

# NASA Mission Summary

National Aeronautics and  
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## STS-129 MISSION SUMMARY

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### SPACE SHUTTLE ATLANTIS (STS-129)

Atlantis' mission will focus on storing spare hardware on the exterior of the International Space Station. The 11-day flight will include three spacewalks and the installation of two platforms to the station's truss, or backbone. The platforms will hold spare parts to sustain station operations after the shuttles are retired. This equipment is large and can only be transported using the unique capability of the shuttle. Atlantis also will bring back a station crew member after more than two months aboard the orbiting laboratory. This is slated to be the final space shuttle crew rotation flight for the station.

### CREW

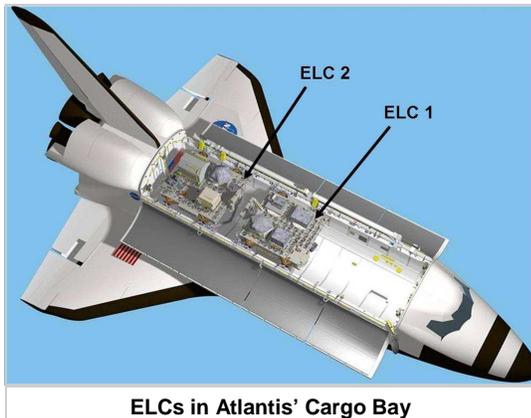
	<p><b>Charlie Hobaugh (hoe-baw)</b> Commander (Colonel, U.S. Marine Corps)</p> <ul style="list-style-type: none"> <li>• Veteran of two spaceflights, pilot of STS-104 in 2001 &amp; STS-118 in 2007</li> <li>• Age: 47, (Nov. 5), born in Bar Harbor, Maine</li> <li>• Married with four children; enjoys triathalons</li> <li>• Call Sign: Scorch</li> </ul>		<p><b>Barry E. Wilmore</b> Pilot (Captain, U.S. Navy)</p> <ul style="list-style-type: none"> <li>• First spaceflight</li> <li>• Hometown: Mt. Juliet, Tenn.</li> <li>• Logged 5,900+ hours in tactical jet aircraft</li> <li>• Joined NASA in 2000 as a pilot</li> <li>• Call Sign: Butch</li> </ul>
	<p><b>Leland Melvin</b> Mission Specialist-1</p> <ul style="list-style-type: none"> <li>• Veteran of one spaceflight (STS-122 in 2008)</li> <li>• Age: 45, Hometown: Lynchburg, Va.</li> <li>• Detroit Lions 11th round pick in 1986 NFL draft</li> <li>• Enjoys taking photos, piano, cycling, tennis and walking his dogs, Jake &amp; Scout</li> </ul>		<p><b>Randy Bresnik</b> Mission Specialist-2 (Lt. Col., U.S. Marine Corps)</p> <ul style="list-style-type: none"> <li>• First spaceflight</li> <li>• Age: 42, Hometown: Santa Monica, Calif.</li> <li>• Married with one son &amp; a daughter on the way</li> <li>• Test pilot, 4,800+ hours in 79 different aircraft</li> <li>• Call Sign: Komrade</li> </ul>
	<p><b>Mike Foreman</b> Mission Specialist-3 (Captain, U.S. Navy, Ret.)</p> <ul style="list-style-type: none"> <li>• Veteran of one spaceflight (STS-123 in 2008)</li> <li>• Age: 52, Hometown: Wadsworth, Ohio</li> <li>• Married with three children</li> <li>• Has 5,000+ hours in over 50 different aircraft</li> <li>• Enjoys golf, running, skiing and home repairs</li> </ul>		<p><b>Robert "Bobby" Satcher</b> Mission Specialist-4 (Ph.D. &amp; M.D.)</p> <ul style="list-style-type: none"> <li>• First spaceflight</li> <li>• Age: 44, Hometown: Hampton, Va.</li> <li>• Married with two children</li> <li>• Worked as orthopedic surgeon</li> <li>• Did medical missions in Venezuela &amp; Nigeria</li> </ul>
	<p><b>Nicole Stott</b> Expedition 20 &amp; 21 Flight Engineer/MS-5</p> <ul style="list-style-type: none"> <li>• Launched to the station on STS-128 in August</li> <li>• Age: 46, Hometown: Clearwater, Fla.</li> <li>• Married with one son</li> <li>• Returns to Earth on STS-129</li> <li>• Twitter feed: @Astro_Nicole</li> </ul>		<p><b>Space Shuttle Atlantis</b></p> <ul style="list-style-type: none"> <li>• Atlantis' 31st flight to the space station</li> <li>• STS-129 is the 129th shuttle flight</li> <li>• STS-129 is Atlantis' 31st flight</li> <li>• Carries ~37,000 pounds of cargo on STS-129</li> <li>• STS-129 is the fifth flight in 2009</li> <li>• After STS-129, Atlantis' last flight is STS-132</li> </ul>



