

US shuttle to bring Tranquility to space station

February 6 2010, by Jean-Louis Santini

The US space shuttle Endeavour and its crew of six astronauts are preparing for a weekend mission to deliver a space module dubbed Tranquility to the International Space Station (ISS).

The mission comes as NASA begins to reevaluate its future after President [Barack Obama](#) effectively abandoned the US space agency's plan to send astronauts back to the moon by 2020.

The Constellation program was intended to develop a successor spacecraft to the shuttle, which could be used to carry astronauts to the moon where they would use a [lunar base](#) to launch manned missions to Mars.

Constrained by soaring budget deficits, Obama submitted a budget to Congress that encourages the agency to instead focus on developing commercial transport alternatives to ferry astronauts to the ISS after the shuttle program ends.

There are just five missions scheduled for NASA's three shuttles before the program is scheduled to wind down later this year. The first shuttle launch was in 1981.

The Endeavour mission's main goal is the delivery of the Tranquility module, also known as Node 3, which comes with a multi-window cupola attached.

The cupola, built for NASA by the European group Thales Alenia Space in their Turin factory, will allow for panoramic views of Earth, space objects and spacecraft arriving at the ISS, the US space agency said.

Endeavour is scheduled to takeoff early Sunday at 4:39 am (0939 GMT) from the Kennedy Space Center in Cape Canaveral, Florida.

"Everything thus far is going exceeding well. We're right on schedule where we're supposed to be and we'll continue to work through the day on our preparations," NASA test director Jeff Spauling told journalists during a press conference.

Countdown began as scheduled at 0700 GMT on Thursday and by Friday the weather forecast had improved to an 80 percent "go" for launch.

Mike Leinbach, the shuttle launch director, reported that his team had not encountered any technical problems and everything was on track for loading of the external fuel tank with propellants at around 7:15 pm Saturday (0015 GMT Sunday).

"The team is energized and excited about the countdown... looking forward to getting Endeavour off the ground Sunday morning," said Leinbach.

With Endeavour's delivery of Tranquility and its attached cupola, the [International Space Station](#) will be 90 percent complete, NASA said.

Tranquility, which weighs in at 18 tonnes, is seven meters long and has a 4.5 meter diameter, while the cupola dome weighs 1.9 tonnes, and measures 1.5 meters with a 2.9 meter diameter.

Installing the module is expected to require a team of two astronauts to undertake three spacewalks lasting 6.5 hours each.

Tranquility, named after the lunar sea where Apollo 11 landed, has the most sophisticated life support system ever flown into space.

It has air revitalization, oxygen generation and water recycling systems and also contains a waste and hygiene compartment for the crew.

The cupola attached to Tranquility boasts six windows arrayed along its sides as well as a central window -- all built with protection against the impact of tiny meteorites -- that will offer an unprecedented panoramic view for those onboard.

But the cupola will also serve an important work function, accommodating two crew members at a time, and is equipped with portable workstations that can control station and robotic activities.

The view will allow the crew to monitor spacewalks and docking operations, NASA said.

The ISS, a joint project involving 16 countries, has cost around 100 billion dollars, mostly provided by the United States.

Under Obama's new budget, the floating research station could see its life extended by five years until 2020.

Meanwhile, NASA will work on sponsoring commercial development of new US spacecraft that can ferry astronauts to the ISS after the shuttle program ends.

Astronauts will have access to Russia's Soyuz craft for transport to the station, but the US [space](#) agency will be called upon to help a US private sector alternative.

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