



Johnson Space Center Report

The Vision of NASA is to improve life here, to extend life there, and to find life beyond. NASA's Mission is to understand and protect our home planet, to explore the Universe and search for life, and to inspire the next generation of explorers...as only NASA can.

At JSC, our mission is to expand the frontiers of space and knowledge by exploring, using and enabling the development of space for human enterprise. We have seen unprecedented accomplishments and delivered numerous benefits to America and the world through Human Exploration and Development of Space initiatives. JSC hosts two of these initiatives: the Space Shuttle Program and the International Space Station.

Human spaceflight is JSC's chief responsibility, including the recruiting and training of U.S. astronauts and the planning and operation of the International Space Station and space shuttle flights. We also coordinate shuttle and station program activities throughout NASA Centers nationwide. Our Center is the training base and home for our nation's astronauts and the site of Mission Control, where a talented team of flight controllers monitors the work of our men and women in space.

We have successfully completed our first full year of crewed operations on board the International Space Station in 2001 with a record-setting assembly sequence – bringing the station to life. Our missions during the year resulted in the station gaining self-sufficiency – it is fully operational without the presence of a shuttle.

And for the first time in decades, JSC began supporting two on-orbit programs simultaneously. We have worked carefully to support flying two spacecraft by training and supporting two separate crews – successfully running the most difficult series of missions since the Apollo era. This achievement brings a tremendous sense of accomplishment for the teams at JSC – making such difficulties look easy is a testament to the Center workforce.

During 2001, a total of 18 spacewalks were conducted – 12 from the shuttle and six from the station. We've recently completed some of the most challenging spaceflights in history, setting records for the number of spacewalks and the amount of hardware assembled in orbit. And four crews of astronauts changed places to live and work on the station during 2001, all during continued station assembly.

As we continue to explore and work in space, we at JSC are engaged in an intense and sustained effort to better understand the physiological changes in astronauts and the causes underlying these changes, and to develop ways to prevent or to mitigate them. The increased information about body functions derived from this effort is paving the way for prolonged missions in space.

Many specific experiments were delivered to the International Space Station via the space shuttle, even during the continued assembly of the International Space Station. Experiments were conducted not only on the physiological changes in astronauts, but with cancer research, protein crystal growth, radiation exposure and changes to the surface of the Earth. These are just some examples of experiments that help to provide valuable data to improve our life on Earth.

Space engineers at JSC continued work on the X-38 prototype space station “lifeboat” or crew return





