

# First long-duration mission for an ESA astronaut onboard the ISS

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Thomas Reiter

ESA astronaut Thomas Reiter from Germany will soon become the first European to undertake a long-duration mission onboard the International Space Station (ISS) following his dispatch on the next Shuttle mission (STS-121), currently scheduled for May.

That mission, which is due to last six to seven months, will mark many important milestones for European astronauts, European science and European control centres.

Two days after arriving, Reiter will take over as Flight Engineer 2 for the Expedition 13 Crew. As the first European member of an Expedition Crew, Reiter will be undertaking many vital tasks onboard; these could involve the use of systems and procedures for ISS guidance and control, environmental control and life-support systems, crew health & safety and Extra-Vehicular Activity operations, to name but a few. His knowledge on EVA operations will be called upon soon after arrival, as he is currently scheduled to become the first European astronaut to take a spacewalk from the ISS, at the end of May.

The arrival of Reiter at the ISS will also mark the

return from a two-member to a three-member crew. There has not been a threesome onboard since the Columbia accident in February 2003. The other crew members - Roscosmos cosmonaut/ISS Commander Pavel Vinogradov and NASA astronaut/ISS Flight Engineer Jeffrey Williams - are due onboard before Reiter on 1 April on Soyuz flight 12S. The return to a crew of three will increase the time available for it to carry out scientific research. For Reiter's mission, this will be the first time that a European scientific programme has been assembled that is tailored to a long-duration ISS mission.

That programme, drawn predominantly from scientific institutions across Europe, will cover the areas of human physiology, complex plasma physics and radiation dosimetry. Reiter will also be taking part in the commissioning of ESA-developed experiment facilities: the Pulmonary Function System, the European Microgravity Cultivation System and the Minus 80-degrees Laboratory Freezer (MELFI). Further activities will centre on technology demonstrations, industrial experiments and education.

On the mission control side, this will be the first use of a European control centre for a long-duration human spaceflight mission to the ISS. This will be based at the Columbus Control Centre in Oberpfaffenhofen near Munich, Germany, which will serve as the control centre for the European Columbus Laboratory following its launch in 2007. The control centre will be the hub of European activity during the mission, monitoring and coordinating the activities of Reiter, coordinating with the Houston and Moscow Mission Control Centres, with the European Astronaut Centre in Cologne and with various User Support and Operations Centres throughout Europe. The Columbus Control Centre, which is being run for ESA by the German Aerospace Centre (DLR), is already supporting mission preparation and mission simulations from its control rooms.

The added complexities and responsibilities for the ground control teams and for Reiter in orbit herald a new era in European participation in the ISS. This will provide Europe with invaluable experience of long-term scientific utilisation of the Station ahead of the launch of Europe's Columbus Laboratory.

Reiter, who will become the first German to visit the ISS, previously served as an ESA astronaut on the 179-day Euromir 95 mission to the Russian space station Mir, the ISS's predecessor. He is set to make more history 30 days after he arrives onboard, becoming the European to clock up the most time in space, overtaking former ESA astronaut Jean-Pierre Haigneré's 209 days over two missions (including the 189-day ESA/CNES Perseus mission to Mir in 1999). In fact, by the end of this mission, Reiter may have become one of the select few to have spent more than a year in space.

A member of ESA's European Astronaut Corps at the European Astronaut Centre in Cologne, Germany, Thomas Reiter has undergone an extensive training programme in preparation for this mission at the various ISS training facilities in Houston, Moscow and Cologne.

The same training programme has been followed by ESA astronaut Léopold Eyharts of France, who is the back-up for the mission and likewise a member of the Corps. Eyharts is thereby similarly prepared to perform the mission. This training also provides excellent preparation for his tasks as prime astronaut for a future ESA mission to the ISS in connection with the Columbus Laboratory. He previously flew to the Russian space station Mir as a CNES astronaut on the Pégase mission (29 January – 19 February 1998) before joining the EAC in August 1998.

Thomas Reiter is currently scheduled to return to Earth on the STS-116 Shuttle flight in December. That flight includes ESA astronaut Christer Fuglesang of Sweden who will be a member of the Shuttle crew on an ISS assembly mission. With the other two Expedition 13 Crew members returning to Earth on 24 September, Reiter will become Flight Engineer 2 with the Expedition 14 Crew for the remainder of his mission.

This forthcoming mission is covered by an agreement between the European Space Agency and the Russian Federal Space Agency (Roscosmos). This covers the ESA astronaut's flight, taking a crew slot originally planned for a Russian cosmonaut, and is supported by a trilateral understanding between ESA, Roscosmos and NASA.

Source: ESA

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