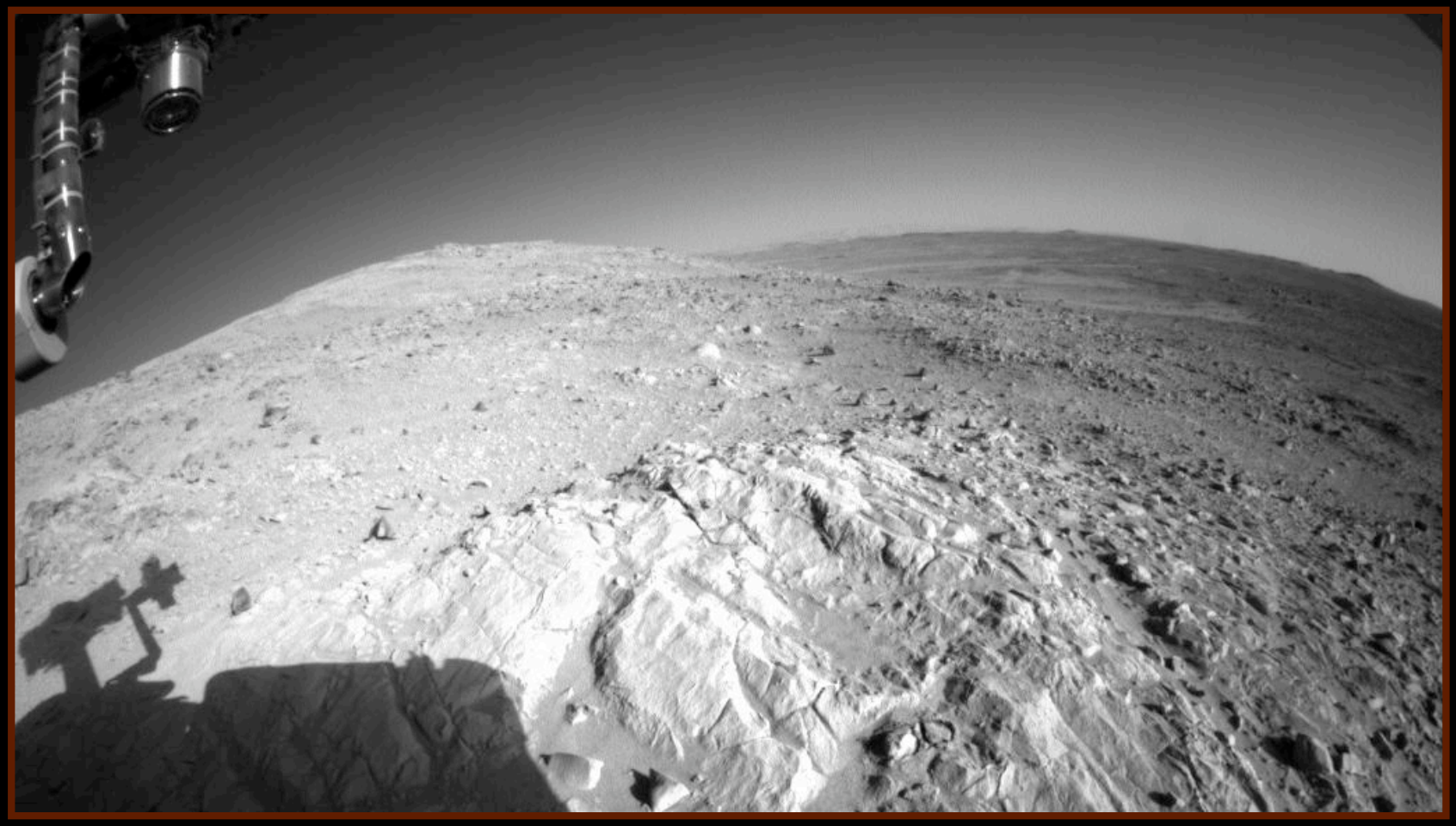
Mars Exploration Rover Mission

Spirit and Opportunity

Week in Review
July 24 - July 30

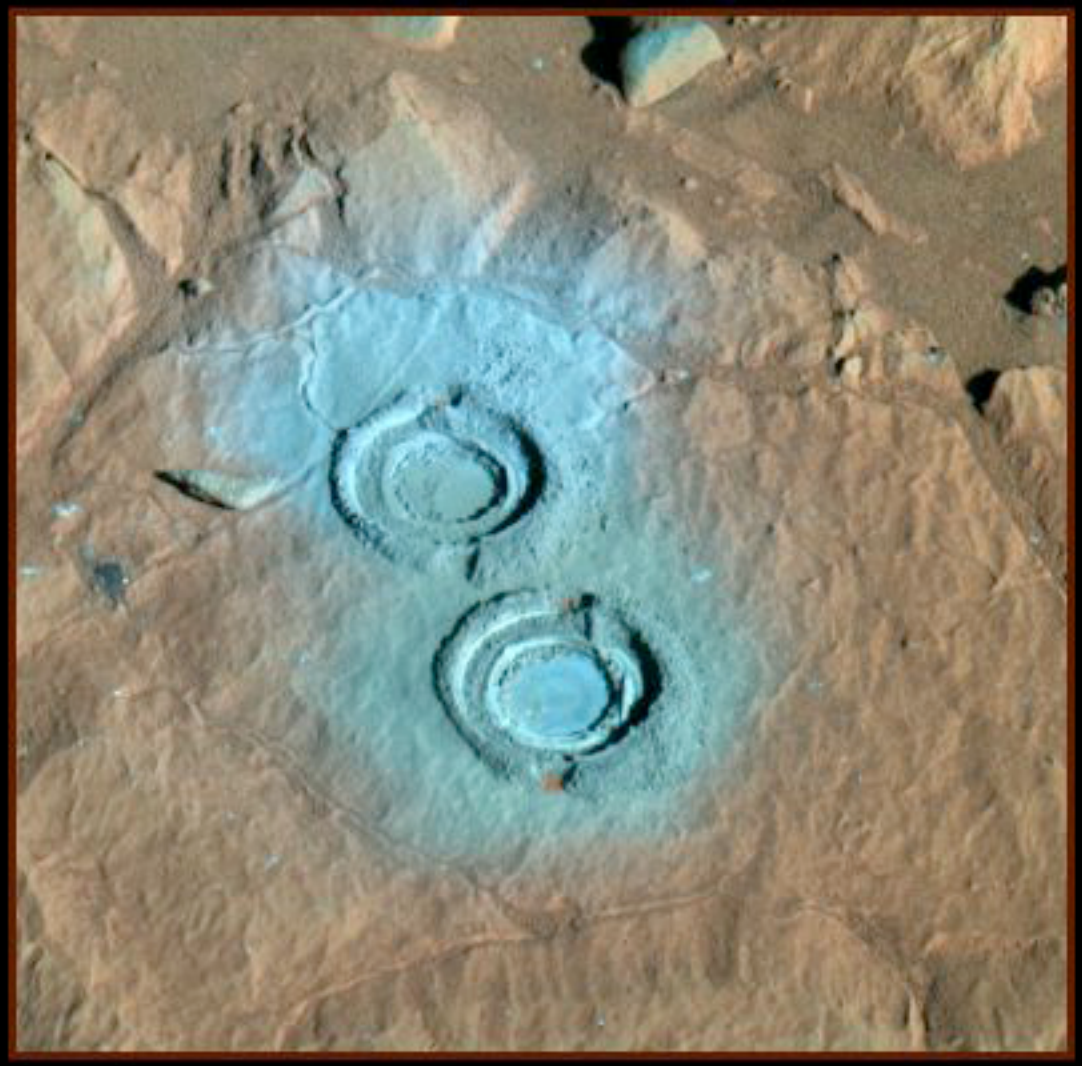
Spirit has survived over 200 sols on the martian surface!



Front hazard-avoidance camera image taken at 3:49 p.m. Mars Local Solar Time on July 24, 2004.

Spirit is wrapping up research at the base of the Columbia Hills.

Spirit ground two holes in a relatively soft rock called "Wooly Patch," near the base of the Columbia Hills.



False-color panoramic camera image, July 25, 2004

Scientist speculate that this relatively soft rock (compared to others analyzed by Spirit) may have been modified by water.

