THEME: International Space Station

The International Space Station (ISS) is a complex of research laboratories in low Earth orbit for conducting unique scientific and technological investigations in a micro-gravity environment. The Station provides space flight capabilities that help NASA to achieve each of its three missions.

INTERNATIONAL SPACE STATION

MAJOR EVENTS IN FY 2004

- Achieve U.S. core complete by spring 2004.
- 12 U.S. racks available for research.
- Expect awards for new contract opportunities for Space Station support.

THEME: International Space Station (ISS)

OVERVIEW

The ISS is a complex of research laboratories in low Earth orbit (LEO) in which American, Russian, Canadian, European, and Japanese astronauts are conducting unique scientific and technological investigations in a micro-gravity environment. The objectives of the Station are to support scientific research and other activities requiring the unique attributes of humans in space, and establish a permanent human presence in Earth orbit. Program estimates have been determined to be credible by independent assessment teams, however, concerns were raised in regard to the sufficiency of funding levels to cover risks to program performance. To this end, the FY 2004 Budget request maintains the budget reserve plan from the FY 2003 budget amendment and provides funding for continued development of the vehicle and for operations in support of continued assembly, logistics re-supply, crew exchange, research operations and other utilization. With fourteen U.S. assembly and logistic missions successfully completed, the budget includes funding to keep subsequent assembly missions on schedule through U.S. Core Complete (Flight 10A), currently planned for February 2004, to continue to expand research opportunities commensurate with the build-up of on-orbit utilization capabilities and resources.

Missions and Goals supported by this theme		Objectives supporting those goals Reference 2003 Strategic Plan
Understand and Protect our Home Planet	1. Understand the Earth system and apply Earth system science to improve prediction of climate, weather and natural hazards.	1.1 Understand how the Earth is changing, better predict change, and understand the consequences for life on Earth. (supporting)
	3. Create a more secure world and improve the quality of life by investing in technologies and collaborating with other agencies, industry and academia.	3.2 Enhance the Nation's security through aeronautical partnerships with DOD and other government agencies. (supporting)
		3.5 Resolve scientific issues impacting Earth-based technological and industrial applications using the unique low-gravity environment of space. (supporting)
Explore the Universe and Search for Life	4. Explore the fundamental principles of physics, chemistry, and biology through research in the natural laboratory of space.	4.2 Understand the fundamental organizing principles of nature and how they give rise to structure and complexity in matter, using the unique low-gravity environment in space. (supporting)
Inspire the Next Generation of Explorers	6. Inspire and motivate students to pursue careers in science, technology, engineering, and mathematics.	6.1, 6.2, 6.3, 6.4 (Supporting Role) - See Education Programs Theme.
	7. Engage the public in shaping and sharing the experience of exploration and discovery.	7.2 Improve science literacy by engaging the public in NASA missions and discoveries, and their benefits, through such avenues as public programs, community outreach, mass media, and the internet. (supporting)
Space Flight Capabilities	8.Ensure the Provision of Space Access for the nation, and improve it by increasing safety, reliability, and affordability.	8.4 Assure capabilities for world class research on a laboratory in low Earth orbit.
	9. Extend the duration and boundaries of human space flight to create new opportunities for exploration and discovery.	9.4 Demonstrate the ability to support a permanent human presence in low Earth orbit as a stepping stone to human presence beyond.

THEME: International Space Station (ISS)

RELEVANCE

The ISS will vastly expand the human experience in living and working in space, encourage and enable development of space, and provide a capability to perform unique, long duration, space-based research in cell and developmental biology, plant biology, human physiology, fluid physics, combustion science, materials science and fundamental physics. ISS will also provide a unique platform for making observations of the Earth's surface and atmosphere, the sun, and other astronomical objects. The experience and dramatic results obtained from the use of the ISS will guide the future direction of the Space Flight Enterprise. The International Space Station is critical to NASA's ability to fulfill its mission to explore, use, and enable the development of space for human enterprise.

The ISS represents an unprecedented level of international cooperation. Space Station Partnership agencies include NASA, the Russian Aviation and Space Agency (Rosaviakosmos), the Canadian Space Agency (CSA), the European Space Agency (ESA), and the National Space Development Agency of Japan (NASDA). Additionally, there are several bilateral agreements between NASA and other nations such as Italy and Brazil, resulting in a total of sixteen participating nations. International participation in the program has significantly enhanced the capabilities of the ISS.

Education and Public Benefits
The ISS is the world's only space station and is central to the NASA vision and mission. The ISS will be used as a unique teaching tool, opening a new frontier for human learning and experience, and allows the Agency and its partners to pursue a series of related goals. It allows basic and applied research in biological and physical sciences that cannot be conducted on Earth, research to enable human and robotic exploration and development of space, and applied research and development, which could not be effectively pursued on the ground. The ISS is the only facility that provides prolonged human research interaction in zero- gravity and routine sample return.

THEME International Space Station (ISS)

IMPLEMENTATION

This theme is composed of two Development and three Operational areas. Individual information templates are included for each. Enterprise Official is William Readdy, AA for Space Flight. Theme Director is Michael Kostelnik.

Go to Project Homepage for more information: http://spaceflight.nasa.gov/station/index.html

Strategy	Schedule	Purpose
9A - S1 TRUSS	Oct '02	Truss Assembly
11A - P1 TRUSS	Nov '02	Truss Assembly
ULF-1, MPLM: CMG	Mar '03	Research and Re-supply; Maintenance
12A - P3/P4 TRUSS Segments	May '03	Truss Assembly
12A.1	Jul '03	Logistical Support
13A S3/S4 TRUSS Segments	Oct '03	Truss Assembly
13A.1	Nov '03	Logistical Support
15A S6 TRUSS Segment	Jan '04	Truss Assembly
10A Node 2	Feb '04	Module Delivery - **US CORE COMPLETE**
ULF-2 Logistics Carriers	Jul '04	Research and Re-supply; Maintenance
Subsequent Major Assembly Missions	Under Review	
1E Columbus Module	FY05	Partner Module Delivery & Activation
1J/A JEM Experiment Logistics Module	FY06	Partner Element Delivery & Activation
1J JEM Pressurized Module	FY06	Partner Module Delivery & Activation
9A.1 MTsM, Science Power Platform	FY07	Partner Element Delivery & Activation
UF-7 CAM	FY07	Utilization and Module Delivery
2J/A JEM Exposed Facility	FY07	Partner Element Delivery & Activation
14A Cupola, Express Pallet	FY08	Element & Equipment Delivery
Utilization Rack Build-up		
5 US Racks	2001	
2 US Racks	2002	
3 US Racks	2003	
2 US Racks	2004	
4 US Racks - 5 ESA	2005	
2 US RACKS - 3 NASDA	2006	
1 US Rack	2007	
2 US Racks	2008	

Tailoring: Full compliance with NPG 7120.5B will be achieved in FY 2003.

STATUS

By end of FY2002, a total of 29 U.S. and Russian flights, as well as five crew increments were accomplished. The current Expedition 5 crew will have operated the station for 107 days.