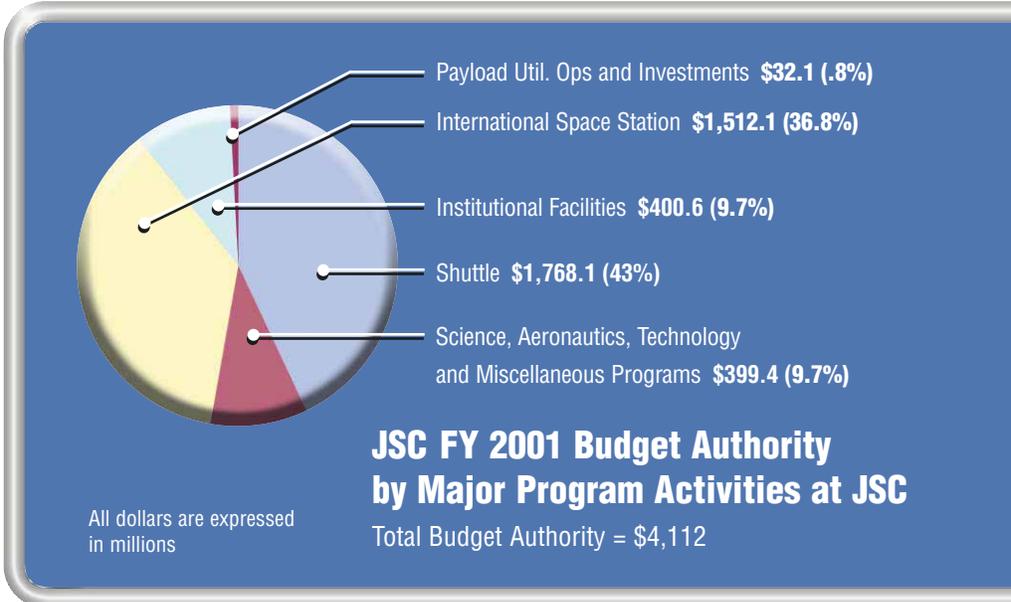
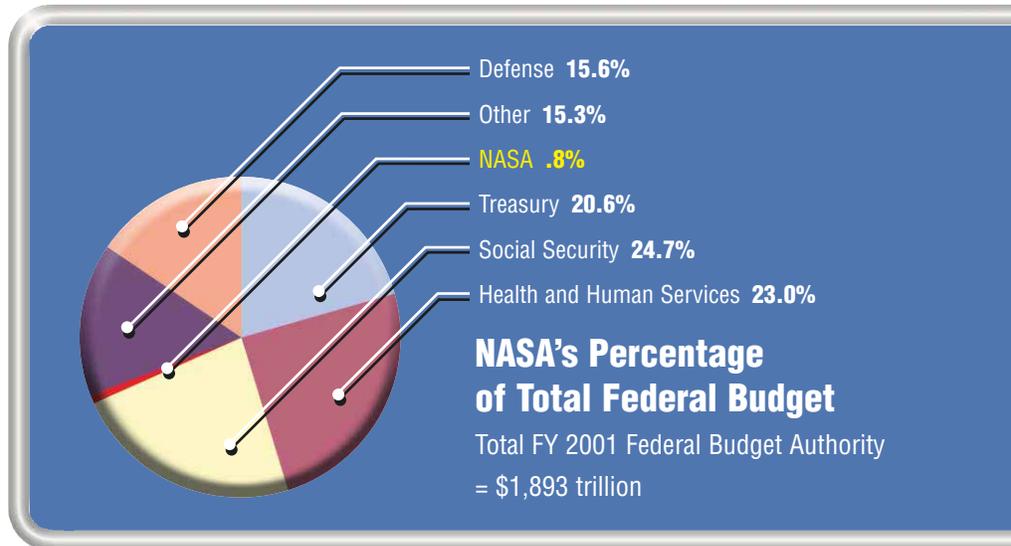
vehicle. Lessons learned from its innovative technology development will prove useful in future spacecraft design.

To support all that we do here at JSC, we employ approximately 16,000 people in federal and contractor positions. Our workforce represents small towns and big cities, suburban neighborhoods and rural areas. At the close of the workday, employees go home to communities throughout Houston that have been enriched by JSC's presence.

A Look Ahead

2002 began with the shuttle fleet matriarch *Columbia*'s return to space on the first non-International Space Station shuttle flight in more than two years. In addition, flights by *Atlantis* and *Endeavour* will begin to haul more than 50 tons of additional components to the International Space Station and more than three dozen new experiments and two new laboratory racks. *Discovery* will remain on the ground in 2002 for standard maintenance and inspections.