Approximate true-color panoramic camera image, July 25, 2004.

Small cracks in the surface outside the drill holes and one running through the upper hole may be the result of interactions with water-rich fluids.

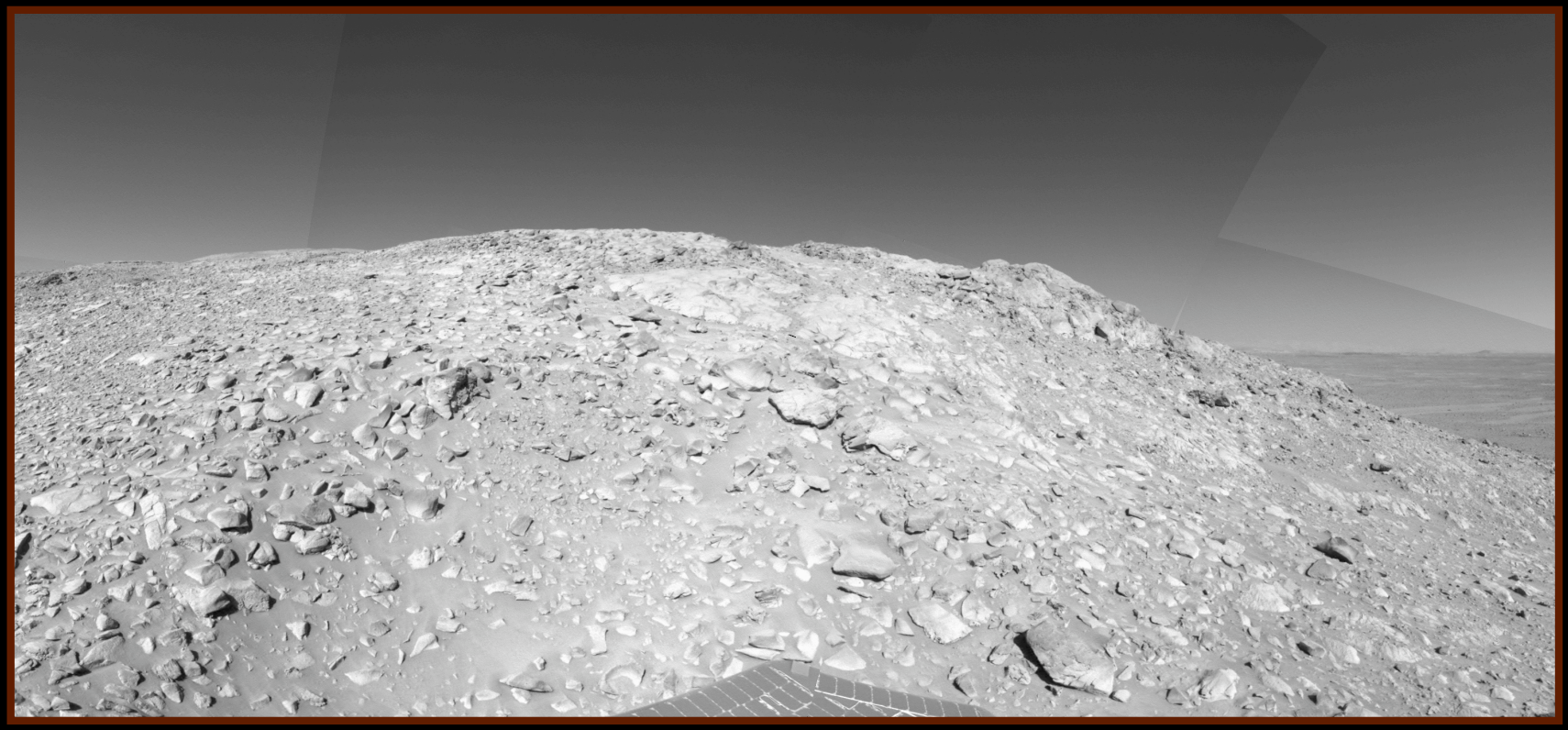
On July 27, Spirit was commanded to journey up the Columbia Hills, but the terrain was too steep for the maximum-tilt-angle limit, set at 25 degrees.

Navigation camera image, 3:10 p.m. Mars Local Solar Time, July 27, 2004.

