

# EXPEDITION 10 PAVING THE ROAD FOR EXPLORATION

The tenth expedition crew to the International Space Station (ISS) was launched from the Baikonur Cosmodrome in Kazakhstan aboard a Russian Soyuz spacecraft in October 2004. During their six-month mission aboard the ISS, the crew will live and conduct research that is critical to the advancement of human space exploration..

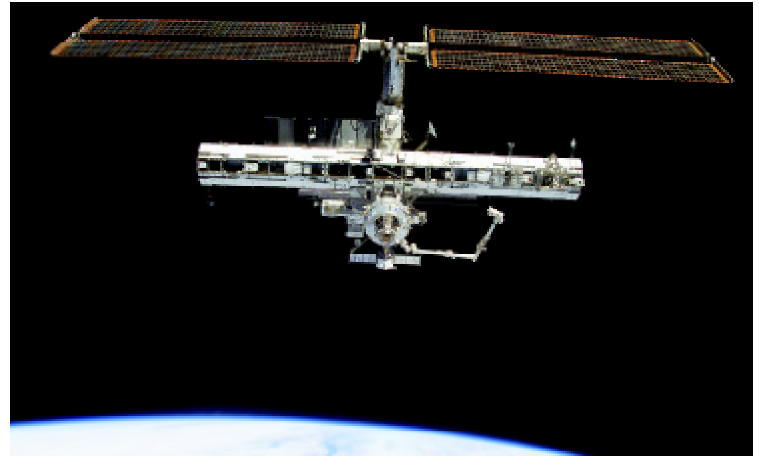
The nation's Vision for Space Exploration is a stepping stone approach to exploring space that calls for returning the Shuttle to safe flight, completing assembly of the ISS, building a new Crew Exploration Vehicle, then returning astronauts to the Moon, and eventually exploring Mars and beyond. The ISS will serve as an Exploration Laboratory to help better understand and ultimately mitigate the effects of long duration space flight.

American Commander and ISS Science Officer Leroy Chiao, along with Russian Flight Engineer and Soyuz Commander Salizhan Sharipov, lifted off to the Space Station aboard the Soyuz TMA-5 to replace the Expedition 9 crew of Gennady Padalka and Michael Fincke, who had been aboard the ISS since April 21, 2004.

Joining the Expedition 10 crew aboard Soyuz TMA-5 was Russian Space Forces engineer Yuri Shargin. He spent eight days aboard the ISS performing scientific experiments before returning home with Padalka and Fincke.

Much of the research performed during Expedition 10 will be carried out with scientific facilities and samples already on board the Space Station. Continuing experiments will use pre- and post-flight physical measurements of Expedition 10 crewmembers as well as on-orbit operations to study changes in the body caused by exposure to microgravity.

One experiment involves crewmembers conducting on-orbit ultrasound exams on each other to determine the accuracy of using the technique to diagnose certain types of on-orbit injuries and to assess whether it would be a feasible option for monitoring in-flight bone alterations. Additionally, researchers will conduct biopsies of tissue taken from crewmembers' calf muscles before and after their stay to allow scientists to begin developing an in-space countermeasure exercise



*Backed by the blackness of space and Earth's horizon, this view of the International Space Station taken during the STS-113 mission includes both the Port One and Starboard One truss segments.*

program aimed at keeping muscles at their peak performance during long missions in space.

The Expedition 10 crew will conduct two space walks to continue the external outfitting of the Zvezda Service Module and to install additional communications gear for the arrival next fall of the European Space Agency's Automated Transfer Vehicle, a cargo ship similar to the Russian Progress vehicle.

Another study will focus on the effects of space radiation on human genetics. The expected results will provide a better knowledge of the risk to astronauts in long term space flight, and can help to optimize radiation shielding.

Chiao and Sharipov's tour of duty will end in April 2005 when they will be replaced by the Expedition 11 crew.

## CREW PROFILE



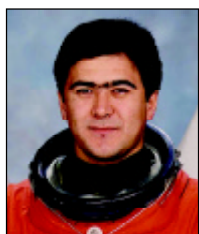
Leroy Chiao

**Leroy Chiao**  
**Expedition 10 Commander & ISS Science Officer**

**Born:** August 28, 1960, Milwaukee, Wisconsin, but considers Danville, California, his hometown.

**Education:** Graduated University of California at Berkeley in 1983 and earned a masters degree and a doctorate in Chemical Engineering from University of California at Santa Barbara in 1985 and 1987 respectively.

**Experience:** Selected as an Astronaut in 1990, Chiao has flown aboard the Space Shuttle on three previous missions including STS-92 to the ISS in 2000.



Salizhan Sharipov

**Salizhan Sharipov**  
**Expedition 10 Flight Engineer & Soyuz Commander**

**Born:** August 24, 1964 in Uzgen, Oshsk region, Kirghizia

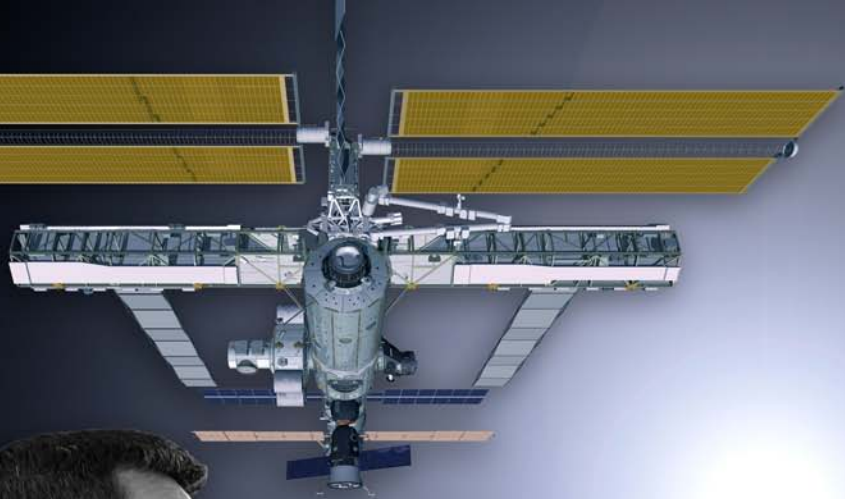
**Education:** Graduated Air Force Pilot School in 1987 and from Moscow State University in 1994 with a degree in Cartography

**Experience:** Selected as a cosmonaut in 1990, Sharipov was a mission specialist in 1998 on the STS-89 Shuttle mission to the Space Station Mir.



*In the Space Vehicle Mockup Facility at the Johnson Space Center United Space Alliance Training Specialist Jesse Castillo (center) explains Space Station emergency procedures to Expedition 10 Commander Leroy Chiao (left) and Flight Engineer Salizhan Sharipov.*





**LEROY  
CHIAO  
COMMANDER**

**SALIZHAN  
SHARIPOV  
FLIGHT ENGINEER**



MP-2004-10-044 ISC

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