

July 21, 2011

# The Shuttle Ends Its Final Voyage and an Era in Space

By [KENNETH CHANG](#)



Space shuttle Atlantis lands at the Kennedy Space Center on Thursday. [More Photos »](#)

The last [space shuttle](#) flight rolled to a stop just before 6 a.m. on Thursday, closing an era in the nation's space program.

"Mission complete, Houston," said Capt. Christopher J. Ferguson of the Navy, commander of the shuttle [Atlantis](#) for the last flight. "After serving the world for over 30 years, the space shuttle has earned its place in history, and it's come to a final stop."

The landing, the 19th before daylight at the Kennedy Space Center in Florida, concluded the 135th shuttle mission. For the Atlantis, the final tally of its 26-year career was 33 missions, accumulating just under 126 million miles during 307 days in space and circumnavigating the [Earth](#) 4,848 times.

Workers used spray paint to mark the position of the Atlantis's wheels; a permanent marker will be placed on the runway to indicate the final resting spot of the space shuttle program.

The last day in space went smoothly. At 4:49 a.m., the Atlantis fired its maneuvering engines to slow down and begin its fall back into Earth's atmosphere.

Descending in a northeast trajectory, it passed over the southeast Pacific Ocean and crossed Central America toward Florida.

On the International Space Station, Michael Fossum, a [NASA](#) astronaut, floated in the station's windowed cupola and observed the trail of hot plasma that marked Atlantis's re-entry.

Less than 10 minutes before landing, Captain Ferguson described the view from his window. "Beautiful view of the Yucatán, I think, going right under the wing right now," he said. "It's a gorgeous thing."

"You're looking good to us, Atlantis," responded Barry E. Wilmore, an astronaut at mission control in Houston. But he added a correction: "You're just passing the west coast of Florida."

"Huh? O.K.," Captain Ferguson said in surprise. "I'm further than I thought we were."

In the clear, windless predawn, twin sonic booms announced the impending arrival as the Atlantis slowed to less than the speed of sound. It made a wide turn to line up with the runway, concluding the 5,284,862-mile trip.

During its 13-day mission, the Atlantis ferried 8,000 pounds of supplies and spare parts to the International Space Station and brought back some pieces, including a failed pump from the space station's cooling system, which engineers want to examine more closely. With the retirement of the shuttles, NASA will no longer be able to return large pieces of equipment back to Earth.

NASA will now begin the work of transforming the Atlantis into a museum piece. It will be mounted nearby at the space center's visitor center.

At a news conference after the landing, Michael D. Leinbach, the shuttle launching director, talked about the mixed emotions of the workers and NASA officials who had gathered on the runway.

"I saw grown men and grown women crying today," Mr. Leinbach said. "Tears of joy, to be sure, and that was just human emotions came out on the runway today. You couldn't suppress them."

There was pride among the shuttle workers, Mr. Leinbach said, that even as the program was shutting down, they had maintained their high standards.

"Over the past three or four years, we've been concentrating on completing the job we were given to do," he said. "We've done that now, successfully. We have a lot of pride in that, and no one can take that away from us."

But jobs will be taken away. Although no NASA government employees have been laid off, the jobs of NASA contractors working in the shuttle program were cut deeply as the program wound down. Three years ago, 15,000 people worked at the Kennedy Space Center. As of Thursday, employment had fallen to 11,500. It is expected to drop soon to 8,200 before edging up to 10,000 in a few years as new NASA programs begin.

Hardest hit is [United Space Alliance](#), the company that handled the maintenance of the shuttles and prepared each one for flight. It will lay off 46 percent of its 5,200 workers in the coming weeks. Nearly all of the 1,643 workers losing their jobs in Florida will be out the door on Friday, a company spokesman said.

"Landing," said Allard Beutel, a NASA spokesman, "really was a heck of a last day for them."