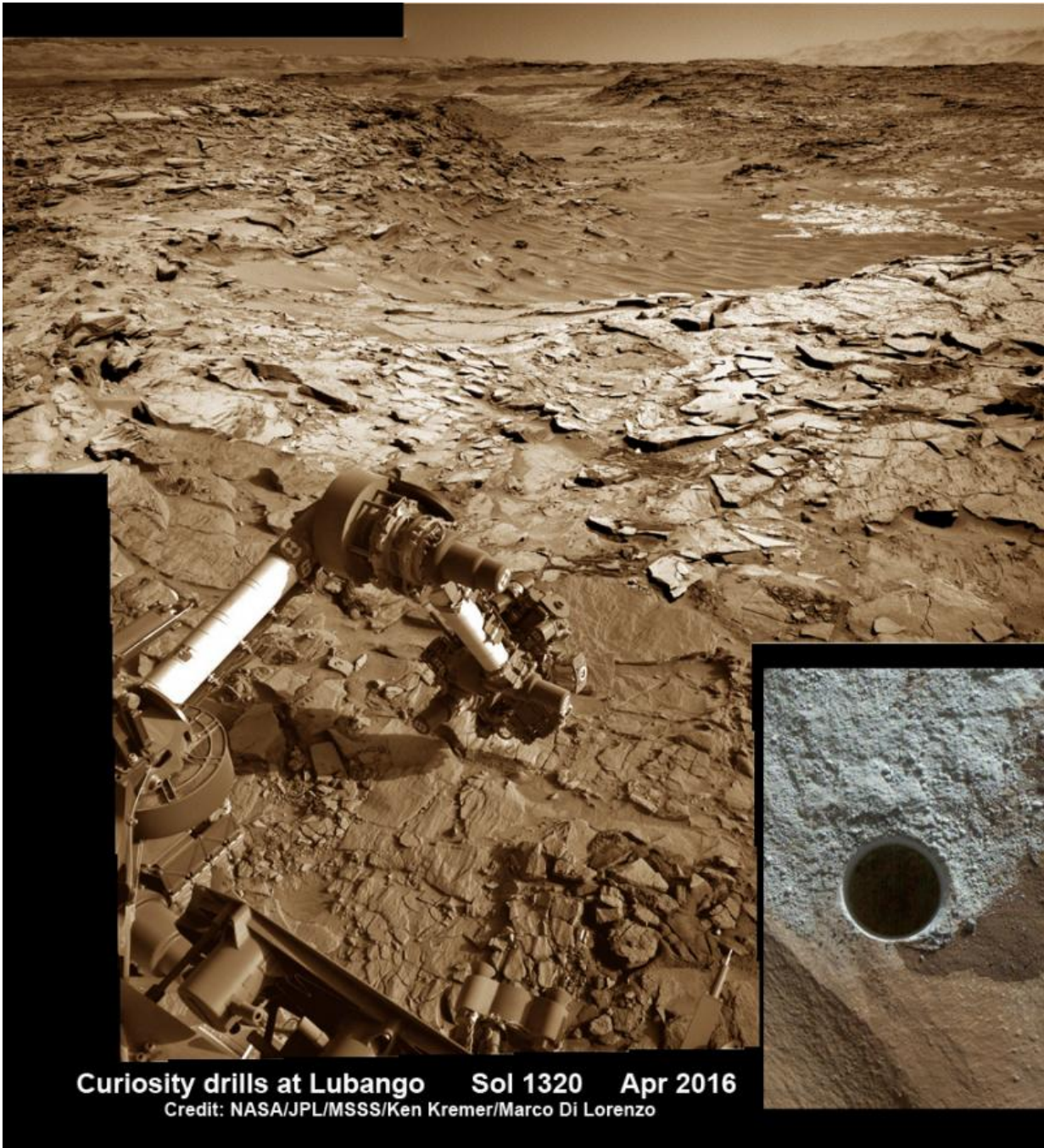


Curiosity cores hole at 'Lubango' fracture zone

May 2 2016, by Ken Kremer



Curiosity rover reached out with robotic arm and drilled into ‘Lubango’ outcrop target on Sol 1320, Apr. 23, 2016, in this photo mosaic stitched from navcam camera raw images and colorized. Lubango is located in the Stimson unit on the lower slopes of Mount Sharp inside Gale Crater. MAHLI camera inset image shows drill hole up close on Sol 1321. Credit: NASA/JPL/MSSS/Ken Kremer/kenkremer.com/Marco Di Lorenzo

NASA's Curiosity Mars Science Laboratory (MSL) rover successfully bored a brand new hole in Mars at a tantalizing sandstone outcrop in the 'Lubango' fracture zone this past weekend on Sol 1320, Apr. 23, and is now carefully analyzing the shaken and sieved drill tailings for clues to Mars watery past atop the Naukluft Plateau.

"We have a new drill hole on Mars!" reported Ken Herkenhoff, Research Geologist at the USGS Astrogeology Science Center and an MSL science team member, in a mission update.

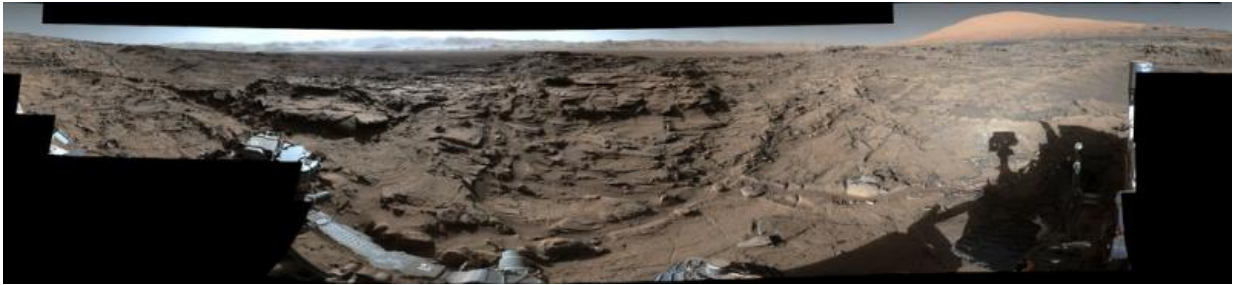
"All of the activities planned for last weekend have completed successfully."

"Lubango" counts as the 10th drilling campaign since the one ton rover safely touched down on the Red Planet some 44 months ago inside the targeted Gale Crater landing site, following the nailbiting and never before used 'sky crane' maneuver.

After transferring the cored sample to the CHIMRA instrument for sieving it, a portion of the less than 0.15 mm filtered material was successfully delivered this week to the CheMin miniaturized chemistry lab situated in the rovers belly.

CheMin is now analyzing the sample and will return mineralogical data back to scientists on earth for interpretation.

The science team selected Lubango as the robots 10th drill target after determining that it was altered sandstone bedrock and had an unusually high silica content based on analyses carried out using the mast mounted ChemCam laser instrument.



This mid-afternoon, 360-degree panorama was acquired by the Mast Camera (Mastcam) on NASA's Curiosity Mars rover on April 4, 2016, as part of long-term campaign to document the context and details of the geology and landforms along Curiosity's traverse since landing in August 2012. Credit: NASA/JPL-Caltech/MSSS

Indeed the rover had already driven away for further scouting and the team then decided to return to Lubango after examining the ChemCam results. They determined the ChemCam and other data observation were encouraging enough – regarding how best to sample both altered and unaltered Stimson bedrock – to change course and drive backwards.

Lubango sits along a fracture in an area that the team dubs the Stimson formation, which is located on the lower slopes of humongous Mount Sharp inside Gale Crater.

Since early March, the rover has been traversing along a rugged region dubbed the Naukluft Plateau.



