Spirit Activates New Software

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Following some dramatic scrambling by rover handlers to command both Mars Exploration Rovers to switch to new flight software during a bit of a traffic jam at the Red Planet, Spirit successfully woke up and began operating with the new software. The X-band frequency for communicating directly with Earth had become unavailable while being used by NASA's Mars Reconnaissance Orbiter during critical events for that mission.

As in the past, engineers were able to use the UHF-band frequency to relay commands indirectly to the rovers via NASA's Mars Odyssey orbiter. Time was of the essence in order to begin running and testing the new software before solar conjunction in October, when Mars will be on the opposite side of the sun from Earth and radio communication will be intermittent for a couple of weeks.

The new software gives the rover enhanced autonomous operational capabilities to be tested in coming months.

Sol-by-sol summary

Sol 964 (Sept. 19, 2006): Spirit halted operations temporarily while awaiting instructions from Earth. Rover handlers originally planned to have the rover reboot using the new flight software by sending a command over the X-band uplink. The X-band became unavailable when it was needed by the Mars Reconnaissance Orbiter. The team sent the reboot command via the UHF-band antenna on the Odyssey orbiter later the same day.

Sol 965: At 11 a.m. local solar time on Mars, Spirit woke up for the first time running the new flight software, known as version R9.2. Later the same sol, or Martian day, Spirit ran a series of engineering sequences to establish operating parameters for data products and imaging.

Sol 966: Spirit set operating parameters for driving and operating the rover's robotic arm. The rover measured atmospheric dust using the panoramic camera.

Sol 967: Plans called for Spirit to continue to test the new software. Science activities remained light as the uplink team waited for both Spirit and Spirit's twin, Opportunity, on the other side of Mars, to reboot using the new software.

Sol 968: Plans called for Spirit to return to relatively normal science operations without moving the robotic arm, while team members awaited confirmation that the rover had established the correct operating parameters for the arm. Spirit was to complete 5 hours of analysis of dust on the rover's capture magnet using the alpha particle X-ray spectrometer.

Sol 969 (Sept. 24, 2006): Plans called for Spirit to measure surface reflectivity with the panoramic camera, measure atmospheric dust, and complete a morning scan of the sky and ground with the miniature thermal emission spectrometer, followed by similar observations in the afternoon. Spirit was also instructed to measure sky brightness, check for changes over time in the panoramic camera, and study a soil target known as "Tyrone" with the miniature thermal emission spectrometer.

Odometry

As of sol 965 (Sept. 20, 2006), Spirit's total odometry remained at 6,876.18 meters (4.27 miles).