Opportunity Edges Toward Crater Erebus

July 18 2005

Opportunity made impressive progress toward "Erebus Crater" during the week. Four sols of driving totaled 57 meters (187 feet), while slipping less than 10 percent on each drive. A longer drive was plotted for the fifth day.

The rover has continued to drive down ripple troughs. We have a series of checks in place to prevent excessive bogging down, including, tilt, roll, pitch limit checks, current checks and slip checks (set at 40 percent slip).

We look forward to more progress south over the coming week.

Sol-by-sol summaries:

Sol 518 and 519 (July 9 and July 10, 2005): In light of extensive driving and data collection the previous week, these sols were designed to conduct light remote sensing, recharge batteries, and downlink data to free up memory space on the rover.

Sol 520: The uplink team designed a 16-meter (52-foot) drive. Opportunity completed 10.34 meters (33.92 feet) of the drive before tripping a mobility-goal error. There was a bad position estimate given to the onboard slip-checking software, so it incorrectly thought the rover was 0.5 to 1 meters (1.6 to 3.3 feet) back from its actual position, thus making insufficient progress because it thought it was slipping excessively. However, analysis by the mobility team on the ground determined the true slip, and we were "go" to drive the following sol.

Sol 521: Opportunity completed a successful drive of 15.2 meters (about 50 feet) without any faults.

Sol 522: The rover completed another successful drive of 15 meters (49 feet), with only 6.4 percent reported slip.

Sol 523: We drove 16.2 meters (53 feet) of a planned 20-meter (66-foot) drive. The drive stopped short because onboard slip-checking software was having difficulty tracking the rover's rear wheel tracks, which are used as a reference point to monitor the slip. Opportunity does not want to keep trying to drive if it is unsure of how much it is slipping, so the team sets a limit to this failure count. This prevents bogging down in the terrain.

Sol 524 (July 15):

The uplink team planned a drive of 27 meters (89 feet). The drive plan is the first in Opportunity's current terrain using a combination of short segments of blind driving followed by shorter segments (40 centimeters, or 16 inches) of slip-check driving. This drive strategy is designed to allow us to drive farther by using a less time-consuming drive option while still verifying every 5 meters that we are not bogging down.

Odometry total after sol 523 drive: 5464.09 meters (3.39 miles).