

2002 Genesis Mission Status Updates: October, November, December

December 20, 2002

The Genesis spacecraft continues its mission collecting solar wind material expelled from the Sun. Telemetry from the spacecraft indicates that it is spinning at a rate of 1.602 rotations per minute and in overall good health.

On Dec. 18, a minor setting change in the flight software was transmitted up to the spacecraft. This setting change decreased the spacecraft's sample concentrator grid maximum voltage from 2060 volts to 1980 volts. The Genesis science team is confident this configuration change will decrease the frequency and duration of voltage sags that occur in the spacecraft's concentrator grid.

December 13, 2002

The Genesis spacecraft remains in good health, collecting solar wind material expelled from the Sun.

On Dec. 10, Genesis fine-tuned the spacecraft's orbit around the Lagrange 1 point of gravitational stability between Earth and the Sun. This station-keeping maneuver was the seventh of 15 planned during the lifetime of the mission. Telemetry downlinked after the burn indicates that the spacecraft's small hydrazine thrusters fired for 291 seconds and the desired velocity change of 1.25 meters-per-second (2.68 miles per hour) was achieved.

On four separate occasions during the past week voltage running through the fine wires forming a rejection grid in the front of the spacecraft's sample concentrator has sagged below the intended voltage. On each occasion the spacecraft's successfully returned the voltage to its desired level within an hour. Genesis team members at the Los Alamos National Laboratory are monitoring the situation and are planning on transmitting up to the spacecraft a minor setting change in the flight software.

December 5, 2002

Happy anniversary Genesis!

This week the Genesis spacecraft exceeded the 1 year mark in the collection of solar wind samples. Telemetry from the spacecraft indicates that it is spinning at a rate of 1.584 rotations per minute and in overall good health.

Genesis team members at the Los Alamos National Laboratory are monitoring voltage sags in the grid wires forming a rejection grid in front of the spacecraft's sample concentrator. The voltage sagged below its intended level only once in the past 12 days, after doing so on several occasions in the preceding 10 days. The grid carries a positive charge in order to deflect hydrogen ions while allowing heavier oxygen ions to pass through. That concentrates oxygen, in proportion to hydrogen, reaching a collector tile.

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The Genesis flight team is in the final design and testing stages of the spacecraft's next station-keeping maneuver. This maneuver, to be performed on Dec. 10, will fine-tune the spacecraft's orbit around the Lagrange 1 point of gravitational stability between Earth and the Sun.

November 21, 2002

Genesis is in good health and continues to collect samples of the solar wind. It is spinning at a rate of 1.59 rotations per minute.

A software patch was successfully sent to the spacecraft on Nov. 20 to improve the spacecraft's protection against potential effects from a faulty bit on a programmable memory chip in the onboard backup computer.

Genesis team members at the Los Alamos National Laboratory are Monitoring repeated incidents of voltage sagging in the grid of wires forming a rejection grid in front of the spacecraft's sample concentrator. The voltage sagged below its intended level once since last week, after doing so several times in the preceding 10 days. The grid carries a positive charge in order to deflect hydrogen ions while allowing heavier oxygen ions to pass through. That concentrates oxygen, in proportion to hydrogen, reaching a collector tile.

The Genesis flight team is designing the spacecraft's next station-keeping maneuver, to be performed on Dec. 10. These maneuvers fine-tune the spacecraft's orbit around the Lagrange 1 point of gravitational stability between Earth and the Sun.

November 8, 2002

Genesis is in good health and continues to collect samples of the solar wind.

Today the spacecraft completes its second orbit around the Earth-Sun libration point, L1. A sequence of commands for the spacecraft to use during a five-week period starting Nov. 12 is scheduled for uplink Nov. 9.

October 30, 2002

The spacecraft continues operating in good health.

A software patch uploaded to the spacecraft is successfully providing information about the temperature of the motor-drive electronics card within the avionics unit of the sample-return capsule. That card is near a critical component, a programmable chip, that could be susceptible if temperatures climb too high. The new information confirms the expected thermal margin for the critical component.

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Preparation has begun for the next stationkeeping maneuver, scheduled for Dec. 10.

October 25, 2002

All systems on Genesis are functioning properly. The solar wind samples collected in the past week included some from days when the wind was the high-speed type that comes from coronal holes.

Don Sweetnam has been appointed Genesis project manager, succeeding Chet Sasaki. Ed Hirst succeeds Sweetnam as acting mission manager. Donna Bradford is temporary project secretary, succeeding Nancy Cuevas. Pete Young has been named financial resource manager for Genesis. Sasaki and Cuevas have moved on to Kepler, another mission of NASA's Discovery program.

The flight team is preparing to upload to the spacecraft a software patch that will increase the number of temperature-sensor readings by the sample return capsule's avionics unit.

October 18, 2002

Genesis continues to operate in good health, collecting samples of solar wind.

The solar wind regime passing the spacecraft at midweek was the high-speed type from the Sun's coronal holes, and the spacecraft deployed its collector array for that type of solar wind for the first time in a month. Genesis uses different arrays for sampling each of three different regimes of solar wind.

The Spacecraft Testing Laboratory is evaluating a flight software patch to increase the number of temperature-sensor readings by the sample return capsule's avionics unit. Uplink of the patch to the spacecraft is scheduled for Oct. 28.

October 9, 2002

Genesis is in good health and continuing to collect samples from the solar wind.

The flight team completed a test of the rejection grid on the sample concentrator. During the test, voltage in the grid was raised to 2,100 volts, with 20-volt increments. Other results were consistent with past testing. The concentrator has operated without incident since June at up to 2,060 volts on the rejection grid. In two successive tests, it has performed at 2,100 volts.