On July 28, engineers set the max tilt angle to 32 degrees, and Spirit made it 83.6 feet (25.5 meters) up the hill.

Navigation camera image, 3:18 p.m. Mars Local Solar Time, July 28, 2004.

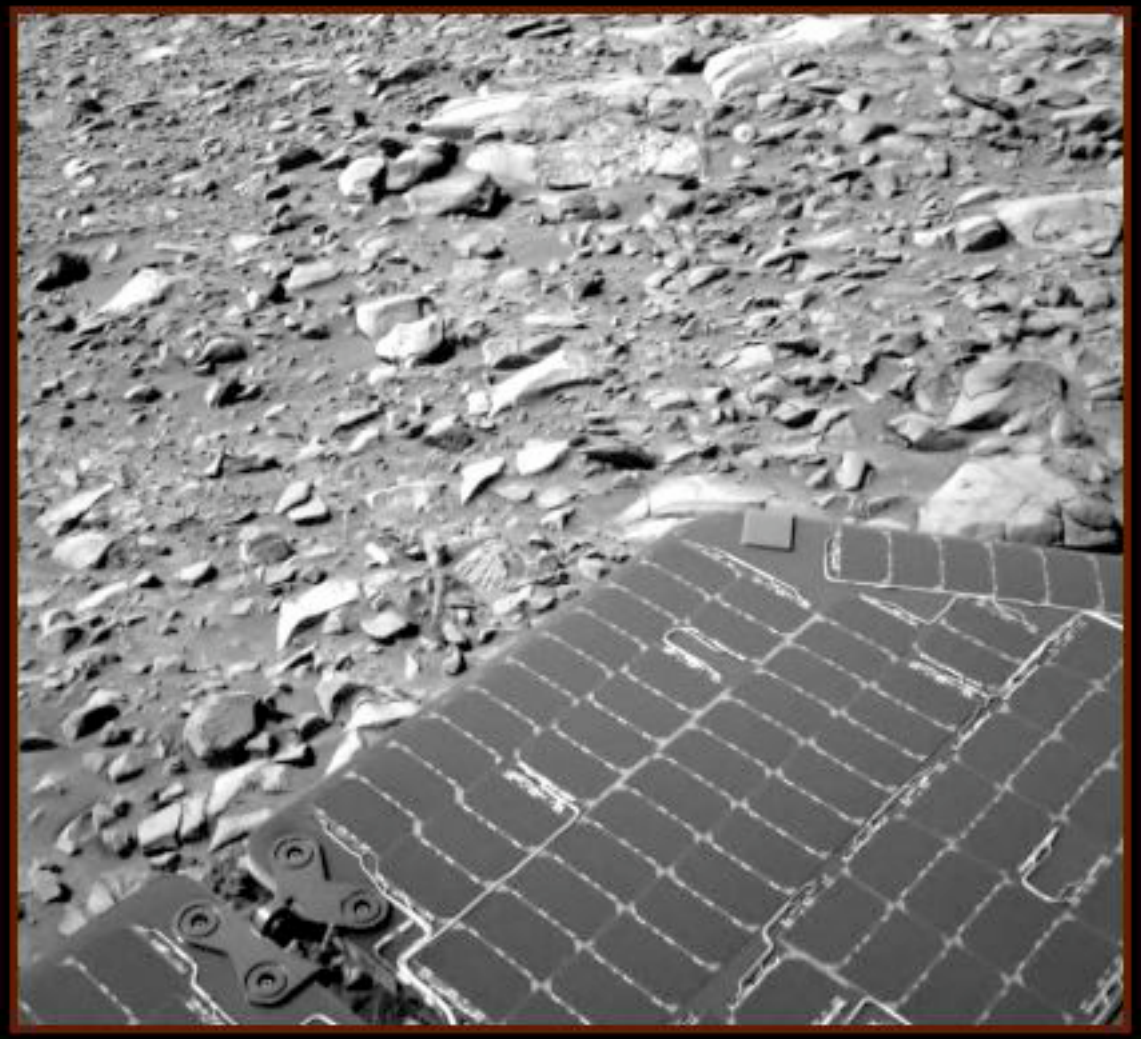
On July 29, Spirit didn't end up on the rock outcrops scientists were hoping to reach. Spirit also drove into a small hollow.



