

Spirit Rover: Computer Modeling Supplements Dusty Testing

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Tests of possible maneuvers for use by NASA's rover Spirit on Mars include use of this lightweight test rover at NASA's Jet Propulsion Laboratory, Pasadena, Calif.

(PhysOrg.com) -- Tests on Earth simulating Spirit's predicament on Mars have reinforced understanding that getting Spirit to rove again will be very difficult.

To supplement the tests at NASA's Jet Propulsion Laboratory in Pasadena, Calif., the rover team is refining a detailed [computer model](#) of rover mobility, calibrated with results from testing and measurements from [Mars](#).

"The computer modeling will allow us to connect the results from tests performed in Earth gravity with what to expect from the rover in Mars gravity," said JPL's John Callas, project manager for Spirit and its twin,

Opportunity.

Spirit became embedded in soft soil at a site called "Troy" in early May, more than five years into a mission on Mars that was originally scheduled to last for three months. The rover team suspended further driving attempts with Spirit while evaluating possibilities from tests performed at JPL simulating the Troy situation.

An additional round of testing was added to the September schedule to gain more detailed assessment of how to move Spirit while avoiding putting the rover's center of [gravity](#) directly over a rock that is touching or nearly touching the rover's underbelly. Other added tests are using a lighter-weight test rover than the one used for most of the testing this summer. A complete "dress rehearsal" test of the extrication strategy judged to hold the best chance of success is planned in the test setup at JPL before the team commands Spirit to begin driving. That test and subsequent review of its results are expected to take several weeks. Moves by Spirit will not begin before October, according to current plans.

"We are proceeding very cautiously and exploring all reasonable options," Callas said. "There is a very real possibility that Spirit may not be able to get out, and we want to give Spirit the very best chance."

A dust storm that had reduced the electrical output from Spirit's solar panels by nearly half during late August still has some lingering effects on the skies above Spirit.

Provided by JPL/NASA ([news](#) : [web](#))

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