,760	7,681	7,681	7,619	98	-98	--	7,619
Space Science	4,138	4,068	4,068	4,015	77	-74	4	4,019
Solar Sys Expl	1,187	1,125	1,125	1,156	18	-28	-10	1,146
Mars Exploration	691	681	681	579	29	-19	10	589
Lunar Exploration	70	52	52	52				52
Astron Search for Orig	1,067	1,136	1,136	1,098	18	-18	--	1,098
Struct & Evol of Univ	378	377	377	377	2	-2	--	377
Sun-Earth Connection	746	696	696	753	10	-6	4	756
Earth Science	1,485	1,459	1,459	1,539	20	-24	-4	1,535
Earth System Science	1,409	1,384	1,384	1,431	20	-23	-2	1,429
Earth Science App'n	77	76	76	107		-2	-2	106
Biological & Phys Res	1,049	1,031	1,031	925	--	--	--	925
Biol Sci Research	492	482	482	374				374
Phys Sci Research	300	296	296	305				305
Res Partn & Flt Supt	257	253	253	245				245
Aeronautics	919	906	906	962	--	--	--	962
Education	169	217	217	179	--	--	--	179
								--
Exploration Capabilities	8,456	8,484	8,484	8,546	50	-50	--	8,546
Exploration Systems	1,782	1,654	1,654	1,431	--	--	--	1,431
Hum & Rob Tech	1,094	1,127	1,127	1,010				1,010
Transport Systems	689	527	527	422				422
Space Flight	6,674	6,830	6,830	7,114	50	-50	--	7,114
Int'l Space Station	1,863	1,676	1,676	1,676	18	-18	--	1,676
Space Shuttle	4,319	4,669	4,669	4,964	33	-33	--	4,964
Space & Flt Supt	492	485	485	474				474
								--
Inspector General	28	31	31	31	--	--	--	31
								--
TOTAL	16,244	16,196	16,196	16,196	148	-148	--	16,196

Goddard Space Flight Center (GSFC), Modifications to Existing Project, “Realign Soil Conservation Road”:

- Other notification: \$2.1M of FY 2003 Construction of Facilities (CoF) will be used for the acquisition of 0.25 acres and the improvement and transfer to Prince Georges County, MD of 2.5 acres to improve security and pedestrian safety at the Goddard Space Flight Center. CoF funding is part of previously approved “Realign Soil Conservation Road” project budget. Acquisition and transfer of land has been reviewed by National Capital Planning Commission and local communities as part of public review of GSFC Masterplan approval.

Other Notifications

Consistent with notification requirements under Section 605, Title VI, the FY 2005 Consolidated Appropriations Act (P.L. 108-447), the following information is provided. NASA would be pleased to brief the Committees on these organizational changes.

- A new Office of Program Analysis & Evaluation (PA&E) is being established, reporting to the Administrator, with the responsibility to independently assess program performance, make programmatic and institutional recommendations, perform cost analysis, and conduct strategic planning activities. Institutional investment functions of the Office of Institutional Planning and Investment are being realigned to NASA's PA&E Office, as are the Cost Analysis and Strategic Investments Divisions of the Office of the Chief Financial Officer.
- A new position of Associate Administrator is being established, which will function as a Chief Operating Officer and will be responsible for the day-to-day operations and management of the Agency; this position will be competed as a career Senior Executive Service position in the future, and is currently occupied by NASA's Chief Engineer in an acting capacity.
- The reporting lines of NASA Center Directors are being redirected from Mission Directorates directly to the Office of the Administrator, consistent with the establishment of the new position of Associate Administrator identified above.
- NASA's Independent Technical Authority (ITA), established in 2004 under the Chief Engineer in response to recommendations of the Columbia Accident Investigation Board, is intended to provide a robust and independent technical authority, independent of programmatic authority, in support of programs and projects, with responsibility and accountability to establish, approve, and maintain technical requirements, processes, and policy. As part of the objective to achieve a better balance between authority at NASA Headquarters and NASA Centers, implementation of the ITA is being re-delegated to the Centers by the NASA Chief Engineer to ensure that NASA Centers have accountability and focus for project technical decision-making. Center Directors will establish and obtain the Chief Engineer's approval of the process for implementing ITA at Centers.
- NASA's Integrated Financial Management Program (IFMP) is being rebaselined as the Integrated Enterprise Management Program (IEMP), to incorporate improvements and to reflect that investments being made in this Program are principally aimed at improving how NASA manages our investments and controls the operating costs of the Agency. As part of the IEMP rebaselining, NASA will focus resources and attention in the near-term on the successful implementation of the Financial Upgrade and Project Management Information Improvements projects, in advance of implementation of the eTravel and Integrated Asset Management projects. The IEMP will continue to be managed by the Office of the Administrator; budgeting and funding for all development and implementation activities of remaining IEMP projects (modules) and planned improvements of existing applications will be consolidated and managed from a single program fund source, effective October 1, 2005, as recently recommended by the Congress.

- The Institutional Management Division of the Office of Institutions and Management is being realigned to the Office of the Chief Financial Officer; G&A, Service Pool Analysis, and Institutional Service Workforce oversight functions currently being performed by the Office of Institutional Planning and Investment will be transferred to the Office of the Chief Financial Officer (OCFO). As we approach FY 2006, OCFO will be staffing up at both Headquarters and Centers to ensure that NASA is adequately staffed to improve our financial management and reporting capabilities.
- The Office of the Chief Health and Medical Officer is being realigned from the Office of the Administrator to the Office of Institutions and Management.