Earthfiles, news category.

U. S. Will Attempt First Landing On Asteroid Eros

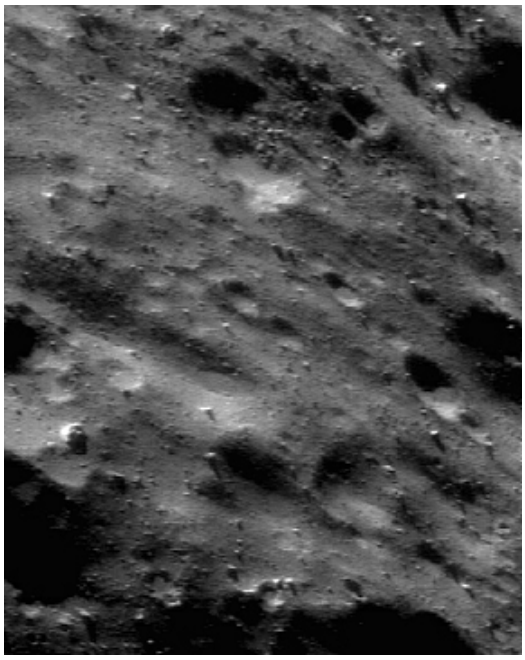
This color image of Eros was acquired by NEAR's multi-spectral imager on February 12, 2000
at a range of 1100 miles (1800 kilometers). The color is close to what the unaided human eye would see.
The butterscotch hue is typical of a wide variety of minerals thought to be major components of asteroids such as Eros. Photograph courtesy of Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland

January 6, 2001 Laurel, Maryland - NASA said OK this week to America's and the world's first attempt to land on an asteroid - or at least touch down briefly. Scientists on the Near Earth Asteroid Rendezvous (NEAR) team at Johns Hopkins University's Applied Physics Laboratory in Laurel, Maryland have been controlling NASA's NEAR Shoemaker spacecraft orbiting the asteroid Eros since February 14, 2000. Now, nearly one year to the day on February 12, 2001, NEAR's rocket engines will be turned on to slow the orbiter's descent toward Eros at about 7 miles per hour.

Robert Farquhar, NEAR mission manager told reporters, "Who knows what NEAR will do. Even if it's a crash landing, it's a first landing."

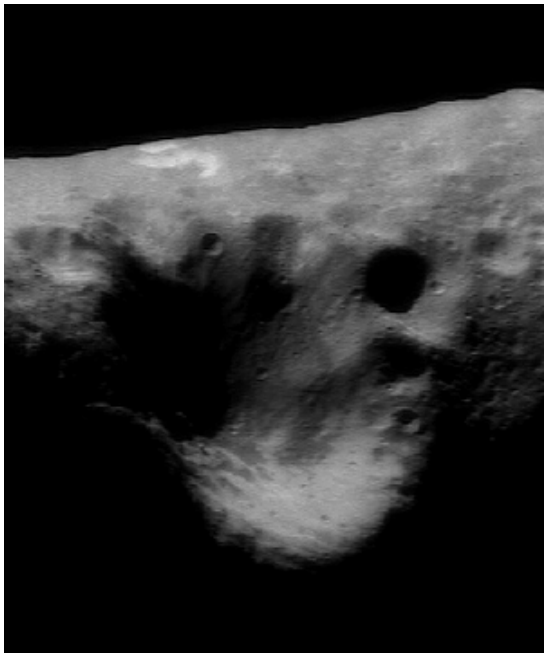
The NEAR spacecraft was not designed to set down on the asteroid. Its mission has been to photograph from high and low orbits every inch of the massive, 21 mile long, foot-shaped rock out in the asteroid belt about 100 million miles from earth. But the spacecraft's orbit control has been so successful that it seemed worth trying for close-up images on or very near the rocky surface, if only for a few seconds before bouncing back into orbit. Whatever happens, the NEAR spacecraft camera will be taking pictures. Already 150,000 images have been

sent to the NEAR scientists. The asteroid is more complex than expected with many rocks, large boulders and mysterious surface details.



Mysterious, similar holes with consistent orientations on Eros.
NEAR Shoemaker photograph on December 18, 2000 from an orbital altitude of 21 miles (33 kilometers).
The strange holes cover an area about .6 miles across (1 kilometer). Photograph courtesy of JHUAPL.

