

Kepler experienced 'safe mode' event

December 23 2010



On Dec. 22, 2010, Kepler experienced a safe mode event. A safe mode is a self-protective measure that the spacecraft takes when something unexpected occurs. During safe mode, the spacecraft points the solar panels directly at the sun and begins to slowly rotate about a sun-aligned axis. This safe mode orientation provides the vehicle with the maximum power, and limits the buildup of momentum from the solar wind.

Engineers immediately began telemetry analysis to determine the spacecraft's subsystem health and cause of the anomaly. Engineers verified that all of Kepler's subsystems were healthy and functioning properly. [Kepler](#) engineers' initial assessment is that Kepler's Fault Protection system, the on-board software that continuously monitors specific key performance parameters, autonomously initiated the [safe mode](#) after sun avoidance alarms were raised.

The scientific data, collected since the last download of science data in November, was not in danger and had already been downloaded successfully via the NASA Deep Space Network during routine operations. The anomaly occurred while the project team was in contact with the [spacecraft](#), preparing to resume science data collection. This allowed an immediate response to analyze the anomaly and begin planning recovery actions.

Kepler engineers plan for potential loss of up to 12 days of science per year from safe mode events, and the mission is well within that time budget for 2010. An anomaly response team will continue to analyze telemetry data to determine the cause of the malfunction and develop possible mitigations to avoid a recurrence. The next download of science data is scheduled for late January 2011.

Provided by JPL/NASA

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