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Station awaits arrival of first visitors

By James Hartsfield

An international crew of seven will become the first visitors to dock with the new International Space Station when *Discovery* lifts off on shuttle mission STS-96 in May.

Discovery will bring supplies and equipment to prepare the station for the arrival of the Russian-built Service Module living quarters this fall and begin laying out the welcome mat for the first station crew, scheduled for launch early next year.

"One of the most complex aspects of this flight will be the docking, with the Zarya module in control of the station rather than the Service Module, because it wasn't originally designed that way," STS-96 Lead Flight Director Wayne Hale said. "Another difficult aspect of the mission is just the number and volume of things that we have to get done and the amount of time we have to do them in."

Navy Commander Kent Rominger will perform the docking and command *Discovery*'s crew, which includes cosmonaut Valery Tokarev, a colonel in the Russian Air Force, and Canadian astronaut Julie Payette as mission specialists, reflecting the truly global nature of the new

station with three of five partners represented aboard the shuttle.

U.S. Air Force Lt. Col. Rick Husband will serve as pilot, and a space walk will be performed by astronauts Tammy Jernigan and Dr. Daniel Barry while *Discovery* is docked to the station.

Jernigan and Barry will attach a JSC-developed spacewalkers' "crane" to the exterior that will assist in future assembly activities. Parts of a Russian "crane" also will be attached. Mission Specialist Ellen Ochoa rounds out the crew as flight engineer and a mission specialist. Ochoa will operate the shuttle's mechanical arm from inside the cabin during the space walk.

Discovery is targeted for a launch at 9:32 a.m. CDT on May 20, and is planned to dock to the station two days later. During six days attached to the International Space Station, the crew will transfer more than 5,000 pounds of equipment from the shuttle to be stowed on the new outpost.

"It's going to be very exciting for us to enter the station and we'll all feel like pioneers because there has only been one other crew on board," Rominger said. "We're really getting ready for the first expedition crews to go up...taking things like food, clothes, a lot of spare equipment

to stow. I take a lot of pride at being involved in the station program, especially at this stage, because it is historic."

Much of the gear destined for the station will be housed inside a double Spacehab module in *Discovery*'s payload bay. The space-walking gear and cranes will be stored outside in the shuttle bay on a new piece of equipment called the Integrated Cargo Carrier, a removable platform that will be used on many future station assembly flights. The carrier, which will remain in the shuttle bay on STS-96, also includes a new space-walking equipment storage box developed by Spacehab. On the day after *Discovery* docks, Jernigan and Barry will conduct the space walk. Jernigan will spend much of the time in a foot platform at the end of the shuttle's mechanical arm, operated by Ochoa.

"What you'll see is the arm going from the carrier, where Tammy and Dan unlatch the equipment, up to where we are going to place it on the station," Ochoa said. "As we proceed through the space walk, you'll basically see the arm going back and forth to the carrier as we transfer different types and pieces of equipment."

The next day, flight day five, the crew will enter the station. Among the first activities will be maintenance work. Payette and Tokarev will install 18 new, cellular phone-sized battery charge-discharge units in the Zarya module. The units, known by the Russian acronym MIRT, will replace faulty units and are expected to allow the station's six batteries to be more fully charged.

"We can't do any transfer of equipment into the Zarya at the time when we change out the chargers, because they are underneath the floor of the module,"

