



INTERNATIONAL SPACE STATION

Expedition 13



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Overview

Expedition 13: Station Assembly Resumes

A veteran crew will fly aboard the International Space Station this spring, working to set the stage for the resumption

of assembly of new components at the complex as well as the return to a three-person crew on board.



Attired in Russian Sokol launch and landing suits, the next crew to launch to the International Space Station pauses from its training schedule in Star City, Russia, to pose for a crew portrait. From the left are Brazilian Space Agency astronaut Marcos C. Pontes; cosmonaut Pavel V. Vinogradov, Expedition 13 commander, representing Russia's Federal Space Agency, and NASA astronaut Jeffrey N. Williams, Expedition 13 Flight Engineer and Science Officer.

Making his second flight into space, Russian cosmonaut Pavel Vinogradov (**Pah'-vuhl Vee-nah-grah'-dawf**), 52, will command the 13th Expedition to the station and serve as Soyuz Commander for launch, landing and on-orbit operations. NASA astronaut Jeffrey Williams, 48, an

Army colonel, will serve as Flight Engineer and Science Officer. He is also making his second flight into space.

Vinogradov and Williams will launch on the ISS Soyuz 12, or TMA-8, spacecraft on March 29, CST, from the Baikonur



Cosmodrome in Kazakhstan for a two-day flight to link up to the Zvezda Service Module on the station. They will be joined on the Soyuz by Brazilian Space Agency astronaut Marcos Pontes, 43, A lieutenant colonel in the Brazilian Air Force, who will spend eight days on the complex under a contract signed with the Russian Federal Space Agency (Roscosmos).

Pontes will return to Earth on the ISS Soyuz 11, or TMA-7, capsule with Expedition 12 Commander and NASA Science Officer William McArthur and Russian Flight Engineer and Soyuz Commander Valery Tokarev (Vuh-lair'-ee **Toe'**-kuh-reff) in the pre-dawn hours of April 9, Kazakhstan time. McArthur and Tokarev have been aboard the station since October, 2005.



European Space Agency (ESA) Astronaut Thomas Reiter



Vinogradov and Williams will be joined on the station during Expedition 13 by European Space Agency (ESA) Astronaut Thomas Reiter (Toe-**mahs'** **Rye'**-turr) of Germany, 47, who will launch to the outpost on the STS-121 shuttle mission. Reiter is expected to be a station crewmember during both the Expedition 13 and 14 missions, and is scheduled to return on a future shuttle or Soyuz mission. He would be the first non-American or Russian long-duration crew member on the station under

a commercial agreement between ESA and Roscosmos.

Once on board, Vinogradov and Williams will conduct more than a week of handover activities with McArthur and Tokarev, familiarizing themselves with station systems and procedures. They will also receive proficiency training on the Canadarm2 robotic arm from McArthur and will engage in safety briefings with the departing Expedition 12 crew as well as payload and scientific equipment training.



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Vinogradov and Williams will assume formal control of the station at hatch closure for the Expedition 12 crew members shortly before they and Pontes undock the ISS Soyuz 11 craft from their docking port at the Zarya Module. With Tokarev at the controls of Soyuz, he, McArthur and Pontes will land in the steppes of Kazakhstan to wrap up

their mission. Pontes' mission will span 10 days.

After landing, the trio will be flown from Kazakhstan to the Gagarin Cosmonaut Training Center in Star City, Russia, for about two weeks of initial physical rehabilitation. Pontes will spend a much



shorter time acclimating himself to Earth's gravity due to the brevity of his flight.

Vinogradov and Williams are expected to spend about six months aboard the station. After the Columbia accident on Feb. 1, 2003, the station program and the international partners determined that the complex would be occupied by only two crewmembers until the resumption of shuttle flights because of limitations on consumables. Once Reiter arrives on board, the station will operate with a three-person crew for the first time since May, 2003.

The crew will work with experiments across a wide variety of fields including human life sciences, physical sciences and Earth observation as well as education and technology demonstrations. Many experiments are designed to gather information about the effects of long-duration spaceflight on the human body to help with planning future exploration missions to the moon or Mars.

The science team at the Payload Operations Center at the Marshall Space Flight Center in Huntsville, Ala., will operate some experiments without crew input and other experiments are designed to function autonomously.



