

Expedition 8

MISSION OVERVIEW



To Improve Life Here, To Extend Life to There, To Find Life Beyond.

That is NASA's vision.

Michael Foale,
*Expedition 8 Commander, NASA ISS
Science Officer:*

"When we look back fifty years to this time, we won't remember the experiments that were performed, we won't remember the assembly that was done, we may barely remember ... any individuals. What we will know was that countries came together to do the first joint international project, and we will know that that was the seed that started us off to the moon and Mars."

Alexander Kaleri,
Expedition 8 Flight Engineer:

"The International Space Station is a very good step forward, and it's a very good experience for us that can show us how to work together in the future. If we put this task in front of ourselves and learn how to operate very difficult scientific projects, we'll be able to reach much more in the future. We can go together on Mars, we can go to other planets. At least I would like to believe that."

Foale is a veteran of long-duration spaceflight aboard the Russian space station Mir as Flight Engineer 2. He also flew as a Mission Specialist on STS-45, STS-56, STS-63 and STS-103. On May 17, 1997, Foale flew on STS-84 to join the Mir 23 crew to conduct science experiments. After spending 145 days in space, he left the Mir 24 crew and returned to Earth aboard STS-86 on Oct. 6, 1997. Foale has logged more than 178 days in space and more than 18 hours of spacewalk time. Kaleri served as the flight engineer for missions Mir 11, Mir 22 and Mir 28 during which he participated in international joint flights with German and French cosmonauts as well as American astronauts. He has logged 416 days in space and has conducted four spacewalks.

*To understand and protect our home planet
To explore the Universe and search for life
To inspire the next generation of explorers
...as only NASA can.*

That is NASA's mission.

Science Comes to the Forefront

Experiments from earlier expeditions will remain aboard the International Space Station (ISS), continuing to benefit from long-term exposure to microgravity, and additional studies in the life and physical sciences and space technology development will be added.

Most of the research complement for Expedition 8 will be carried out with scientific research facilities and samples already on board the Space Station. Additional experiments are being evaluated and prepared to take advantage of the limited cargo space on the Soyuz or Progress vehicles. The research agenda for the expedition remains flexible.

New U.S. experiments to be conducted during Expedition 8 may include:

Cell Biotechnology Operations Support System (CBOSS) is used to grow three-dimensional tissue that retains the form and function of natural living tissue, a capability that could hold insights in studying human diseases, including various types of cancer, diabetes, heart disease and AIDS.

Education Payload Operations (EPO) include three educational activities that will focus on demonstrating science, mathematics, technology, engineering or geography principles.

Group Activation Packs -- YEAST will evaluate the role of individual genes in the response of yeast to space flight conditions. The results of this research could help clarify how mammalian cells grow under microgravity conditions and determine if genes are altered.

Synchronized Position Hold, Engage, Reorient, Experimental Satellites (SPHERES) will allow scientists to study maturing technologies in the flights of self-directed, or autonomous satellites, as well as their rendezvous.

Expedition 8 Commander Michael Foale, who will also serve as NASA ISS Science Officer, and Alexander Kaleri, who will serve as Commander of the Soyuz and Space Station Flight Engineer, are scheduled to devote more than 200 hours to research, while continuing to maintain the ISS.

Experiments, Education, Maintenance

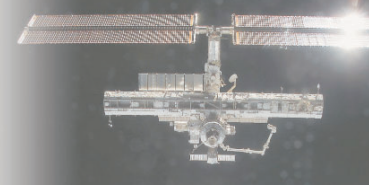
In mid-October, Expedition 8 Commander and NASA ISS Science Officer Michael Foale and Flight Engineer and Soyuz Commander Alexander Kaleri will launch on the ISS Soyuz 7 spacecraft for a two-day flight to the Space Station. Foale and Kaleri will assume formal control of the Station from outgoing Expedition 7 Commander Yuri Malenchenko and NASA ISS Science Officer Ed Lu, who have been aboard the Station since April.