Navigation camera mosaic at a position labeled "Site 80," looking south near the West Spur portion of the Columbia Hills.

As a result, Spirit pitched 15 degrees to the south, away from the Sun, which is Spirit's power source.

Spirit later recharged its batteries and has made it 30 feet (9 meters) up the hills.



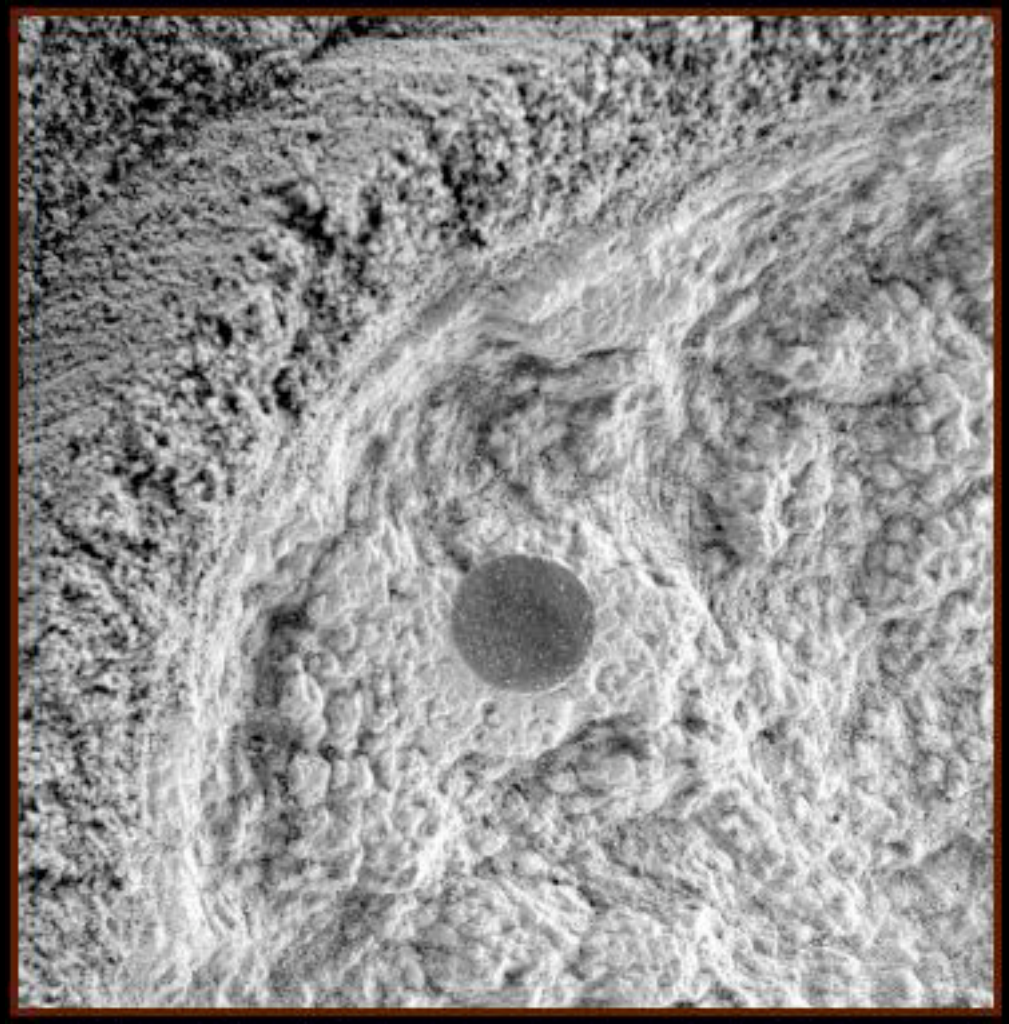
Opportunity's solar panels, navigation camera, July 30, 2004, 2:19 p.m. Mars Local Solar Time.

Meanwhile, Opportunity passed the double-mission milestone on July 26, reaching Sol 180.

Spirit and Opportunity have both well surpassed their original 90-sol missions.

Front hazard-avoidance camera image, sol 180, July 26, 2004.

