

# Are we alone? NASA's Mars rover aims to find out

August 5 2012, by Kerry Sheridan

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Image provided by NASA shows an artist's conception of Mars Science Laboratory's Curiosity rover. NASA's \$2.5 billion dream machine, the Mars Science Laboratory, aims to take the first steps toward finding out when it nears Mars' surface on Monday.

Are we alone? Or was there life on another planet? NASA's \$2.5 billion dream machine, the Mars Science Laboratory, aims to take the first steps toward finding out when it nears Mars's surface on Monday.

Scientists have found signs of water on Red Planet, which is Earth's neighbor, hinting that some form of life was once likely even though

Mars is now a dry place with a thin atmosphere, extreme winters and dust storms.

NASA said it will find out whether its Mars Science Laboratory and rover, Curiosity -- designed to hunt for soil-based signatures of life and send back data to prepare for a future human mission -- landed safely at 1:31 am Eastern time (0531 GMT) on Monday.

That will be about 14 minutes after the touchdown actually happens due to the time it takes for spacecraft signals to travel from Mars to Earth.

As of late Saturday, the laboratory was approximately 261,000 miles (420,039 kilometers) from Mars, closing in at around 8,000 miles per hour.

"Curiosity remains in good health with all systems operating as expected," NASA said in a statement.

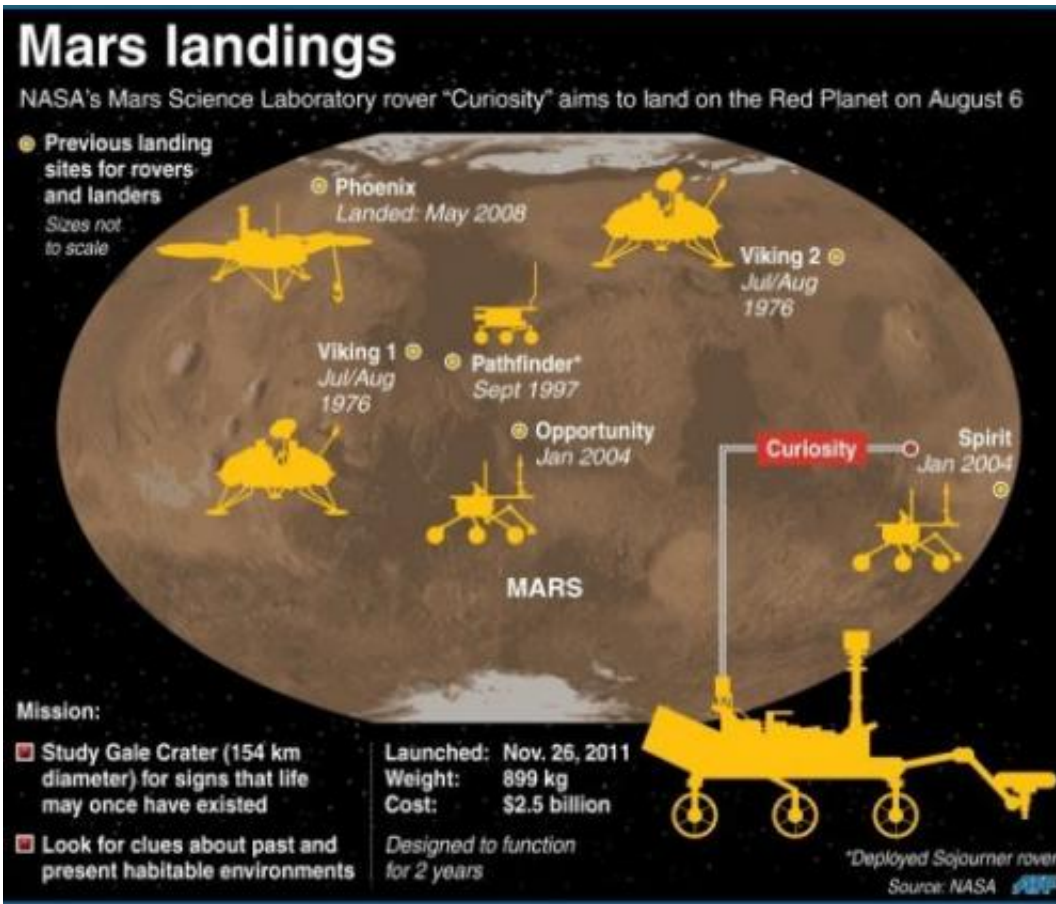
The nuclear-powered rover is the biggest ever built for planetary exploration -- weighing in at one ton, about the size of a small car -- and carries a complex chemistry kit to zap rocks, drill soil and test for radiation.

