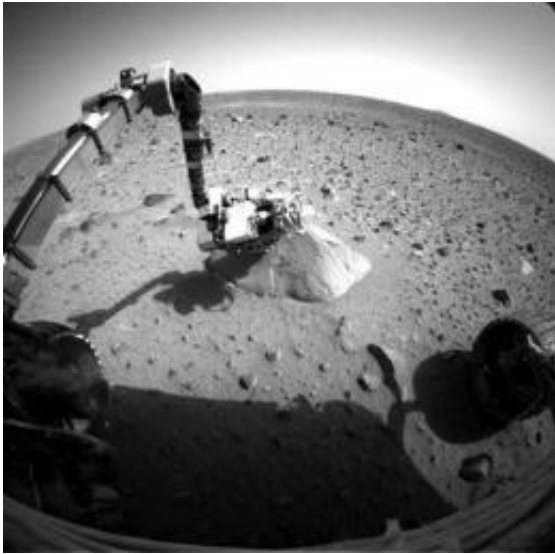


# NASA hangs up on silent Mars rover Spirit (Update)

May 24 2011, By ALICIA CHANG , AP Science Writer

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In this Jan. 28, 2004 photo provided by NASA/JPL of a photo shot by NASA's Mars Exploration Rover Spirit. NASA is ending efforts to revive the sand-trapped rover Spirit, which has been silent for more than a year. Project manager John Callas of NASA's Jet Propulsion Laboratory says the last commands will be sent up Wednesday, May 25. (AP Photo/NASA/JPL,File)

Shortly after midnight, NASA sent one last plea to the rover Spirit, mired in a sand trap on the surface of Mars.

Please phone home.

With that, the space agency ended its efforts Wednesday to contact the

workhorse robot geologist, which fell silent last year. Rather than spend time and money hanging onto faint hope, mission managers decided to turn their focus on Spirit's healthy twin Opportunity and prepare for the upcoming launch of the next Mars mega-rover.

Orbiting spacecraft will continue to passively listen for Spirit until the end of May, but the chance of a response is slim.

"There's a sadness that we have to say goodbye to Spirit," said project manager John Callas of NASA's Jet Propulsion Laboratory, which runs the twin rovers. But "we have to remember the great accomplishments and the blessings that we've received of having this rover operate for so long."

NASA planned a televised farewell fete after the Memorial Day holiday that will be more of a celebration.

Upon hearing the news, Spirit fans took to Twitter to express their sadness and thanked the rover for its hard work.

The solar-powered, six-wheel rovers parachuted to opposite sides of Mars in 2004 for what was supposed to be a three-month mission. Both defied expectations by surviving beyond their warranty.

Their greatest discovery was uncovering geologic evidence that Mars, now a dusty desert, was warmer and wetter billions of years ago - conditions that suggest the ancient Martian environment could have been favorable for primitive life.

Spirit had always been the unluckier of the two. Weeks after landing, engineers had to nurse it back to health after it sent back garbled data.

Unlike Opportunity, which landed in a geologic gold mine, Spirit's

landing site contained few signs of past water. It had to trek toward the hills to make discoveries.

Spirit scaled a mountain the height of the Statue of Liberty in 2005. It also was the first to record Martian dust devils as they formed, which NASA later made into movie clips.

Soon Spirit began to show its age. One of its front wheels stopped spinning in 2006, forcing it to drive backward and drag the lame wheel. In recent years, Spirit had temporary spells of failing to record data to its flash memory.

Spirit survived three Martian winters, but the hardy rover was no match for the latest cold.

In 2009, Spirit's wheels became bogged in a sand pit while driving backward. During attempts to get it unstuck, one of the back wheels stopped working - essentially turning the rover into a four-wheel drive.

NASA last year announced that Spirit will no longer rove - its odometer stuck at 4.8 miles. Instead, it will conduct science experiments while stationary.

With Martian winter looming, engineers struggled to put Spirit in a favorable tilt with its solar panels pointed at the sun. With no way to power its heaters to stay warm, Spirit went into hibernation.

NASA had hoped Spirit would reawaken once spring arrived. Despite daily attempts to contact it, there was no signal.

The exact cause of Spirit's demise may never be known, but it most likely froze to death.

Mission scientist Steve Ruff of Arizona State University called Spirit's time on Mars "a Cinderella story" for overcoming early struggles.

As hard as it is to accept Spirit's fate, Ruff said he was comforted that there was time to say goodbye.

"It wasn't like an overnight death. It was a slow decline," he said. "It gave me some time to adjust to the reality that the mission was probably over or about to be, so it wasn't as painful."

With Spirit out of the picture, the rover team will shift to Opportunity, which costs about \$12 million annually to operate.

Opportunity is less than 3 miles from its latest destination, Endeavour crater. Barring any problems, it should reach the crater rim later this year.

Opportunity could soon get some company on the Martian surface. NASA later this year will launch the car-size Curiosity, which will land at a still-to-be-determined spot on Mars in summer 2012.

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