National Aeronautics and Space Administration

NASAfacts

STS-115/Atlantis

19th ISS Flight Continues Construction

NASA's space shuttle mission STS-115 marks the return to construction of the International Space Station, which is the main goal of the remaining space shuttle flights. During the 11-day mission, Atlantis will dock to the station and the crew will perform three spacewalks. Mission STS-115 is the 116th space shuttle flight and the 19th flight to the station.

The astronauts will deliver and install the P3/P4 integrated truss segment, as well as batteries and solar arrays to provide power to the station. The segment is approximately 45.3 feet long and weighs nearly 35,000 pounds. The P3/P4 segment will attach to the P1 truss on the port side of the station's integrated truss segment. Together, the trusses and solar arrays will provide one-fourth of the total power-generation capability of the completed station.

The P3 portion includes the Solar Alpha Rotary Joint, which is the largest mechanism on P3. It fosters the primary function of P3: rotating the entire truss structure outboard, including two solar arrays on P4 and eventually the two solar arrays on P6. This rotation keeps the surface of the arrays pointing at the sun for optimal power generation. P3 also comprises two Unpressurized Cargo Carrier Attach System platforms for stowage.

P4's upper and lower decks each have a separate station power channel known as 2A and 4A. These channels each include a solar array, six batteries, three battery charge/discharge units and other electronics which generate, store, regulate and distribute power to the station. P4 also includes a large photovoltaic radiator and two thermal cooling loops filled with ammonia for each deck. This system dissipates the heat that accumulates during power storage and distribution, keeping the various electronic components cool.

During the first spacewalk, crew members will mate the P3/P4 truss segment and begin powering it. The second spacewalk includes removing the restraints that kept the truss

structure rigid during launch, thus allowing the P3 joint to rotate. The crew will perform various tasks during the third spacewalk, including clean-up activities, deploying the P4 radiator and upgrading an antenna. If necessary to complete mission objectives, there are enough provisions for one docked and two undocked additional spacewalks.

To prepare for the extravehicular activities, spacewalkers will perform a new "campout pre-breathing exercise." These crewmembers will reside in the station's airlock overnight, where the pressure will slowly be reduced. This safely removes harmful gases from their blood, allowing them to gradually acclimate to the lower pressure they will encounter.

The Crew

A veteran of three space missions, Commander **Brent Jett** will lead the crew of STS-115. He was the pilot of both STS-72 in 1996 and STS-81 in 1997. He commanded the crew of STS-97 in 2000, which included his current STS-115 crewmate Joe Tanner. Jett has traveled more than 12.1 million miles and logged more than 699 hours in space. NASA selected him in 1992, and he performed various technical assignments during the following two years. Jett graduated first in his class with a Bachelor of Science degree in aerospace engineering from the U.S. Naval Academy in 1981. In 1989, he earned a Master of Science degree in aeronautical engineering from the U.S. Naval Postgraduate School. He was born in Pontiac, Mich., but considers Fort Lauderdale, Fla., his hometown.

Chris Ferguson will serve as pilot during his first space flight. He will also be the robotic arm's back-up operator. He was selected by NASA in 1998 and then completed two years of training and evaluation. Ferguson performed technical duties in the Astronaut Office Spacecraft Systems/Operations branch, including work related to the space shuttle main engine, external tank, solid rocket boosters and software. He earned a Bachelor of Science degree in mechanical engineering from Drexel University in Philadelphia in 1984, and a master's in aeronautical engineering from the Naval Postgraduate School in 1991. He was born in Philadelphia.

Mission Specialist **Joe Tanner** will make his fourth space flight during STS-115. He will perform two spacewalks, adding to the five he's already accrued. Selected by NASA in 1992, Tanner flew on STS-66 in 1994, STS-82 in 1997 and STS-97 in 2000. He has logged more than 742 hours in space, including more than 33 spacewalk hours. Tanner has been part of the Astronaut Support Personnel and Shuttle Avionics Integration Laboratory teams, served as a branch chief and taught space shuttle landing techniques. He earned a Bachelor of Science degree in mechanical engineering from the University of Illinois in 1973. He was born in Illinois.

Dan Burbank will serve as a mission specialist during his second space flight, and will participate in the mission's second spacewalk. Selected by NASA in 1996, he flew on STS-106 in 2000. He has logged more than 283 hours in space. Burbank focused on technical issues for the Astronaut Office's Operations Planning branch and the International Space Station, and served as spacecraft communicator. He earned a Bachelor of Science degree in electrical engineering from the U.S. Coast Guard Academy in 1985, and a Master of Science degree in aeronautical science from Embry-Riddle Aeronautical University in 1990. He was born in Manchester, Conn., but considers Tolland, Conn., his hometown.

Canadian Space Agency astronaut **Steve MacLean** will serve as a mission specialist on his second space flight. He will become the first Canadian to operate the station's robotic arm, Canadarm 2, and the second to walk in space when he participates in the mission's second spacewalk. In 1983, MacLean was selected as one of the first six Canadian astronauts. In 1992, he participated in the STS-52 mission. MacLean earned bachelor's (1997) and doctoral (1997) degrees in physics from York University in Ontario. He was born in Ottawa.

During her first space flight, **Heidemarie Stefanyshyn-Piper** will serve as a mission specialist. She will participate in the first and third spacewalk of the mission. She was selected by NASA in 1996 and has served as lead Astronaut Office representative for payloads. Stefanyshyn-Piper earned bachelor's (1984) and master's (1985) degrees in mechanical engineering from the Massachusetts Institute of Technology. She was born in St. Paul, Minn.

National Aeronautics and Space Administration

John F. Kennedy Space Center
Kennedy Space Center, FL 32899

www.nasa.gov