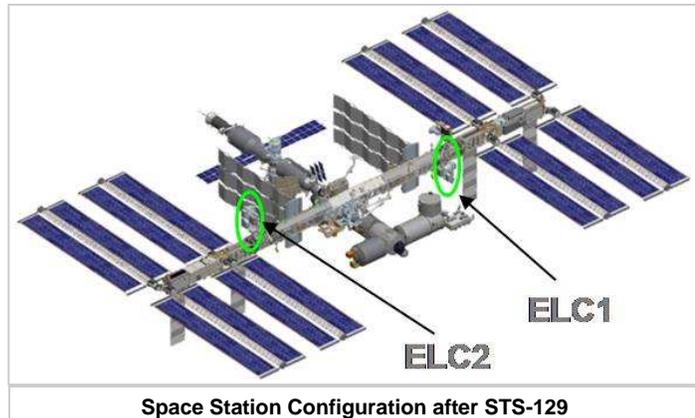
For STS-129 the sun shines brightly on the station above and the United States below representing the bright future of U.S. human spaceflight. The contiguous U.S., Rocky Mountains, and Great Desert Southwest are clearly visible on the earth below. The integrated shapes of the patch signifying the two carriers providing equipment ensuring the station's longevity. The shuttle is vividly silhouetted by the sun and ascends on the astronaut symbol portrayed by the red, white and blue swoosh bounded by the gold halo. The 13 stars are symbolic of our children who are the future. The moon and Mars represent just how close humans are to reaching those heavenly bodies and how the current shuttle and station missions are laying the essential ground work.

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

- On flight day 4, Foreman and Satcher will install a spare antenna on the station's truss, or backbone, and a bracket for ammonia lines on the Unity module. They will lubricate the grapple mechanism on the Payload Orbital Replacement Unit Attachment Device on the Mobile Base System and lubricate the snares of the hand of the station's Japanese robotic arm.
- On flight day 6, Foreman and Bresnik will install the GATOR (Grappling Adaptor to On-Orbit Railing) bracket to the Columbus laboratory and an additional ham radio antenna. They will install on the truss an antenna for wireless helmet camera video. They also will relocate the Floating Potential Measurement Unit that records electrical potential around the station as it orbits the Earth and deploy a bracket to attach cargo on the truss.
- On flight day 8, Satcher and Bresnik will install a new oxygen tank on the Quest airlock and the next set of the "Materials on International Space Station Experiment," known as MISSE-7A and 7B, on ELC-2. They will work the heater cables on a docking adapter in advance of the Tranquility node's installation on Unity's port side and deploy another cargo platform on the truss.



ELCs in Atlantis' Cargo Bay



Space Station Configuration after STS-129

## **FACTS & FIGURES**

- For MISSE-7 there are 700 materials samples that will be installed in holders and placed in two experiment trays, called Passive Experiment Containers 7A and 7B.
  - The PECs will be mounted on the outside of the station.
  - The experiments include tests of spacesuit materials for use on the lunar surface and materials for the solar arrays being designed for the Orion spacecraft.
  - This installment of experiments for the MISSE program will be the first to receive power directly from the station and use its communication system to receive commands and downlink data.
- During STS-129, the two platforms that will be installed on the station are known as ExPRESS Logistics Carriers 1 & 2. ExPRESS stands for "Expedite the Processing of Experiments to the Space Station." Each ELC can hold up to 9,800 pounds (total with spares, ELC 1: 13,842 lbs, ELC 2: 13,365 lbs). The ELCs hold:
  - 2 spare gyroscopes that help maintain the station's attitude in orbit
  - 2 nitrogen tank assemblies used for pressurizing the station's ammonia cooling system
  - 2 pump modules for pumping ammonia from a tank through cooling line in the truss
  - an ammonia tank assembly. Ammonia is used to move excess heat from inside the station to the radiators located outside.
  - a spare latching end effector, or hand, that allows the station's robotic arm to grapple
  - a spare trailing umbilical system for the Mobile Transporter, the rail car that the arm travels on.
  - a high-pressure gas tank for supplying oxygen for the airlock in support of spacewalks
  - Two other ELCs will be delivered next year: one on STS-133 and one on STS-134.
- Shuttle Atlantis also will carry the Commercial Orbital Transportation Services Ultra High Frequency Communication Unit. It will be integrated on the station in preparation for Space Exploration Technologies' (SpaceX) future flights to the orbiting laboratory.
  - Developed by SpaceX, in collaboration with NASA, the unit will allow for communication between the station, SpaceX's Dragon spacecraft, and ground-based mission control.
- STS-129 is the 2nd flight to carry two African-American astronauts. The first was STS-116, which included Robert Curbeam and Joan Higginbotham.