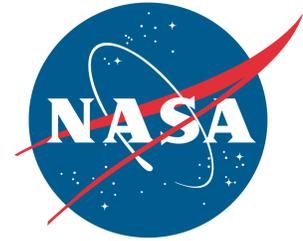


# NASA Mission Summary

National Aeronautics and  
Space Administration

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## STS-130 MISSION SUMMARY

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### SPACE SHUTTLE ENDEAVOUR (STS-130)

Endeavour's 13-day flight will include three spacewalks and the delivery of a connecting module that will increase the International Space Station's interior space. Node 3, known as Tranquility, will provide additional room for crew members and many of the space station's life support and environmental control systems. Attached to the node is a cupola, which is a robotic control station with six windows around its sides and another in the center that will provide a panoramic view of Earth, celestial objects and visiting spacecrafts. After the node and cupola are added, the space station will be about 90 percent complete.

### CREW

	<b>George Zamka</b> (ZAM-kuh) Commander (Colonel, U.S. Marine Corps) <ul style="list-style-type: none"><li>• Served as pilot on STS-120 in 2007</li><li>• Age: 47, Born: Jersey City, N.J.</li><li>• Married with two children</li><li>• Flew 66 combat missions during Desert Storm</li><li>• Enjoys scuba diving, running and boating</li></ul>		<b>Terry Virts</b> Pilot (Colonel, U.S. Air Force) <ul style="list-style-type: none"><li>• First spaceflight</li><li>• Age: 41, Hometown: Columbia, Md.</li><li>• Married with two children</li><li>• Joined NASA in 2000 as a pilot</li><li>• Enjoys baseball, astronomy and photography</li></ul>
	<b>Kay Hire</b> Mission Specialist (Captain, U.S. Navy Reserve) <ul style="list-style-type: none"><li>• 2nd spaceflight (1st was STS-90 in 1998)</li><li>• Age: 50, Mobile, Ala., &amp; Merritt Island, Fla.</li><li>• First female in the U.S. military assigned to a combat aircrew</li><li>• Enjoys fishing, skiing and competitive sailing</li></ul>		<b>Steve Robinson</b> Mission Specialist (Ph.D.) <ul style="list-style-type: none"><li>• Veteran of 3 shuttle flights (STS-85 in 1997, STS-95 in 1998, STS-114 in 2005)</li><li>• Age: 54, Born: Sacramento, Calif.</li><li>• Plays lead guitar in astronaut band, "Max Q"</li><li>• Enjoys drawing, painting, hiking and canoeing</li></ul>
	<b>Nicholas Patrick</b> Mission Specialist (Ph.D., P.E.) <ul style="list-style-type: none"><li>• 2nd spaceflight, (1st was STS-116 in 2006)</li><li>• Age: 45; Saltburn &amp; London, U.K., &amp; Rye, N.Y.</li><li>• Married with three children</li><li>• Holds 3 patents, one in telerobotics</li><li>• Enjoys Tae Kwon Do, flying and reading</li></ul>		<b>Bob Behnken</b> (BANK-ehn) Mission Specialist (Ph.D., Lieutenant Colonel, U.S. Air Force) <ul style="list-style-type: none"><li>• 2nd spaceflight, (1st was STS-123 in 2008)</li><li>• Age: 39, Hometown: St. Ann, Mo.</li><li>• Married</li><li>• Enjoys mountain biking, skiing &amp; backpacking</li></ul>



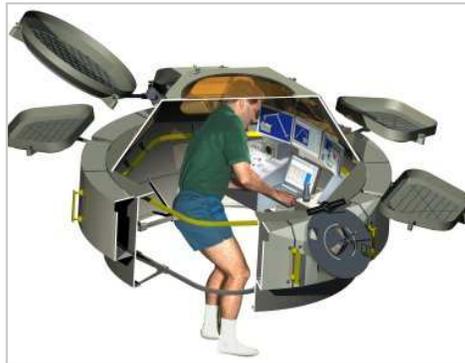
The STS-130 patch was designed by the crew to reflect both the objectives of the mission and its place in the history of human spaceflight. The shape of the patch represents the cupola. The image of Earth is the first photograph of the Earth taken from the moon by Lunar Orbiter I on Aug. 23, 1966. As both a past and a future destination for explorers from the planet Earth, the moon is thus represented symbolically in the patch. The space shuttle Endeavour is pictured approaching the space station, symbolizing the shuttle's role as the prime construction vehicle for the complex.

