



February 27 – March 1, 2007  
The Aerospace Corporation  
Building A-1, Room 1062  
El Segundo, CA

## 2007 Spacecraft Thermal Control Workshop Presentations

### Session 1: Technology Roadmaps

JPL Advanced Thermal Control Technology Roadmap – 2007  
*G. Birur, JPL*

NASA/GODDARD Thermal Control Technology Roadmap – 2007  
*T. Swanson and D. Butler, NASA/Goddard*

### Session 2: Two-Phase Thermal Technology

Intermediate Temperature Heat Pipe Fluid Life Tests  
*W. Anderson, D. Sarraf, C. Tarrau, I. Locci, and D. Beach,*

Multiple-Evaporator Hybrid Two-Phase Loop Cooling Systems  
*D. Bugby, Swales Aerospace*

Deployable Radiator Test Results  
*D. Hull, R. Leitch, and R. Macklin, Lockheed Martin*

Modeling Systems with Multiple Capillary Evaporators and Loop Heat Pipes using Thermal Desktop<sup>®</sup>  
*D. Khrustalev, Swales Aerospace*

Loop Heat Pipes with Low Control Power: First Test Results  
*M. Nikitkin and D. Wolf, Swales Aerospace*

Spacecraft Thermal Management using Advanced Hybrid Two-Phase Loop Technology  
*C. Park, Advanced Cooling Technologies, Inc.*

Application of Loop Heat Pipes to the INMARSAT-4 Spacecraft  
*D. Wolf, Swales Aerospace*

### Session 3: Surface Design and Characteristics

Advanced composite radiators and phase change heat sinks  
*J. Bootle, XC Associates, and M. Wirzburger, JHU APL*

Thermal Interface Performance of RTV When Used Between Aluminum Electronic Unit Baseplates and Graphite Equipment Panels  
*D. Johnson, Northrop Grumman Space Technology*

The Development of the Radiator Panels for the NASA/JPL Moon Mineralogy Mapper  
*M. Montesano, k Technology Corporation*



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## **Session 4: Design Experiences and Lessons Learned**

Hardly Investigated Aerospace Thermal Conductance Issues: Bolted Joints between Metal Plates & Effect of Folding on Plate Conductance

*A. Delil, Advanced Aerospace Thermal Control Systems*

Programmable Thermostat Module Upgrade for the Multi-Purpose Logistics Module

*D. Clark, S. Glasgow, S. Reagan, K. Presson, D. Howard, and D. Smith, NASA/Marshall*

Integration of thermal data sources for extended missions

*C. Goulding and D. Presti, JPL*

MEMS Louvers For Emissivity Control On ST5

*R. Osiander, M. Darrin, and D. Farrar, JHU APL; D. Douglas and T. Swanson, NASA/Goddard*

Lessons Learned from the HST Wide Field Camera 3 TV-1 Correlation Effort

*R. Stavely, H. Peabody, and W. Bast, NASA/Goddard*

Compact Reconnaissance Imaging Spectrometer for Mars (CRISM) Cryogenic Testing and Comparison to Flight Data

*M. Wirzburger, JHU APL*

## **Session 5: Advanced Analysis and Design**

Lunar Reconnaissance Orbiter Thermal Challenges

*C. Baker, C. Cottingham, M. Garrison, W. Ousley, and S. Peabody,*

SIM PlanetQuest: Milli-Kelvin Analysis of the Collector Subsystem Thermal Model

*F. Kelly, JPL*

New Methods to Solve for Radiation from Finite Element Modelers

*O. Kornberg and D. Popok, Network Analysis Inc.*

A Suspended Film Heater for Highly Stable Temperature Control of a Mirror

*R. Krylo, JPL*

Operationally Responsive Space Thermal Design of a Standard Bus

*M. Marley and B. Williams, JHU APL*

Mars Science Laboratory Rover Battery Thermal Design

*K. Novak, P. Bhandari, P. Wu, and B. Hernandez, JPL*

Non-Grey Temperature Dependent Radiation Analysis Methods

*T. Panczak, Cullimore and Ring Technologies, Inc.*



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## **Session 5: Advanced Analysis and Design (continued)**

Comprehensive Thermal Analysis of Orbiters on the Extreme Conditions of Mercury

*R. Patrício, Active Space Technologies*

SIM PlanetQuest: The TOM-3 (Thermo-Optical-Mechanical) Siderostat Mirror Test

*C. Phillips, JPL*

Analytical Investigation of Pumped Fluid Loop Radiators for Orion Spacecraft

*G. Reavis, Paragon Space Development Corporation*

SIM Instrument Integrated Modeling: "Beamwalk" Thermal Analysis

*B. Shreckengost, JPL*

The CEV Smart Buyer Team Effort: A Summary of the Crew Module & Service Module Thermal Design Architecture

*D. Hernandez, Sverdrup Engineering; D. Nguyen, NASA/Goddard; H. Rotter and R. Stephan, Johnson Space Center; G. Tsuyuki, JPL; J. Yuko, Glenn Research Center*

## **Session 6: Advanced Space Hardware, Materials and Design Technologies**

Orion Crew Exploration Vehicle Thermal Control System Architecture

*G. Adamson, Hamilton Sundstrand Space Land and Sea Systems*

Mars Science Laboratory Launch Pad Thermal Control

*P. Bhandari, K. Novak, B. Dudik, T. Paris, G. Birur, and D. Bame, JPL*

Advanced Thermal Control Technologies for the NASA CEV

*E. Gollither, D. Westheimer, M. Ewert, M. Hasan, and D. Beach,*

Interface Conduction: Conductance across a Thermal Joint as a Function of Material Displacement

*J. Lasco, Ball Aerospace*

New Approach for Thermal Protection System

*B. Yendler, LMMS*