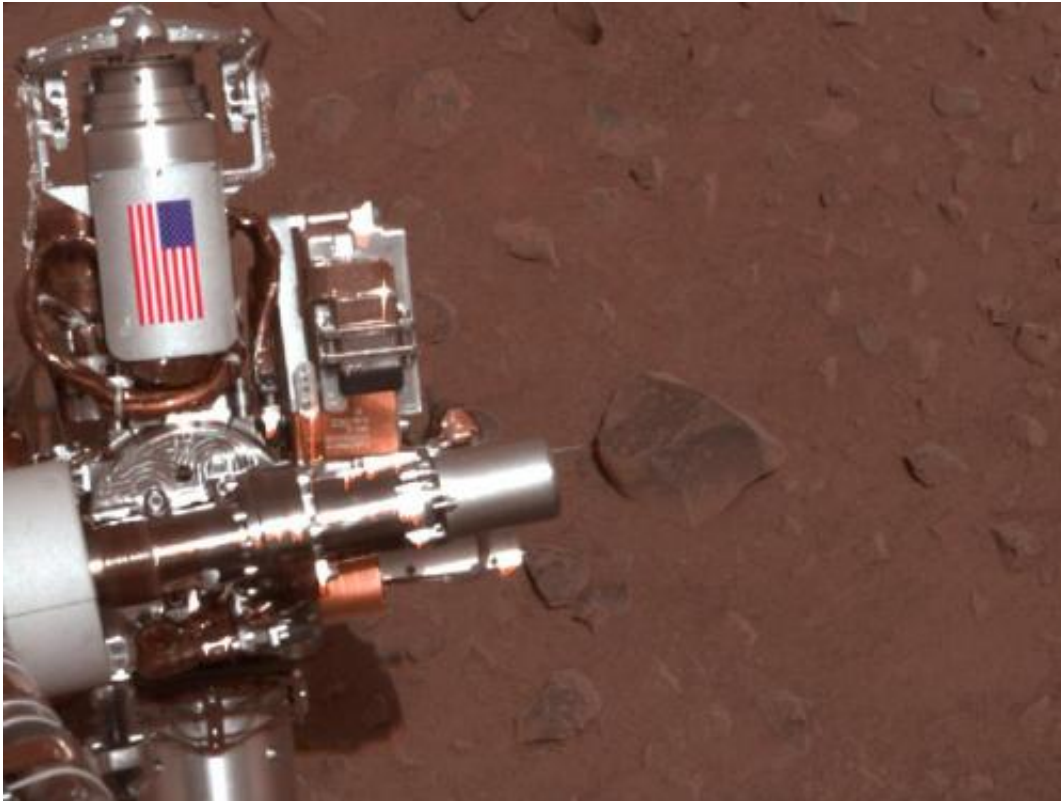


Tributes to terrorism victims are on Mars

September 9 2011, By Guy Webster



The piece of metal with the American flag on it in this image of a NASA rover on Mars is made of aluminum recovered from the site of the World Trade Center towers in the weeks after their destruction. Credit: NASA/JPL-Caltech/Cornell University

In September 2001, Honeybee Robotics employees in lower Manhattan were building a pair of tools for grinding weathered rinds off rocks on Mars, so that scientific instruments on NASA's Mars Exploration Rovers

Spirit and Opportunity could inspect the rocks' interiors.

That month's attack on the twin towers of the World Trade Center, less than a mile away, shook the lives of the employees and millions of others.

Work on the rock abrasion tools needed to meet a tight schedule to allow thorough testing before launch dates governed by the motions of the planets. The people building the tools could not spend much time helping at shelters or in other ways to cope with the life-changing tragedy of Sept. 11. However, they did find a special way to pay tribute to the thousands of victims who perished in the attack.

An aluminum cuff serving as a cable shield on each of the rock abrasion tools on [Mars](#) was made from aluminum recovered from the destroyed World Trade Center towers. The metal bears the image of an American flag and fills a renewed purpose as part of solar system exploration.

Honeybee Robotics collaborated with the New York mayor's office; a metal-working shop in Round Rock, Texas; NASA's Jet Propulsion Laboratory in Pasadena, Calif.; and the rover missions' science leader, Steve Squyres, at Cornell University, Ithaca, N.Y.

"It's gratifying knowing that a piece of the World Trade Center is up there on Mars. That shield on Mars, to me, contrasts the destructive nature of the attackers with the ingenuity and hopeful attitude of Americans," said Stephen Gorevan, Honeybee founder and chairman, and a member of the Mars rover science team.

On the morning of Sept. 11, 2001, Gorevan was six blocks from the World Trade Center, riding his bicycle to work, when he heard an airliner hit the first tower. "Mostly, what comes back to me even today is the sound of the engines before the first plane struck the tower. Just

before crashing into the tower, I could hear the engines being revved up as if those behind the controls wanted to ensure the maximum destruction. I stopped and stared for a few minutes and realized I felt totally helpless, and I left the scene and went to my office nearby, where my colleagues told me a second plane had struck. We watched the rest of the sad events of that day from the roof of our facility."

At Honeybee's building on Elizabeth Street, as in the rest of the area, normal activities were put on hold for days, and the smell from the collapse of the towers persisted for weeks.

Steve Kondos, who was at the time a JPL engineer working closely with the Honeybee team, came up with the suggestion for including something on the rovers as an interplanetary memorial. JPL was building the rovers and managing the project.

To carry out the idea, an early hurdle was acquiring an appropriate piece of material from the World Trade Center site. Through Gorevan's contacts, a parcel was delivered to Honeybee Robotics from the mayor's office on Dec. 1, 2001, with a twisted plate of aluminum inside and a note: "Here is debris from Tower 1 and Tower 2."

Tom Myrick, an engineer at Honeybee, saw the possibility of machining the aluminum into the cable shields for the rock abrasion tools. He hand-delivered the material to the machine shop in Texas that was working on other components of the tools. When the shields were back in New York, he affixed an image of the American flag on each.

The Mars Exploration Rover Spirit was launched from Cape Canaveral Air Force Station, Fla., on June 10, 2003. Opportunity's launch followed on July 7. Both rovers landed the following January and completed their three-month prime missions in April 2004. Nobody on the rover team or at Honeybee spoke publicly about the source of the aluminum on the cable shields until later that year.

"It was meant to be a quiet tribute," Gorevan told a New York Times reporter writing a November 2004 story about Manhattan's participation in the rover missions. "Enough time has passed. We want the families to know."

Since landing on the Red Planet, both rovers have made important discoveries about wet environments on ancient Mars that may have been favorable for supporting microbial life. Spirit ended communications in March 2010. Opportunity is still active, and researchers plan to use its rock abrasion tool on selected targets around a large crater that the rover reached last month.

One day, both rovers will be silent. In the cold, dry environments where they have worked on Mars, the onboard memorials to victims of the Sept. 11 attack could remain in good condition for millions of years.

The Jet Propulsion Laboratory in Pasadena, Calif., a division of the California Institute of Technology, manages the Mars Exploration Rovers for NASA.

Provided by JPL/NASA

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