NASA Extended Mars Rovers Mission for Third Time

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NASA has approved up to 18 more months of operations for Spirit and Opportunity, the twin Mars rovers that have already surprised engineers and scientists by continuing active exploration for more than 14 months. "The rovers have proven their value with major discoveries about ancient watery environments on Mars that might have harbored life," said Dr. Ghassem Asrar, deputy associate administrator for NASA's Science Mission Directorate. "We are extending their mission through September 2006 to take advantage of having such capable resources still healthy and in an excellent position to continue their adventures."

The rovers have already completed 11 months of extensions on top of their successful three-month prime missions. "We now have to make long-term plans for the vehicles because they may be around for quite a while," said Jim Erickson, rover project manager at NASA's Jet

Propulsion Laboratory, Pasadena, Calif.

Erickson cautioned though, "Either mission could end tomorrow with a random part failure. With the rovers already performing well beyond their original design lifetimes, having a part wear out and disable a rover is a distinct possibility at any time. But right now, both rovers are in amazingly good shape. We're going to work them hard to get as much benefit from them as we can, for as long as they are capable of producing worthwhile science results."

"Spirit and Opportunity are approaching targets that a year ago seemed well out of reach," said Doug McCuistion, director of NASA's Mars Exploration Program. "Their successes strengthen NASA's commitment to a vision with the ambitious targets of returning samples from Mars and sending human explorers to Mars."

Opportunity is within a few football fields' length of a region called "Etched Terrain," where scientists hope to find rocks exposed by gentle wind erosion rather than by disruptive cratering impacts, and rocks from a different time in Mars' history than any examined so far. "This is a journey into the unknown, to something completely new," said Dr. Steve Squyres of Cornell University, Ithaca, N.Y., principal investigator for the rovers' science instruments.

To reach the Etched Terrain, rover planners have been pushing the rover fast. Opportunity has overtaken Spirit in total distance driven. It has rolled more than 4.9 kilometers (3 miles) -- eight times the original goal. On March 20, Opportunity also set a new martian record of 220 meters (722 feet) in a single day's drive. Drive-distance estimates can vary by a few percent. The long drives take advantage of crossing a plain so smooth it's "like an East Coast beach," said JPL's Jeff Favretto, mission manager on the Opportunity shift in recent weeks. Also, Opportunity's solar panels, though now dustier than Spirit's, still generate enough

power to allow driving for more than three hours on some days.

Spirit is in much rougher terrain than Opportunity, climbing a rocky slope toward the top of "Husband Hill." However, with a boost in power from wind cleaning its solar panels on March 9 and with its formerly balky right-front wheel now working normally, Spirit made some longer one-day drives last week than it had for months. "We've doubled our power," said JPL's Emily Eelkema, mission manager. "It has given us extra hours of operations every day, so we can drive longer and we've used more time for observations."

The jump in power output has taken some urgency out of Spirit's southward climb. With Mars now beginning southern-hemisphere spring, the Sun is farther south in the sky each day. If not for panel-cleaning, Spirit might be facing the prospect of becoming critically short of power if still on the north-facing slope by early June.

"We still want to get to the summit of Husband Hill and then head down into the 'Inner Basin' on the other side," Squyres said. "But now we have more flexibility in how we carry out the plan. Before, it was climb or die." Cresting the hill is now not as crucial for solar energy, but it still offers allures of potential exposures of rock layers not yet examined, plus a vista of surrounding terrain. In orbital images, the Inner Basin farther south appears to have terracing that hints of layered rock.

Both rovers do have some signs of wear and exposure. Spirit's rock abrasion tool shows indications that its grinding teeth might be worn away after exposing the interiors of five times more rock targets than its design goal of three rocks. Researchers probably won't know the extent of wear until Spirit's next rock-grinding attempt, which may be weeks away. Also, troubleshooting continues for determining whether Opportunity's miniature thermal emission spectrometer is still usable despite tests indicating a problem last month. All other instruments on

both rovers are still working normally.