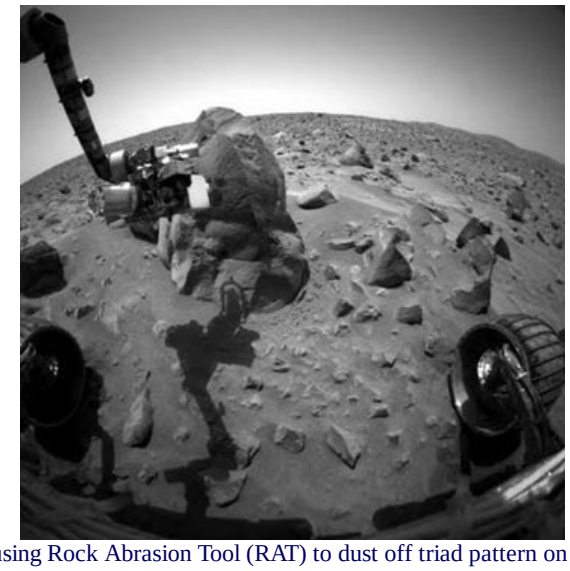
Opportunity Grinds Bedrock; Spirit Ready to Grind "Humphrey"


Left: Spirit rover approaches big Martian rock called "Humphrey" to dust off in triad pattern and analyze before grinding. **Right:** Triad pattern after Spirit's dusting shows dark rock beneath lighter dust. Images by **Front Hazard Camera** Non-linearized Full frame EDR acquired on Sol 55 of Spirit's mission to Gusev Crater at approximately 13:48:37 Mars local solar time. Image credit: NASA/JPL.

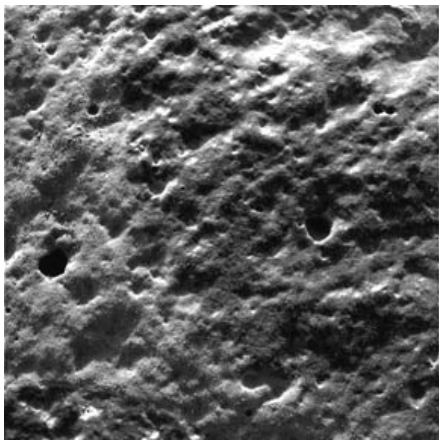
March 1, 2004 Pasadena, California - Nasa reports that the Spirit rover: "...used its rock abrasion tool for brushing the dust off three patches of a rock named "Humphrey," during its 55th sol on Mars, ending at 5:53 p.m. Saturday, PST. Before applying the wire-bristled brush, the rover inspected the surface of the rock with its microscope and with its alpha particle X-ray spectrometer, which identifies elements that are present. Brushing three different places on a rock one right after another was an unprecedented use of the rock abrasion tool, designed to provide a larger cleaned area for examining.



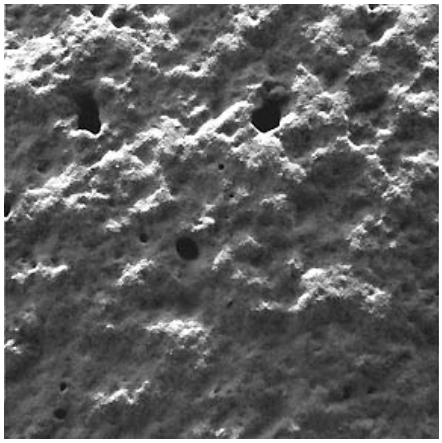
Spirit using Rock Abrasion Tool (RAT) to dust off triad pattern on big rock named Humphrey before grinding this week. Image by right Front Hazard Camera Non-linearized Downsampled EDR acquired on Sol 55 of Spirit's mission to Gusev Crater at approximately 11:30:30 Mars local solar time. Image credit: NASA/JPL .

