Genesis capsule falls to Earth

The Genesis sample return capsule entered Earth's atmosphere on Wednesday at 9:52:47 a.m. Mountain Daylight Time and entered the preplanned entry ellipse in the Utah Test and Training Range as predict- ed. However, the Genesis capsule, as a result of its parachute not de- ploying, impacted the ground at a speed of 311 kilometers per hour (193 mph). The impact occurred near Granite Peak on a remote portion of the range. No people or structures were anywhere near the area.

“We have the capsule,” said Genesis Project Manager Don Sweetnam of JPL. “It is on the ground. We have previously written procedures and tools at our disposal for such an event. We are beginning capsule recover- y operations at this time.”

By the time the capsule entered Earth’s atmosphere, the flight crews tasked to capture Genesis were already in the air. Once it was con- firm the capsule touched down out on the range, the flight crews were guided toward the site to initiate a previously developed contin- gency plan. They landed close to the capsule and, per the plan, began to document the capsule and the area.

“For the velocity of the impact, I thought there was surprisingly little damage,” said Roy Haggard of Vertigo Inc. Lake Elsinore, Calif., who took part in the initial reconnaisance of the cap- sule. “I observed the capsule penetrated the soil about 50 percent of its diameter. The shell had been breached about 3 inches and I could see the science canister inside and that also appeared to have a small breach,” he said.

“The safety of recovery personnel has been the top priority. The capsule’s separa- tion charge had to be confirmed safe before the capsule could be moved. Genesis’ science canister was moved into the cleanroom at the U.S. Army Dugway Proving Ground in Utah early Wednesday evening. First, a team of specialists picked pieces of dirt and mud that had lodged in the canis- ter after the sample return capsule landed. The Genesis team was to begin examining the contents of the canister on Thursday morning. Dr. David Lindstrom, Genesis program scientist at NASA Headquar- ters, said Thursday that the scientific community is optimistic that some of the samples will be saved for study, each of which requires just a square millimeter of material. Genesis was launched in August 2001 on a journey to capture sam- ples from the sun. The flight crews were guided toward the site to initiate a previously developed contingency plan. They landed close to the capsule and, per the plan, began to document the capsule and the area.

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Cassini discovers ring, possible moons at Saturn

Scientists examining Saturn's restored F ring, which has baffled them since its discovery, have found one small body, possibly two, orbiting in the F ring region, and a ring of material associated with Saturn's moon Atlas.

A small object was discovered moving near the outside of the F ring, interior to the moon Pandora. The object was seen by Dr. Carl Murray, imaging team member atQueen Mary, Univer- sity of London, in images taken on June 21, 2004, just days before Cassini arrived at Saturn. "I noticed this barely detectable object skrit- ing the outer part of the F ring. It was an incredible privilege to be the first person to spot it," he said. Murray's group at Queen Mary thus calculated an orbit for the object.

Scientists cannot yet definitively say if the object is a moon or a temporary clump. If it is a moon, its diameter is estimated at 4 to 5 kilometers (2 to 3 miles) and it is located 1,000 kilometers (620 miles) from the F ring. Saturn's outmost ring. It is at a distance of approxi- mately 141,000 kilometers (88,000 miles) from the center of Saturn and within 300 kilometers (190 miles) of the orbit of Pandora. The object has been provisionally named S/2004 S3.

Scientists are not sure if the object is alone. This is because of re- sults from a search through other images that might capture the object to pin down its orbit. The search by Dr. Joseph Spilie, a planetary scientist working with team leader Dr. Carolyn Porco at the Space Science Institute in Boulder, Colo., revealed something strange: Spilie said, "When I went to look for additional images of this object to refine its orbit, I found that about five hours after first being sighted, it seemed to be orbiting interior to the F ring," said Spilie. "If this is the same object then it has an orbit that crosses the F ring, which makes it a strange object." Because of the puzzling dynamical implications of having a body that crosses the ring, the inner object sighted by Spilie is presently considered a separate object with the temporary designa- tion S/2004 S 4. S4 is roughly the same size as S3.

In the process of examining the F ring region, Murray also detected a previously unknown ring, S/2004 1R, associated with Saturn's moon Atlas. "We knew from Voyager that the region between the main rings and the F ring is mostly dusty, but the role of the moons in this region was a mystery," said Murray. "It was while studying the F ring in these im- ages that I discovered the faint ring of material. My immediate hunch was that it might be associated with the orbit of one of Saturn's moons, and after some calculation I identified Atlas as the prime suspect."
Odyssey now working overtime

JPL’s Mars Odyssey orbiter began working overtime Aug. 25 after completing a prime mission that discovered vast supplies of frozen water, ran a solar panel into orbit, and found a future for its children. The spacecraft has been aiming Mars in detail since February 2002, more than a full year before the arrival of Opportunity and Spirit, NASA has approved an extended mission through August 2006.

"This extension gives us another martian year to build on what we have already accomplished," said Principal Investigator Dr. Jeff Plaut. "The goal is to look for signs of water, particularly on the martian surface," he said. "If we find water there, we could have found the origins of an early biomolecular future," she said. "I just do what I'm nominated by fellow engineers or future generations of those ages 30 to 45 who perform cutting-edge engineering's annual engineering symposia to coordinate the goings of polar ice, clouds and dust storms. Now we have been beginning to use our resources to prevent the same time of the same event.

