

Spirit Preparing For Robotic Arm Work

October 11 2005

Spirit is healthy and still performing science in the summit area of "Husband Hill." The rover has acquired a 360-degree panorama from the top of Husband Hill, and has performed remote sensing of other targets of interest. Spirit drove back down to the clean face of the rock outcrop called "Hillary" to find a good position to perform work with the robotic arm.

Sol-by-sol summaries:

Sol 620 to 622 (Sept. 30 to Oct. 2, 2005): While perched on the summit of Husband Hill, Spirit spent the weekend acquiring a 360-degree color mosaic. Team members took this opportunity to place the Moessbauer spectrometer on Spirit's compositional calibration target for a three-sol integration.

The compositional calibration target provides an independent, external reference source for calibrating the alpha particle X-ray spectrometer and Moessbauer spectrometer. Both instruments also have their own internal calibration reference targets.

The compositional calibration target is made of a piece of magnetite rock from Earth, bonded to an aluminum base plate and covered by a protective coating that the Moessbauer spectrometer cannot detect.

The science team also wanted new measurements of the compositional calibration target with the alpha particle X-ray spectrometer to supplement measurements from sols 614 to 619, but rover planners saw

a rock under the rover.

If the alpha particle X-ray spectrometer were on the compositional calibration target, the rock abrasion tool would be too close to this hazard. The resolution was to do only a Moessbauer spectrometer integration.

Sol 623: There is a fascinating outcrop at the summit called Hillary. From the panoramic camera position on top of the summit, Spirit could access only very dusty areas of Hillary. On sol 623, Spirit began the approach to the clean face. However, the drive did not take place due to a sequencing error.

Sol 624: The second approach attempt succeeded, with a 12-meter (39-foot) drive. From the new location, Spirit imaged potential workspace for the robotic arm. The images allowed rover planners to determine the best way to bump into position for robotic arm work.

Sol 625: A 3.4-meter (11.15-foot) bump put the desired target into the work space. However, the left front wheel is perched upon a small rock and not in full contact with the ground.

Sol 626: Since engineers could not tell if the rover was 100-percent stable, the team decided not to deploy the robotic arm. Instead, the plan is for Spirit to perform small maneuvers. The hazard-avoidance cameras will take images at every step to stabilize the rover and confirm that it is in a safe position to perform robotic arm work.

As of the end of sol 626, (Oct. 6, 2005), Spirit has driven 4,993 meters (3.10 miles).

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