

NASA officials remember Mars rover Spirit

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NASA Associate Administrator for the Science Mission Directorate Edward Weiler praises NASA's scientists and engineers gathered to pay tribute to the Mars rover Spirit Tuesday , July 19, 2011, at NASA's Jet Propulsion Laboratory in Pasadena, Calif. Spirit and its twin, Opportunity, landed on Mars in 2004 for what was supposed to be a three-month mission. Both survived longer than expected and uncovered geologic evidence that the red planet was once warmer and wet. Spirit operated on the surface for six years. In May, NASA declared Spirit dead after it had not responded to commands for more than a year. (AP Photo/Damian Dovarganes)

Scientists and engineers gathered Tuesday at NASA's Jet Propulsion Laboratory to remember the legacy of the hard-luck rover Spirit that came through in the end with geologic evidence that Mars was once a warm and wet place where life potentially could have formed.

NASA finally gave up listening for a signal from Spirit in May, more than a year after it fell silent while hopelessly mired in a [sand trap](#) on

Earth's dusty neighbor.

"[Mars](#) today is a cold and dry and desolate world but Spirit's discoveries have helped show us that in the past it was a very different place," the mission's principal investigator, Steve Squyres of Cornell University, told a packed auditorium at JPL's Flight Projects Center.

Spirit was the first of NASA's twin solar-powered [Mars Exploration Rovers](#) to land on the [red planet](#) in early 2004, parachuting through the thin atmosphere, bouncing to a landing cocooned in airbags and then rolling onto the surface on its six wheels.

Exhuberance turned to anxiety when early in the mission Spirit seemed to have been lost, ceasing to transmit until engineers figured out a memory problem.

There was also the realization that its location was essentially lava, not a landscape of [sedimentary layers](#) most likely to yield mineral signatures of a surface altered by water. Spirit would have to go looking for that while its twin, Opportunity, seemed to have landed amid a geologic buffet on the other side of the planet.

Like Opportunity, Spirit lasted years longer on the surface than the expected three months, though eventually its right front wheel began failing and it had to drive in reverse. Fortuitously, the scar left by the dragging wheel eventually exposed an area of carbonate, a mineral that forms in the presence of water.

"What was initially conceived as a fairly simple geologic experiment ultimately turned into humanity's first great expedition of exploration across the surface of another planet," Squyres said. "That certainly wasn't what I expected."

JPL Director Charles Elachi drew laughter when he said that for the event he had wanted to wear the blue shirt that mission team members had worn for Spirit's landing but found that so many years later it was too tight.

He also recalled the tension of those days as NASA needed a success.

"It was really a challenging time," he said.

Other mission participants and NASA officials recalled how the double rover mission evolved out of a rethinking of strategies following disasters in the Mars program and almost was cut back to one rover.

Spirit, the first of the two to be assembled, was described as "the problem child," presenting technical problems even as it neared launch and during the cruise to Mars.

But despite its problems it logged 4.8 miles, survived dust storms and hostile winters on the Martian surface.

When it became stuck it could not be maneuvered into a position where its solar panels were tilted enough to capture energy from the low winter sun. Without power for heat, it went into hibernation and never reawakened.

"Well done, little rover. Sleep in peace," said John Callas, the Mars Exploration Rovers project manager at JPL.

Opportunity continues to operate, and [NASA](#) is preparing to send a much larger rover, Curiosity, to Mars.

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