ISS achievements during FY2002 included the addition of the S0 truss segment, and the Mobile Transporter (MT) for the Canadian Space Station Remote Manipulator System (SSRMS), on Flight 8A (STS-110) in April 2002. The first U.S. utilization mission during FY2002, UF-1, was launched on the Space Shuttle (STS-108) on December 5, 2001. This flight replaced the Expedition 3 crew with Expedition 4 and carried one of the three Italian-built Multi Purpose Logistic Modules (MPLMs). The second utilization flight (UF-2/STS-111) added the Mobile Base System (MBS) to the SSRMS/MT and also served as a crew exchange flight replacing Expedition 4 with the Expedition 5 crew. The first Shuttle mission at the beginning of FY2003 in early October, STS-112/9A, delivered the second major truss segment, S1, as well as ancillary equipment for the S1 and SSRMS. By the end of FY2003, ISS mass will have grown to 188,700 kg (416,000 lb.), and a total of about 73 spacewalks (EVAs), with 450 hrs accumulated time, will have been conducted by U.S. and Russian crewmembers in support of ISS assembly.

During FY2002, two Russian Soyuz spacecraft (Soyuz 3 and 4) were launched from Baikonur. These “taxi” flight carried Claudie Haigneré and Mark Shuttleworth as paying Russian customers . The Russians also launched four Progress logistics flights, taking consumables, spare parts and propellants to the station.

THEME: International Space Station (ISS)

PERFORMANCE MEASURES

Annual Performance Goals	
Outcome: 1.1.3	**Provision of Space Station accommodations to support Earth Science Research**
4 ISS1	Provide at least 80% of the upmass, middecks, and crewtime for Earth Science payloads as established at the beginning of FY 2004.
Outcome: 3.2.1	**Gain experience in multi-national space construction & operations to support future cooperative programs**
4 ISS2	The ISS will meet its commitments with the International Partners to provide Node-2 in FY 2004.
Outcome: 3.5.2	**Provision of ISS accommodations to support NASA, other U.S. Government Agencies, Industry and Academic research**
4 ISS3	Provide at least 80% of the upmass, middecks, and crewtime for technology development payloads as established at the start of FY 2004.
Outcome: 4.2.3	**Provision of Space Station accommodations to support Physics, Chemistry and Biological Research**
4 ISS4	Provide at least 80% of the upmass, middecks, and crewtime for Biological and Physical Science's payloads as established at the beginning of FY 2004.
Outcome: 6.1.1	**Kindergarten through graduate students will be more proficient in STEM**
4 ISS5	Ensure the development and distribution of OSF content for curricular use in NASA Explorer Schools and in the Education Mission Specialist Program.
Outcome: 6.2.1	**More students from diverse communities motivated to pursue careers in science, technology, engineering, and mathematics (STEM)**
4 ISS6	Increase by 10%, students participating in OSF research and development opportunities that enhance their academic experience, strengthens their professional skills, and supports their successful transition into scientific and technical workforce.
Outcome: 6.3.1	**Improve quality of STEM instruction**
4 ISS7	Reach and expose, through both formal and informal educations venues, 800 in-service and pre-service teachers, university teacher education faculty and students to mathematics and science careers and to OSF's unique educational resources.
4 ISS8	During the Academic year 2003-2004, increase by 2 the number of pre-college programs for student participation in OSF center sponsored education enrichment activities that promote their interest in and knowledge of mathematics, science, engineering and technology career fields.
Outcome: 6.4.1	**More students prepared to enter the STEM workforce**
4 ISS9	During the Academic year 2003-2004, increase by 4% the number of undergraduate and graduate students and faculty researchers exposed and gaining hands-on experience in OSF's state-of-the-art research instrumentation and methodologies.
4 ISS10	Host 2 forums to strengthen OSF partnership with the minority university community to more fully engage faculty and students from this community in OSF's mission.
Outcome: 7.2.3	**Use OSF unique facilities, education resources, formal and informal venues (conferences, workshops, science centers, museums) and print, web and TV media, to reach and engage an increasing number or percent of the public in exploration and space development activities.**
4 ISS11	Increase by 10% venues (education, and commercial) that provides "hands-on" opportunities for the public to experience and become more knowledgeable of benefits and contributions, particularly the International Space Station.
4 ISS 12	Increase the number of visits to the Space Flight Website.
Outcome: 8.4.1	**Provision of a well managed program that is safe, reliable, and affordable**
4 ISS 13	Achieve reduced costs and improved accountability through the reduction in the number of direct ISS Program Office contracts.
4 ISS14	Assure zero Type A or Type B on-orbit mishaps in FY04 as defined in the OSF Contingency Action Plan.
4 ISS15	Achieve 90% success and accomplishment for planned on-orbit ISS assembly and logistical activities on the Space Shuttle missions scheduled for FY 2004.
Outcome: 9.4.1	**Operation of the ISS as an on-going research facility to further human experience and develop technology for self sustaining systems**
4 ISS16	Maintain to within 90% , the predicted maintenance and logistics hardware replacement schedule.
4 ISS17	Provide 100% of the logistics required to sustain the permanent crew living aboard the ISS.
Outcome:	**Conduct a well managed program in accordance with Agency implementing strategies.**
4 ISS18	ISS development activities will complete their development phases with no more than 10% life-cycle cost growth.
4 ISS19	The ISS Program will complete all of its missions within 10% of its baseline schedules.

INDEPENDENT REVIEWS

Types of Review	Performer	Last Review	Next Review	Purpose
Mgmt Cost and Eval (IMCE)	IMCE Tsk Force	Nov 2002	Not Planned	Overall review of the Mgmt & cost of the ISS Program
Ind. Life Cycle Cost Estimate	NASA ICE Team	Aug. 2002	Not Planned	Life Cycle cost estimate confirmation
Life Cycle Cost Estimate	CAIG	Aug. 2002	Not Planned	Life Cycle cost estimate confirmation

THEME: International Space Station (ISS)

BUDGET

Budget Authority ($millions)	Prior	FY02	FY03	Chng	FY04	FY05	FY06	FY07	FY08	BTC	Total	Comments
International Space Station	**16835.9**	**1720.8**	**1492.1**	**+215.0**	**1707.1**	**1587.4**	**1585.9**	**1605.6**	**1603.0**	**cont**	**28,137.8**	**ISS BLI**
Development	12525.1	437.1	310.2	-156.7	153.5	78.1	54.0	67.2	41.1		13,666.4	
ISS Core Development	11959.8	355.6	278.4	-170.8	107.6	51.0	33.6	57.3	41.1		12,884.5	
ISS Capability Upgrades	565.4	81.5	31.8	+14.0	45.8	27.1	20.4	9.9	0.0		781.8	
(ECLSS/Node3 thru FY04, reserve coverage FY05-08; prior CRV & Russ. Prog.)												
Operations	2679.5	1283.7	1181.9	+371.7	1553.6	1509.3	1531.9	1538.4	1561.8	cont	12,840.1	
Spacecraft Operations			710.4	+126.2	836.6	797.9	796.7	795.6	804.6		4,741.8	New structure
Launch & Mission Operations			202.8	+289.7	492.5	508.5	530.3	535.6	549.7		2,819.4	New structure
Operations Program Integration			268.7	-44.2	224.5	202.8	204.9	207.2	207.5		1,315.7	New structure
Other Operations	2679.5	1283.7		+0.0							3,963.2	Old structure
Research	1631.3			+0.0							1,631.3	ISS BLI funded
Other ISS-Related Activities*	**1083**	**373**	**347**	**+231**	**578**	**609**	**581**	**586**	**582**	**cont**	**4,740**	**Other BLI's**
Other HSF Core Dev.	59			+0							59	FY94 Shuttle
Other HSF Cap. Upgrades	310			+0							310	FY97-98 RPA
Other HSF Research	150			+0							150	FY94-96 HSF
Other SAT Research	564	373	347	+231	578	609	581	586	582		4,221	FY94-BTC SAT
TOTAL PROGRAM EST.	**17919**	**2094**	**1839**	**+446**	**2286**	**2197**	**2167**	**2191**	**2185**		**32,878**	

*Other ISS-Related Activities have traditionally been included as related program activities and cost, but are funded and managed in other enterprises.