The extension will also continue Odyssey's support for other Mars missions. About 85 percent of images and data transmitted from the twin rovers, Spirit and Opportunity, have reached Earth via communications relay orbiters, the Odyssey orbiter helped analyze potential landing sites for the rover. "It's doing its job for the mission," he said. "NASA's Phoenix mission, scheduled to land on Mars in 2008. Plans call for Odyssey to aid the Mars Phoenix Mission to orbit in 2009 as an orbiter to continue monitoring atmospheric conditions during when the rovers arrive orbiter uses data collected into the atmosphere to gather data into the desired shape.

Howard selected as young innovator

Aerospace engineer Dr. Howard has been selected to participate in the National Academy of Engineers' Frontiers of Engineering initiative, to be held Sept. 6-11 in Irvine, Calif. Dr. Howard was among 40 to 45 people who performed cutting-edge engineering research and technical work in a variety of areas. Howard and the 85 other participants were nominated by fellow engineers or organizations.

"It's an honor to have my research acknowledged as part of the technolog- ical future," he said. "I just do what I love. So I take the opportunities to continue to evolve." Howard

JPL’s Mars Exploration Rover Opportunity has resumed using its rock abrasion tool after a Pebble fell off that had jammed the tool's rotors in late August. The tool's abrasion successfully sprints a wire brush on Aug. 30 to scrub dust off two patches of a rock inside "Endurance Crater," and engineering data received Aug. 31 confirmed that the tool is fully recovered. Rover engineers at JPL plan to use the tool's grinding rotor next to a hole exposing the interior of the rock. We're delighted to be using Opportunity's rock abrasion tool again," said Professor Rogers of Honeybee Robotics, New York, lead scientist for that tool on both rovers. "We had planned to kick out that Pebble by turning the Motors in reverse, but just the posting of the rover's movements seems to have shaken it loose even before we tested it. The rock abrasion tool has functioned beyond engineering expectations as a window for Mars Exploration Rover science. The new imaging consultation makes it clear that not only does the tool appear to be working, but also that its teeth have now worn very much at all." Opportunity and its twin, Spirit, have each conducted more than four missions to discover small and smaller planets. Earth-like planets are the next destination.

Future NASA planet-hunting missions, including Kepler, the Space Interferometry Mission, are expected to discover exoplanets. "NASA, along with our partner NSF, is extremely proud of this significant scientific achievement," said Dr. Alan Stern, principal investigator on "The Genesis Sample Return Mission" at JPL. "Von Kármán Lecture Series—Genesis Project Manager Donald Sweetnam will present "Collecting a Piece of the Sun: The Genesis Sample Return Mission." at 7 p.m. Thursday in von Kármán Auditorium, Room 301. For information, call Doudrick at (818) 354-3217.

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JPL Stamp Club—Meeting at noon in Beckman Institute Auditorium. Information and registration on line at http://www.jpl.nasa.gov/events/stamps/.

JPL Astronomy Club—Meeting at noon in Building 167-111. For more information, call Teresa Bailey at ext. 4-9233.

Lambda (Gay, Lesbian, Bisexual and other communities) will present "An Adaptive and Design Talk—Dr. Stephen Lu, program manager at NASA's Interactive Modeling System To Support Model-Based Engineering Design"at 7 p.m. Thursday in von Kármán Auditorium, Room 301. For information, call Doudrick at (818) 354-3217.

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The Extramural call will place JPL in a position of advantage for the nation's space vision. It will provide a significant amount of technology for both sticking with it and for producing some really extraordinary ideas.

The proposal activity for the tenacity and ingenuity of the JPL technology portfolio left after the intramural and extramural competitions are still a work in progress, and probably will be for some time to come. As the architecture of the future mission is developed, we will discover what the fundamental ideas in the nation's Exploration Vision are and probably will be for some time to come. As the architecture of the future mission is developed, we will discover what the fundamental ideas are and further information is needed about the moon and Mars that might not otherwise naturally come up in the science missions. Those needs will be met by ESMD-driven robotic missions.

We anticipate that there would be a significant robotic component leading up to the human missions, and also anticipate that when humans have landed on those bodies, they would be supported by a significant robotic infrastructure.

All this proposal activity is quite a start. What's next?

**Who else works with you here on Lab?**

Garry Buntick leads the Project Prometheus effort. Barbara Wilson, who is working for Headquarters on the Institutional Program Office, is part of the 190 staff.

There is a matrized group representing the technology program managers: Steve Prusha (Organization 133), Tom Krabach (650), Sahish Khanna (660), John Hong (710), Ken Wolfshagen (820), Jim Lesh (720) and Rich Doyle (800). Steve Prusha (Organization 133), Tom Krabach (650), Sahish Khanna (660), John Hong (710), Ken Wolfshagen (820), Jim Lesh (720) and Rich Doyle (800) are the outreach manager. John Hong has been doing double duty as the head of the Commercial Management Office and the acting business manager for the office.

**How has it been so far working with the Heads of the Heads?**

I’ve found the Code Team to be a highly energetic, very dedicated group of people. The team has made a great deal of progress in a very short period of time. The Headquarters group, supported by highly motivated center teams, is working hard to put some substance and flesh to the fundamental ideas in the nation's Exploration Vision.