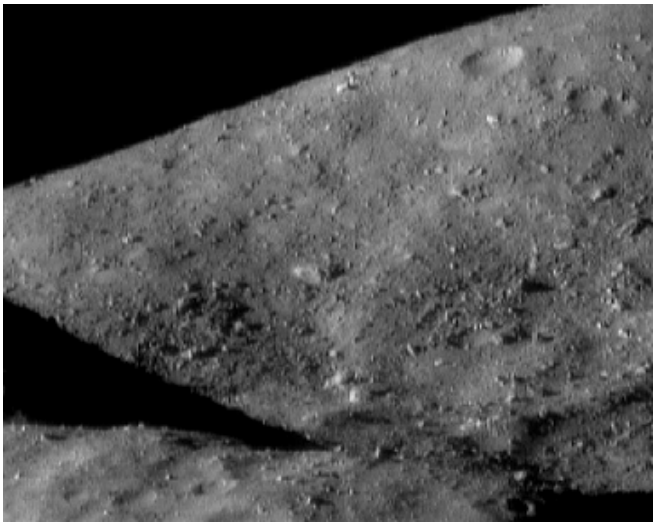
On December 18, 2000, the NEAR Shoemaker spacecraft photographed a half mile area shown above from an orbital altitude of 21 miles (33 kilometers). The strange similar holes with consistent orientations have also been found in other areas of the asteroid. According to JHUAPL, some contain unexplained, smooth pond-like material. "Neither the surface sculpturing nor the pond-like materials are well understood and both will be investigated in detail using even higher-resolution images from NEAR Shoemaker's low passes over Eros in January to February 2001.



The "paw print" crater on Eros known as Psyche, about 4.6 miles (7.4 kilometers) across.

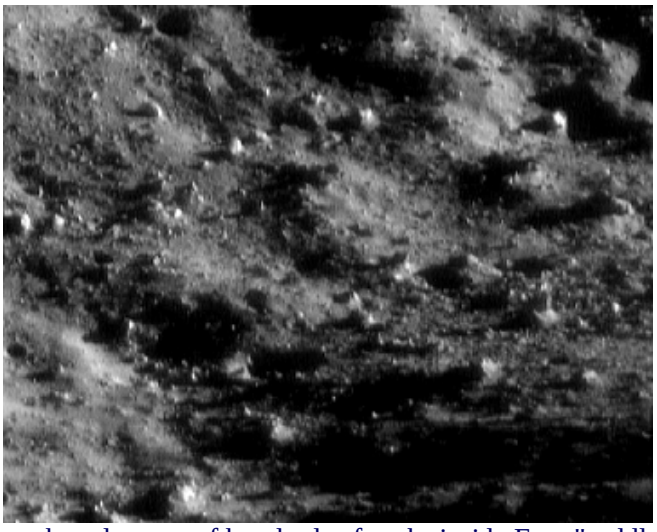
NEAR Shoemaker image on November 25, 2000 from 122-mile (197 kilometers) altitude. The white material is on Psyche's northern wall. Photograph courtesy of JHUAPL.

NEAR scientists describe the above photograph taken on November 25, 2000 from a 122-mile (197 kilometers) altitude, "As the sun moves high into Eros' southern sky, the interior of the 'paw print' is the large crater known as Psyche. The several smaller craters superimposed on its rim become increasingly shadowed. During the current season on the asteroid, the southern wall of the 3.3 mile diameter Psyche (5.3 kilometers) is barely illuminated."



Pointed shadow cast from low ridge in foreground. NEAR Shoemaker photograph on December 19, 2000, courtesy of JHUAPL.

NEAR Shoemaker photographed the southern part of the Eros "saddle" region above on December 19, 2000 from an orbital altitude of 23 miles (37 kilometers). The low ridge in the foreground casts a wedge-shaped shadow against the hill in the background. The surface here is packed with boulders. The largest near the center of the picture is about 200 feet across (60 meters). The whole scene is about a mile across (1.5 kilometers).



NEAR Shoemaker close-up of hundreds of rocks inside Eros "saddle" region on December 25, 2000 from 24 miles up (38 kilometers). Photograph courtesy JHUAPL.

NEAR Shoemaker took the above close-up of a spot inside the rim of the Eros asteroid "saddle" region on December 25, 2000 from an orbital altitude of 24 miles (38 kilometers). This region of the asteroid is densely littered with rocks having a variety of sizes and shapes. However, there are very few impact craters

visible, indicating the surface has been reworked relatively recently in Eros's history. The whole scene is about a mile across (1.5 kilometers).

Websites:

http://near.jhuapl.edu/iod/20010102/index.html

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