Mars Reconnaissance Orbiter - a Quantum Leap in Spacecraft and Instrument Capabilities at Mars

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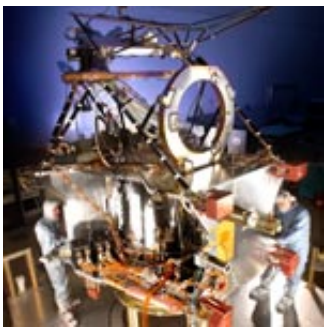

With one very busy year remaining before launch, the team preparing NASA's next mission to Mars has begun integrating and testing the spacecraft's versatile payload. Possible launch dates from Cape Canaveral, Fla., for NASA's Mars Reconnaissance Orbiter begin Aug. 10, 2005. The spacecraft will reach Mars seven months later to study the surface, subsurface and atmosphere with the **most powerful instrument suite ever flown to the red planet.**

"Mars Reconnaissance Orbiter is a quantum leap in our spacecraft and instrument capabilities at Mars," said James Graf, the mission's project manager at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "Weighing 2,180 kilograms [4,806 pounds] at launch, the spacecraft will

be the largest ever to orbit Mars. The data rate from the orbiter at Mars back to Earth will be three times faster than a high-speed residential telephone line. This rate will enable us to return a tremendous amount of data and dramatically increase our understanding of this mysterious planet."

JPL's Dr. Richard Zurek, project scientist for Mars Reconnaissance Orbiter, said, "This capability is needed to achieve the higher-resolution imaging, spectral mapping, atmospheric profiling and subsurface probing that will allow us to follow up on the exciting discoveries of the current Mars missions."

Workers at Lockheed Martin Space Systems, Denver, have been building the orbiter for more than a year and have reached the final assembly stage. Flight software is 96 percent complete. Assembly of the launch vehicle, an Atlas V, has begun at the same facility where the orbiter is being completed and tested. This will be the first interplanetary mission hitched to an Atlas since 1973. The Mars Reconnaissance Orbiter team now numbers about 175 people at Lockheed Martin and 110 at JPL.

Kevin McNeill, Lockheed Martin's program manager for the orbiter, said, "Our team has completed integration and testing of a majority of the spacecraft's subsystems. In the next few months, we'll integrate and test the science instruments on the orbiter, followed by environmental testing through early next year. We look forward to getting to the Cape next spring and integrating with the Atlas V launch vehicle. We're all very excited about getting to Mars and returning data for the science teams to evaluate."

The spacecraft's six science instruments are in the final stages of assembly, testing and calibration at several locations for delivery in coming weeks. The payload also includes a relay telecommunications

package called Electra and two technology demonstrations to support planning of future Mars missions. "Electra was integrated with the spacecraft and tested in July," Graf said. "The next payload elements to be integrated will be the Mars climate sounder and the compact reconnaissance imaging spectrometer for Mars." The climate sounder, from JPL, will quantify the martian atmosphere's vertical variations in water vapor, dust and temperature; the imaging spectrometer, from Johns Hopkins Applied Physics Laboratory of Laurel, Md., will scan the surface to look for water-related minerals at unprecedented scales, extending discoveries made by NASA's Mars Exploration Rovers.

The largest telescopic camera ever sent into orbit around another planet, called the high resolution imaging science experiment, will reveal Mars surface features as small as a kitchen table. Ball Aerospace, Boulder, Colo., is building it for the University of Arizona, Tucson. The orbiter will also carry three other cameras. Two come from Malin Space Sciences, San Diego: the context camera for wide-swath, high-resolution pictures, and the Mars multi-color imager with its fish-eye lens for tracking changes in weather and variations in atmospheric ozone. An optical navigation camera from JPL will use positions of Mars' two moons to demonstrate precision navigation for future missions.

The Italian Space Agency is providing the orbiter's shallow radar sounding instrument, designed to probe below the surface to discover evidence of underground layers of ice, rock and, perhaps, melted water.

Another technology demonstration from JPL will allow comparison of a higher-frequency, more-efficient radio band with the band commonly used for interplanetary communications. This may allow future missions to return more data with the same expended power.

NASA’s chief scientist for Mars, Dr. Jim Garvin, added, "We build our science strategy for Mars around the next-generation reconnaissance this

spacecraft is to provide, with its revolutionary remote sensing payload, and we are proud of the impressive progress to date by our Mars Reconnaissance Orbiter team. Mars Reconnaissance Orbiter will tell us where we must send our next wave of robotic explorers, including the Mars Science Laboratory, as well as paving the way for human exploration."

The Mars Reconnaissance Orbiter mission is managed by JPL, a division of the California Institute of Technology, Pasadena, for the NASA Science Mission Directorate, Washington. Lockheed Martin Space Systems is the prime contractor for the project.

Source: NASA