The landing is a daring and unprecedented maneuver that involves penetrating the atmosphere at a speed of 13,200 miles per hour, slowing down with the help of a supersonic parachute and dropping down gently with tethers from a rocket-powered sky crane.

"This is the most challenging landing we have ever attempted," said Doug McCuiston, director of NASA's Mars Exploration Program.

Two NASA orbiters will be crossing overhead as the lander approaches the surface, and a third orbiter operated by the European Space Agency

will also send data back to Earth.



Graphic showing NASA's Mars Science Laboratory landing site on August 6, as well as previous touchdowns for rovers and landers on the Red Planet. Includes fact file on the new rover and its mission on Mars.

The Mars Science Laboratory began its journey more than eight months ago when it launched from the Florida coast in late November 2011.

"It gets scarier every day," said McCuistion, noting that only about 40 percent of past attempts by global space agencies to send spacecraft to Mars have succeeded.



David Oh, Mars Science Laboratory's Lead Flight Director, speaks to the media in the Mission Control room at Jet Propulsion Laboratory in Pasadena on August 2, ahead of the landing of the Curiosity rover. NASA said it will find out if its Mars Science Laboratory and Curiosity rover landed safely at 0531 GMT on Monday.

"Can we do this? Yeah, I think we can do this. I am confident the team has done an amazing job," he said.

"But that risk still exists. It is going to be tough."



Mars Science Laboratory mission members work in the data processing room at the Jet Propulsion Laboratory in Pasadena on August 2. A live broadcast of the landing from mission control in Pasadena, California will be on [www.nasa.gov](http://www.nasa.gov) beginning at 0330 GMT Monday.

NASA has detailed the final minutes of the complex landing in an Internet video called "Seven Minutes of Terror."

A live broadcast from mission control in Pasadena, California will be on [www.nasa.gov](http://www.nasa.gov) beginning at 0330 GMT Monday. Final press briefings are scheduled for 1630 GMT and 2200 GMT on Sunday.

The landing site for the rover is a flat area known as Gale Crater, which lies near a mountain that scientists hope the rover will be able to climb in the search for sediment layers that could be up to a billion years old.

One potential factor of concern, the weather, appears to be cooperating



after a nearby dust storm spotted days ago dissipated, deputy project scientist Ashwin Vasavada told reporters.

"Mars is playing nice and we are going to get good conditions for Sunday," he said.

If the landing goes according to plan, NASA hopes to have some low-resolution black and white images taken from cameras on the rear of the rover shortly afterward.

More images will follow in the coming days. Then, engineers on Earth will spend most of August remotely checking out systems on the vehicle, according to deputy program manager Richard Cook.

The rover is carrying a chemistry kit that contains a rock-zapping laser, 17 cameras, a drill, radiation detectors, water sensors, and tools to scoop soil and check for carbon-based compounds that are the building blocks for life.

Curiosity may start to roll for its first drive in September, with its first scoop samples expected late in the month and its first drilling attempt in October or November.

If the landing fails, McCuiston vowed that NASA would continue its efforts to explore Mars.

"We will pick ourselves up and dust ourselves off," he said.

"Human spirit gets driven by these kinds of challenges and these are the kinds of challenges that force us, drive us to explore. To explore our surroundings, to understand what is out there, and obviously look at 'Are we alone?'"

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