



The Mission



Orbiter: Discovery
Mission: STS-131
Payload: Leonardo
Launch: April 5, 2010
Time: 6:21 a.m. EDT
Site: Pad 39A, Kennedy Space Center
Landing: April 20 @ 9:08 a.m. EDT
Site: KSC's Shuttle Landing Facility

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Space shuttle Discovery soars into predawn sky

BY WILLIAM HARWOOD
 STORY WRITTEN FOR [CBS NEWS "SPACE PLACE"](#) & USED WITH PERMISSION
 Posted: April 5, 2010



The shuttle Discovery, carrying a crew of seven and 10 tons of supplies and equipment bound for the International Space Station, rocketed into orbit early Monday to kick off a three-spacewalk resupply mission.

With its three hydrogen-fueled main engines throttled up to full power, Discovery's twin solid-fuel boosters ignited with a crackling roar at 6:21:25 a.m. EDT, instantly pushing the spacecraft away from pad 39A.

Fifteen minutes before liftoff, the space station sailed 220 miles above the Kennedy Space Center, shining like a brilliant "star" as it streaked away to the northeast.

Discovery's launch, timed for the moment Earth's rotation carried the launch pad into the plane of the station's orbit, occurred 22 minutes before the start of civil twilight and 46 minutes before sunrise.

Lighting up a clear pre-dawn sky, Discovery climbed into sunlight less than two minutes after liftoff, the churning cloud of exhaust from the shuttle's two boosters suddenly illuminated in a ghostly display for area residents and tourists.

The shuttle's climb to space appeared uneventful. A camera mounted on the side of the ship's external tank spotted a few pieces of presumed foam insulation falling away four minutes and 18 seconds after liftoff, but that was well after the shuttle had left the dense lower atmosphere where debris impacts pose the greatest threat.

Eight-and-a-half-minutes after liftoff, the shuttle slipped into its planned preliminary orbit. If all goes well, commander John Poindexter and pilot James Dutton will guide the orbiter to a docking with the space station's forward port at 3:44 a.m. Wednesday.

Joining Poindexter and Dutton aboard Discovery were flight engineer Dorothy Metcalf-Lindenburger, Stephanie Wilson, Japanese astronaut Naoko Yamazaki and spacewalkers Richard Mastracchio and Clayton Anderson, veteran of a long-duration stay aboard the station in 2007.

"The biggest objective is to bring the multi-purpose logistics

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module, the MPLM, and attach it to the station so that we can empty it," said Anderson. "The MPLM has all sorts of cargo and supplies, experiments, racks, food, clothing. We need to get all that stuff onto the station (to make) it easier for them to sustain themselves over time.

"Then the second really big task that we have are the EVAs, the spacewalks that Rick Mastracchio and I will do. The main point of those is to replace a couple key pieces of hardware, the ammonia tank assembly on the outside of the station and then a rate gyro assembly that helps the station understand what its attitude is."

The space station is equipped with two independent coolant loops that dissipate the heat generated by the lab's electrical systems by circulating ammonia coolant through large radiator panels.

"It's like Freon in your air conditioner at home but we use ammonia on the outside of the station," Anderson said. "So we have a huge tank, it's about (1,700) pounds. It's probably the size of a double refrigerator-freezer component and it lives on the backside toward the center of the station and there are actually two, one on the right and one on the left. The one on the left has recently been changed out by another shuttle crew. So we're going to change the one on the right."

Discovery's launching continues an extremely busy period in the life of the space station, coming three days after launch of a Russian Soyuz capsule from Kazakhstan carrying three fresh crew members - cosmonauts Alexander Skvortsov, Mikhail Kornienko and NASA astronaut Tracy Caldwell Dyson.

The Soyuz TMA-18 spacecraft docked with the station early Sunday and its crew joined Expedition 23 commander Oleg Kotov, Japanese astronaut Soichi Noguchi and NASA flight engineer Timothy Creamer. The expanded Expedition 23 crew will, in turn, welcome the Discovery astronauts to the lab complex two days after the shuttle's launching.

"We're absolutely delighted to have our friends and comrades joining us here in a couple of days," Creamer radioed from the station after watching Discovery's launch.

"Stand by for a knock on the door," a flight controller replied.

With the shuttle program facing retirement later this year after a final four missions, the space station program is racing the clock to complete the outpost and stock it with supplies and spare parts before the heavy lift orbiter is grounded for good.

Kirk Shireman, deputy manager of the space station program at the Johnson Space Center in Houston, said that along with the final four shuttle missions, the program expects three more Soyuz crew launches this year, four Soyuz landings, six launches of unmanned Progress supply ships, launch of a

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European Space Agency Automated Transfer Vehicle resupply mission and six station-based spacewalks above and beyond the EVAs planned by visiting shuttle crews.

"So you can see, it's a busy time," he said. "The program focus is turning away from assembly. We're looking forward to fully utilizing ISS and extending the International Space Station to 2020. We'll have a very busy year and we're very much looking forward to it."

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