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

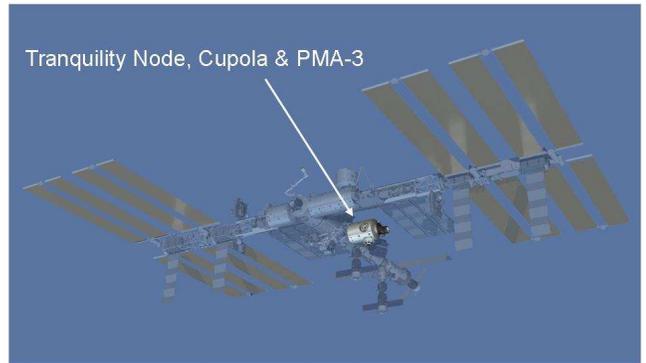
- On flight day 5, Behnken and Patrick will remove a cover that has been in place to protect a port on the Unity node, the location where Tranquility will be attached robotically halfway through the spacewalk. Next, the spacewalkers will remove and store a spare parts platform from the Special Purpose Dexterous Manipulator, or DEXTRE, a two-armed space station robot capable of handling delicate assembly tasks currently performed by spacewalkers. Finally, they will install four electronics systems cables between Unity and Tranquility to bring the new node to life.
- On flight day 7, Behnken and Patrick will install ammonia plumbing connectors between Unity and Tranquility and cover them with thermal insulation. When turned on, the ammonia will provide cooling to Tranquility. Then they will prepare a port on the Earth-facing side of Tranquility for the flight day 8 relocation and attachment of the cupola.
- On flight day 10, Behnken and Patrick will turn on the ammonia cooling lines between Unity and Tranquility, install heater and data cables on Tranquility, remove insulation and launch locks from the newly-installed Cupola, and install handrails on the outside of Tranquility.



The Tranquility Node



The Cupola



Space Station Configuration after STS-130

## **FACTS & FIGURES**

- STS-130 is the 130th space shuttle flight, the 24th flight for shuttle Endeavour and the 32nd flight to station.
- The Tranquility node, a pressurized module, will provide additional room for many of the space station's life support and environmental control systems already on board. These systems include air revitalization, oxygen generation and water recycling. A waste and hygiene compartment and the COLBERT treadmill also will be relocated to the node from other areas of the station.
  - On flight day 5, from inside the station, Virts and Hire will use the station's robotic arm to remove Tranquility from the shuttle's payload bay, then carefully maneuver then install the node onto the port side of the Unity node. Tranquility's hatch opening is scheduled for flight day 6.
  - Pressurized Mating Adapter-3, used to interconnect spacecraft and modules with different docking mechanisms, will be relocated on flight day 9 from the Harmony node's zenith to Tranquility forward where the cupola resided for launch to serve as debris protection.
  - Tranquility will join four other named U.S. modules on the station: the Destiny laboratory, the Quest airlock, the Unity node and the Harmony node.
  - The name Tranquility was chosen from thousands of suggestions submitted by participants on [www.nasa.gov](http://www.nasa.gov). The "Help Name Node 3" poll asked people to vote for the module's name either by choosing one of four options listed by NASA or offering their own suggestion. After receiving more than a million responses in an online poll, NASA named the node "Tranquility." Tranquility was one of the top 10 suggestions submitted by respondents to the poll, which ended March 20.
  - Tranquility was built for NASA by Thales Alenia Space in Turin, Italy, under contract to the European Space Agency.
  - The node spans 23 feet in length, 14.8 feet in diameter and will weigh almost 40,000 pounds in orbit.
- The cupola will be detached from the front port of Tranquility on flight day 8 and relocated to Tranquility nadir.
  - The cupola is 4.9 feet in length, 9.7 feet in diameter and will weigh about 4,145 pounds in orbit.
  - The cupola includes window shutters that provide orbital debris protection when closed.