

Surviving NASA rover nears rim of Martian crater

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In this photo released July 19, 2011 by NASA showing NASA's Mars Exploration Rover Opportunity. Months after the death of the Mars rover Spirit, its surviving twin Opportunity, is poised to reach the rim of a vast crater to begin a fresh round of exploration. (AP Photo/NASA/JPL)

(AP) -- Months after the death of the Mars rover Spirit, its surviving twin is poised to reach the rim of a vast crater to begin a fresh round of exploration.

Driving commands sent up to Opportunity directed the six-wheel rover to make the final push toward [Endeavour](#) crater, a 14-mile-wide depression near the [Martian equator](#) that likely could be its final destination.

At its current pace and barring any hiccups, Opportunity should roll up to the crater's edge on Tuesday. The finish line was a spot along a ridge that the rover team nicknamed "Spirit Point" in honor of Opportunity's lost twin.

"I'm totally pumped. We've been driving for so long," said Ray Arvidson of Washington University in St. Louis who is part of the team.

The milestone injects a sense of adventure back into a mission that wowed the public with color portraits of the landscape and the unmistakable geologic discoveries of a warm and wetter past.

The NASA rovers parachuted to opposite sides of Mars in 2004 for what was a planned three-month mission, but both have operated beyond their factory warranty.

Spirit's journey ended in May after NASA ceased trying to contact it. It had been trapped in sand and unheard from for more than a year.

Opportunity has been on a driving spree since 2008 after it crawled out of a much smaller crater and trundled south toward Endeavour, stopping occasionally to sightsee and examine rock outcrops.

Unlike the early days of the mission when the public tracked

Opportunity's every move, the march to Endeavour has been largely low-key.

In early 2009, Opportunity caught its first peek of the uplifted rim on the horizon. At the time, scientists were unsure if the rover would make it all the way.

The roughly seven-mile journey took longer than the estimated two years to fulfill. Opportunity, driving backward to prevent its right front wheel from wearing out, could not travel as the crow flies because of dangerous obstacles. So it took a circuitous route and ended up driving twice the distance.

Project manager John Callas of the [NASA](#) Jet Propulsion Laboratory said Endeavour crater is arguably the most important science target since landing.

Opportunity, which logged more than 20 miles since landing, will spend several months imaging the rim and interior, which has been partially filled in by rocks and sediments.

There are no plans to drive across the crater for fear of getting stuck, Callas said. Instead, it will traverse south along the rim in search of clay minerals thought to form under wet conditions.

While these clay minerals have been extensively studied by orbiting spacecraft, Opportunity will be the first to examine them on the ground.

"We will likely spend years at this location," Callas said. "What a destination. It's not just one spot. There's kilometers of interesting geology to explore."

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