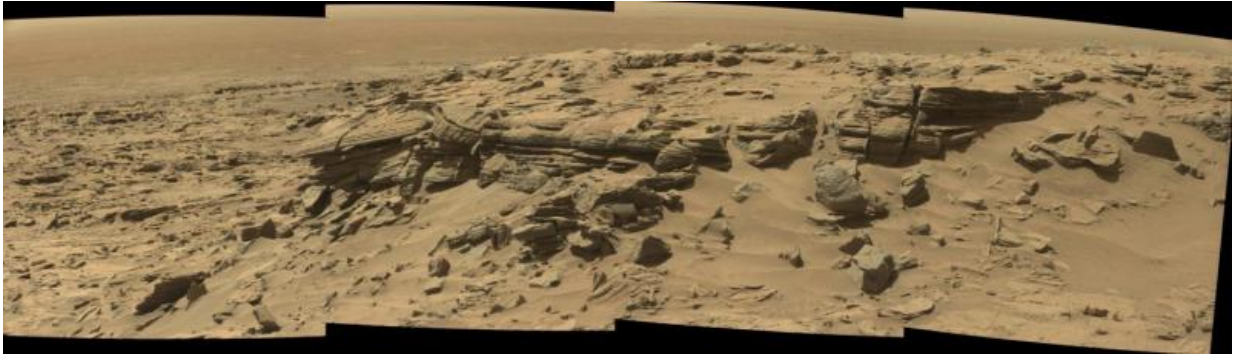
Curiosity rover views 'Lubango' drill target up close in this MAHLI camera image taken on Sol 1321, Apr. 24, 2016, processed to enhance details. Credit: NASA/JPL/MSSS

"The team decided to drill near this fracture to better understand both the altered and unaltered Stimson bedrock," noted Herkenhoff.

See our photo mosaic above showing the geologically exciting terrain surrounding Curiosity with its outstretched 7-foot-long (2-meter-long) robotic arm after completing the Lubango drill campaign on Sol 1320. The mosaic was created by the imaging team of Ken Kremer and Marco Di Lorenzo.

Its again abundantly clear from the images that beneath the rusty veneer of the Red Planet lies a greyish interior preserving the secrets of Mars

ancient climate history.