Indicates budget numbers in Full Cost.
Indicates changes since the FY 2003 Presidents Budget Submit.
FY 2002, FY 2003, Prior and BTC are not in full cost.

Note: For all formats, the FY 02 column reflects the FY 2002 Congressional Operating Plan dated 9/30/02. The FY 03 column reflects the FY 2003 Presidents Budget Submit (PBS) as Amended. The Change column includes both programmatic and full cost adjustments. FY 2004 column is in full cost.
FY03 and prior years reformulated in FY04 program budget structure, prior to full cost.

COMPLIANCE WITH COST LIMITATIONS

NASA's evaluation of this budget is that the Space Station is within the $25 billion cost limitation imposed in the NASA Authorization Act of 2000 (P.L. 106-391), and that the Space Shuttle flights supporting the ISS are within the $17.7 billion cost limitation imposed by that Act. This is based on the assumption that the point at which substantial completion will be reached will occur in FY 2004 when the U.S. Core capability is reached, after which development spending will fall below 5% of the total annual budget.

Of the $20 billion appropriated for space station and related activities from FY 1994 through FY 2002, approximately $19.8 billion has been obligated as of September 30, 2002. Remaining FY 2002 funds will be obligated in the course of FY 2003 performance.

A separate report required by the Act will be prepared and submitted.

THEME: International Space Station

DEVELOPMENT: ISS Core Development

PURPOSE

Objectives		Reference 2003 Strategic Plan	Performance Measures
8.4	Assure capabilities for world class research on a laboratory in low Earth orbit.		4 ISS 15, 16 ,17

Vehicle development of the International Space Station (ISS) provides an on-orbit, habitable laboratory for science and research activities, including flight and test hardware and software, flight demonstrations for risk mitigation, facility construction, Shuttle hardware and integration for assembly and operation of the station, mission planning, and integration of Space Station systems.

OVERVIEW

Space Station elements are provided by U.S. and international partners Russia, Europe, Japan, and Canada. The U.S. elements include nodes, laboratory module, airlock, truss segments, photovoltaic arrays, three pressurized mating adapters, unpressurized logistics carriers, and a cupola. Various systems have been developed by the U.S., including thermal control, life support, navigation, command and data handling, power systems, and internal audio/video. Other U.S. elements being provided through bilateral agreements include the pressurized logistics modules provided by the Italian Space Agency, Node 2 provided by ESA, and the centrifuge accommodation module (CAM)/centrifuge provided by the Japanese. During FY 2003 the remaining major truss elements constituting the power block will be deployed to orbit, Expeditions 6 and 7 crews will be launched, and another utilization flight will expand science capabilities. In 2003, activation of the thermal system will be completed and two of the three remaining solar array modules will be deployed. Both the S6 truss and Node 2, the final components of the U.S. Core, will be delivered in FY 2003 to NASA for final integration and pre-flight test and checkout to support planned launches in 2004.

PROGRAM MANAGEMENT

The program management and reporting flows from the program manager, Bill Gerstenmaier, located at the Johnson Space Center, to the Deputy Associate Administrator for ISS and SSP. The DAA for ISS & SSP reports directly to the Assoc. Admin. Office of Space Flight who reports directly to the NASA Administrator. The agency Program Management Council (PMC) has ISS governing responsibility.
Full compliance with NPG 7120.5B will be achieved in FY 2003.

TECHNICAL COMMITMENT

Baseline defined by May 2002 Cost Analysis Requirements Document (CARD).

Technical Specifications	FY04 President's Budget	Change from Baseline
Crew Size	3 International Crew Members	--
Power	80 Kilowatts	--
Accommodations	27 US User Racks	--
External Payload Sites	24 External Payload sites on Truss	--
	10 Sites on JEM Exposed Facility	--
Optical Viewing	Nadir viewing optical research window	--
Ku Band Downlink	1.5 - 2.46 Terabits per day average	--
Operational Life	10 Years after deployment of the core and IP elements	--

Schedule	FY04 President's Budget		Change from Baseline
9A - S1 TRUSS	Oct '02	*Launched*	2 months
11A - P1 TRUSS	Nov '02	*Launched*	2 months
ULF-1, MPLM: CMG	Mar '03		2 months
12A - P3/P4 TRUSS Segments	May '03		2 months
12A.1	Jul '03		2 months
13A S3/S4 TRUSS Segments	Oct '03		2 months
13A.1	Nov '03		2 months
15A S6 TRUSS Segment	Jan '04		--
10A Node 2	Feb '04		--

THEME: International Space Station

DEVELOPMENT: ISS Core Development

ACQUISITION STRATEGY & PERFORMING ORGANIZATIONS

The Prime Contractor for design, development, test and evaluation of major elements of U.S. Flight Hardware and Engineering Support for the integration of the Space Station is Boeing Aerospace. The Prime contract covers 10 years of development and operations (through Dec '03). In FY2002, direct procurements from Boeing represented about 51% of budget authority in development and operations. **Changes since FY03 Pres. Budget: None**

Current Acquisitions	Actual *	Selection Method	Actual *	Performer	Actual *
Cooperative Agreements	0%	Full & Open Competition	32%	Industry	90%
Cost Reimbursable	84%	Sole Source	68%	Government	9%
Fixed Price	9%		100%	NASA Intramural	8%
Grants	0%			University	1%
Other	7%	Sci Peer Review	0%	Non Profit	0%
* as % of FY02 direct procurement	100%	* as % of FY02 direct procurement		* as % of FY02 direct procurement	100%

Future Acquisitions - Major		Selection	Goals
1. Contract restructuring		Sept '03	TBD Full& Open Comp; TBD Cost Reimbursable;

AGREEMENTS

External:

1. Intergovernmental Agreement (IGA) Active (1/29/98)
2. NASA/RSA Memorandum of Understanding (MOU) Active (1/29/98)
3. NASA/European Space Agency (ESA) MOU Active (1/29/98)
4. NASA/Government of Japan (GOJ) MOU Active (2/24/98)
5. NASA/Canadian Space Agency (CSA) MOU Active (1/29/98)
6. NASA/ESA Early Utilization Agreement Active (3/18/97)
7. NASA/Italian Space Agency (ASI) MOU on the Design, Development, Operation, and Utilization of Three Mini-Pressurized Logistics Modules for the ISS Active (10/9/97)
8. NASA-GOJ Agreement in Principle for CAM and Related Hardware Active (9/10/97)
9. NASA-Brazilian Space Agency Implementing Arrangement for ISS Cooperation Active (10/14/97)

INDEPENDENT REVIEWS

Types of Review	**Performer**	Last Review	Next Review	**Purpose**
Mgmt & Cost Evaluation	IMCE Tsk Force	Nov 2002	Not Planned	Overall review of the mgmt and cost of the ISS Program
Ind. Life Cycle Cost Estimate	NASA ICE Team	Aug. 2002	Not Planned	Life cycle cost estimate confirmation
Life Cycle Cost Estimate	CAIG	Aug. 2002	Not Planned	Life cycle cost estimate confirmation

BUDGET/LIFE CYCLE COST

Total budget authority represents the Life Cycle Cost (LCC) for ISS Core Development only.

