

Curiosity's drill hole and location are picture perfect

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Credit: NASA/JPL-Caltech/MSSS

On Tuesday, Sept. 29, NASA's Curiosity Mars rover drilled its eighth hole on Mars, and its fifth since reaching Mount Sharp one year ago. The drilling of the hole 2.6-inches (65 millimeters) deep in a rock the team labeled "Big Sky" is part of a multi-day, multi-step sequence that will result in the analysis of the Martian rock's ingredients in the rover's two onboard laboratories - the Chemistry and Mineralogy X-Ray diffractometer (CheMin) and the Sample Analysis at Mars (SAM) instrument suite.

"With Big Sky, we found the ordinary sandstone rock we were looking for," said Curiosity Project Scientist Ashwin Vasavada. "It also happens to be relatively near sandstone that looks as though it has been altered by fluids—likely groundwater with other dissolved chemicals. We are hoping to drill that rock next, compare the results, and understand what changes have taken place."

The analyses of the Big Sky rock-powder samples by CheMin and SAM will occur over the next week. Meanwhile, the team will be turning the rover's attention and its wheels towards the second rock, where the sample analysis process will begin anew.

Curiosity is currently on the lower slopes of Mount Sharp in a region covered in sandstone called the Stimson Unit. Two weeks ago, still in the same general vicinity, Curiosity took a pair of long-range images toward higher regions of the mountain. In the foreground—about 2 miles (3 kilometers) from the rover—is a long ridge teeming with hematite, an iron oxide. Just beyond is an undulating plain rich in clay minerals. And just beyond that are a multitude of rounded buttes, all high in sulfate minerals. The changing mineralogy in these layers of Mount Sharp suggests a changing environment in early Mars, though all involve exposure to water billions of years ago. The Curiosity team hopes to be able to explore these diverse areas in the months and years ahead. Farther back in the image are striking, light-toned cliffs in [rock](#) that may have formed in drier times and now are heavily eroded by winds.

"The only thing more stunning than these images is the thought that Curiosity will be driving through those lower hills one day," Vasavada said. "We couldn't help but send a postcard back to all those following her journey."

Provided by Jet Propulsion Laboratory

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