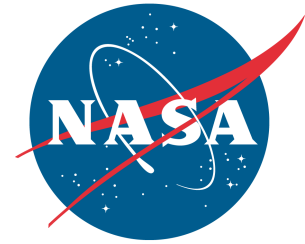


# NASA Mission Summary

National Aeronautics and  
Space Administration  
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## STS-126 MISSION SUMMARY

NOVEMBER 2008

### SPACE SHUTTLE ENDEAVOUR (STS-126)

Space shuttle Endeavour's STS-126 flight will feature important repair work and prepare the International Space Station to house six crew members for long-duration missions. The 15-day flight with its four planned spacewalks will primarily focus on servicing the station's two Solar Alpha Rotary Joints, which allow its solar arrays to track the sun. (The starboard SARJ has had limited use since September 2007.) Endeavour will carry about 32,000 pounds, which will include supplies and equipment necessary to double the crew size from three to six members in spring 2009. The new station cargo includes additional sleeping quarters, a second toilet and a resistance exercise device. The shuttle also will deliver a new crew member and bring back another after more than five months aboard the station.

### CREW

	<p><b>Chris Ferguson</b> Commander (Captain, U.S. Navy)</p> <ul style="list-style-type: none"> <li>• Veteran of one spaceflight, pilot on STS-115</li> <li>• Age: 47, Born: Philadelphia</li> <li>• Married with three children</li> <li>• Attended the Navy Fighter Weapons School</li> <li>• Drummer for Max Q, astronaut rock &amp; roll band</li> </ul>		<p><b>Eric Boe (bo)</b> Pilot (Colonel, U.S. Air Force)</p> <ul style="list-style-type: none"> <li>• First spaceflight</li> <li>• Age: 44, Hometown: Atlanta</li> <li>• Married with two children</li> <li>• Logged 4,000+ hours in 45 different aircraft</li> <li>• Enjoys outdoor sports, skiing &amp; scuba diving</li> </ul>
	<p><b>Donald Pettit (pet-it)</b> Mission Specialist-1</p> <ul style="list-style-type: none"> <li>• Second spaceflight, Expedition 6 science officer</li> <li>• Over 161 days in space, 13 spacewalk hours</li> <li>• Age: 53, Born: Silverton, Ore.</li> <li>• Married with two children</li> <li>• Ph.D. chemical engineering, U. Arizona 1983</li> </ul>		<p><b>Steve Bowen (bo-en)</b> Mission Specialist-2 (Captain, U.S. Navy)</p> <ul style="list-style-type: none"> <li>• First spaceflight</li> <li>• Will conduct three spacewalks</li> <li>• Age: 44, Born: Cohasset, Mass.</li> <li>• Married with three children</li> <li>• First submarine officer selected as an astronaut</li> </ul>
	<p><b>Heidmarie Stefanyshyn-Piper (hi-dee-mar-ee stef-uh-NIH-shun PIE-pur)</b> Mission Specialist-3 (Captain, U.S. Navy)</p> <ul style="list-style-type: none"> <li>• Veteran of one spaceflight, STS-115</li> <li>• Lead STS-126 spacewalker, will conduct three</li> <li>• Age: 45, Born: St. Paul, Minn.</li> <li>• Married with one son</li> </ul>		<p><b>Shane Kimbrough (kim-BRO)</b> Mission Specialist-4, (Lt. Colonel, U.S. Army)</p> <ul style="list-style-type: none"> <li>• First spaceflight</li> <li>• Age: 41, Hometown: Atlanta</li> <li>• Married with three children</li> <li>• Deployed in Operation Desert Storm</li> <li>• Captain of the West Point baseball team, 1989</li> </ul>
	<p><b>Sandra Magnus</b> Mission Specialist-5 Expedition 18 Flight Engineer &amp; Science Officer</p> <ul style="list-style-type: none"> <li>• Veteran of one spaceflight, STS-112</li> <li>• Ph.D. material science &amp; engineering, GIT 1996</li> <li>• Age: 44, Born: Belleville, Ill.</li> <li>• Returns on STS-119, targeted February 2009</li> </ul>		<p><b>Greg Chamitoff (SHAM-eh-tawf)</b> Expedition 17/18 Flight Engineer Mission Specialist-5</p> <ul style="list-style-type: none"> <li>• Launched to the station on STS-124 in May</li> <li>• Ph.D. aeronautic &amp; astronautic, MIT 1992</li> <li>• Age: 45, Born: Montreal, Canada</li> <li>• Returns to Earth on STS-126</li> </ul>



The STS-126 patch represents shuttle Endeavour on its mission to help complete the assembly of the station. The inner patch outline depicts the logistics module. Near the center of the patch, the constellation Orion reflects the goals of the human spaceflight program, returning us to the moon and on to Mars, which are also shown. At the top of the patch is the gold symbol of the astronaut office. The sunburst, just clearing the horizon of the Earth, powers all these efforts through the solar arrays of the station's current configuration orbiting high above.

