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STS-97/Endeavour

Shuttle to Power Up Orbiting Station with Help from the Sun

Powering up the enormous orbiting International Space Station (ISS) will be the primary objective of the five-member crew aboard STS-97. Two of the eight giant solar arrays will be carried aboard the P6 Integrated Truss Segment and will be the first part of a system that ultimately will deliver 60 times more power to the ISS research facilities than was possible on Russia's Mir. The P6 Truss Segment, containing the solar arrays and the batteries, will be temporarily installed to the Unity connecting module by the Z1 Truss recently launched aboard STS-92.

Each 108.6-ft. long solar array wings will extend outward at right angles and be connected to the Station's 310-ft. long truss. Altogether, they will cover an area about the size of an acre, and when fully extended, will span about 240 feet, the largest deployable structure ever built.

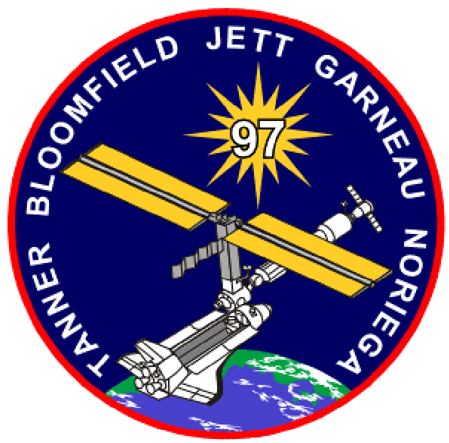
An array consists of two solar cell "blankets," one on either side of a telescoping mast that extends and retracts to form the solar array wing. The mast turns on a gimbal or device to level the arrays and keep it facing the sun. There are a total of four pairs of wings, each with two arrays measuring 112 feet long by 39 feet wide, and along with its assemblies are called a "photo-voltaic module."

The most powerful solar arrays ever to orbit Earth will capture the sun's elusive energy and begin the process of converting it into power for the Station.

The arrays will supply 105 kilowatts - enough to light a town - and will connect the labs, living quarters, payloads and systems equipment.

To complete this daunting task, Mission Specialists Carlos Noriega and Joseph Tanner will perform two spacewalks to install the solar array connections.

The crew will also install batteries to provide



power when the Station is in Earth's shadow, about one-third of every orbit, to compensate for the time the Station will spend in darkness. The batteries will store energy gathered by the solar arrays during the sunlit portion of time and will supply the energy to power the Station.

This mission, STS-97, will have the challenge of catching up to and docking with an inhabited International Space Station traveling more than 17,000 miles per hour. Three crew members, launched earlier from Baikonur Cosmodrome in Kazakhstan on a Russian Soyuz rocket, will greet the visitors of STS-97 and welcome them as guests to the Station.

Bill Shepard, Sergei Krikalev and Yuri Gidzneko make up the Station's first crew and begin the preparations for a five-month stay that will mark the beginning of continuous habitation of the Space Station. The Soyuz spacecraft will stay docked to the Station to serve as a Crew Return Vehicle in case of a medical or other emergency.

The International Space Station represents a global partnership of 16 nations. The million-pound Station will include six laboratories and provide more space for research than any spacecraft ever built. Internal volume of the Station will be roughly equal to the passenger cabin volume of a 747 jumbo jet.

One goal to building and operating an International Space Station is to provide a world-class research center in the unique environment of space. More than 900 researchers from countries around the world are developing experiments that will be carried out aboard the ISS to improve life on Earth.

The Crew

Commander Brent W. Jett Jr. (Com., USN) is a veteran of two previous space flights and has traveled 7.6 million miles and more than 458 hours in space. Before becoming an astronaut, he worked as a project test pilot at the Carrier Stability Department of the Strike Aircraft Directorate flying F-14s and was then assigned to the USS Saratoga. After being selected as an astronaut in March 1992, Jett served in various technical assignments in the Astronaut Office at Johnson Space Center in Houston.

Jett was born in Pontiac, Mich., but considers Ft. Lauderdale, Fla., to be his hometown. His educational background includes a bachelor of science degree in aerospace engineering from the U.S. Naval Academy and a master of science degree in aeronautical engineering from the U.S. Naval Postgraduate School.

Michael J. Bloomfield (Lt. Col., USAF) will serve as pilot aboard the STS-97 flight. His initial space flight for NASA was STS-86, the seventh mission to rendezvous and dock with the Russian Space Station Mir. Selected as an astronaut by NASA in December 1994, he worked technical issues for the Operations Planning Branch and served as chief of safety for the Astronaut Office.

Bloomfield was born in Flint, Mich., but considers Lake Fenton, Mich., to be his hometown. He received a bachelor of science degree in engineering mechanics from the U.S. Air Force Academy and a master of science degree in engineering management from Old Dominion University.

Mission Specialist Joseph R. "Joe" Tanner is an experienced spacewalker and has spent a total of 14 hours on previous Extravehicular Activities (EVA) to service the Hubble Space Telescope on mission STS-82. His work for NASA began as a research pilot and involved teaching astronaut pilots Space Shuttle landing techniques in the Shuttle Training Aircraft.

Tanner considers Danville, Ill., to be his hometown. He received his bachelor of science degree in mechanical engineering from the University of Illinois. Selected as an astronaut candidate by NASA in March 1992, he served between missions as a part of the Astronaut Support Personnel team at KSC to support launches and landings.

Carlos I. Noriega (Lt. Col., USMC) will serve as a mission specialist on his second space flight. Aboard STS-97, Noriega will conduct two spacewalks to assist in the assembly of the P6 Integrated Truss Segment of the International Space Station. Noriega has held technical assignments in the Astronaut Office EVA/Robotics and Operations Planning Branches and Johnson Space Center. He flew aboard STS-84 in 1997 and has logged more than 221 hours in space.

Born in Lima, Peru, he considers Santa Clara, Calif., to be his hometown. Noriega's educational background includes a bachelor of science degree in computer science from the University of Southern California and a master of science degree in computer science and space systems operations from the Naval Postgraduate School. Selected by NASA in December 1994, Noriega reported to Johnson Space Center in March 1995 to begin his training.

Mission Specialist Marc Garneau (Ph.D.) will be making his third space flight on mission STS-97. Garneau was the first Canadian to fly on NASA's initial mission to carry a seven-person crew on STS-41G in 1984 and has logged more than 437 hours in space. After his initial flight, he served as spacecraft communicator (CAPCOM) in Mission Control during Shuttle flights.

He was born in Quebec City, Canada, and attended the Canadian Forces Command and Staff College in Toronto. Garneau earned a bachelor of science degree in engineering physics from the Royal Military College of Kingston and a doctorate in electrical engineering from the Imperial College of Science and Technology, London, England.

Related NASA Web sites

Mission and crew press kit:
www.shuttlepresskit.com/

Mission and crew - Johnson Space Center:
spaceflight.nasa.gov/

Shuttle countdown - Kennedy Space Center:
www.ksc.nasa.gov/shuttle/countdown/

Multimedia prelaunch guest presentation:
www-pao.ksc.nasa.gov/kscpao/briefing/