

Year in Review - Thermophysics

Glenn T. Tsuyuki
Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

SUMMARY

Galileo, NASA's current mission to investigate Jupiter, released its atmospheric Probe in July. A significant thermal analysis was performed to devise a heater strategy that would properly compensate for the spacecraft cooling resulting from Probe release. An additional effort was undertaken to reduce the entire unique operational mode power set into a small repeatable set which maintains the planned science investigations, but reduces engineering analysis costs. The spacecraft will be placed into orbit around Jupiter in December.

Cassini, NASA's mission to investigate Saturn has completed a highly successful subsystem thermal development test program. This program demonstrated the flight worthiness of a number of engineering and science subsystem thermal design as well as developed novel thermal control hardware/approaches: a variable radioisotope heater unit (a self-regulating heater), radioisotope thermoelectric generator waste heat utilization (radiant energy transport), and a reverse louver (operates in the opposite sense of a conventional louver).

Mars Pathfinder, a NASA mission to place a small rover on Mars has made significant progress in the thermal design arena. In August, a thermal characterization test was performed on the heat rejection system, an active Freon fluid loop for the removal of internal spacecraft heat. Furthermore, life testing of this fluid loop also commenced in August, and it is expected to be completed in January **1997**.

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