

NASA lands rover on Mars to seek signs of life (Update)

August 6 2012, by Romain Raynaldy

NASA opened a new chapter in the history of interplanetary exploration on Monday when its \$2.5 billion nuclear-powered robot Curiosity beamed back pictures from the surface of Mars.

The one-ton mobile lab is the largest rover ever sent to Mars, and its high-speed landing was the most daring to date, using a rocket-powered sky crane to lower the six-wheeled vehicle gently to the Red Planet's surface.

"Touchdown confirmed," said a member of mission control at NASA's Jet Propulsion Laboratory as scientists hugged each other and the room erupted in cheers late Sunday. "We are wheels down on Mars. Oh, my God."

Several images of the car-sized rover and its sophisticated toolkit designed to hunt for signs that life once existed there have come back to NASA since the landing occurred at 10:32 pm Sunday on the US West Coast (0532 GMT Monday).

Among them was dusty, black and white footage showing the shadow of the rover on the Martian surface and a picture taken from the Mars Reconnaissance Orbiter that showed the rover from above as it was lowered by parachute.

The nuclear-powered rover is now set for a two-year mission to explore the Red Planet, including a long climb up a mountain to analyze sediment layers that are up to a billion years old.

"The spacecraft is oriented northwest-southeast, pointing forward toward Mount Sharp," said project scientist John Grotzinger. "This couldn't have been a better position to land in."

However, Grotzinger said it may be a year before the rover arrives at the mountain in the center of the planet's Gale Crater, as scientists first take a close look at soil and rock samples inside the crater.

"We would never want to just drive across the dunes as the shortest way to go there," he said.

According to NASA chief engineer Miguel San Martin, the rover touched down inside the planned landing ellipse that spanned 12 by four miles (20 by six kilometers) at the foot of the mountain.

Further data in the coming days will give scientists a better idea of exactly where the rover landed.

Initial checks on the instruments on board have also come back positive, NASA said.

When the landing was announced after a tense, seven-minute entry, descent and landing, NASA's Jet Propulsion Laboratory filled with jubilation as the mission team cheered and exchanged Mars chocolate bars.

President Barack Obama described the landing as "an unprecedented feat of technology that will stand as a point of national pride far into the future."

And Charles Bolden, the NASA administrator, applauded all the other nations -- including France, Canada, Finland, Spain, Russia and Germany -- whose scientists contributed to experiments on board the

rover's Mars Science Lab.

"It is a huge day for the nation, it is a huge day for all of our partners who have something on Curiosity and it is a huge day for the American people," Bolden said.

Obama's science adviser John Holdren described the landing as "an enormous step forward in planetary exploration."

"And if anybody has been harboring doubts about the status of US leadership in space, well there is a one-ton automobile sized piece of American ingenuity that is sitting on the surface of Mars right now," he added.

Success had been anything but certain. NASA's more recent rover drop-offs involved smaller craft that were cushioned with the help of airbags.

In the final moments, the MSL craft accelerated with the pull of gravity as it neared Mars's atmosphere, made a fiery entry at 13,200 miles per hour and then slowed with the help of a supersonic parachute.

An elaborate sky crane powered by rocket blasters then kicked in, and the rover was lowered down by nylon tethers, landing upright on all six wheels.

Adam Steltzner, engineer and leader of the entry, descent and landing team, who has previously admitted the landing bid appeared "crazy," said that in the end, it "looked extremely clean."

Scientists do not expect Curiosity to find aliens or living creatures but they hope to use it to analyze soil and rocks for signs the building blocks of life are present and may have supported life in the past.

The project also aims to study the Martian environment to prepare for a possible human mission there in the coming years. Obama has vowed to send humans there by 2030.

The spacecraft had already been collecting data on radiation during its eight-and-a-half-month journey following launch in November 2011 from Cape Canaveral, Florida.

Previous attempts by space agencies since 1960 have seen a near 40 percent success rate in sending landers, orbiters or other spacecraft to Mars.

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Citation: NASA lands rover on Mars to seek signs of life (Update) (2012, August 6) retrieved 27 April 2024 from <https://phys.org/news/2012-08-nasa-rover-mars-life.html>

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