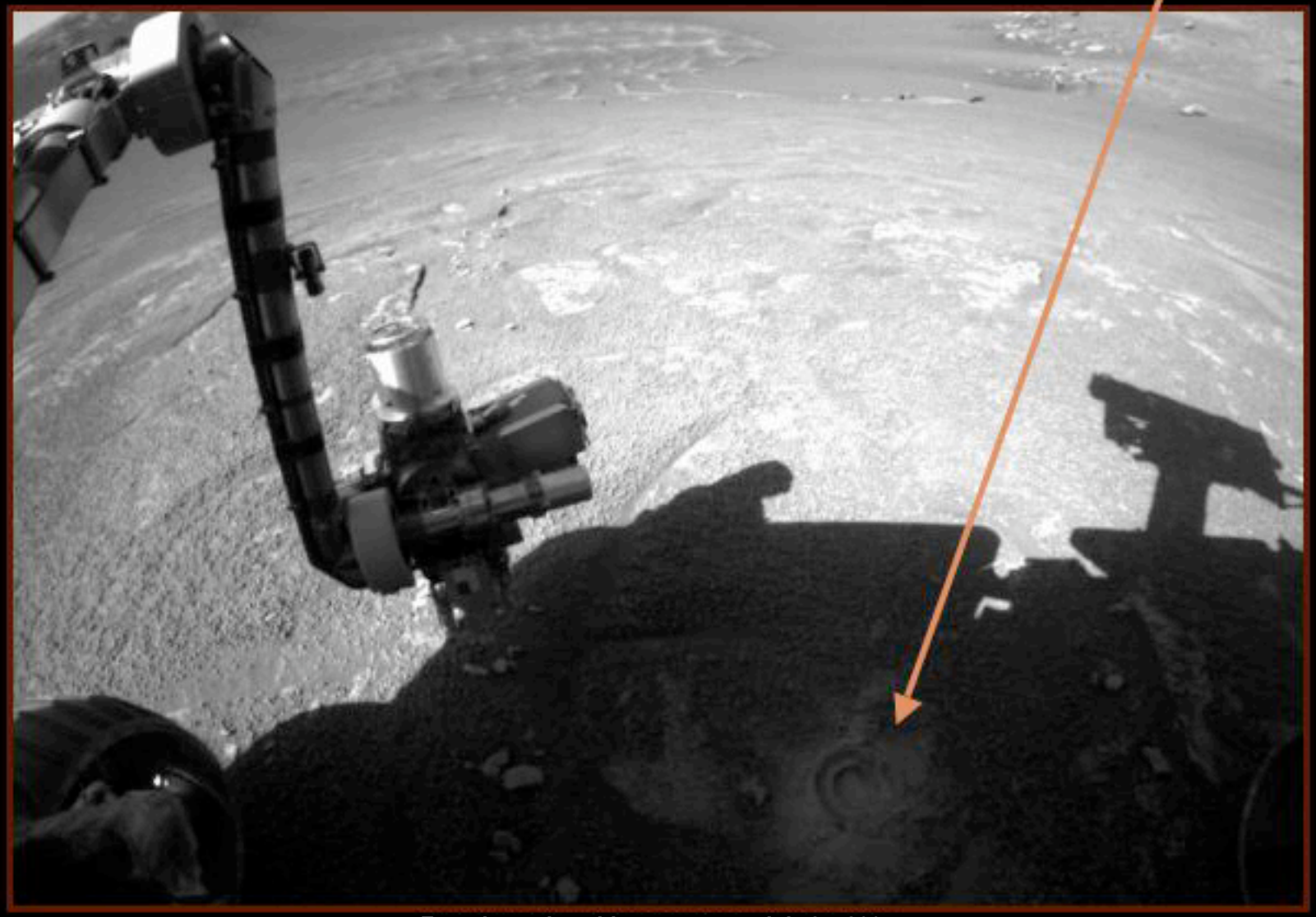
On July 24, Opportunity's rock abrasion tool performed a two-hour grind on the target "Diamond Jenness."



Microscopic Imager, July 24, 2004.