Budget Authority ($ in millions)	**Prior**	**FY02**	**FY03**	**FY04**	**FY05**	**FY06**	**FY07**	**FY08**	**BTC**	**Total**	Comments
FY 2004 President's Budget (LCC)	11959.8	355.6	278.4	107.6	51.0	33.6	57.3	41.1		12884.5	
Flight Hardware	9779.9	277.2	237.1	84.2	51.0	33.6	57.3	41.1		10561.5	Full cost elements
Test, Manufac & Assembly Supt	470.6	50.4	23.3							544.3	
Ops Capability Development	880.9	28.0	17.9	23.5						950.4	
Other (Trans Supt, Prog Spt, FTD)	828.4									828.4	
Changes since FY 03 Pres. Budget	-	-	-4.7	-23.5	-10.9	+3.0	+38.0	-		+2.0	***Reason for Change:***
Flight Hardware programmatic	-	-	+18.9	-39.2	-18.7	-2.2	+25.7			-15.5	Re-allocations, Ops transition
Test, Manufac & Assembly Supt	-	-	-19.0	-	-	-	-			-19.0	Ops transition
Ops Capability Development	-	-	-4.7	-6.7	-3.7	-2.7	-1.6			-19.3	Ops transition
Other (Trans Supt, Prog Spt, FTD)	-	-	-	-	-	-	-			-	
Flight Hardware full cost			-	+10.6	+5.6	+3.9	+6.7			+26.8	C.S. & Travel allocation added
Flight Hardware full cost	-	-	-	+11.8	+6.0	+4.0	+7.2			+29.0	Center & corporate G&A
FY 2003 President's Budget (LCC)	11959.8	355.6	283.1	131.1	61.9	30.6	19.3			12841.4	FY03 Bgt Amend., no full cost
Flight Hardware	9779.9	277.2	218.2	105.8	58.2	27.9	17.7			10484.9	Prior-FY04 ECLSS/Node-3 excl.
Test, Manufac & Assembly Supt	470.6	50.4	42.3							563.3	
Ops Capability Development	880.9	28.0	22.6	25.3	3.7	2.7	1.6			964.8	
Other (Trans Supt, Prog Spt, FTD)	828.4									828.4	
Initial Baseline (Jan-94)	9010.0	79.0	0.0	0.0	0.0	0.0	0.0			9089.0	FY 1995 budget estimates
Flight Hardware	7060.9	79.0								7139.9	
Test, Manufac & Assembly Supt	513.6									513.6	
Ops Capability Development	882.0									882.0	
Other (Trans Supt, Prog Spt, FTD)	553.5									553.5	

Indicates budget numbers in Full Cost.
Indicates changes since the FY 2003 Presidents Budget Submit.
FY 2002, FY 2003, Prior and BTC are not in full cost.

THEME: International Space Station

DEVELOPMENT: ISS Capability Upgrades

PURPOSE

Objectives		Reference 2003 Strategic Plan	Performance Measures
8.4	Assure capabilities for world class research on a laboratory in low Earth orbit.		4 ISS 15, 16 ,17

The purpose of this budget line is to provide capability to enable potential enhancements that would allow for research driven requirements of additional crew time past U.S. core complete currently projected to be second quarter FY 04. Development of the U.S. designed Environmental Control and Life Support System (ECLSS) and Node 3 through FY 2004 are the only capability upgrades currently in the submit.

OVERVIEW

ECLSS and Node 3, managed by the MSFC reporting to the ISS Program, and Node 3 built by Alenia, are critical pacing items requiring funding to enable option paths to expand the ISS crew to greater than 3 after U.S. core complete. They also provide critical life support dissimilar redundancy to the Russian life support system, Elektron Oxygen Generator. FY03 budget amendment funds through FY 2004; subsequent continuation to be decided during the FY 2005 budget formulation.

CRV/X-38: The JSC managed Project is being terminated with termination completion scheduled for 2003; the FY2004 budget submit contains no X-38 funding.

RPA: MSFC managed project for a U.S propulsion module was terminated in 2001.

PROGRAM MANAGEMENT

The program management and reporting flows from the program manager, Bill Gerstenmaier, located at the Johnson Space Center, to the Deputy Associate Administrator for ISS and SSP. The DAA for ISS & SSP reports directly to the Assoc. Admin. Office of Space Flight who reports directly to the NASA Administrator. The agency Program Management Council (PMC) has ISS governing responsibility.

Full compliance with NPG 7120.5B will be achieved in FY 2003.

TECHNICAL COMMITMENT

Baseline defined by May 2002 Cost Analysis Requirements Document (CARD).

Technical Specifications		FY04 President's Budget	Change from Baseline
Node-3			Baseline: 2002 CARD
Atmosphere	14.7 psia		
Length	249 inches	(20.75 ft)	*No Changes*
Diameter	175 Inches	(14.6 ft)	*to*
Volume	3470 cu ft.		*Baseline*
Ports	6 (5 ACBM, 1 PCBM)		
Advanced ECLSS			Baseline: 2002 CARD
Dissimilar design:	ECLSS redundancy (from Russian System)		*No Changes*
	O2 Generation System-Up to 41K lbs of recycled Water		*to*
	Water Recovery System - up to 7,500 lbs of O2		*Baseline*
Support Increased:	Crew size to 7		

Schedule			FY04 President's Budget		Change from Baseline
Node-3					
Design Review #2			September	2002	
Delivery (to KSC)			January	2004	*No*
Launch			April	2006	*Changes*
Advanced ECLSS					*to*
Water Processing Assembly		Integrated Testing	April	2003	*Baseline*
Urine Processing Assembly		Build	February	2003	
Oxygen Generator Assembly		Integration & Test	September	2004	
Water Recovery System		Integration & Test	March	2004	

THEME: International Space Station

DEVELOPMENT: ISS Capability Upgrades

ACQUISITION STRATEGY & PERFORMING ORGANIZATIONS

Data current as of 9/9/2002

The Prime Contractor for design, development, test and evaluation of major elements of U.S. Flight Hardware and Engineering Support for the integration of the Space Station is Boeing Aerospace. The Prime contract covers 10 years of development and operations (through Dec '03). In FY2002, direct procurements from Boeing represented about 51% of budget authority in development and operations. **Changes since FY03 Pres. Budget: None**

Current Acquisitions	Actual *	Selection Method	Actual *	Performer	Actual *
Cooperative Agreements	0%	Full & Open Competition	32%	Industry	90%
Cost Reimbursable	84%	Sole Source	68%	Government	9%
Fixed Price	9%		100%	NASA Intramural	8%
Grants	0%			University	1%
Other	7%	Sci Peer Review	0%	Non Profit	0%
* as % of FY02 direct procurement	100%				100%

