Stardust-NExT Spacecraft Fires Engines To Delay Arrival At Comet

Lockheed Martin-Built Spacecraft One Year Away From Encounter with Tempel 1

PRNewswire
DENVER

NASA's Stardust-NExT (New Exploration of Tempel) spacecraft fired its engines for 22 minutes 53 seconds on Feb. 17 to purposely delay its arrival at comet Tempel 1 by 8 hours 21 minutes. In one year, the Lockheed Martin- built spacecraft will still fly by the comet on Feb. 14, 2011, Valentines' Day, but the encounter time will now be 8:42 p.m. PT.

The low-cost Discovery Program Mission of Opportunity will expand the investigation of comet Tempel 1 initiated by NASA's Deep Impact spacecraft. The mission uses the still-healthy Stardust spacecraft to perform a flyby of comet Tempel 1 and obtain high-resolution images of the comet and hopefully the crater made by Deep Impact in July 2005. The delayed arrival will provide project scientists the best chance of seeing both previously imaged areas and news areas of Tempel 1. By taking photos of previously imaged areas of the comet, scientists can analyze terrain changes caused by the comet's close approach to the Sun on a successive orbit five and one-half years later.

The engine burn was performed autonomously at 2:00 p.m. PST while the spacecraft was out of contact from Earth. Spacecraft engineers at Lockheed Martin sent the trajectory correction maneuver commands to the spacecraft on Monday, Feb. 15. The maneuver reduced the spacecraft's velocity, relative to the sun, by 54 mph (24 meters per second). The spacecraft's velocity relative to the sun is 47,500 mph (21 km per second).

The robust spacecraft recently completed it 4,000th day of flight and had traveled approximately 3.4 billion miles (5.4 million kilometers) since its launch 11 years ago.

Throughout its two-mission life, Stardust has had many January and February milestones.

-- Feb. 7, 1999 launch from Cape Canaveral Air Force Station
-- Jan. 15, 2001 Earth gravity assist to meet up with comet Wild 2
-- Jan. 2, 2004 encounter with comet Wild 2
-- Jan. 15, 2006 sample return capsule returned safely back to Earth
-- Jan. 14, 2009 Earth gravity assist to meet up with comet Tempel 1
-- Feb. 14, 2011 future encounter with comet Tempel 1

Dr. Joseph Veverka at Cornell University is the principal investigator of the Stardust-NExT mission. JPL is managing Stardust-NExT for the NASA Science Mission Directorate, Washington, D.C. Lockheed Martin Space Systems Company designed and built the Stardust spacecraft and performs flight operations for the mission.

Headquartered in Bethesda, Md., Lockheed Martin is a global security company that employs about 140,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The Corporation reported 2009 sales of $45.2 billion.

Allan Cheuvront video comments: http://www.lockheedmartin.com/products/StardustNExT

Stardust-NExT illustrations: http://www.lockheedmartin.com/products/StardustNExT

Mission Web site: http://stardustnext.jpl.nasa.gov/

MEDIA CONTACT:
Gary Napier, Lockheed Martin Space Systems Company; (303) 971-4012;
gary.p.napier@lmco.com

First Call Analyst:
FCMN Contact:

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