**SPACEWALKS** Each will last approximately 6.5 hours.

- On flight day 5, Piper and Bowen will conduct external outfitting of the station. They will replace a depleted nitrogen tank and a device used to help the flow of coolant from the truss, the backbone of the station. They also will remove thermal covers from the Japanese Kibo module to inspect the berthing mechanism where the module's exposed facility will be installed during the STS-127 mission in 2009. They also will start inspecting, cleaning and lubricating the starboard SARJ and begin replacing 11 of 12 trundle bearings. One was replaced during the STS-124 mission in June.
- On flight day 7, Piper and Kimbrough will relocate equipment carts, setting the stage for the installation of the starboard S6 truss. The spacewalkers also will lubricate the end effector, or hand, of the Canadarm2, the station's robotic arm. They also will continue lubricating the starboard SARJ and replacing trundle bearings.
- On flight day 9, Piper and Bowen will complete starboard SARJ cleaning, lubricating and trundle bearing work.
- On flight day 11, Bowen and Kimbrough will remove several thermal covers on the port SARJ. Kimbrough will lubricate the port SARJ, while Bowen will reinstall the thermal insulation covers (removed on flight day 5) on Kibo. He then will install two GPS antennas on Kibo's logistics module, while Kimbrough installs a new TV camera on the truss. If time permits, they will remove launch restraint hose clamps on cooling lines.

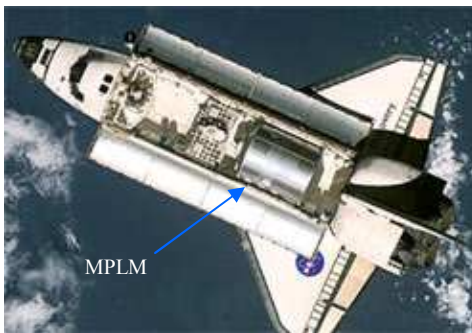


Figure 1: Shuttle carrying MPLM

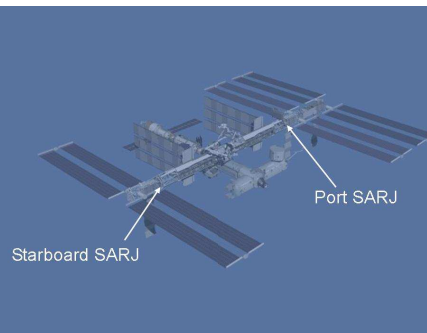


Figure 2: SARJ locations

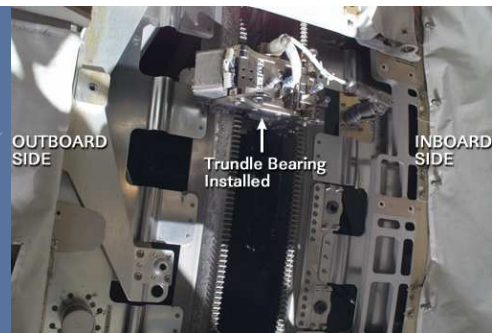


Figure 3: Trundle bearing installed

**FACTS & FIGURES**

- STS-126 is the 124th space shuttle flight, the 27th flight to the station, the 22nd flight for Endeavour and the fourth flight in 2008. The mission will be docked during the 10th anniversary of the space station on Nov. 20.
- The *Leonardo* Multi-Purpose Logistics Module will be installed to the station on flight day 4 and returned to the shuttle's cargo bay on flight day 13 for its return to Earth.
  - The station's three MPLMs are the "moving vans" inside the shuttle's cargo bay that carry supplies to and from the space station.
  - Leonardo will be moved to and from the complex using the station's robotic arm.
  - The pressurized modules, built as a joint venture between NASA and the Italian Space Agency, get their distinct names from great engineers in Italian history: painters Leonardo and Raffaello, and sculptor Donatello.
- The MPLM will deliver systems to be installed in the U.S. Destiny lab and Harmony node, such as:
  - Two water recovery systems racks for recycling urine into potable water, a second toilet system, new galley components, two new food warmers, a food refrigerator, an experiment freezer and a combustion science experiment rack.
  - Two separate sleeping quarters and a resistance exercise device that allows station crew members to perform a variety of exercises, such as bench presses, dead lifts, sit-ups and squats.
- Spacewalkers will lubricate the SARJs with a high-vacuum grease lubricant called Braycote. Braycote was selected for its lubrication qualities, because it is chemically inert and non-flammable. The SARJ work on STS-126 is expected to at least extend the lives of the joints.