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During their six months aloft, Vinogradov and Williams will greet the arrival of two Russian Progress resupply cargo ships filled with food, fuel, water and supplies that

will augment the delivery of supplies on visiting shuttles. If all goes as planned, they will also greet two visiting shuttle crews.



On STS-121, Discovery will deliver Reiter to the complex as well as logistical supplies and a new umbilical cable system for the station's Mobile Transporter rail car. The new system will replace a unit that incurred a mechanical failure last December, resulting in the severing of one of two redundant cables that enable the car to move along the station's truss.

STS-115, on Atlantis, will deliver the next pair of segments for the port side of the truss. The P3 and P4 trusses will also add a new set of photovoltaic solar arrays to increase the power capability of the station.

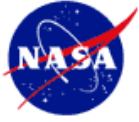
The ISS Progress 21 cargo ship is scheduled to reach the station in late April and ISS Progress 22 is earmarked to fly to the complex in late June. The first Progress craft will link up to the aft port of Zvezda and the second will arrive at the Pirs Docking Compartment.

U.S. and Russian specialists are reviewing tasks that will be included in two

spacewalks scheduled for Expedition 13. The first would be staged by Williams and Reiter out of the Quest airlock wearing U.S. suits to install a variety of external equipment for future assembly work. The second would be conducted by Vinogradov and Williams in Russian Orlan suits out of the Pirs airlock to install a new vent nozzle for the Elektron oxygen-generation system and to retrieve experiments.

Vinogradov is a veteran of five spacewalks on the Mir Space Station. Reiter conducted a pair of spacewalks on Mir. Williams would be conducting his second spacewalk. His first was during a shuttle assembly mission to the International Space Station.

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.



Expedition 13 Crew



Pavel Vinogradov, commander

Russian Cosmonaut Pavel Vinogradov will command Expedition 13 and serve as the Soyuz commander for launch, landing and on-orbit operations. This will be the second long-duration mission for Vinogradov. He joined the RSC-Energia cosmonaut corps in May 1992 and conducted his first

spaceflight in August 1997, launching on a Russian Soyuz for a 198-day spaceflight on board the Mir space station as the Expedition 24 flight engineer. During the mission, he conducted five spacewalks. He plans to conduct one spacewalk during Expedition 13.



Jeffrey Williams, flight engineer-1 and science officer

This will be the second visit to the International Space Station for NASA astronaut Jeffrey Williams, an Army colonel, who will serve as the flight engineer. He'll also serve as the station science officer for the six-month mission, overseeing a diverse range of U.S. experiments. His previous spaceflight experience includes STS-101 in

May 2000, the third shuttle mission devoted to space station construction. During the flight, Williams performed his first spacewalk lasting nearly seven hours as he worked on station assembly tasks. He is scheduled to conduct two spacewalks during Expedition 13.



Thomas Reiter, Expedition 13 flight engineer-2

As the first astronaut from the European Space Agency to conduct a long-duration mission on the International Space Station, Thomas Reiter is scheduled to join Expedition 13 in progress, launching on Discovery on the STS-121 mission. Once on board, Reiter will return the station to a three-man crew for the first time since May 2003. Reiter is flying under a commercial agreement between ESA and the Russian Federal Space Agency.

Reiter will launch with Discovery's crew, scheduled for liftoff no earlier than May 2006. Shortly after docking to the outpost, Reiter will transfer his custom-made Soyuz capsule seat liner from the shuttle to the station to officially join Expedition 13. He is scheduled to return to Earth aboard shuttle mission STS-116 or aboard a Russian Soyuz.



This will be Reiter's second long-duration spaceflight, having served as a flight engineer on a mission aboard the Russian Mir Space Station in 1995 and 1996. During that flight, he performed 40

European scientific experiments and participated in the maintenance of Mir. He did two spacewalks to install and later retrieve cassettes of the European Space Exposure Facility experiment.



Marcos Pontes, Brazilian Space Agency astronaut

Brazilian Space Agency astronaut Marcos Pontes, a lieutenant colonel in the Brazil Air Force, will join the Expedition 13 crew for its launch to the International Space Station. He will remain aboard the complex for eight days of docked operations, and then return to Earth in with the Expedition 12 crew,

Commander Bill McArthur and Flight Engineer Valery Tokarev.