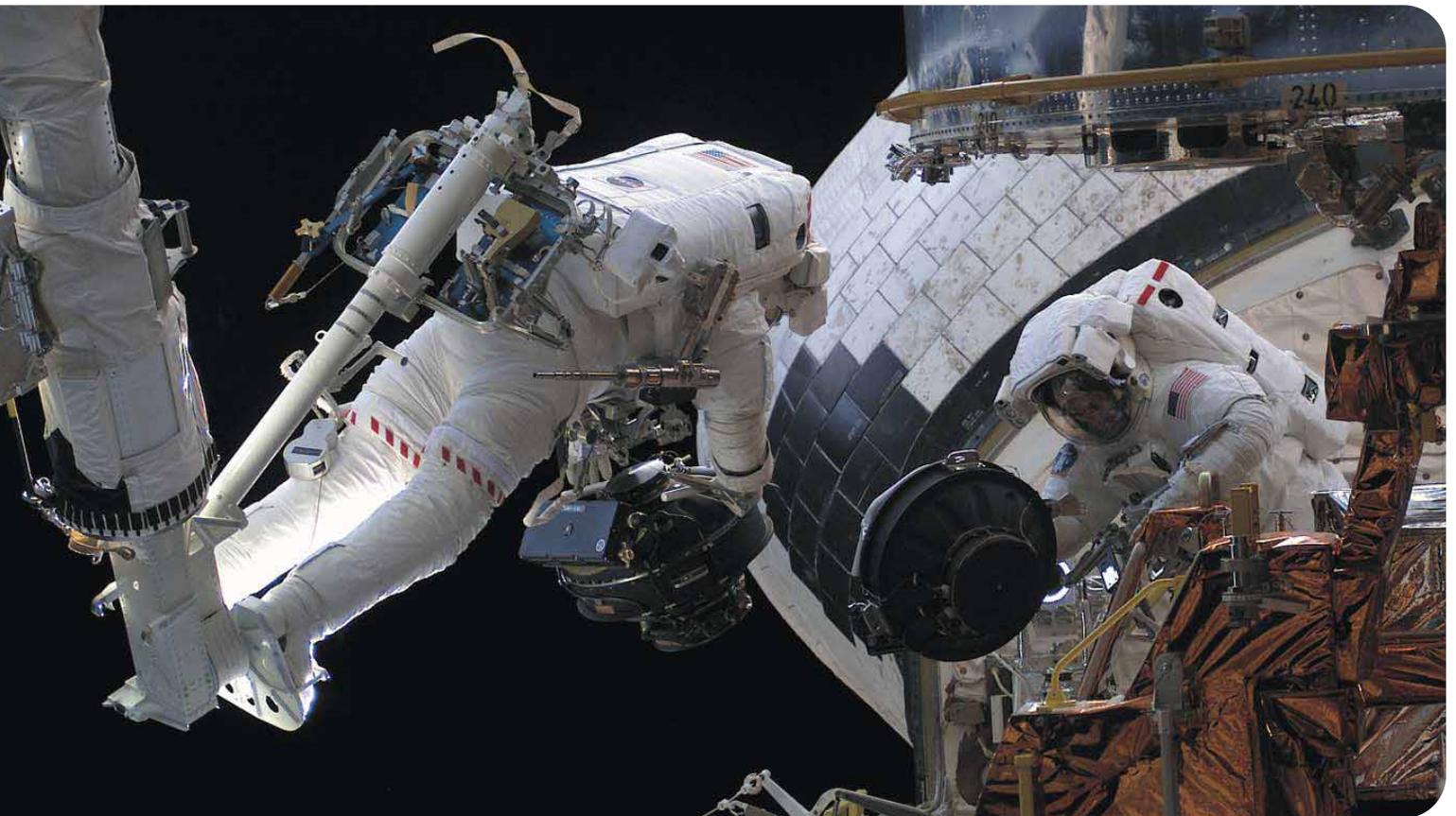
Columbia began the new year with a flight to the Hubble Space Telescope on mission STS-109, the fourth mission to service the space telescope since its launch in 1990. Five spacewalks were successfully conducted during the flight to install an advanced new camera system, reactivate an existing infrared instrument system, and install new solar arrays and a new power controller.





The mission extended the lifetime and capabilities of the now-famous orbiting telescope. Also in 2002, NASA plans to break our record set last year for the most spacewalks ever conducted in a single year.

