Music

George Diller Launch Commentator: "Go for main engine start,

7...

6...

5...

4...

3...

2...

1...

zero...and liftoff for the final launch of Endeavour...

expanding our knowledge and expanding our lives in space."

And with that, space shuttle Endeavour embarked on its final flight on the morning of May 16, 2011, carrying six crew members on their way to complete U.S. construction of
the International Space Station.

Under the command of Mark Kelly,
Pilot Greg Johnson and
Mission Specialists Mike Fincke,
Greg Chamitoff,
Drew Feustel and the European Space Agency's
Roberto Vittori headed to orbit.

After the remote inspection of the shuttle's exterior thermal protection system was
complete, Vittori and Johnson used the shuttle's robotic arm to reach into the payload bay
and grapple the Express Logistics Carrier.

Once Endeavour caught up with the station, Kelly put the shuttle through a "backflip"
at a distance of 600 feet to allow the station crew to photograph Endeavour's thermal
protection tiles before docking.

During the docking process an advanced system called
STORMM -- or Sensor Test for Orion Rel-nav Risk Mitigation -- gathered data that could help future spacecraft dock to the station.

Soon after docking and the hatches were opened, the Express Logistics Carrier containing space parts was installed on the station's exterior using shuttle and station robotic arms.

The chief payload -- the Alpha Magnetic Spectrometer-2 -- was handed off from the shuttle arm to the station's and then placed in its permanent position atop the starboard 3 truss.

The spectrometer is a 15,000-pound, $2 billion advanced scientific instrument that could answer basic questions about our universe, perhaps shedding light on dark matter and antimatter.

The mission's first of four spacewalks was completed by Feustel and Chamitoff as they swapped exterior experiments and installed equipment in more than six hours outside the station.

The following day, the crew used the station's robotic arm to conduct a focused
inspection to collect photographs and data on a small area of damage spotted on

00:02:23,319 --> 00:02:25,439
Endeavour's underside.

00:02:25,439 --> 00:02:30,810
The information gathered enabled mission managers to clear Endeavour for its return.

00:02:30,810 --> 00:02:35,590
That same day, the combined crews joined together in the Kibo module for a special call

00:02:35,590 --> 00:02:40,900
from Pope Benedict XVI.

00:02:40,900 --> 00:02:46,090
Spacewalk two paired Fincke and Feustel as they spent eight hours completing station

00:02:46,090 --> 00:02:47,500
maintenance tasks.

00:02:47,500 --> 00:02:52,530
Among those tasks -- topping off ammonia in a cooling loop and lubricating a solar array

00:02:52,530 --> 00:02:57,960
joint on the port truss and one of the hands on Dextre robotic arm.

00:02:57,960 --> 00:03:01,510
There was a break in the busy schedule when three of the station's

00:03:01,509 --> 00:03:04,609
crew members departed the station aboard a Russian Soyuz and

00:03:04,610 --> 00:03:07,120
returned to Earth on May 23.

00:03:07,120 --> 00:03:12,050
It marked the only time a Soyuz departed the station while a space shuttle was docked.

00:03:12,050 --> 00:03:16,160
The following day, the remaining combined crew of nine had time to complete some

00:03:16,159 --> 00:03:19,169
interior maintenance around the station.
The third spacewalk was once again conducted by the team of Fincke and Feustel. Performing a number of tasks in just short of seven hours, the spacewalkers left the Canadarm2 closer to having a new base of operation which will give it access to much of the orbiting laboratory's Russian segment. After the docked inspection and clearance for Endeavour from Houston, the fourth and last spacewalk was conducted by Chamitoff and Fincke. The outing marked the final spacewalk by space shuttle crew members. Among the tasks in their almost seven-and-a-half hour work, the spacewalkers attached the shuttle's boom sensor to the station -- making it the final major U.S. piece to be added to the orbiting laboratory. Greg Chamitoff STS-134 Mission Specialist: "On behalf of the STS-134 crew and the Expedition 27 crew, space station assembly is complete." With construction complete and supplies delivered during 11 days of joint operations, the two crews said goodbye and the hatches were closed between the two spacecraft.
After undocking, the shuttle completed a fly-around, providing amazing images of the fully completed station.

Fincke -- who during the mission became the U.S. astronaut with the most time in space -- later described the crew's feelings looking at the completed station.

Mike Fincke STS-134 Mission Specialist: "I think we all should be really impressed how big and magnificent that space station is, we were impressed; we were exited like five-year olds at a rollercoaster park a mean it was pretty impressive."

The STS-134 crew performed an additional test of the STORRM equipment during a rendezvous exercise before backing away from the station.

Endeavour's final return to Earth came in the overnight hours, as its ghostly outline -- lit by the runway's xenon lights -- appeared out of the darkness at 2:35 a.m. on June 1.

Mark Kelly STS-134 Commander: "Houston, Endeavour, wheelstop."

Mission Control: One hundred and twenty-two million miles flown during 25 challenging spaceflights, your landing ends a vibrant legacy for this amazing vehicle that will long be
reminded. Welcome home, Endeavour."

After 16 days of a demanding and busy mission, the crew members greeted well-wishers at the runway and received congratulations for a job well done.