While on board, Pontes will perform research and science experiments on behalf of the Brazilian Space Agency under a commercial agreement with the Russian Federal Space Agency.



Mission Milestones

(Dates are subject to change.)

March 30.....Launch of ISS Soyuz
12/TMA-8 with Expedition 13 / Pontes

April 1.....Docking of ISS Soyuz
12/TMA-8 with Expedition 13 / Pontes
(docks to Zarya nadir aft; 3 Russian
vehicles at ISS)

March 31 - April 9.....Expedition 13 / 12
Handover

April 9.....Undocking of ISS Soyuz
11/TMA-7 and landing of Expedition 12 /
Pontes (undocks from Zvezda aft;
2 Russian vehicles at ISS)

*April 12.....45th anniversary of Yuri
Gagarin's flight; 25th anniversary of STS-1*

April 24.....Launch of ISS
Progress 21

April 26.....Docking of ISS
Progress 21 (to Zvezda aft)

June 19.....Undocking of ISS
Progress 20 (from Pirs Docking
Compartment)

June 28.....Launch of ISS
Progress 22

June 30.....Docking of ISS
Progress 22 (to Pirs)

July 1 - 19.....STS-121/ULF1.1 space
shuttle mission planning launch window

July.....U.S. spacewalk by
Williams and Reiter

Aug.....Russian spacewalk by
Vinogradov and Williams

Aug.....STS-115/12A space
shuttle mission planning launch window

Sept. 13.....Undocking of ISS
Progress 21

Sept. 14.....Launch of Expedition 14
in ISS Soyuz 13/TMA-9

Sept. 16.....Docking of Expedition 14
to ISS

Sept. 24.....Undocking from ISS and
landing of Expedition 13 in ISS Soyuz
12/TMA-8



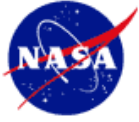
Expedition 13 Spacewalks



Cosmonaut Pavel V. Vinogradov, Expedition 13 commander representing the Russian Federal Space Agency, participates in an Extravehicular Mobility Unit (EMU) spacesuit fit check in the Space Station Airlock Test Article (SSATA) in the Crew Systems Laboratory at the Johnson Space Center.

Two spacewalks are planned during Expedition 13. The first spacewalk, staged from the Quest airlock, is scheduled in July and the second, staged from the Pirs airlock, is scheduled in August. Jeff

Williams and Thomas Reiter will perform the spacewalk from Quest. Pavel Vinogradov and Williams will perform the spacewalk from Pirs.



Astronaut Jeffrey N. Williams, Expedition 13 NASA science officer and flight engineer, is submerged in the waters of the Neutral Buoyancy Laboratory at Johnson Space Center.



All three crewmembers are spacewalk veterans. Vinogradov has made five, Williams has made one and Reiter has made two.

The following activities are to be accomplished during the Expedition 13 spacewalks:

U.S. Spacewalk No. 5 (July)

Williams (EV1) and Reiter (EV2)

- Install Video Stanchion Support Assembly and Floating Potential Measurement Unit on the S1 truss
- Deploy materials on the ISS Experiment 3 and 4
- Install Thermal Radiator Rotary Joint Rotary Joint Motor Controller on S1 truss
- Remove and replace Thermal Radiator Multiplexer/Demultiplexer on S1 truss
- Remove and replace Node 2 Shunt Jumper in S0 truss
- Install four Spool Positioning Devices (SPDs) on the S0 truss
- Complete infra-red camera Detailed Test Objective 851 Objective 2 for the

Space Shuttle Program to test shuttle heat shield inspection techniques

- A variety of get-ahead tasks for future shuttle assembly mission to the station are under consideration, including:
 - Install a light on the Crew Equipment Translation Aid cart on the S1 truss
 - Install a Non-Propulsive Valve on the Destiny Laboratory
- Remove Global Positioning Satellite antenna No. 4

Russian Spacewalk No. 16 (August)

Vinogradov (EV1) and Williams (EV2)

- Elektron vent nozzle (hydrogen relief valve) installation
- Retrieve third Biorisk container from DC-1
- Perform Golf Project
- Retrieve Pressure Control and Exposure Monitor Sensor
- Retrieve Kromka No. 3



National Aeronautics and
Space Administration

Expedition 13 Press Kit

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