NASA Facts

National Aeronautics and Space Administration

Washington, D.C. 20546
(202) 358-1600

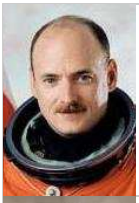
FACT SHEET **August 2007**

SPACE SHUTTLE ENDEAVOUR (STS-118)

Space shuttle Endeavour's upcoming mission, designated STS-118, will deliver a new segment to the right side of the International Space Station's backbone, known as the truss. The mission will be Endeavour's first flight in more than four years. Endeavour has undergone extensive modifications, including the addition of safety upgrades already added to shuttles Discovery and Atlantis. Endeavour also features the new Station-to-Shuttle Power Transfer System, or SSPTS (pronounced "spits"), that will allow the docked shuttle to draw electrical power from the station and extend its visit to the orbiting lab. Three spacewalks are planned to install the S5 truss segment and repair one of the station's control moment gyroscopes, a mini-refrigerator-sized spinning wheel used to control the station's orientation. Three days and one spacewalk may be added to the 11-day mission if SSPTS works as planned. The STS-118's seven-member crew includes Barbara Morgan, a mission specialist astronaut who will fly 22 years after first being selected as the backup in the Teacher in Space Project. *(For more details, see Press Kit, p. 1)*

CREW

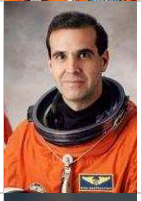
(Press Kit, p. 27)



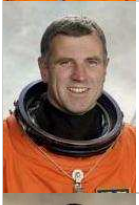
Scott Kelly
Commander (Commander, U.S. Navy)
- Veteran of one spaceflight, pilot on STS-103 in 1999 to upgrade the Hubble Space Telescope
- Age: 43, Hometown: Orange, N.J.
- Married with two children
- Over 3,700 flight hours in 30 different aircraft

Charlie Hobaugh (HOE-baw)
Pilot (Colonel, U.S. Marine Corps)
- Veteran of one spaceflight, pilot on STS-104, the 10th mission to the station
- Age: 45, born in Bar Harbor, Maine
- Married with four children; enjoys triathalons
- Call Sign: Scorch

Tracy Caldwell
Mission Specialist-1 (Ph.D)
- First spaceflight
- Age 37 (Aug. 14), Hometown: Arcadia, Calif.
- Enjoys running and auto repair
- Speaks Russian, knows sign language
- Call Sign: T.C.



Rick Mastracchio (Muh-strack-ee-oh)
Mission Specialist-2
- Veteran of one spaceflight, STS-106
- Will perform three spacewalks
- Age 47, Hometown: Waterbury, Conn.
- Member, Institute of Electrical and Electronics Engineers



Dave Williams
Mission Specialist-3 (M.D.)
- Canadian Space Agency astronaut; veteran of one spaceflight, will do at least two spacewalks
- Age: 53, Born: Saskatoon, Saskatchewan
- Married with two children; enjoys scuba diving
- Joined the international class of NASA in 1995

Barbara R. Morgan
Mission Specialist-4
- First spaceflight
- Selected as a mission specialist in 1998
- Age: 55, Hometown: Fresno, Calif.
- Married with two children; plays the flute
- Taught second, third and fourth grades

Alvin Drew
Mission Specialist-5 (Colonel, U.S. Air Force)
- First spaceflight
- Selected as a mission specialist in July 2000
- Age 44, Born: Washington, DC
- 3,000 hours flying in over 30 types of aircraft
- Member, Society of Experimental Test Pilots

STS-118 Crew Patch
The patch represents the mission to help complete the assembly of the International Space Station and symbolizes the pursuit of knowledge through space exploration. The flight will accomplish assembly tasks and highlight the importance of education.

