

# Last spacewalk of US shuttle era ends (Update 2)

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This July 10 NASA TV video image shows the space shuttle Atlantis docking with the International Space Station (ISS). Two US astronauts were to step out on the last spacewalk of the shuttle era Tuesday at the International Space Station where Atlantis is docked for a final time as the US program winds down after 30 years.

Two US astronauts wrapped up the last spacewalk of the shuttle era Tuesday at the International Space Station, where Atlantis is docked on the final mission of the 30-year US program.

Americans Ron Garan and Mike Fossum, who were already aboard the ISS as part of the six-member international Expedition 28 crew when Atlantis arrived on Sunday, successfully completed their repair and maintenance tasks at the lab.

The main objective -- of retrieving a failed ammonia pump from the orbiting outpost and placing it into the shuttle's payload for return to Earth -- was tackled early in the six hour, 31 minute spacewalk.

The duo then turned their efforts toward attaching a Robotic Refueling Module experiment to the lab. The joint US-Canadian project aims to test technologies for repairing and refueling satellites in space.

The Atlantis crew of four American astronauts helped support the spacewalk, which was choreographed by mission specialist Rex Walheim and formally ended at 3:53 pm (1953 GMT).

A total of 160 floating trips have been carried out by astronauts and cosmonauts to build the ISS over the past decade.

The last-ever spacewalk by astronauts from a US shuttle crew was completed on May 27 during Endeavour's final visit to the orbiting outpost.

American astronauts Mike Fincke and Greg Chamitoff's seven and a half hour trip helped move the global space tally past 1,000 hours of spacewalking to construct, maintain and repair the ISS.

The next spacewalk by US astronauts is not scheduled until the fall of

2012, NASA said.

Tuesday's outing marked the 249th spacewalk by US astronauts in history, and brought the total time spent on spacewalk assembly and repair of the ISS to 1,009 hours and nine minutes, mission control in Houston said.

On Monday, NASA decided to extend Atlantis's mission by a day, so the astronauts will now spend 13 days on their final journey to space before the US shuttle program closes down forever.

Atlantis's key mission is to take advantage of the massive cargo space available one last time in order to restock the space station with a year's worth of food and supplies.

The Atlantis crew began work on Monday with their six colleagues at the ISS to transfer nearly five tons of goods to the orbiting outpost and succeeded in unloading the Raffaello multipurpose logistics module.

Other supply ships from Europe, Japan and Russia will be able to stock the ISS when the shuttle program retires after Atlantis, but the space available on the shuttle is unparalleled.

The container is "packed with 9,403 pounds (4,265 kilograms) of spare parts, spare equipment, and other supplies -- including 2,677 pounds (1,215 kilograms) of food -- that will sustain space station operations for a year," NASA said.

Over the coming days, the combined crew will be transferring items from the Raffaello to the station and moving more than 5,600 pounds (2,540 kilograms) of old station gear back into the module for the return to Earth.

"It is pretty much all hands on deck," said flight director Jerry Jason. "It is going to be a very busy time period."

Atlantis's flight marks the end of an era for NASA, leaving Americans without their own vehicle for sending astronauts into space until private industry comes up with a new capsule, likely by 2015 at the earliest.

With the shuttle gone, only Russia's three-seat Soyuz capsules will be capable of carrying astronauts to the ISS -- at a cost of more than \$50 million per seat.

With the extra day in space, Atlantis is now scheduled to land back on Earth July 21 at 5:56 am (0956 GMT), mission control in Houston said.

The four remaining US shuttles -- Discovery, Endeavour, Atlantis and the prototype Enterprise -- will be sent to museums across the country after the program ends.

Two shuttles were destroyed in flight: Challenger blew up in a post-takeoff explosion in 1986 and Columbia disintegrated during its return to Earth in 2003. The disasters killed 14 crew members.

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