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STS-100/Endeavour

Second Logistics Module, 'Raffaello,' Rides To International Space Station

The exotic experiments of countless scientists will be carried to the International Space Station (ISS) and back again in modules built by Italians and borne by the Space Shuttle.

Mission STS-100, the ninth flight to the International Space Station, will carry the second of three Multi-Purpose Logistics Modules (MPLM) aboard Endeavour and bring it back to Earth for use on future missions. Built by the Italian Space Agency for NASA, the second module, Raffaello, was named for the 16th century artist Raphaello Sanzio, who was more widely known as Raphael. The Italian Space Agency named all three of the Modules after Italian figures of enormous historical significance in science and the arts.

Raffaello is a pressurized module specially-designed to carry laboratory racks filled with equipment, experiments and supplies to and from the Space Station. Weighing 4.5 tons, with a length of 21 feet, and a 14.2-foot diameter, Raffaello can carry up to 16 racks of experiments or Space Station systems. The module is capable of providing enough life support, fire detection and suppression, power and computer functionality to support two astronauts, as well as the various flora and fauna used in experiments.

Raffaello will ride in the Space Shuttle's payload bay for launch and landing. The reusable logistics module functions as both a cargo carrier and a Space Station module. While in the payload bay, the module is inaccessible to the crew.

When Endeavour reaches the International Space Station, the seven-member crew of STS-100, using the Shuttle's robotic arm to attach the module to the Station, will unload racks of equipment to be used during the mission, and reload old racks of equipment inside Raffaello to be taken back to Earth.

Also, the Space Station Remote Manipulator System (SSRMS), will be carried up to the Space Station aboard Endeavour for installation during two planned spacewalks. The SSRMS is the next-generation version of the Shuttle's robotic arm, known as the Canadarm. It is 56 feet long when fully extended and has seven motorized joints. It is capable of handling large payloads and assisting with docking the Space Shuttle to the International Space Station. The SSRMS is self-relocatable with a latching end effector, so it can be attached to complementary ports located throughout the Station's exterior surfaces.

The Crew

Commander Kent V. Rominger, a veteran of four previous space flights, will lead the seven-member crew. Since being selected as an astronaut in March 1992, Rominger has flown as a pilot on missions STS-73, STS-80 and STS-85 and served as commander on STS-96. He received a bachelor of science degree in civil engineering from Colorado State University in 1974 and a master of science degree in civil engineering from Colorado State University in 1978. He then received a master of science degree in aeronautical engineering from the U.S. Naval Postgraduate School in 1987.

Rominger was selected to be an astronaut by NASA in March 1992. He has logged over 5000 flying hours in over 35 types of aircraft and 685 carrier landings.

Jeffery S. Ashby will serve as pilot on his second space flight during mission STS-100. Prior to joining NASA in March 1995, Ashby was a Navy test pilot and commanding officer of Strike Fighter Squadron 94. His educational background includes a bachelor of science degree in mechanical engineering from the University of Idaho in 1976 and a master of science degree in mechanical engineering from the University of Tennessee in 1993. During his 16-year tenure as a fleet Navy Pilot, Ashby completed five carrier deployments, and has flown missions in support of Operation Desert Shield, Desert Storm, Southern Watch in Iraq and Operation Continue Hope in Somalia.

Ashby has accumulated over 6000 flight hours and 1000 carrier landings. He is a graduate of the Naval Test Pilot School (1988) and the Naval Fighters Weapons School (Top Gun, 1986).

Chris A. Hadfield, a member of the Canadian Space Agency, will serve as mission specialist on his second space flight during mission STS-100. He received a bachelor degree in mechanical engineering from the Royal Military College in Kingston, Ontario, Canada, in 1982 and completed his post-graduate research at the University of Waterloo in Ontario, Canada in 1982. He earned a master of science degree in aviation systems at the University of Tennessee in 1992.

Hadfield has the distinction of being the first Canadian mission specialist, the first Canadian to operate the Canadarm in orbit and the only Canadian to ever visit the Russian Space Station Mir. During the STS-100 flight two spacewalks are planned, which will make Hadfield the first Canadian to ever leave a spacecraft and float free in space. He is currently the Chief Astronaut for the Canadian Space Agency.

John L. Phillips (Ph.D.) will serve as mission specialist on his first space flight aboard Space Shuttle Endeavour. Since NASA selected him as an astronaut in April 1996, Phillips has held various positions at Johnson Space Center in the Astronaut office. Phillips received a bachelor of science degree in mathematics and Russian from the U.S. Naval Academy in 1972, a master of science degree in aeronautical systems from the University of West Florida in 1974 and a master of science degree and a doctorate in geophysics and space physics from the University of California, Los Angeles (UCLA) in 1984 and 1987, respectively.

After completing astronaut candidate training, he held various positions in the Astronaut office, including systems engineering and CAPCOM for the International Space Station (ISS).

Scott E. Parazynski (M.D.) will serve as a mission specialist on his fourth flight during mission STS-100. On previous missions, he has logged more than 734 hours in space including more than five hours of time completing spacewalks. He was selected by NASA in March 1992 and served as the Astronaut Office Operations Planning Branch crew representative for Space Shuttle, Space Station and Soyuz training and was assigned to the Astronaut EVA Branch where he helped to develop tools and procedures for the assembly of the International Space Station (ISS).

Dr. Parazynski received a bachelor of science degree in biology from Stanford University in 1983, and continued on to graduate with honors from Stanford Medical School in 1989. He served his medical internship at the Brigham and Women's Hospital of Harvard Medical School in 1990. He had completed 22 months of a residency program in emergency medicine in Denver, Colo. when selected to the Astronaut Corps.

Dr. Parazynski will perform a pair of EVA's to install the Space Station robotic arm and other assembly tasks during mission STS-100.

Umberto Guidoni (Ph.D.), an astronaut with the European Space Agency, will serve as mission specialist aboard Endeavour on his second space flight. On his first mission, STS-75, Guidoni completed 252 orbits covering 6.5 million miles.

Dr. Guidoni received his bachelor of science degree in physics and a Ph.D. in Astrophysics from the University of Rome in 1978. He received a National Committee for Nuclear Energy (CNEN) Post-Doctoral Fellowship in the thermonuclear fusion field in 1980 and was awarded the NASA Space Flight Medal in 1996.

Yuri V. Lonchakov, a cosmonaut with the Russian Space Agency, will be making his initial flight aboard Endeavour on mission STS-100. Lonchakov was selected as a test-cosmonaut candidate at the Gagarin Cosmonaut Training Center in December 1997. Lonchakov graduated with honors as a pilot-engineer from Oresburg Air Force Pilot School in 1986. In 1995 he entered the Zhukovski Air Force Academy from which he graduated with honors as a pilot-engineer-researcher in 1998. He served as a second crew commander, crew commander, squadron senior pilot and brigade commander in the Air Force where he flew several types of aircraft.

Lonchakov is a Class I Air Force Pilot and has logged over 1400 hours of flight time.