Foale and Kaleri will be joined aboard the Soyuz by European Space Agency (ESA) astronaut Pedro Duque of Spain, who will spend eight days aboard the Space Station performing scientific experiments under a commercial contract between ESA and the Russian Aviation and Space Agency (Rosaviakosmos). Duque will return to Earth on Oct. 28 with Malenchenko and Lu. They will land in Kazakhstan in the ISS Soyuz 6 capsule.

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Related Web Sites:

<http://www.nasa.gov/>
<http://spaceflight.nasa.gov/station/>
<http://spaceflight.nasa.gov/station/science/>
<http://spaceflight.nasa.gov/station/crew/>
<http://spaceflight.nasa.gov/station/assembly/>



Education, Maintenance

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Foale and Kaleri are expected to spend almost 200 days aboard the ISS. They will focus their activities on Station operations and maintenance, though research will continue, as will science-focused education activities and Earth observations.

Experiments make use of the microgravity environment in the Destiny Laboratory and the orientation of the Station to conduct investigations in a variety of disciplines including life sciences, physics and chemistry, and their applications in materials and manufacturing processes. The Station also studies the Earth – its environment, climate, geology, oceanography and more. Indeed, Earth observations are expected to occupy a relatively large share of this crew’s time for scientific activity. The crew is scheduled to devote nearly 200 hours to U.S., Russian, and other partner research during its stay on orbit.

During more than six months aloft, Foale and Kaleri will monitor the arrival of three Russian Progress resupply cargo ships filled with food, fuel, water and supplies. ISS Progress 13 is scheduled to reach the space station in late November, ISS Progress 14 is earmarked to

fly to the station at the end of January and ISS Progress 15 is slated for launch in late March, about a month before the launch of the next piloted Soyuz vehicle to the Station. All three Progress craft will dock to the aft port of Zvezda.

Also on the crew’s agenda is work with the station’s robotic arm, Canadarm2. Robotics work will focus on observations of the station’s exterior, maintaining operator proficiency, and completing the schedule of on-orbit checkout requirements that were developed to fully characterize the performance of the robotic system.

Foale and Kaleri may perform a spacewalk out of the Pirs Docking Compartment airlock to swap out experiments on the Zvezda Service Module that measure the microgravity environment in low Earth orbit and to prepare equipment on Zvezda for next year’s planned maiden flight of ESA’s “Jules Verne” Automated Transfer Vehicle (ATV) cargo ship. The unpiloted ATV, like the Russian Progress craft, will deliver equipment and supplies to the ISS.



Expedition 1



Launch.....Oct. 2000
MissionISS Flight 2R
Return.....March 2001
Duration137 Days

Expedition 2



Launch.....March 2001
MissionSTS-102
Return.....Aug. 2001
Duration148 Days

Expedition 3



Launch.....Aug. 2001
MissionSTS-105
Return.....Dec. 2001
Duration117 Days

Expedition 4



Launch.....Dec. 2001
MissionSTS-108
Return.....June 2002
Duration181 Days

Expedition 5



Launch.....June 2002
MissionSTS-111
Return.....Nov. 2002
Duration171 Days

Expedition 6



Launch.....Nov. 2002
MissionSTS-113
Return.....May 2003
Duration159 Days

Expedition 7



Launch.....April 2003
MissionISS Soyuz 6
Return.....Oct. 2003
DurationTBD

Expedition 8



Launch.....Oct. 2003
MissionISS Soyuz 7
Return.....April 2004
DurationTBD



Expedition 8 Commander and NASA ISS Science Officer Michael Foale (right), and Flight Engineer and Cosmonaut Alexander Kaleri pose for their crew portrait while in training at the Gagarin Cosmonaut Training Center in Star City, Russia for their scheduled launch in the ISS Soyuz 7 spacecraft in mid-October. Kaleri represents Rosaviakosmos.

Expedition 7, the crew that Expedition 8 is replacing, will be leaving the station on the ISS Soyuz 6 spacecraft and landing in Kazakhstan. Below, from left to right are, Flight Engineer and NASA ISS Science Officer Ed Lu and Mission Commander and Cosmonaut Yuri Malenchenko.

