



**THEMES**

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**International  
Space  
Station**



**Space  
Shuttle**



**Space and  
Flight  
Support**

Astronauts Michael E. Lopez-Alegria and John B. Herrington work on the newly installed Port One (P1) truss on the International Space Station (ISS) during the STS-113 mission. The spacewalk lasted 6 hours, 10 minutes. The end effector of the Canadarm2 / Space Station Remote Manipulator System (SSRMS) and Earth's horizon are visible in bottom of frame.

# SPACE FLIGHT

**PURPOSE**

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The Space Flight Enterprise programs ensure that the Nation will have reliable, safe, and affordable access to space for NASA's human and robotic explorers and open new exploration and research opportunities through the extension of human presence in Space. The Space Flight Enterprise enables research by providing transportation systems such as the Space Shuttle, operational research facilities in space such as the International Space Station (ISS), and space communications systems and supporting space infrastructure. The Enterprise also provides the unique system--the human system--necessary to open the space frontier to the broadest extent possible.

## Enterprise: Space Flight

### FY 2003 ACCOMPLISHMENTS

The Space Flight Enterprise had some notable accomplishments in FY 2003. These were overshadowed by the tragic loss of the Space Shuttle Columbia on February 1, 2003. The independent Columbia Accident Investigation Board (CAIB) was formed following the loss of Columbia to determine the cause of the accident and to recommend measures to prevent similar mishaps in the future. In August of 2003, the CAIB provided its findings to NASA, and the Shuttle program began to respond to the CAIB's recommendations, findings, and observations. NASA's response to the CAIB report is provided in a publicly available and evolving implementation plan. The Return to Flight Task Group, co-chaired by Gen. Thomas Stafford and Richard Covey, is performing an assessment of NASA's actions to implement the CAIB recommendations.

Originally, NASA had planned five Shuttle flights for FY 2003 but two were put on hold until the Shuttle is safe to fly again. During the Shuttle stand down, Space Station operations used Russian launch vehicles for crew rotation and re-supply, and the international partners agreed to fully support all efforts to keep the Station crewed until Shuttle return to flight. On November 2, 2003, the International Space Station celebrated its third full year of continuous, permanent human habitation in space. What began as the largest, most sophisticated and powerful spacecraft ever built has grown to a capacious, efficiently organized laboratory and living complex whose internal size now resembles that of a three-bedroom house. Before the Columbia accident, Station construction continued with the successful delivery of two truss segments, part of a series of truss segments that would greatly expand Station power generating capability. In FY 2003, the number of science investigations climbed to 70 and the crew devoted an average of ten hours per week to on-orbit research. Three Space Shuttle missions delivered crew, supplies, and assembly pieces to the Station, bringing the total number of Shuttle flights to the Station to 18. The ISS Continuing Flight Team is assessing the CAIB recommendations for applicability to the ISS program.

The Enterprise continued to maintain a high level of success for NASA missions using commercial launch services. Eight of eight payloads were successfully launched, on three different launch vehicles, from two launch sites in an eight-month period.

### THEME DISTRIBUTION

Budget Authority (\$ in millions)	FY 2003	FY 2004	FY 2005
International Space Station	1,462.4	1,498.1	1,862.7
Space Shuttle	3,304.4	3,945.0	4319.2
Space and Flight Support	444.5	431.8	492.1
Institutional Support	940.5	-	-
Total	6,148.8	5874.9	6674.0

Note: For all formats, the FY 2003 column reflects the FY 2003 Congressional Operating Plan, dated 9/04/03. The FY 2004 column reflects the FY 2004 Conference committee report. The FY 2005 column represents the FY 2005 President's Budget Submit.

Indicates budget numbers in full cost

### International Space Station

This theme supports activities for establishing a research facility in Earth orbit aboard the International Space Station (ISS). The ISS provides a long-duration habitable laboratory for science and research activities primarily to support future human and robotic exploration of the solar system.

The ISS can also support unique, long-duration, space-based research in cell and developmental biology, plant biology, fluid physics, combustion science, materials science, and fundamental physics. It can also provide a unique platform for observing Earth's surface and atmosphere, the Sun, and other astronomical objects.

All U.S. Core assembly flight elements and the first International Partner Laboratory have been delivered to the launch site. Upon completion of final ground integration, all assembly launch packages will be placed in protected stowage awaiting the Shuttle's return to flight.

## Enterprise: Space Flight

### OVERALL BUDGET

The FY 2005 request is \$ 1,863 million, a \$276 million (or 17 percent) increase over the FY 2004 President's Request. Major features of this budget include:

- Funding is maintained throughout FY 2005 for continuous on-orbit operations and completion of U.S. Core assembly after Shuttle return to flight and for funding Node 3 and the Environmental Closed Life Support System;
- Funding reflects Administration approval to proceed beyond the U.S. and International Partner Core configuration to accommodate research requirements following the program's successful completion of program management and cost control reforms;
- New funding for the acquisition of cargo and crew services to support the ISS.

### Space Shuttle

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The Shuttle, first launched in 1981, provides the only capability in the United States for human access to space. The Shuttle is also a versatile cargo launch vehicle and serves as a platform to support construction activities in space. The Shuttle's primary role is to complete the assembly of the International Space Station. The Shuttle's phase out is planned for the end of the decade, following the completion of its role in the ISS assembly.

### OVERALL BUDGET

The FY 2005 request is \$4,319 million, a \$299 million (or 7 percent) increase over the FY 2004 President's Request. This budget will enable:

- Safe return to flight;
- Continuance of Space Station assembly missions; and
- Preparation for the planned phase out of the Space Shuttle at the end of the decade, following completion of its role in the ISS assembly.

### Space and Flight Support

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This theme encompasses space communications, launch services, rocket propulsion testing, and environmental clean-up. Space communications consists of (1) the Tracking and Data Relay Satellite System (TDRSS), which supports the Space Shuttle, ISS, expendable launch vehicles, and research aircraft, and (2) the NASA Integrated Services Network, which provides telecommunications services at facilities, such as flight support networks, mission control centers and science facilities, and administrative communications networks for NASA Centers. The Launch Services program focuses on meeting the Agency's launch and payload processing requirements by assuring safe and cost-effective access to space via the Space Shuttle and expendable launch vehicles. Rocket propulsion testing supports a core of highly trained test and engineering crews and test facilities. The two initiatives (Plum Brook Reactor Facility and Environmental Compliance and Restoration) address environmental legacy liabilities of decades of space explorations and demonstrate NASA's commitment to providing a safe and clean natural environment for future generations.

### OVERALL BUDGET

The FY 2005 request is \$492 million, a \$73 million (or 17 percent) increase over the FY 2004 President's Request. The budget supports:

- Communications support of human and science missions;
- Launch services and support;
- Rocket propulsion testing;
- Environmental compliance and the cleanup of the Plum Brook Reactor Facility; and
- The formulation phase of TDRS Continuation project.