



SPACE STATION

May 2, 1994

In March 1993, the President directed NASA to redesign Space Station Freedom to reduce the cost and to provide earlier scientific return on America's investment. NASA undertook a 90-day effort which resulted in a recommendation to the President by the Advisory Committee on the Redesign of Space Station, to proceed with the redesign and implement a series of management and contractual changes.

SIGNIFICANT POST-REDESIGN ACTIVITIES

Since last year's redesign of the Space Station, NASA has made significant progress with our international partners and our industry team, to provide - on schedule and within budget - a truly world-class space-based research facility. By utilizing approximately 75 percent of the hardware planned for Space Station Freedom, NASA has been able to maintain its investment-to-date while redesigning the Space Station to be less expensive and more capable. The international community of researchers, scientists, and industry that comprises the international Space Station users will have access to an unprecedented amount of volume, power, and crew time for the conduct of experiments that, as the history of the space age has already proven, are sure to provide extraordinary technological breakthroughs and economic benefits.

RECENT SIGNIFICANT EVENTS

NASA has increased accountability by implementing a new management structure, beginning with the appointment of a new Program Director based at Headquarters, Wilbur Trafton. The Space Station Program Office, located at the Johnson Space Center in Houston, is headed by Program Manager Randy Brinkley, who reports to Trafton.

Boeing Defense and Space Group has been named the prime Space Station contractor. Previous Freedom prime contracts were novated (made sub-contractors to Boeing) on February 1, 1994.

In mid-December 1993, the Program held a successful System Requirements Review.

On March 23, 1994, another very important milestone was reached with the successful completion of the System Design Review.

On March 25 and 26, 1994, Members of the Advisory Committee on the Redesign of the Space Station (Vest Committee) convened at the Space Station Program Office in Houston, Texas to review the current state of the international Space Station. Based on letters from individual members, it is clear that the Space Station team has made significant technical and managerial progress.

In a letter to Dr. John Gibbons, Science Advisor to the President, Dr. Vest wrote:

"This program has been dramatically reorganized and has progressed to an extent that greatly exceeded my expectations...I can state with confidence that the high level conclusions were self-evident and overwhelmingly positive."

Dr. Bradford Parkinson, Vest Committee member as well as Chairman of the NASA Advisory Council wrote to Dr. Gibbons:

"The [Space Station], as defined at this review has every prospect of becoming an outstanding international space research facility. The design has addressed and reduced many of the risk areas that existed in previous designs."

The United States and its Space Station Partners -- Canada, Japan, and the member nations of the European Space Agency -- invited Russia to become a full partner. Russia officially accepted the offer on December 17, 1993.

The first negotiating session to reach agreement on the necessary changes to the Space Station Intergovernmental Agreements due to Russian participation was held on April 27/28, 1994.

The international Space Station is currently on schedule and within the budget cap established by Congress for fiscal year 1994. The current schedule calls for the first U.S. element launch in December, 1997, and completion of assembly by mid 2002. NASA's current cost estimate to complete assembly of the international Space Station is \$17.4B.

UPCOMING EVENTS

Over the next several months, NASA will be negotiating a contract with the Russian Space Agency (RSA) which stipulates the goods and services to be provided by the Russians for the first two phases of the International Space Station.

The Space Station prime contractor, Boeing Defense and Space Group, is currently operating under a letter contract and will be submitting its formal contract proposal to NASA in late Spring. NASA and Boeing plan to finalize the contract during the summer.

Also over the coming months, NASA and the RSA will be concluding an interim agreement on Russian participation in the Space Station program. A NASA/RSA Memorandum of Understanding, which will complete the partnership arrangement, will be negotiated in parallel with the negotiations on the Intergovernmental Agreement.

SIGNIFICANT CHANGES DUE TO RUSSIAN INVOLVEMENT

Russia's participation in the Space Station will contribute in a positive way to the overall cost, schedule, and capability of the Station. Although technical details remain to be finalized, some of the benefits accruing from Russian involvement include:

orbital inclination of 51.6 degrees rather than 28.8 degrees, which is better for Earth-viewing experiments and for access to the Station by multiple launch vehicles;

power availability will increase from 68 kilowatts to 110 kilowatts;

first U.S. element launch will be accelerated from September 1998 to December 1997;

permanent human capability will be accelerated from September, 2003 to June 2002;

crew size will increase from four to six; and

Russian involvement could result in up to \$2B in cost reduction to reach permanent human capability, while also increasing the station size and capability.

CONTINGENCY PLANS

The U.S. is planning a "gradual engagement" with Russia, with a series of incremental steps allowing us to disengage at specific times should the situation in Russia dictate we do so. This gradual engagement began with the flight of a cosmonaut on the Shuttle in February, and will continue next year with the flight of a U.S. astronaut to the Russian space station Mir. NASA is very much aware of the need to protect our capability to proceed with the Space Station program without the Russians, should conditions dictate, and is taking steps to assure that option is retained.

THE THREE PHASES OF RUSSIAN INVOLVEMENT

Phase One:

The Shuttle-Mir activities, will provide joint flight experience to reduce risk associated with Space Station assembly and provide early opportunity for extended scientific research. Phase One began on February 3, 1994, when the first Russian cosmonaut flew aboard the eight-day Space Shuttle flight of STS-60. A second cosmonaut is in training for flight aboard STS-63 in early 1995.

Phase One will continue as American astronauts begin flying aboard the Mir Space Station; two U.S. astronauts are currently training in Russia for the first of these missions. There will be up to ten Space Shuttle flights to Mir with tasks ranging from docking and crew exchanges to technical and scientific upgrading of the Mir station itself.

Shuttle-Mir flights are currently scheduled between May 1995, and June 1997.

Phase Two:

Phase Two begins in 1997 with the launch of the Russian Functional Control Block (known as the FGB), to provide propulsion, and other services. The U.S. lab will be put in place in early 1998 providing scientists with an average of 6 kW of power for experimentation and research.

Phase Three:

In mid-2002, the international Space Station--including U.S and Russian elements, the European Space Agency Module, Japanese Experiment Module and Exposed Facility, and Canadian Remote Manipulator System--will be completed and capable of supporting an international crew of six.

Throughout the Station's expected 10-year lifetime, primary command and control of the Space Station's operations will be managed by the U.S. with Russia providing backup.

BUILDING THE SPACE STATION MAKES SENSE BECAUSE IT:

Establishes the capability to perform significant long-duration space research in materials and life sciences;

Develops technology and engineering skills for building and operating advanced human and autonomous space systems;

Encourages international cooperation in science and technology;

Provides opportunity for new users, particularly industry users, to conduct experiments on new, commercially relevant products and processes; and

Encourages our children to dream and reach for the stars.

