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STS-115 Fact Sheet

The on-orbit construction of the International Space Station returns to full speed when space shuttle *Atlantis* and the STS-115 crew visit the orbital outpost. During the mission, which is designated as Station Assembly Flight 12A, *Atlantis* will deliver a piece of the station's integrated truss structure and other key components.

STS-115's crew will conduct three spacewalks to install hardware and outfit the new P3/P4 truss section, preparing it for operation. Another task for the STS-115 crew is the inspection of the Atlantis heat shield. The six-member shuttle crew will also conduct joint operations with the Expedition 13 crew and transfer cargo between the space station and *Atlantis*.

STS-115 will be the 116th space shuttle mission and the 19th to visit the space station. *Atlantis* will be making its 27th flight and sixth trip to the station.

The Truss

The P3/P4 structure will be attached to the P1 truss, which was delivered to the space station during STS-113 in the fall of 2002. The new set of photovoltaic solar arrays will increase the power capability of the station. The new segment is 45.3 feet long and weighs 34,885 pounds.

The solar arrays on the P4 truss will be unfurled on flight day 6. The full length of the arrays is 240 feet. The arrays will provide additional power for the station in preparation for the delivery of international science modules. The 82 active array blankets contain a total of 16,400 individual silicon photovoltaic cells to convert sunlight into electricity.

The P3/P4 truss also contains a device called the Solar Alpha Rotary Joint (SARJ). This device will be joined to the end of the P5 truss once it is delivered on the STS-116 mission and the P6 truss, which will be relocated on the STS-120 mission. The SARJ will rotate 360 degrees either clockwise or counterclockwise to position the P4 and P6 solar arrays to track the sun for electrical power generation.

Once completed, the integrated truss structure will span more than 300 feet and carry power, data and environmental services for the station.

The Crew

The six-member STS-115 crew is composed of a mixture of veterans and first-time space travelers.

Brent Jett, a captain in the U.S. Navy, is commanding his second shuttle mission. He served as pilot on STS-72 in 1996 and STS-81 in 1997. He then commanded STS-97 in 2000, a mission that delivered the first set of solar arrays to the station and the first shuttle mission to visit an expedition crew.

Chris Ferguson, who is making his first space-flight, is the STS-115 pilot. He is a captain in the Navy.

Joe Tanner is a mission specialist for STS-115. He is a veteran of three flights, logging more than 742 hours in space. He flew on STS-66 in 1994, STS-82 in 1997 and STS-97 with Jett. He has conducted five spacewalks. Tanner is scheduled to conduct two spacewalks during STS-115.

Dan Burbank is a commander in the U.S. Coast Guard and has one shuttle mission under his belt. He flew to the station during STS-106 in 2000. He is a mission specialist for STS-115 and is scheduled to conduct one spacewalk.

STS-115 will be the first spaceflight for Heidemarie Stefanyshyn-Piper. She is a Navy commander and joined the astronaut corps in 1998. Piper is slated to perform two spacewalks.

Joining the five NASA astronauts is Steven MacLean from the Canadian Space Agency. He previously flew in space during STS-52 in 1992. During STS-115, he will be the first Canadian to operate the station's robotic arm, which was built by the Canadian Space Agency.

Spacewalks and Solar Array Deployment

The three scheduled STS-115 spacewalks will be performed by two teams, each consisting of two astronauts. This set-up will allow back-to-back spacewalks on flight days 4 and 5. The third trip outside the shuttle/station complex will take place on flight day 7.

Tanner and Piper are slated to conduct the first spacewalk. The P3/P4 segment will be installed prior to the start of the excursion. The two spacewalkers will begin efforts to prepare the truss for solar array deployment, which includes connecting power and data cables between the P1 and the newly installed segment.

Burbank and MacLean will perform the second spacewalk, continuing preparations for the solar deployment. They are slated to remove more than 20 locks and launch restraints.

Solar array deployment occurs on flight day 6 in increments to allow for the proper thermal conditioning of the array blankets. Also, the arrays will be deployed with high tension to avoid large motion that occurred when the station's first set of arrays were deployed during STS-97 in 2000.

Tanner and Piper will conduct the mission's third spacewalk. They will prepare the solar array radiator for deployment. They will then remove and configure equipment that will allow the station mobile transporter to move along its path from the P1 to the P3. Before they return to the airlock, the two are slated to retrieve a material science experiment from the station's exterior and perform antenna installation.

Atlantis is scheduled to leave the station on flight day 9, allowing the STS-115 crew to conduct late heat shield inspections on flight day 10, as the result of lessons learned during the STS-121 mission. Late inspection of the heat shield after undocking will enable the crew to take advantage of improved lighting and better clearances for the orbiter boom sensor system.

The astronauts will prepare for landing on flight day 11 and return to Earth on flight day 12. If flight controllers require a focused orbiter heat shield inspection while *Atlantis* is at the station, STS-115 will receive an additional day of docked operations.

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National Aeronautics and Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058

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