



STS-123 (25th Space Station Flight)

Endeavour

Pad A:

122nd shuttle mission
21st flight of OV-105
16th night landing at Kennedy
Space Center

Crew:

Dominic Gorie, commander (4th shuttle flight)
Gregory H. Johnson, pilot (1st)
Rick Linnehan, mission specialist (4th)
Robert L. Behnken, mission specialist (1st)
Mike Foreman, mission specialist (1st)
Takao Doi, mission specialist (2nd),
represents Japan Aerospace
Exploration Agency
Garrett Reisman, mission specialist (1st),
up to International Space Station
Leopold Eyharts, flight engineer, down
from International Space Station

Orbiter Preps:

OPF Roll-In: 08/21/07
OPF Rollout: 02/11/08
VAB Rollout: 02/18/08

Launch:

March 11, 2008, at 2:28 a.m. EDT.

After a smooth countdown with no weather concerns, the night launch was on time. A low cloud cover quickly swallowed the shuttle from ground view.

Landing:

March 26, 2008, at 8:39 p.m. EDT.

The first landing attempt was waved off



due to unstable weather of the Kennedy Space Center area. Endeavour landed on orbit 250 after a journey of 6.578 million miles. Main gear touchdown was at 8:39:08 p.m. EDT; nosegear touchdown at 8:39:17 p.m. and wheel stop at 8:40:41 p.m. Rollout distance was 13,506 feet. Mission elapsed time was 15 days, 18 hours, 10 minutes.

Mission Highlights:

Endeavour's cargo was the Japanese Experiment Logistics Module-Pressurized Section, or ELM-PS, to be temporarily attached to the Harmony Node 2 module, and the Canadian Space Agency's special purpose dextrous manipulator, called Dextre.

Before rendezvous with the International Space Station, or ISS, astronauts made a five-hour inspection of Endeavour's heat shield. Commander Dominic Gorie also performed the rendezvous pitch maneuver -- an orbiter backflip -- while ISS crew members photographed the underside. Images showed a clean heat shield and the mission management team later cleared the shuttle's thermal protection system for re-entry.

Endeavour docked with the station March 12; the hatch was opened at 12:36 a.m. March 13. Shortly after, Mission Specialist Garrett

NASAfacts

Reisman swapped places with Expedition 16 Flight Engineer Leopold Eyharts, who spent 33 days on the station. Later, Pilot Gregory Johnson and Mission Specialist Robert Behnken, using the Canadarm2, unberthed the Spacelab Pallet containing Dextre and mated it to the station's mobile base system.

Between spacewalks, Japan Aerospace Exploration Agency astronaut Takao Doi configured experiment and stowage racks with the newly installed ELM-PS. Also, Reisman and Behnken tested the joint brakes on Dextre before they later moved Dextre's arms for the first time, positioning them for final assembly.

Commander Dominic Gorie examined minor condensation on a cooling line under the shuttle's middeck floorboards. The condensation was deemed not to impact shuttle operations but was inspected periodically during the rest of the mission.

Eyharts and Johnson used the Canadarm2 to move Dextre to a position on the Destiny laboratory, attached to one of the lab's power and data grapple fixtures.

On March 19, Doi, Gorie and station Commander Peggy Whitson talked to Yasuo Fukuda, Japan's prime minister, who congratulated the astronauts for successfully installing the Kibo laboratory's pressurized section.

Hatches between Endeavour and the station were closed at 5:49 p.m. EST. The shuttle separated from the station at 10:08 p.m. EST, completing 11 days, 20 hours and 36 minutes of docked operations.

EVA No. 1 — March 13: 7 hours, 1 minute

Linnehan and Reisman removed a thermal cover from the centerline berthing camera system on top of the Harmony module during the mission's first Extravehicular Activity (EVA), or spacewalk. The system provides live video to assist in docking spacecraft and modules together. The astronauts also removed contamination covers from the Japanese Logistics Module docking mechanism and disconnected other power and heater connections. They also installed the "hands" of Dextre's arms, the orbital replacement unit/tool changeout mechanisms. Initial attempts to route power to Dextre were not successful. Canadian Space Agency engineers developed a bypass software patch to try at a later time.

EVA No. 2 — March 15: 7 hours, 8 minutes

Linnehan and Foreman attached the two

arms of Dextre that will allow installation and maintenance tasks to be conducted from inside the space station. The astronauts also removed thermal covers from Dextre, with help from Behnken choreographing their movements from inside the space station.

EVA No. 3 — March 18: 6 hours, 53 minutes

Linnehan and Behnken installed Dextre's tool holder assembly and a camera light pan tilt assembly, which will serve as Dextre's eyes. Other tasks included preparing the Spacelab Logistics Pallet for its return to Earth in Endeavour, installing spare equipment for the space station on an external platform on the Quest airlock, including a yaw joint for the Canadarm2 and two spare direct-current switching units. The spacewalkers attempted to install the MISSE 6 experiment on the Columbus laboratory but were unable to engage the latching pins. The task was delayed for another EVA.

EVA No. 4 — March 20: 6 hours, 24 minutes

Behnken and Foreman replaced an electrical circuit box called a remote power controller module on the station's truss.

The major focus was demonstrating use of a tile repair ablator dispenser to apply a substance called shuttle tile ablator-54 into intentionally damaged heat shield tiles. The test samples will undergo extensive testing on Earth to determine how STA-54 performs in both microgravity and vacuum environments.

The spacewalkers also removed a cover from Dextre and launch locks that were still attached to the Harmony module.

EVA No. 5 — March 22: 6 hours, 2 minutes

Behnken and Foreman stored the orbiter boom sensor system on the station's truss to make room in the space shuttle Discovery's payload bay for the Japanese Kibo science laboratory. Later, Behnken installed the MISSE-6, with help from troubleshooting methods developed by engineers on the ground for difficult latching pins, on the outside of the Columbus laboratory. Foreman inspected the solar alpha rotary joint to look at an apparent pockmark previously photographed.

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