

Space Station Crew Gets Ready for Christmas

December 20 2004

The Expedition 10 crew is spending this week getting ready for the Christmas arrival of resupply spacecraft, while continuing research and maintenance activities aboard the [International Space Station](#).

Commander Leroy Chiao and Flight Engineer Salizhan Sharipov, a third of the way through their planned six-month mission, also put the Station's 58-foot robotic arm through its paces. They installed cables and a switching unit for the docking system that will guide the European Space Agency-provided Automated Transfer Vehicle to docking when it makes its maiden voyage next year.

Chiao and Sharipov inventoried gear and loaded the Progress spacecraft docked to the Station with trash and unneeded equipment for disposal when that craft is jettisoned next week. At 2:34 p.m. EST Wednesday, a day before the launch of the next cargo spacecraft, the Progress will be released from the rear of the Zvezda Service Module to clear that docking port. It will be commanded to deorbit and burn up in Earth's atmosphere.

Preparations for the launch of the new Progress resupply spacecraft are on schedule at the Baikonur Cosmodrome in Kazakhstan. It's scheduled for liftoff at 5:19 p.m. EST Dec. 23, carrying 5000 pounds of food, fuel, clothing and Christmas gifts. The spacecraft is scheduled to dock with the Station at about 7:05 p.m. EST Christmas Day. This will be the 16th Progress to dock with the Station. Due to the length of their workday on Dec. 25, the hatch to the Progress will not be opened until the next morning, when the crew will unload their Christmas cargo.

Maintenance activities this week included turning off the Russian oxygen generation system, so remaining oxygen in the tanks of the Progress docked to the Station could be used; preventive work on the Zvezda Service Module's ventilation system; and charging the batteries of the heart defibrillator that would be used in the event of a medical emergency.

On the science research front, Chiao conducted a scheduled photography session of the Binary Colloid Alloy Test Three. He took pictures of the samples of colloids, which is a system of fine particles suspended in a fluid such as paint, milk or ink. The colloids were mixed together during Expedition 8 and have been photographed periodically as they separated.

Possible future applications of the colloidal alloy experiments are photonic crystals for telecommunications, computer applications and extremely low threshold lasers. They may also lead to improved use of supercritical fluids for food extractions, pharmaceuticals, dry cleaning, and rocket propellants.

Chiao used the On-board Proficiency Enhance to complete a proficiency training session of the Advanced Diagnostic Ultrasound in Microgravity experiment. This activity was in preparation for upcoming ultrasound abdominal, dental, and bone scans. The crewmembers serve as operators and test subjects in the experiment that focuses on various parts of the body. The research will be used to determine the accuracy of ultrasound in novel non-clinical conditions as a diagnostic tool for orthopedic, thoracic, and ophthalmic injury, dental and sinus infections. It's also evaluating the ability of astronauts in space, who have minimal medical training, to work with doctors on the ground and diagnose medical problems.

Also this week, Chiao and Sharipov conducted the first full inventory of the Quest airlock module, since Expedition 4, to prepare for next year's

planned Space Shuttle Return to Flight mission, STS-114. The top-to-bottom inspection was designed to account for all spacesuit components, tools and support equipment that will be needed for the three spacewalks planned during STS-114. A full accounting will allow the Shuttle and Station programs to update cargo manifests with additional items if needed.

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