

Spirit Wiggles Into A Sturdy Workspace

October 19 2005

Spirit is healthy and spent the week examining a rock called "Hillary" at the true summit of "Husband Hill." The first attempt to approach Hillary ended with a small pebble under Spirit's left front wheel, and the stability of the rover was uncertain.

A set of wheel wiggles was performed to stabilize the rover before deployment of the robotic arm. Once the wheel was in good contact with the ground, Spirit began a conservative robotic-arm campaign, started with Moessbauer spectrometer and alpha particle X-ray spectrometer integrations.

Sol-by-sol summaries: Sol 626 (Oct. 6, 2005): Spirit began sol 626 on a steep slope, with Hillary in the work area. However, the right front wheel did not look like it was in stable contact with the ground. A set of three wheel wiggles and a final move to steer the wheels against the slip direction reduced Spirit's overall tilt by two degrees.

After looking at several images, rover meshes and RSVP simulations, the planning team was able to determine that the wheel was in a more stable area than it had been earlier.

Rover meshes are three-dimensional terrain maps that are created by rover team members by "gluing" together multiple pieces of data from the hazard-avoidance cameras (up-close images), navigation cameras (middle distance images), and panoramic cameras (far-away images) to give a view of the Martian landscape for multiple tactical purposes.

RSVP stands for Rover Sequencing and Visualization Program. The rover planners use this software tool to plan sequences of commands for driving and robotic arm work. It can simulate the sequence, showing a model of the rover superimposed on actual images of the Martian terrain.

Sol 627: Spirit deployed the robotic arm. When the arm is deployed while the rover is on a slope, the degree to which the rover is tilting may change. The team expected a change of less than 0.3 degrees and saw only a 0.005 degree change.

Sol 628: Robotic arm work continued with a Moessbauer spectrometer placement on the first of two targets. Targeted remote sensing was also performed.

Sol 629: Spirit continued Moessbauer spectrometer integration and remote sensing.

Sol 630: Spirit changed tools to the alpha particle X-ray spectrometer and made observations with the navigation camera.

Sol 631: Spirit placed the Moessbauer spectrometer on a second target, performed targeted remote sensing and made nighttime observations with the panoramic camera.

Sol 632: Spirit continued the Moessbauer spectrometer integration and remote sensing. The rover also used the miniature thermal emission spectrometer at night.

Sol 633: Spirit took pictures of targets on Hillary using the microscopic imager, performed an alpha particle X-ray spectrometer integration at night and checked for dust devils.

As of the end of sol 633, (Oct. 13, 2005), Spirit has driven 4,993 meters (3.10 miles).

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