Afterwards, Spirit rolled backward 85 centimeters (2.8 feet) to a position from which it could use its miniature thermal emission spectrometer on the cleaned areas for assessing what minerals are present. Due to caution about potential hazards while re-approaching Humphrey, the rover moved only part of the way

back. Plans for sol 56, ending at 6:33 p.m. Sunday, PST, call for finishing that re-approach and further inspecting the brushed areas. If all goes well, the rock abrasion tool's diamond-toothed grinding wheel will cut into the rock on sol 57 to expose fresh interior material."



Above and below: Spirit Microscopic close-up images of the dusted triad on the Humphrey rock.
Microscopic Imager Non-linearized Full frame EDR acquired on Sol 57 of Spirit's mission to
Gusev Crater at approximately at approximately 10:59:38 Mars local solar time. Image credit: NASA/JPL/Cornell/USGS

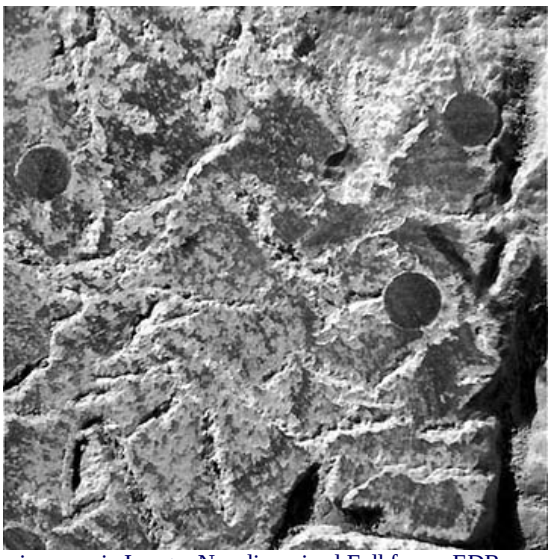


Microscopic Imager Non-linearized Full frame EDR acquired on Sol 55 of Spirit's mission to Gusev Crater at approximately at approximately 10:34:12 Mars local solar time. Image credit: NASA/JPL/Cornell/USGS

Opportunity

On the other side of Mars at the Meridiani Planum, Opportunity has ground yet again on the bedrock section called "El Capitan." Extensive measurements will be made as scientists continue to look for evidence of water, past or present, and for elemental composition.

Above: Section of El Capitan bedrock called "Guadalupe" before grinding.
Below: Same section after grinding by Opportunity Rock Abrasion Tool.
Microscopic Imager Non-linearized Full frame EDR acquired on Sol 34 of Opportunity's mission
to Meridiani Planum at approximately at approximately 11:31:52 Mars local solar time.
Image credit: NASA/JPL/Cornell/USGS.



Opportunity's microscopic Imager Non-linearized Full frame EDR acquired on Sol 35 of Opportunity's mission to Meridiani Planum at approximately at approximately 13:10:44 Mars local solar time. Image credit: NASA/JPL/Cornell/USGS.

During its 35th sol on Mars, ending at 6:14 a.m. Sunday, PST, Opportunity manipulated the microscopic imager at the tip of its arm for eight observations of the fine textures of an outcrop-rock target called "Guadalupe." The observations include frames to be used for developing stereo and color views.

Opportunity also used its Moessbauer spectrometer and, after an overnight switch, its alpha particle X-ray spectrometer to assess the composition of the interior material of "Guadalupe" exposed yestersol by a grinding session with the rock abrasion tool.

The panoramic camera up on the rover's mast captured a new view toward the eastern horizon beyond the crater where Opportunity is working, for use in evaluating potential drive directions after the rover leaves the crater.

Plans for sol 36, ending at 6:54 a.m. Monday, PST, called for finishing the close-up inspection of "Guadalupe," then backing up enough to give the panoramic camera and miniature emission spectrometer good views of the area where the rock interior has been exposed by grinding.

Websites:

http://marsrovers.jpl.nasa.gov/home/index.html

http://www.esa.int/export/esaCP/index.html

http://athena.cornell.edu

Credits