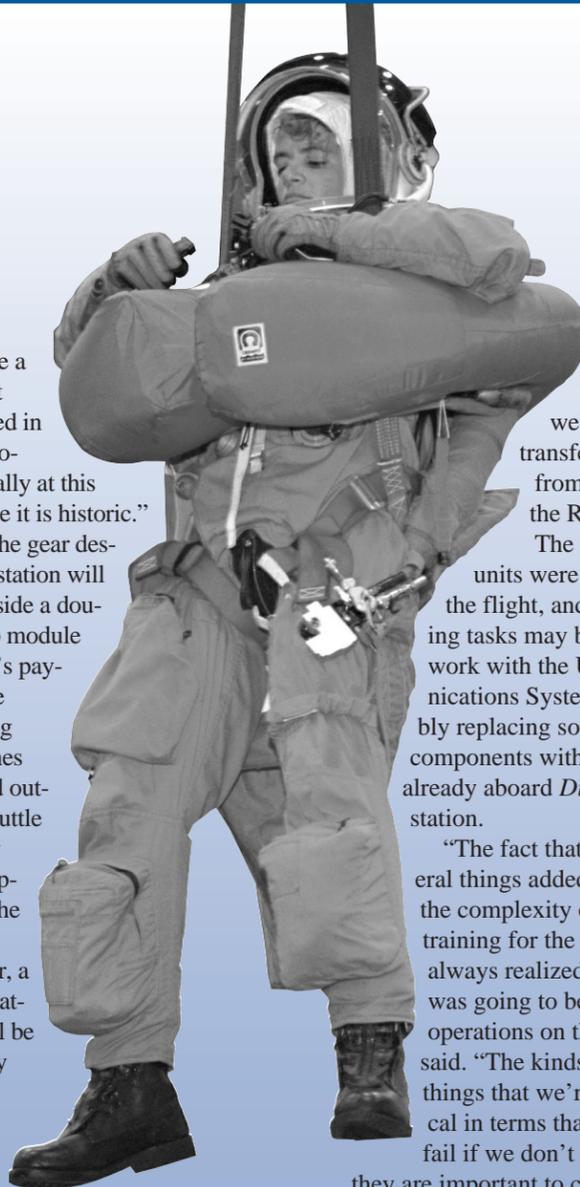
Payette said. "Once that is done we'll be able to start transferring equipment from the Spacehab to the Russian module." The charge-discharge units were a late addition to the flight, and other late-breaking tasks may be added, including work with the U.S. Early Communications System in Unity, possibly replacing some of that system's components with spare items already aboard *Discovery* and the station.

"The fact that we have had several things added late has increased the complexity of planning and training for the flight, but we have always realized that flexibility was going to be a key element of operations on the station," Hale said. "The kinds of maintenance things that we're doing aren't critical in terms that the station would fail if we don't get them done. But they are important to continuing smooth operations of the station."

While docked to the station, the crew also will evaluate a system to be used on future missions to transfer fluids and gases from the shuttle to the station. Although nothing will be transferred using the system on this mission, the lines, controls and mechanisms will be tested.

After six days, *Discovery* will undock from the station and perform a flyaround, circling the station twice, to survey and photograph the exterior. A day later, on flight day 10, the crew will eject a small, innovative educational satellite called Starshine from a canister in the cargo bay. Although only slightly larger than a basketball, the Starshine satellite is composed of more than 900 highly polished mirrors that will allow it to be visible from the ground. More than 1,000 schools worldwide are participating in the project and have helped construct the satellite. Students will track Starshine after its release, calculating its orbit, as they learn about math and physics.

After almost 10 full days in orbit, *Discovery* is planned to land at Kennedy's shuttle runway at about 4:30 a.m. May 30. ■



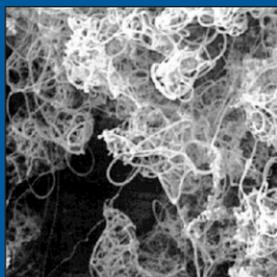
JSC Photo S99-00591 by Mark Sowa

STS-96 Astronauts Rick Husband, left, pilot, and Dan Barry, mission specialist, look toward Canadian Space Agency Astronaut Julie Payette, mission specialist, as she simulates a parachute drop into water during emergency bailout training. Husband and Barry had earlier "parachuted" into the deep pool at the Neutral Buoyancy Laboratory and quickly deployed their rafts. SCUBA-equipped diver, who supported the training exercise, looks on at left.



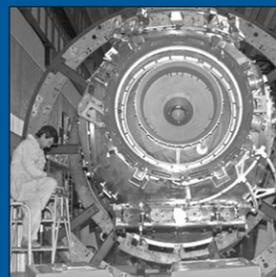
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