Future Acquisitions - Major		Selection	Goals
1. Contract restructuring		Sept '03	TBD Full& Open Comp; TBD Cost Reimbursable;

AGREEMENTS

External:

1. Intergovernmental Agreement (IGA) Active (1/29/98)
2. NASA/RSA Memorandum of Understanding (MOU) Active (1/29/98)
3. NASA/European Space Agency (ESA) MOU Active (1/29/98)
4. NASA/Government of Japan (GOJ) MOU Active (2/24/98)
5. NASA/Canadian Space Agency (CSA) MOU Active (1/29/98)
6. NASA/ESA Early Utilization Agreement Active (3/18/97)
7. NASA/Italian Space Agency (ASI) MOU on the Design, Development, Operation, and Utilization of Three Mini-Pressurized Logistics Modules for the ISS Active (10/9/97)
8. NASA-GOJ Agreement in Principle for CAM and Related Hardware Active (9/10/97)
9. NASA-Brazilian Space Agency Implementing Arrangement for ISS Cooperation Active (10/14/97)

INDEPENDENT REVIEWS

Types of Review	Performer	Last Review	Next Review	Purpose
Mgmt & Cost Evaluation	IMCE Tsk Force	Nov 2002	Not Planned	Overall review of the mgmt and cost of the ISS Program
ECLSS/Node3 Ind Assessmer	JSC SMO	Sep. 2002	Not Planned	Assessment of requirements, cost & schedule estimates
Ind. Life Cycle Cost Estimate	NASA ICE Tean	Aug. 2002	Not Planned	Life cycle cost estimate confirmation
Life Cycle Cost Estimate	CAIG	Aug. 2002	Not Planned	Life cycle cost estimate confirmation

BUDGET/LIFE CYCLE COST

Total budget authority represents the Life Cycle Cost (LCC) for ISS Capability Upgrades only.

Budget Authority ($ in millions)	Prior	FY02	FY03	FY04	FY05	FY06	FY07	FY08	BTC	Total	Comments
FY 2004 President's Budget (LCC)	565.4	81.5	31.8	45.8	27.1	20.4	9.9	0.0		781.8	
ECLSS w/ full cost	144.2	39.2	22.0	19.4	5.7	3.9	0.9			235.3	Full cost
Node 3 w/ full cost	6.0	2.3	9.8	26.4	21.4	16.4	9.0			91.3	Full cost
CRV	144.8	40.0								184.8	
RPA	270.4									270.4	
Ops Est. ECLSS/N-3 (Ops elements)	5.5	5.0	10.4	16.6	24.2	32.4	11.0			105.1	(Procurement only; non-add)
Changes since FY 03 Pres. Budget	-	-	-	+16.8	+27.1	+20.4	+9.9	-		+74.2	***Reason for Change:***
ECLSS Programmatic	-	-	-	-	+1.0	+0.0	+0.0			+1.0	Reserve coverage FY05
Node 3 Programmatic	-	-	-	-	+14.4	+10.5	+7.7			+32.6	Reserve coverage FY05-08
CRV & RPA	-	-	-	-	-	-	-			-	
ECLSS/Node 3 full cost			-	+7.6	+6.1	+5.5	+1.2			+20.4	C.S. & Travel allocation
ECLSS/Node 3 full cost	-	-	-	+9.3	+5.5	+4.4	+1.0			+20.2	G&A & Serv Pools allocation
FY 2003 President's Budget (LCC)	565.4	81.5	31.8	29.0	0.0	0.0	0.0			707.7	FY03 Bgt Amend., no full cost
ECLSS	144.2	39.2	22.0	12.3						217.7	Bgt Amend funded through FY04
Node 3	6.0	2.3	9.8	16.7						34.8	Bgt Amend funded through FY04
CRV	144.8	40.0								184.8	Project to be terminated in 2003
RPA	270.4									270.4	Project terminated in 2001
Ops Est. ECLSS/N-3 (Ops elements)	5.5	5.0	10.4	16.6						37.5	Bgt Amend funded through FY04
Initial Baseline	1136.5	355.8	202.3	195.0	15.4	10.5	7.7			1923.2	
ECLSS (Nov-02)	144.2	39.2	22.5	12.3	1.0					219.2	2002 PMR est., development only
Node 3 (Nov-02)	6.0	2.3	9.8	16.7	14.4	10.5	7.7			67.4	2002 PMR est., development only
CRV (Jan-98)	288.0	173.0	165.0	166.0						792.0	FY 1999 budget estimates
RPA (Jan-99)	698.3	141.3	5.0							844.6	FY00 bgt est (+$310M HSF RPA)
Ops Est. ECLSS/N-3 (Ops elements)	5.5	5.0	9.9	16.6	24.2	32.4	11.0			104.6	2002 PMR est., operations only

Indicates budget numbers in Full Cost.
Indicates changes since the FY 2003 Presidents Budget Submit.
FY 2002, FY 2003, Prior and BTC are not in full cost.

THEME: International Space Station

OPERATIONS: Spacecraft Operations

PURPOSE

Objectives		Reference 2003 Strategic Plan	Performance Measures
8.4	Assure capabilities for world class research on a laboratory in low Earth orbit.		4 ISS18 , 4 ISS19

The primary objective of the operations program is to safely and reliably assemble, activate, integrate, and operate the ISS, and to perform these activities in an affordable manner. This requires a significant level of planning, coordination, and execution. Most of the hardware engineering, manufacturing, and testing – leading to the final acceptance and launch of the ISS elements – have successfully been completed, and the vehicle has been operating successfully since the first element was launched in 1998. Spacecraft Operations provides the engineering expertise and analysis to sustain the performance and reliability of Space Station hardware and software systems, spares provisioning, and maintenance and repair as detailed on the budget table.

OVERVIEW

The first crew was launched to the ISS in October 2000 and a progression of international crews has, and will continue to permanently inhabit the ISS. The ISS assembly period spans more than half a decade, with infrastructure and logistics deployed over multiple flights. Because of the program's complexity, the Space Station team has done extensive planning for operations of several different ISS vehicle configurations on-orbit. The Space Station program is drawing on the experience derived from Skylab, the Shuttle-Mir program, and that gained from operating the Space Shuttle for nearly two decades to address the unique circumstances of building and operating an ever-changing vehicle.

Engineering for sustaining and supporting the flight hardware and software, crew systems and maintenance, and extravehicular activity (EVA) systems, is consolidated and performed at the Johnson Space Center (JSC), and at the Marshall Space Flight Center (MSFC) for ECLSS related activities. Flight hardware spares and repair costs continue to be controlled by maintenance and repair capabilities, including hardware depots, that effectively utilize the Kennedy Space Center (KSC), and original equipment manufacturers or other certified industry repair resources.

PROGRAM MANAGEMENT

The program management and reporting flows from the program manager, Bill Gerstenmaier, located at the Johnson Space Center, to the Deputy Associate Administrator for ISS and SSP. The DAA for ISS & SSP reports directly to the Assoc. Admin. Office of Space Flight who reports directly to the NASA Administrator. The agency Program Management Council (PMC) has ISS governing responsibility. Full compliance with NPG 7120.5B will be achieved in FY 2003.