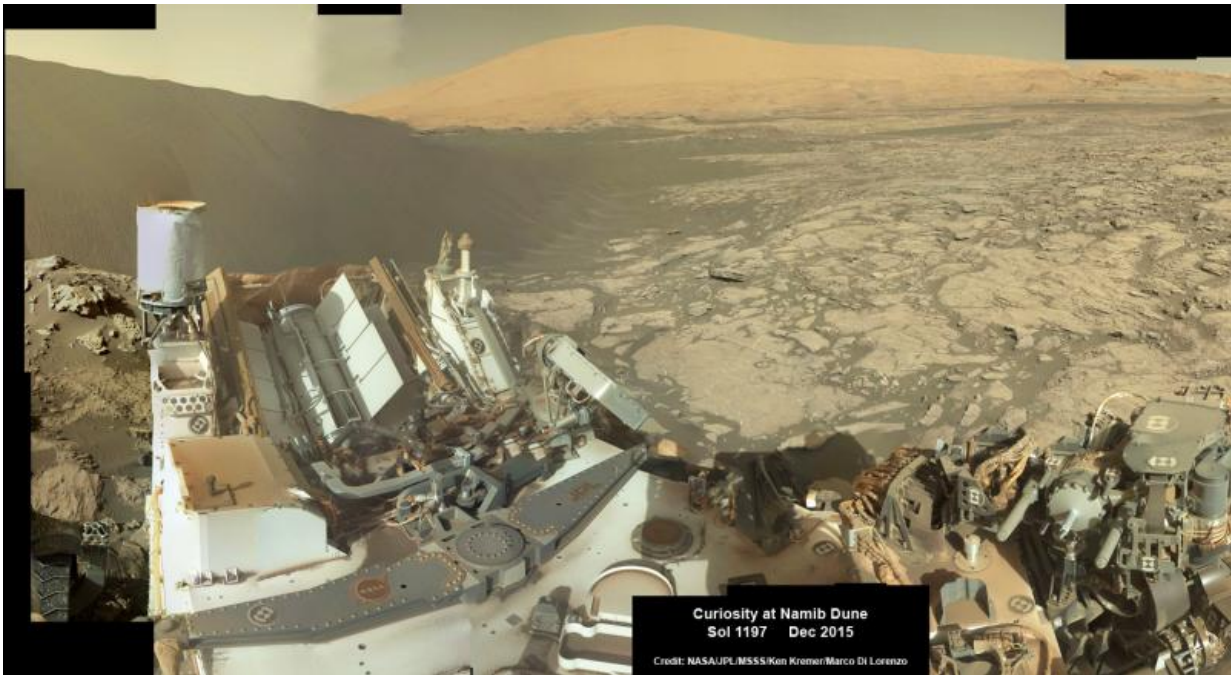


Curiosity images Nauyuk Plateau in this photo mosaic stitched from Mastcam camera raw images taken on Sol1296. Credit: NASA/JPL/MSSS

The team then commanded Curiosity to dump the unsieved portion of the sample onto the ground and examine the leftover drill tailing residues with the Mastcam, Navcam, MAHLI multispectral characterization cameras and the APXS spectrometer. ChemCam is also being used to fire laser shots in the wall of the drill hole to make additional chemical measurements.

To complement the data from Lubango, scientists are now looking around the area for a suitable target of unaltered Stimson bedrock as the 11th drill target.

"The color information provided by Mastcam is really helpful in distinguishing altered versus unaltered bedrock," explained MSL science team member Lauren Edgar, Research Geologist at the USGS Astrogeology Science Center, in a mission update.



Curiosity explores Red Planet paradise at Namib Dune during Christmas 2015 – backdropped by Mount Sharp. Curiosity took first ever self-portrait with Mastcam color camera after arriving at the lee face of Namib Dune. This photo mosaic shows a portion of the full self portrait and is stitched from Mastcam color camera raw images taken on Sol 1197, Dec. 19, 2015. Credit: NASA/JPL/MSSS

The ChemCam laser has already shot at the spot dubbed "Oshikati," a potential target for the next drilling campaign.

"On Sunday we will drive to our next drilling location, which is on a nearby patch of normal-looking Stimson sandstone," wrote Ryan Anderson, planetary scientist at the USGS Astrogeology Science Center and a member of the ChemCam team on MSL in today's (Apr. 28) mission update.

As time permits, the Navcam imager is also being used to search for dust devils.



Spectacular Mastcam camera view of Gale Crater rim from Curiosity on Sol 1302 enhanced to bring out detail. Credit: NASA/JPL/MSSS

As I reported here, Opportunity recently detected a beautiful looking dust devil on the floor of Endeavour crater on April 1. Dust devil detections by the NASA rovers are relatively rare.

Curiosity has been driving to the edge of the Naukluft Plateau to reach the interesting [fracture zone](#) seen in orbital data gathered from NASA's Mars orbiter spacecraft.

The rover is almost finished crossing the Naukluft Plateau which is "the most rugged and difficult-to-navigate terrain encountered during the mission's 44 months on Mars," says NASA.

Prior to climbing onto the Naukluft Plateau the rover spent several weeks investigating sand dunes including the two story tall Namib dune.

As of today, Sol 1325, April 28, 2016, Curiosity has driven over 7.9 miles (12.7 kilometers) since its August 2012 landing, and taken over 320,100 amazing images.

Source: [Universe Today](#)

Citation: Curiosity cores hole at 'Lubango' fracture zone (2016, May 2) retrieved 3 May 2024 from <https://phys.org/news/2016-05-curiosity-cores-hole-lubango-fracture.html>

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