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NASA Prepares Spacecraft to Blow a Hole in Surface of a Comet ▶ 🔊 Listen

Dec. 13 (Bloomberg) -- NASA scientists will try to get a glimpse into the early solar system by blowing a hole the size of a football stadium in a comet with the Deep Impact spacecraft scheduled to take off next month.

The spacecraft is scheduled to travel 268 million miles (431 million kilometers) to the 4-mile-wide comet Tempel 1 and launch a 39-inch-by-39-inch, 820-pound (372-kilogram) copper projectile onto its surface on July 4, creating a crater that could be as much as 100 meters wide.

Scientists with the \$311 million mission hope that the explosion will reveal the contents of the interior of the comet's nucleus, which astronomers believe is made up of the elements from which the solar system formed more than 4 billion years ago.

"Comets are perhaps the least understood objects in our solar system," said mission scientist Donald Yeomans of NASA's Jet Propulsion Laboratory in Pasadena, California, in a telephone interview. "They're thought to be the building blocks of the outer planets, the leftover bits and pieces from the outer planet formation process."

The idea of sending a spacecraft to blow a hole in a comet has been discussed for more than 30 years, and was mentioned in Arthur C. Clarke's 1968 book "2001," yet implementing the mission has been difficult due to the limits of technology and space travel.

One Chance

The U.S. space agency in the mid-1990s canceled a mission to send a spacecraft to the comet Korff and the Deep Impact project was originally proposed and rejected in a different form in 1996 before being resubmitted in 1998 and approved in 1999.

NASA's Stardust mission, launched in February 1999, flew within 149 miles of the comet Wild 2 in January, collecting samples of the object's dust that are scheduled to return to Earth in January 2006.

Engineers will only get one chance at the 4-mile-wide comet Tempel 1 and need to hit it on the sunlit side so scientists on Earth can see the resulting collision, Yeomans said.

"It's not sufficient only to hit the thing," he said. "We have to hit it in the right spot."

The Deep Impact mission comes as NASA spacecraft are scattered throughout the solar system. Two robot rovers are roaming Mars, the Cassini spacecraft is orbiting Saturn and the Messenger spacecraft is on its way towards Mercury.

First Golden Age

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The missions, along with Deep Impact, may help the U.S. space agency fulfill President George W. Bush's \$12 billion plan for NASA, which calls for human missions to the moon and Mars as precursors to trips to deeper in the cosmos, by furthering knowledge of the solar system.

``This is the golden age of planetary exploration, or the first golden age, anyway," Yeomans said. ``It's somewhat similar to the late 1500s when the globe was being explored and new lands and new discoveries were being made fairly frequently."

The 2,152-pound Deep Impact spacecraft is scheduled to be launched aboard a Boeing Co.-built Delta II rocket from Kennedy Space Center in Cape Canaveral, Florida, after 2:39 p.m. on Jan. 8.

Ball Corp.'s Aerospace and Technologies unit in Boulder, Colorado, built the Deep Impact spacecraft for NASA's Jet Propulsion Laboratory in Pasadena, California, which is managing the project with help from the University of Maryland in College Park.

Deep Impact is one of 10 missions in NASA's Discovery program, which is designed to enhance knowledge of the solar system by exploring the planets, their moons and bodies such as comets and asteroids through lower-cost scientific investigations.

Other missions in the Discovery program include Stardust, the Genesis spacecraft that collected samples of the solar wind, and the Messenger mission launched to Mercury earlier this year.

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