TECHNICAL COMMITMENT

Baseline defined by May 2002 Cost Analysis Requirements Document (CARD).

Technical Specifications	FY04 President's Budget	Change from Baseline
(Development commitments also apply to operations elements)		
(Development commitments also apply to operations elements)		
Operational Life	Nominal operations and utilization lifetime to 2015, and a 1-year decommissioning period.	--
Shuttle Logistical Flights	5 per Year.	--
Power to User Payloads	26kW minimum continuous power & 30kW annual average after U.S. Core Complete.	--
Micro-Gravity	At least 180 days annually (4 periods greater than 30 days).	--
Crew Time	Each flight increment nominally planned for 180 days on-orbit.	--
Spacecraft	Maintain and sustain U.S. flight and ground hardware and software to ensure integrity of the ISS design and the	--

Schedule	FY04 President's Budget		Change from Baseline
9A - S1 TRUSS	Oct '02	*Launched*	2 months
11A - P1 TRUSS	Nov '02	*Launched*	2 months
ULF-1, MPLM: CMG	Mar '03		2 months
12A - P3/P4 TRUSS Segments	May '03		2 months
12A.1	Jul '03		2 months
13A S3/S4 TRUSS Segments	Oct '03		2 months
13A.1	Nov '03		2 months
15A S6 TRUSS Segment	Jan '04		--
10A Node 2	Feb '04		--
ULF-2 Logistics Carriers	Jul '04		--

THEME: International Space Station

OPERATIONS: Spacecraft Operations

ACQUISITION STRATEGY & PERFORMING ORGANIZATIONS

The Prime Contractor for design, development, test and evaluation of major elements of U.S. Flight Hardware and Engineering Support for the integration of the entire Space Station is Boeing Aerospace. The Prime contract covers 10 years of development and operations (through Dec '03). In FY2002, direct procurements from Boeing represented about 51% of budget authority in development and operations.

Changes since FY03 Pres. Budget: None

Current Acquisitions	Actual *	Selection Method	Actual *	Performer	Actual *
Cooperative Agreements	0%	Full & Open Competition	32%	Industry	90%
Cost Reimbursable	84%	Sole Source	68%	Government	9%
Fixed Price	9%		####	NASA Intramural	8%
Grants	0%			University	1%
Other	7%	Sci Peer Review	0%	Non Profit	0%
* as % of FY02 direct procurement	100%				100%

Future Acquisitions - Major	Selection	Goals
1. Contract restructuring	Sept '03	TBD Full& Open Comp; TBD Cost Reimbursable;

AGREEMENTS

External:

1. Intergovernmental Agreement (IGA) Active (1/29/98)
2. NASA/RSA Memorandum of Understanding (MOU) Active (1/29/98)
3. NASA/European Space Agency (ESA) MOU Active (1/29/98)
4. NASA/Government of Japan (GOJ) MOU Active (2/24/98)
5. NASA/Canadian Space Agency (CSA) MOU Active (1/29/98)
6. NASA/ESA Early Utilization Agreement Active (3/18/97)
7. NASA/Italian Space Agency (ASI) MOU on the Design, Development, Operation, and Utilization of Three Mini-Pressurized Logistics Modules for the ISS Active (10/9/97)
8. NASA-GOJ Agreement in Principle for CAM and Related Hardware Active (9/10/97)
9. NASA-Brazilian Space Agency Implementing Arrangement for ISS Cooperation Active (10/14/97)

INDEPENDENT REVIEWS

Types of Review	**Performer**	Last Review	Next Review	**Purpose**
Mgmt & Cost Evaluation	IMCE Tsk Force	Nov 2002	Not Planned	Overall review of the mgmt and cost of the ISS Program
Ind. Life Cycle Cost Estimate	NASA ICE Team	Aug. 2002	Not Planned	Life cycle cost estimate confirmation
Life Cycle Cost Estimate	CAIG	Aug. 2002	Not Planned	Life cycle cost estimate confirmation

BUDGET

Budget Authority ($ in millions)	**FY02**	**FY03**	**FY04**	Comments
FY 2004 President's Budget (Operations)	1283.7	1181.9	1553.6	
Spacecraft Operations	0.0	710.4	836.6	
ISS Spacecraft Management		147.4	234.8	Structure aligned w/ISS WBS
ISS Elements		61.7	28.0	Structure aligned w/ISS WBS
Flight Systems		111.2	149.1	Structure aligned w/ISS WBS
Avionics Systems		51.0	58.5	Structure aligned w/ISS WBS
Crew Systems		11.9	14.7	Structure aligned w/ISS WBS
Extra-Vehicular Activity Systems		37.9	48.9	Structure aligned w/ISS WBS
Flight Software		130.8	154.4	Structure aligned w/ISS WBS
Logistics & Maintenance		158.4	148.3	Structure aligned w/ISS WBS
Crew Transfer Vehicles				Structure aligned w/ISS WBS
Launch & Mission Operations	0.0	202.8	492.5	Structure aligned w/ISS WBS
Operations Program Integration	0.0	268.7	224.5	Structure aligned w/ISS WBS
Other Operations	1283.7			Previous Ops funding structure
Changes since FY 03 Pres. Budget	-	+4.7	+352.2	
Spacecraft Operations		+710.4	+684.6	Allocation to new ops structure
Launch & Mission Operations		+202.8	+385.0	Allocation to new ops structure
Operations Program Integration		+268.7	+185.5	Allocation to new ops structure
Other Operations		-1177.2	-1201.4	Allocated to new Ops structure
Direct Civil Service & Travel			+144.0	C.S. & Travel allocation added
G&A Rates			+154.5	Center & corporate G&A

Indicates budget numbers in Full Cost.
Indicates changes since the FY 2003 Presidents Budget Submit.
FY 2002 and FY 2003 are not in full cost.

THEME: International Space Station

OPERATIONS: Launch and Mission Operations

PURPOSE

Objectives	Reference 2003 Strategic Plan	Performance Measures
9.4	Demonstrate the ability to support a permanent human presence in low Earth orbit as a stepping stone to human presence beyond.	4 ISS18 , 4 ISS19

The primary objective of the operations program is to safely and reliably assemble, activate, integrate, and operate the ISS, and to perform these activities in an affordable manner. This requires a significant level of planning, coordination, and execution. Most of the hardware engineering, manufacturing, and testing – leading to the final acceptance and launch of the ISS elements – have successfully been completed, and the vehicle has been operating successfully since the first element was launched in 1998. Launch and Mission Operations provides training, mission control operations, operations engineering support, operations planning and cargo integration, medical support, and launch site processing.

OVERVIEW

The first crew was launched to the ISS in October 2000 and a progression of international crews has, and will continue to permanently inhabit the ISS. The ISS assembly period spans more than half a decade, with infrastructure and logistics deployed over multiple flights. Because of the program's complexity, the Space Station team has done extensive planning for operations of several different ISS vehicle configurations on-orbit. Each time an element is added to the current Station, the flight characteristics and internal systems change, creating different thermal constraints and orbital characteristics. The Space Station Program is drawing on the experience derived from Skylab, the Shuttle-Mir program, and that gained from operating the Space Shuttle for nearly two decades to address the unique circumstances of building and operating an ever-changing vehicle.