Spacewalks: Each will last approximately 6.5 hours. *(Press Kit, p. 53)*

- First spacewalk or EVA-1: On flight day 4, after the station's robotic arm attaches the S5 truss segment to the S4, Williams and Mastracchio will remove locks from the S5 that secure it during launch. They will then lock it in place. They also will relocate a radiator from its launch position to the bottom of the S5 to provide clearance for solar arrays to track the sun. Finally, ground commands will retract a radiator on the P6 truss on the left side of the station. The astronauts will monitor and secure it in place for deployment on the next shuttle mission, STS-120, targeted for launch in October.
- Second spacewalk: On flight day 6, Williams and Mastracchio will move a failed control moment gyroscope (CMG-3) to an unpressurized platform that holds spare parts outside the station called External Stowage Platform–2 (ESP-2). ESP-2 will be returned to Earth during a later mission. Endeavour will deliver a new platform, ESP-3, that will be added to the station. Stored inside ESP-3 is a new gyro that the spacewalkers will use to replace the failed one. They also will disconnect ESP-3 power cables to prepare it for permanent relocation to the station.
- Third spacewalk: On flight day 8, Expedition 15 crew member Clayton Anderson and Mastracchio will perform tasks to prepare for the relocation of the P6 truss segment on the STS-120 mission. Using the station's robotic arm, they also will move two equipment carts from the right to left side of the station. They will relocate an antenna and upgrade avionics and communication systems.
- A potential fourth spacewalk (depends on SSPTS): On flight day 10, Anderson and Williams will install support equipment on the S1 truss that will allow for an addition to the inspection boom during the STS-123 mission, targeted for launch February 2008. The boom is used to check the a shuttle's protective skin for possible damage. They also will install a system to provide better wireless video coverage during future missions.

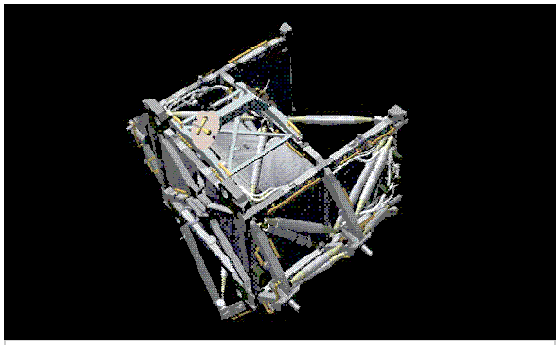


Figure 1: The aluminum square-shaped S5 is about the length of a small compact car and weighs 4,010 pounds.

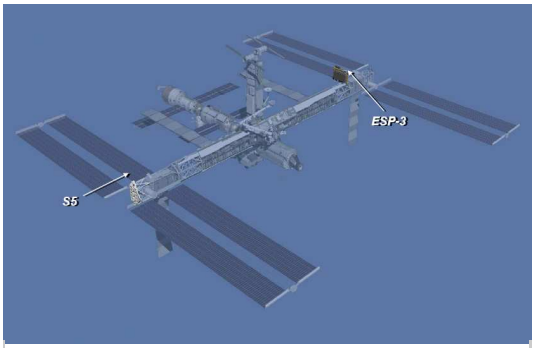


Figure 2: The station's configuration after STS-118, with the S5 truss segment and ESP-3 installed.

FACTS & FIGURES

- STS-118 is the 119th space shuttle flight, the 20th flight for the space shuttle Endeavour and the 22nd flight to the station. This is Endeavour's first flight since STS-113 in November 2002.
- Future missions using the Station-to-Shuttle Power Transfer System, or SSPTS, could gain as many as six extra days once all the station's solar arrays are installed and providing power to the system. *(Press Kit, p. 44)*
- The 10-1/2-by-15-foot S5 truss segment will be the 10th truss attached to the station as part of 11 total trusses. The truss structure will ultimately extend the length of a football field. The S5 provides clearance between sets of solar arrays on the right side of the truss structure. *(Press Kit, p. 37)*
- Endeavour will include in its cargo bay a Spacehab module, a pressurized, closet-like room carrying supplies. This is the 22 and last shuttle flight of any Spacehab module. *(Press Kit, p. 41)*
- The shuttle also will deliver 5,000 pounds of supplies, including spare parts, food, clothing, scientific experiments, and then bring down 5,000 pounds of garbage and spare parts no longer needed on the station.
- An improvement to the shuttle's main engine system will be actively operating on all three of Endeavour's engines. The Advanced Health Management System, or AHMS, can shut down an engine if vibration issues are detected. *(Press Kit, p. 75)*
- Approximately 10 million basil seeds will launch and return with STS-118. After the mission, the seeds will be distributed to students and educators as part of a comprehensive education plan.
- Nearly 17,000 NASA civil servants and contractors across the country contribute to the agency's Space Shuttle Program.