

## Mars Global Surveyor Completes Over 25,000 Orbits And Continues To Rewrite The History Books On Mars

*Lockheed Martin-Built Spacecraft for NASA Keeps Going and Going*

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The venerable Mars Global Surveyor (MGS) spacecraft, built by Lockheed Martin, completed its 25,000th orbit around Mars recently and is still going strong. Built by Lockheed Martin Space Systems in partnership with the Jet Propulsion Laboratory for NASA's Mars exploration program, MGS achieved this major milestone May 26, demonstrating its yeoman's performance as the "big brother" of orbiters circling Mars and mapping the planet's surface since 1997, as no other Mars exploration spacecraft has done before. The Mars Global Surveyor is approaching the beginning of its eighth year of mission operations in orbit around Mars and continues its record of collecting more information about the red planet than all previous missions combined.

"The Mars Global Surveyor is performing incredibly and continues to provide data that is changing the history books on Mars. It is quite remarkable and speaks volumes to the success of NASA's vision for exploring Mars and beyond," said James H. Crocker, vice president of Civil Space at Lockheed Martin Space Systems. "All of us at Lockheed Martin are extremely proud of our more than four decades of partnership with NASA and the almost daily discoveries that these spacecraft bring us, allowing us to explore a universe that holds unlimited possibilities for the human race. There is a tremendous amount of space exploration expertise here in the United States that has positioned us as leaders of the next generation of space explorers."

Since its launch Nov. 7, 1996, the Mars Global Surveyor has returned over 180,000 images of the martian surface, providing indicators of where and how to look closer. More than 1,000 of those were specially targeted images, some reaching up to 50-centimeter resolution by using techniques developed by the Lockheed Martin spacecraft team, along with members of the Mars Orbiter Camera and JPL navigation teams, to compensate for spacecraft orbital motion and planetary rotation. MGS is now in its second mission extension phase. The spacecraft and almost all of its instruments continue to operate, providing full data return.

"MGS has literally rewritten the martian landscape, allowing it to emerge in three-dimensional clarity, at scales previously unattainable, and yet key to all future exploration," said Dr. James Garvin, NASA's lead scientist for Mars and Lunar Exploration. "Its scientific impact has been so profound that it will be felt well into the next decade of Mars Exploration. Its near-term effect on the successful targeting of the Mars Exploration Rovers to scientifically compelling sites, as well as providing essential atmospheric monitoring, is the stuff of legend."

But that's not all. The Mars Odyssey spacecraft, also built by Lockheed Martin, recently completed 10,000 mapping orbits around Mars as of May 22, 2004. Teamed with the Mars Global Surveyor -- both with data relay and communications capabilities -- the two

orbiters have served as the primary data relay links for the Mars Exploration Rovers -- Spirit and Opportunity -- transmitting back to Earth over 92 percent of the data and images provided by the rovers since their successful missions began in January 2004. In fact, the first images from the rovers were transmitted back to Earth through Odyssey. MGS provided tracking data and telemetry of each of the rovers during their fiery entry and descent through the martian atmosphere while safely encapsulated in protective aeroshells built by Lockheed Martin. MGS, from its orbital perch 400 km (248 miles) above the planet's surface, also provided images of marks or impressions made by the rovers on the planet's surface as they bounced and rolled safely to a stop.

The list of discoveries by MGS since arriving in orbit in September 1997 continues to grow. MGS discovered magnetic field remnants during its aerobraking phase, has measured surface altitudes with hundreds of millions of data points, and is investigating surface and atmospheric constituents and changes. Its first images of gullies on Mars and preliminary glimpses into potential water ice on the planet led science teams to use instruments on Odyssey to actually find the water ice, now known to be in relatively abundant supply in the planet's surface.

MGS is in good shape and will enter its third extended mission beginning in October 2004. The spacecraft has enough fuel to potentially continue collecting science for further extended missions into 2010. That more than doubles its expected life and provides potential for MGS to remain an integral part of the infrastructure at Mars for years to come. Lockheed Martin currently operates five Lockheed Martin-built spacecraft for NASA from its Mission Support Area near Denver, Colo., in cooperation with JPL, including the Mars Global Surveyor, Mars Odyssey, Stardust, Genesis and the Spitzer Space Telescope.

Lockheed Martin Space Systems Company, headquartered near Denver, Colo., is one of the major operating units of Lockheed Martin Corporation. Space Systems Company designs, develops, tests and manufactures a variety of advanced technology systems for space and defense. Chief products include space launch systems, defense systems, interplanetary and science spacecraft, spacecraft for commercial and government customers, fleet ballistic missiles and missile defense systems.

Headquartered in Bethesda, Maryland, Lockheed Martin employs about 130,000 people worldwide and is principally engaged in the research, design, development, manufacture and integration of advanced technology systems, products and services. The Corporation reported 2003 sales of \$31.8 billion.

CONTACT: Julie Andrews of Lockheed Martin, +1-321-853-1567, or [julie.c.andrews@lmco.com](mailto:julie.c.andrews@lmco.com).

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