The Mission Control Center-Houston (MCC-H) at JSC is the prime site for the planning and execution of integrated system operations of the Space Station. Communication links from both Mission Control Center-Moscow (MCC-M) and MCC-H support control activities, using the Tracking and Data Relay Satellite system (TDRSS) system and Russian communication assets. Crewmembers are trained in the Neutral Buoyancy Lab (NBL) and Space Station Training Facility (SSTF) on systems, operations, and other activities expected during a mission. Engineering support provides ground facility requirements and test support, ground display and limited applications development, resource planning, photo/TV training, medical operations tasks, and mission execution and systems performance assessment. Launch site processing at KSC includes requirement definition and processing planning, post delivery inspection/verification, servicing, interface testing, integrated testing, close-outs, weight and center of gravity measurement, and rack/component to carrier installation.

PROGRAM MANAGEMENT

The program management and reporting flows from the program manager, Bill Gerstenmaier, located at the Johnson Space Center, to the Deputy Associate Administrator for ISS and SSP. The DAA for ISS & SSP reports directly to the Assoc. Admin. Office of Space Flight who reports directly to the NASA Administrator. The agency Program Management Council (PMC) has ISS governing responsibility. Full compliance with NPG 7120.5B will be achieved in FY 2003.

TECHNICAL COMMITMENT

Baseline defined by May 2002 Cost Analysis Requirements Document (CARD).

Technical Specifications	FY04 President's Budget	Change from Baseline
(Development commitments also apply to operations elements)		
Operational Life	Nominal operations and utilization lifetime to 2015, and a 1-year decommissioning period.	--
Shuttle Logistical Flights	5 per Year.	--
Power to User Payloads	26kW minimum continuous power & 30kW annual average after U.S. Core Complete.	--
Micro-Gravity	At least 180 days annually (4 periods greater than 30 days).	--
Crew Time	Each flight increment nominally planned for 180 days on-orbit.	--
Spacecraft	Maintain and sustain U.S. flight and ground hardware and software to ensure integrity of the ISS design and the continuous, safe operability of the vehicle.	--
Integration & Operations	Operational & mission planning, coordination, training, & real-time support to ensure flight readiness & mission success.	--

THEME: International Space Station

OPERATIONS: Launch and Mission Operations

Schedule	FY04 President's Budget		Change from Baseline
9A - S1 TRUSS	Oct '02	*Launched*	2 months
11A - P1 TRUSS	Nov '02	*Launched*	2 months
ULF-1, MPLM: CMG	Mar '03		2 months
12A - P3/P4 TRUSS Segments	May '03		2 months
12A.1	Jul '03		2 months
13A S3/S4 TRUSS Segments	Oct '03		2 months
13A.1	Nov '03		2 months
15A S6 TRUSS Segment	Jan '04		--
10A Node 2	Feb '04		--
ULF-2 Logistics Carriers	Jul '04		--

ACQUISITION STRATEGY & PERFORMING ORGANIZATIONS

The Prime Contractor for design, development, test and evaluation of major elements of U.S. Flight Hardware and Engineering Support for the integration of the Space Station is Boeing Aerospace. The Prime contract covers 10 years of development and operations (through Dec '03). In FY2002, direct procurements from Boeing represented about 51% of budget authority in development and operations. **Changes since FY03 Pres. Budget: None**

Current Acquisitions	Actual *	Selection Method	Actual *	Performer	Actual *
Cooperative Agreements	0%	Full & Open Competition	32%	Industry	90%
Cost Reimbursable	84%	Sole Source	68%	Government	9%
Fixed Price	9%		100%	NASA Intramural	8%
Grants	0%			University	1%
Other	7%	Sci Peer Review	0%	Non Profit	0%
* as % of FY02 direct procurement	100%				100%

Future Acquisitions - Major	Selection	Goals
1. Contract restructuring	Sept '03	TBD Full& Open Comp; TBD Cost Reimbursable;

AGREEMENTS

External:

1. Intergovernmental Agreement (IGA) Active (1/29/98)
2. NASA/RSA Memorandum of Understanding (MOU) Active (1/29/98)
3. NASA/European Space Agency (ESA) MOU Active (1/29/98)
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5. NASA/Canadian Space Agency (CSA) MOU Active (1/29/98)
6. NASA/ESA Early Utilization Agreement Active (3/18/97)
7. NASA/Italian Space Agency (ASI) MOU on the Design, Development, Operation, and Utilization of Three Mini-Pressurized Logistics Modules for the ISS Active (10/9/97)
8. NASA-GOJ Agreement in Principle for CAM and Related Hardware Active (9/10/97)
9. NASA-Brazilian Space Agency Implementing Arrangement for ISS Cooperation Active (10/14/97)

INDEPENDENT REVIEWS

Types of Review	**Performer**	Last Review	Next Review	**Purpose**
Mgmt & Cost Evaluation	IMCE Tsk Force	Nov 2002	Not Planned	Overall review of the mgmt and cost of the ISS Program
Ind. Life Cycle Cost Estimate	NASA ICE Team	Aug. 2002	Not Planned	Life cycle cost estimate confirmation
Life Cycle Cost Estimate	CAIG	Aug. 2002	Not Planned	Life cycle cost estimate confirmation

BUDGET

Budget Authority ($ in millions)	**FY02**	**FY03**	**FY04**	Comments
FY 2004 President's Budget (Operations)	1283.7	1181.9	1553.6	
Spacecraft Operations	0.0	710.4	836.6	
Launch & Mission Operations	0.0	202.8	492.5	Structure aligned w/ISS WBS
Mission Integration		41.5	139.6	Structure aligned w/ISS WBS
Medical Support		14.2	19.5	Structure aligned w/ISS WBS
Mission Operations		88.8	210.9	Structure aligned w/ISS WBS
Launch Site Processing		58.3	122.5	Structure aligned w/ISS WBS
Operations Program Integration	0.0	268.7	224.5	Structure aligned w/ISS WBS
Other Operations	1283.7			Previous Ops funding structure
Changes since FY 03 Pres. Budget	-	+4.7	+352.2	
Spacecraft Operations		+710.4	+684.6	Allocation to new ops structure
Launch & Mission Operations		+202.8	+385.0	Allocation to new ops structure
Operations Program Integration		+268.7	+185.5	Allocation to new ops structure
Other Operations		-1177.2	-1201.4	Allocated to new Ops structure
Direct Civil Service & Travel			+144.0	C.S. & Travel allocation added
G&A Rates			+154.5	Center & corporate G&A

Indicates budget numbers in Full Cost.
Indicates changes since the FY 2003 Presidents Budget Submit.
FY 2002 and FY 2003 are not in full cost.

THEME: International Space Station

OPERATIONS: Operations Program Integration

PURPOSE

Objectives		Reference 2003 Strategic Plan	Performance Measures
9.4	Demonstrate the ability to support a permanent human presence in low Earth orbit as a stepping stone to human presence beyond.		4 ISS18 , 4 ISS19

The primary objective of the operations program is to safely and reliably assemble, activate, integrate, and operate the ISS, and to perform these activities in an affordable manner. This requires a significant level of planning, coordination, and execution. Most of the hardware engineering, manufacturing, and testing – leading to the final acceptance and launch of the ISS elements – have successfully been completed, and the vehicle has been operating successfully since the first element was launched in 1998. Operations Program Integration provides the overall ISS program management functions, system engineering, analysis and integration, and safety and mission assurance activities.