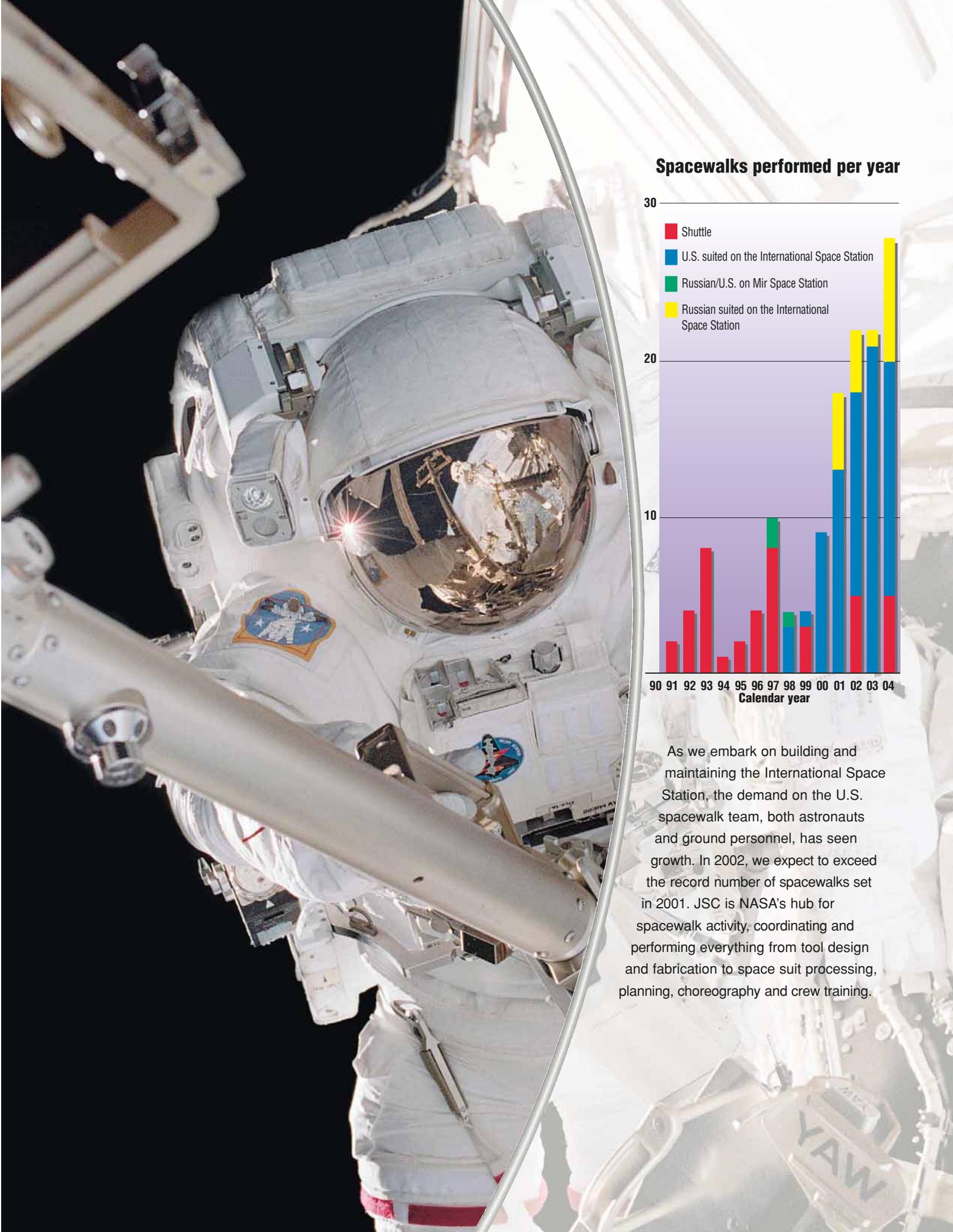
From the space shuttles alone, 15 spacewalks are planned, coupled with seven spacewalks planned for crews from the International Space Station.



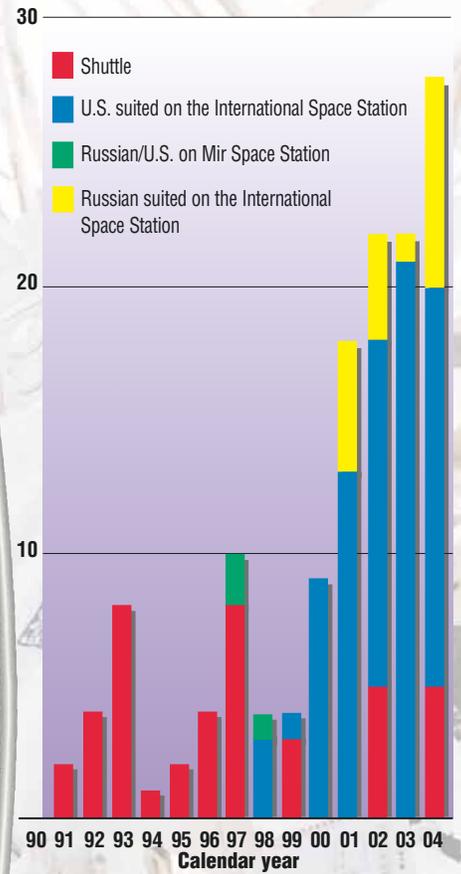
STS109-E-5401 (March 5, 2002) – With his feet secured on a platform connected to the Remote Manipulator System (RMS) robotic arm of the Space Shuttle *Columbia*, astronaut Michael Massimino, mission specialist, hovers over the shuttle's cargo

bay while working in tandem with astronaut James Newman, mission specialist, during the STS-109 mission's second day of Extravehicular Activity (EVA).





Spacewalks performed per year



As we embark on building and maintaining the International Space Station, the demand on the U.S. spacewalk team, both astronauts and ground personnel, has seen growth. In 2002, we expect to exceed the record number of spacewalks set in 2001. JSC is NASA's hub for spacewalk activity, coordinating and performing everything from tool design and fabrication to space suit processing, planning, choreography and crew training.