National Aeronautics and Space Administration

NASAfacts

STS-119 (28th Space Station Flight)

Discovery

Pad A:

125th shuttle mission
36th flight OV-103
70th landing at KSC

Crew:

Lee Archambault, commander (2nd shuttle flight)
Tony Antonelli, pilot (1st)
Richard Arnold, mission specialist (1st)
Joseph Acaba, mission specialist (1st)
John Phillips, mission specialist (3rd)
Steve Swanson, mission specialist (2nd)
Up to ISS: Koichi Wakata, with JAXA (3rd)
Down from ISS: Sandra Magnus

Orbiter Preps:

Into OPF – 06/14/08
Rollover to VAB – 01/07/09
Rollout to Pad 39A – 01/14/09

Launch:

March 15, 2009, at 7:43 p.m. EDT. The original Feb. 12 launch date was postponed after an issue surfaced with the gaseous hydrogen flow control valves. Part of the main propulsion system, the valves channel gaseous hydrogen from the main engines to the external tank. The valves were replaced on space shuttle Discovery.

On the next scheduled launch date, March 11, the STS-119 launch was scrubbed at 2:37 p.m. for at least 24 hours because of a hydrogen leak in a liquid hydrogen vent line between the shuttle and the external tank. Managers and engineers looked at potential repair options and Discovery's launch attempt was planned no earlier than March 15, at 7:43 p.m. Discovery launched on time.

Landing:

March 28, 2009, at 3:14:45 p.m. EDT. Main gear touchdown was 3:13:17, nose gear touchdown at 3:13:40 and wheelstop at 3:14:45 on Runway 15 at Kennedy. Mission elapsed time was 12 days, 19 hours, 31 minutes and one second. The landing completed a 13-day journey of more than 5.3 million miles.

Mission managers waved off the first landing opportunity because of gusty winds and clouds at the Shuttle Landing Facility. Improved conditions afforded a successful landing on orbit 202.

Mission Highlights:

The STS-119 flight delivered the space station's fourth and final set of solar array wings and the S6 truss, completing the station's backbone. The additional electricity provided by the arrays will fully power science experiments and help support a six-person crew and station operations.

Crew members also replaced a failed unit on a system that converts urine to potable water. Samples from the station's Water Recovery System were collected for analysis to determine if the water is suitable for drinking.

On March 16, focus was on a close inspection

of Discovery's wing leading edge panels using the shuttle's robotic arm and orbiter boom sensor system extension. In preparation for docking, the crew tested rendezvous equipment, installed an orbiter docking system "centerline" camera and extended the docking ring atop the docking system. Before docking on March 17, Commander Lee Archambault performed a "backflip" of Discovery, allowing the station's Expedition 18 Commander Michael Finke and Flight Engineer Sandra Magnus to take photos for analysis by imagery experts on the health of Discovery's heat shield. The analysts and Damage Assessment Team in Mission Control determined the heat shield was healthy for re-entry.

On March 24, the 10 shuttle and station crew members gathered in the station's Harmony module and spoke to President Barack Obama, members of Congress and school children from the Washington, D.C., area.

EVA No. 1 — 6 hours, 7 minutes, March 19.

Mission Specialists Steve Swanson and Richard Arnold bolted the S6 truss in place, connecting the power and data cables that allowed station flight controllers to remotely command the segment to life.

EVA No. 2 — 6 hours, 30 minutes, March 21.

Swanson and Mission Specialist Joseph Acaba prepared a work site for new batteries that will be delivered on the STS-127 mission on space shuttle Endeavour. They also installed a Global Positioning System antenna on the pressurized logistics module attached to the Kibo laboratory. It will allow Japan's H-II Transfer Vehicle to rendezvous with the station later in 2009 and set the stage for future assembly tasks by station and shuttle crews.

During installation of a cargo carrier attach system, a misaligned bracket proved too difficult to reposition and the crew moved to other tasks, including imagery documentation of station radiators.

EVA No. 3 — 6 hours, 27 minutes, March 23.

Acaba and Arnold relocated one of two crew equipment carts from one side of the mobile transporter to the other. They had trouble freeing a stuck mechanism to allow deployment of a spare equipment platform and deferred the deployment to a future spacewalk. Mission Control later decided to forego work on a similar payload attach system.

The astronauts also lubricated the end effector capture snares on the station's robotic arm, work proven on the STS-126 mission that will prevent the snare from snagging or not returning snuggly into its groove inside the latching mechanism.

On the 10th day of the mission, Discovery undocked from the ISS. As the shuttle moved away, Pilot Tony Antonelli circled the station while the crew photographed the completed truss structure with the final set of solar array wings fully deployed.

On March 26, Antonelli used the shuttle's robotic arm to hold the orbiter boom sensor system so the cameras and laser sensors could scan Discovery for signs of damage from orbital debris.

Astronaut Sandra Magnus returned to Earth aboard Discovery after 129 days aboard the space station. Japan Aerospace Exploration Agency astronaut Koichi Wakata, who launched aboard Discovery, remained on the station as a member of the Expedition 18 and 19 crews.

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John F. Kennedy Space Center
Kennedy Space Center, FL 32899

www.nasa.gov