OVERVIEW

The first crew was launched to the ISS in October 2000 and a progression of international crews has, and will continue to permanently inhabit the ISS. The ISS assembly period spans more than half a decade, with infrastructure and logistics deployed over multiple flights. Because of the program's complexity, the Space Station team has done extensive planning for operations of several different ISS vehicle configurations on-orbit. Each time an element is added to the current Station, the flight characteristics and internal systems change, creating different thermal constraints and orbital characteristics. The Space Station Program is drawing on the experience derived from Skylab, the Shuttle-Mir program, and that gained from operating the Space Shuttle for nearly two decades to address the unique circumstances of building and operating an ever-changing vehicle.

Program integration is a continuous effort managing and coordinating program and international activities, and evaluating the technical performance of the flight, avionics and crew systems, and the necessary logistical systems required to support the on-orbit vehicle and crew. This is especially critical as the vehicle undergoes significant configuration changes as each of the final elements is assembled. Program management activities are centered at JSC and include contractor and government business management functions, international partner integration, configuration management and data integration, management information systems, and enterprise support. System engineering and integration responsibilities include requirements and interface documentation, integrated systems and performance analysis, assembly and configuration definition and analysis, and Shuttle/Station integration. Safe program operations remains a top priority, and safety and mission assurance (S&MA) functions provide for risk management, quality assurance, and reliability and maintainability activities, as well as overall S&MA integration and operations.

PROGRAM MANAGEMENT

The program management and reporting flows from the program manager, Bill Gerstenmaier, located at the Johnson Space Center, to the Deputy Associate Administrator for ISS and SSP. The DAA for ISS & SSP reports directly to the Assoc. Admin. Office of Space Flight who reports directly to the NASA Administrator. The agency Program Management Council (PMC) has ISS governing responsibility. Full compliance with NPG 7120.5B will be achieved in FY 2003.

TECHNICAL COMMITMENT

Baseline defined by May 2002 Cost Analysis Requirements Document (CARD).

Technical Specifications	FY04 President's Budget	Change from Baseline
(Development commitments also apply to operations elements)		
Operational Life	Nominal operations and utilization lifetime to 2015, and a 1-year decommissioning period.	--
Shuttle Logistical Flights	5 per Year.	--
Power to User Payloads	26kW minimum continuous power & 30kW annual average after U.S. Core Complete.	--
Micro-Gravity	At least 180 days annually (4 periods greater than 30 days).	--
Crew Time	Each flight increment nominally planned for 180 days on-orbit.	--
Spacecraft	Maintain and sustain U.S. flight and ground hardware and software to ensure integrity of the ISS design and the continuous, safe operability of the vehicle.	--
Integration & Operations	Operational & mission planning, coordination, training, & real-time support to ensure flight readiness & mission success.	--

THEME: International Space Station

OPERATIONS: Operations Program Integration

Schedule	FY04 President's Budget		Change from Baseline
9A - S1 TRUSS	Oct '02	*Launched*	2 months
11A - P1 TRUSS	Nov '02	*Launched*	2 months
ULF-1, MPLM: CMG	Mar '03		2 months
12A - P3/P4 TRUSS Segments	May '03		2 months
12A.1	Jul '03		2 months
13A S3/S4 TRUSS Segments	Oct '03		2 months
13A.1	Nov '03		2 months
15A S6 TRUSS Segment	Jan '04		--
10A Node 2	Feb '04		--
ULF-2 Logistics Carriers	Jul '04		--

ACQUISITION STRATEGY & PERFORMING ORGANIZATIONS

The Prime Contractor for design, development, test and evaluation of major elements of U.S. Flight Hardware and Engineering Support for the integration of the entire Space Station is Boeing Aerospace. The Prime contract covers 10 years of development and operations (through Dec '03). In FY2002, direct procurements from Boeing represented about 51% of budget authority in development and operations. **Changes since FY03 Pres. Budget: None**

Current Acquisitions	Actual *	Selection Method	Actual *	Performer	Actual *
Cooperative Agreements	0%	Full & Open Competition	32%	Industry	90%
Cost Reimbursable	84%	Sole Source	68%	Government	9%
Fixed Price	9%		100%	NASA Intramural	8%
Grants	0%			University	1%
Other	7%	Sci Peer Review	0%	Non Profit	0%
* as % of FY02 direct procurement	100%				100%

Future Acquisitions - Major	Selection	Goals
1. Contract restructuring	Sept '03	TBD Full& Open Comp; TBD Cost Reimbursable;

AGREEMENTS

External:

1. Intergovernmental Agreement (IGA) Active (1/29/98)
2. NASA/RSA Memorandum of Understanding (MOU) Active (1/29/98)
3. NASA/European Space Agency (ESA) MOU Active (1/29/98)
4. NASA/Government of Japan (GOJ) MOU Active (2/24/98)
5. NASA/Canadian Space Agency (CSA) MOU Active (1/29/98)
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7. NASA/Italian Space Agency (ASI) MOU on the Design, Development, Operation, and Utilization of Three Mini-Pressurized Logistics Modules for the ISS Active (10/9/97)
8. NASA-GOJ Agreement in Principle for CAM and Related Hardware Active (9/10/97)
9. NASA-Brazilian Space Agency Implementing Arrangement for ISS Cooperation Active (10/14/97)

INDEPENDENT REVIEWS

Types of Review	**Performer**	Last Review	Next Review	**Purpose**
Mgmt & Cost Evaluation	IMCE Tsk Force	Nov 2002	Not Planned	Overall review of the mgmt and cost of the ISS Program
Ind. Life Cycle Cost Estimate	NASA ICE Team	Aug. 2002	Not Planned	Life cycle cost estimate confirmation
Life Cycle Cost Estimate	CAIG	Aug. 2002	Not Planned	Life cycle cost estimate confirmation

BUDGET

Budget Authority ($ in millions)	**FY02**	**FY03**	**FY04**	Comments
FY 2004 President's Budget (Operations)	1283.7	1181.9	1553.6	
Spacecraft Operations	0.0	710.4	836.6	
Launch & Mission Operations	0.0	202.8	492.5	Structure aligned w/ISS WBS
Operations Program Integration	0.0	268.7	224.5	Structure aligned w/ISS WBS
Ops Program Management	0.0	230.1	181.2	Structure aligned w/ISS WBS
Ops System Eng'g, Analysis & Integration		18.7	20.1	Structure aligned w/ISS WBS
Ops Safety & Mission Assurance		19.9	23.2	Structure aligned w/ISS WBS
Other Operations	1283.7			Previous Ops funding structure
Changes since FY 03 Pres. Budget	-	+4.7	+352.2	
Spacecraft Operations		+710.4	+684.6	Allocation to new ops structure
Launch & Mission Operations		+202.8	+385.0	Allocation to new ops structure
Operations Program Integration		+268.7	+185.5	Allocation to new ops structure
Other Operations		-1177.2	-1201.4	Allocated to new Ops structure
Direct Civil Service & Travel			+144.0	C.S. & Travel allocation added
G&A Rates			+154.5	Center & corporate G&A

Indicates budget numbers in Full Cost.
Indicates changes since the FY 2003 Presidents Budget Submit.
FY 2002 and FY 2003 are not in full cost.