# Spirit Examines Light Tones Halley Formation

July 4 2006

Stretching along a formation mission team members have named Low Ridge, lying in front of the Martian winter haven for NASA's Spirit rover, are several continuous rock layers that make up the ridge.

Some of these layers form fins that stick out from the other rocks in a way that suggests they are resistant to erosion.

Spirit currently is straddling one of these fin-like layers and can reach a

small bit of light-toned material that might be a broken bit of it. Informally named Halley, this rock was broken by Spirit's wheels when the rover drove over it.

Spirit took this red-green-blue composite image with its panoramic camera on the 820th sol, or Martian day, of its mission to mars on April 24. The image is presented in false color to emphasize differences among materials in the rocks and soil.

The image also combines frames taken through the camera's 750-nanometer, 530-nanometer, and 430-nanometer filters. The middle of the imaged area has dark basaltic sand.

Spirit's wheel track is at the left edge of the frame. Just to the right of the wheel track in the lower left are two types of brighter material examined by Spirit at the Halley target. The bluer material yielded the evidence for a calcium sulfate mineral.

The first analyses of Halley showed it to be unusual in composition, containing a lot of the minor element zinc relative to the soil around it and having much of its iron tied up in the mineral hematite.

When scientists again placed the scientific instruments on Spirit's robotic arm on a particularly bright-looking part of Halley, they found that the chemical composition of the bright spots was suggestive of a calcium sulfate mineral.

Bright soils that Spirit has examined earlier in the mission contain iron sulfate.

This discovery raises new questions for the science team: Why is the sulfate mineralogy here different? Did Halley and the fin material form by water percolating through the layered rocks of Low Ridge? When did

the chemical alteration of this rock occur?

Spirit will continue to work on Halley and other light-toned materials along Low Ridge in the coming months to try to answer these questions.