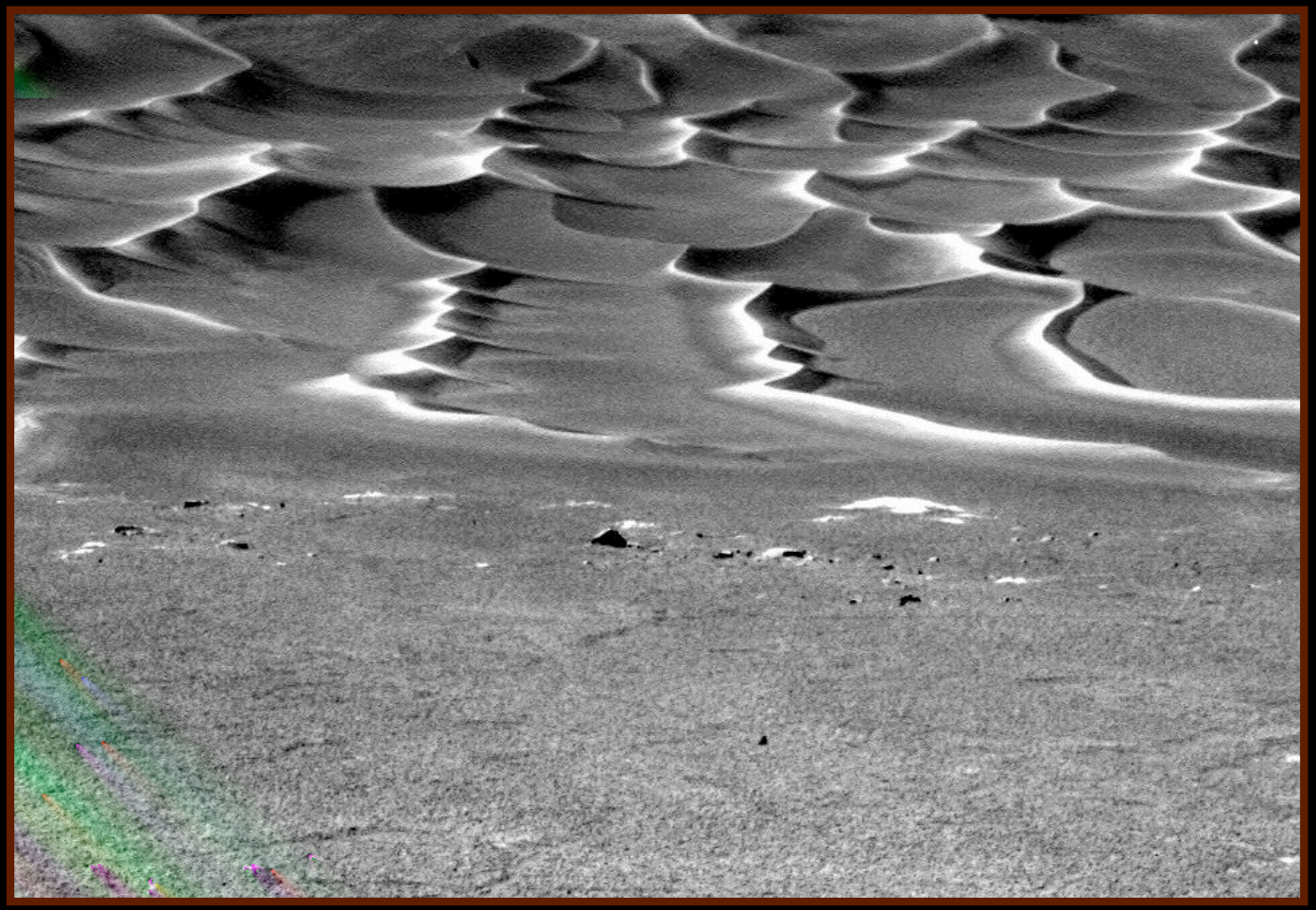
The bumpy shape of the rock apparently made it hard for the rock abrasion tool to dig deep and make a smooth hole.

On July 25, the rock abrasion tool dug into Diamond Jenness again, smoothing out the hole.



