NASA's Curiosity Rover Celebrates 1 Year On Mars

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LOS ANGELES (AP) — Mount Sharp has beckoned Curiosity since the NASA rover made its grand entrance on Mars exactly a year ago, dangling from nylon cables to a safe landing.

If microbes ever existed on Mars, the mountain represents the best hope for preserving the chemical ingredients that are fundamental to all living things.

After a poky but productive start, Curiosity recently pointed its wheels south, rolling toward the base of Mount Sharp in a journey that will last many months. Expect Curiosity to channel its inner tourist as it drives across the rock-strewn landscape, dodging bumps and taking in the scenery.

"We do a lot of off-roading on a lot of little dirt roads," said mission manager Jennifer Trosper.

Curiosity will unpack its toolkit once it arrives at its destination to hunt for the organic building blocks of life.

Scientists have been eager for a peek of Mount Sharp since Curiosity, the size of a small SUV, touched down in an ancient crater near the Martian equator on the night of Aug. 5, 2012.

The world wondered whether Curiosity would nail its landing, which involved an acrobatic plunge through the thin atmosphere that ended with it being gently lowered to the ground with cables.

Engineers had to invent new tricks since Curiosity was too massive to bounce to a landing cocooned in airbags — the preferred choice for previous rovers Spirit and Opportunity.

After seven terrifying minutes, a voice echoed through mission control at the NASA Jet Propulsion Laboratory. "Touchdown confirmed," said engineer Allen Chen. "We're safe on Mars."

Scientists and engineers clad in matching sky-blue polo shirts erupted in cheers. Some were so excited that they overshot their high-fives.

Curiosity became a pop sensation. Several of Curiosity's handlers including Bobak "Mohawk Guy" Ferdowsi became science rock stars.

The technical prowess required to pull off such a landing has "captured the imagination of a whole new generation of prospective explorers," said American University space policy professor Howard McCurdy, who has closely followed the $2.5 billion mission.

Mission scientist Sushil Atreya of the University of Michigan remained calm until the last ten seconds. "Then it hit me — it's crazy! It was an unbelievable feeling of relief when the first picture from the rover came down," Atreya said.

Mike Malin, who operates Curiosity's cameras, ticked off two of his favorite pictures from the mission so far: A view of the rover's heat shield falling away right before landing and a color portrait of Mount Sharp.

"That looks so much like Utah that it felt very familiar," said Malin, who heads Malin Space Science Systems.

Once the euphoria of landing wore off, the six-wheel, nuclear-powered rover went to work, spending two months testing its instruments and systems. The health checks took longer than expected because Curiosity was a complex machine.

To celebrate the landing anniversary, engineers commanded one of Curiosity's instruments to play "Happy Birthday" as the rover took a break from driving.

Scientists initially hoped to head to Mount Sharp late last year, but decided to take a detour to an intriguing spot near the landing site where three different types of terrain intersected.

Curiosity discovered rounded pebbles — clear evidence of an ancient streambed. It also fulfilled one of the mission's main goals. By drilling into a rock and analyzing its chemistry, Curiosity concluded that Gale Crater possessed the right environmental conditions to support primitive life. It's not equipped to look for microbes, living or extinct.

With Curiosity busy studying rocks and dirt, the start date for the mountain trek kept getting pushed back. At one point, the team declined to predict anymore.

Now that it's finally on the move, scientists hope to keep stops to a minimum. Along the way, Curiosity will take pictures, check the weather, track radiation and fire its laser at rocks.

Curiosity was such a smash that NASA is preparing for an encore performance in 2021 using the same landing technology. Budget willing, the next rover will be able to collect rocks and store them on the Martian surface for a possible future mission to pick up and ferry back to Earth.

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