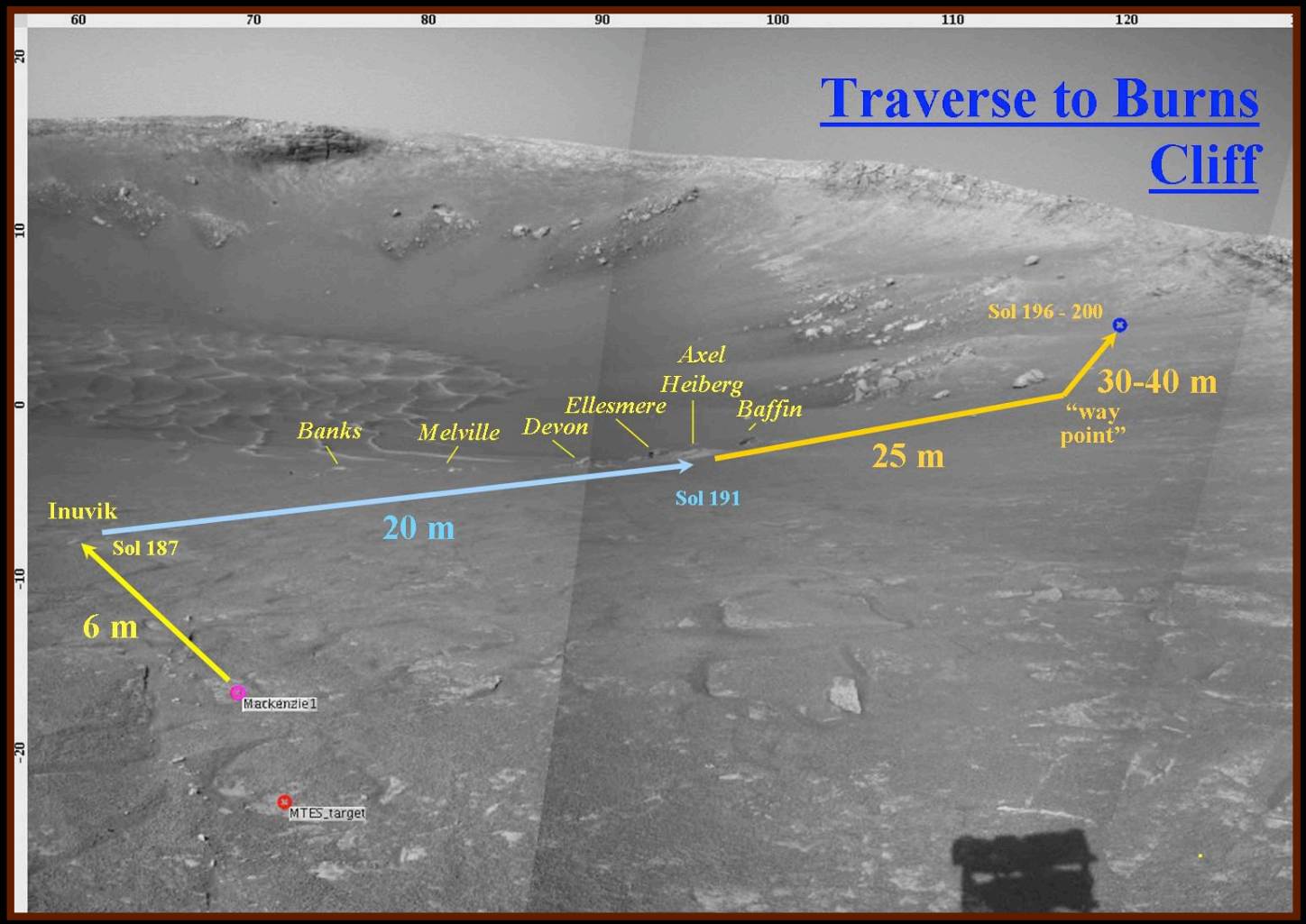
Front hazard-avoidance camera, July 25, 2004.

Opportunity continues moving deeper into Endurance, and is now 66 feet (20 meters) down inside the crater in an area dubbed Tuktoyuktuk, named after a small village in the Canadian Arctic.



Panoramic camera image, July 29, 2004.

Spirit will aim for the "Clovis" outcrop, while engineers decide whether it's safe for Opportunity to drive to "Burns Cliff."



Navigation camera image of Endurance Crater with graphics overlain.