TABLE OF CONTENTS

SPACECRAFT and VEHICLE FLUID SYSTEMS DESIGN, ANALYSIS, and TEST PAPER SESSION

Determining Dynamic Stiffness of a Pressurized Bearing Using 3D CFD Code with Experimental Verification
  Robert F. Blumenthal, AEA Technology Engineering Software and Wes Franklin, Bently Rotor Dynamics Research Corporation

Launch Vehicle Ascent Stage Separation Wind Tunnel Test
  Wayne Bordelon, Alonzo Frost, and Victor Pritchett, NASA MSFC

Advances in Turbulence and Plume Thermo-Chemistry on the Prediction of Missile Plume Structure
  W.H. Calhoon, J.L. Papp, S.M. Dash, CRAFT Tech

Comparison of Full and Partial Admission Flow Fields in the Simplex Turbine
  Daniel J. Dorney, Lisa W. Griffin and Douglas L. Sondak, NASA MSFC

Pre- and Post-Processing Tools to Streamline the CFD Process
  Suzanne Miller Dorney, Ph.D., NASA MSFC

Stage Separation CFD Tool Development and Evaluation
  Alan Droegge and Ten-See Wang, NASA MSFC, Reynaldo Gomez, NASA JSC

Time-Dependent Simulations of Turbopump Flows
  Cetin Kiris, Dochan Kwak, and William Chan, NASA Ames Research Center, Robert Williams, NASA MSFC

CFD Prediction of the BEAGLE 2 Mars Probe Aerodynamic Database
  Peter A. Liever and Sami D. Habchi, CFD Research Corporation, Simon I. Burnell and Steve J. Lingard, Martin Baker Aircraft, Ltd.

Extension of a System Level Tool for Component Level Analysis
  Alok Majumdar, NASA MSFC, and Paul Schallhorn, Sverdrup Technology, Inc.

Approximating Fluid Flow from Ambient to Very Low Pressures – Modeling ISS Experiments that Vent to Vacuum

Incorporation of Condensation Heat Transfer in a Flow Network Code
  Miranda Anthony and Alok Majumdar, NASA MSFC

Status of Nozzle Aerodynamic Technology at MSFC
  Joseph H. Ruf, David M. McDaniels, NASA MSFC, Bud Smith, Plumetech, and Zachary Owens, University of Virginia

Aero-Heating Analysis For Davinci Space Project Rocket Ballute
  Brian Feeney, ORVA Corp, and Vladimir Kudriavtsev, CFD Canada

Experimental Study of Unshrouded Impeller Pump Stage Sensitivity to Tip Clearance
  Robert W. Williams, Thomas Zoladz, Anne K. Storey, and Stephen E. Skelley, NASA MSFC
INTERDISCIPLINARY ANALYSIS and INTEGRATION PAPER SESSION

Thermal Response Modeling System for a Mars Sample Return Vehicle
Y.-K. Chen and F.S. Milos, NASA Ames Research Center

Advances in Thermal Model Data Exchange Using Open Standards
Hans Peter De Koning, ESA/ESTEC – The Netherlands

Use of Thermplot Software for Quick Evaluation of Thermal Model Results
Hume Peabody, Swales Aerospace

Integrated Turbopump Thermo-Mechanical Design and Analysis Tools
Mike Platt, Concepts NREC

How to Quickly Import CAD Geometry into Thermal Desktop
Shonte Wright, JPL California Institute of Technology and Emilio Beltran, Microsoft Corporation

PROPULSION and LAUNCH VEHICLE THERMAL SYSTEMS DESIGN, ANALYSIS, and TEST PAPER SESSION

Steady State Transportation Cooling in Porous Media Under Local, Non-Thermal Equilibrium Fluid Flow
Alvaro Che Rodriguez, NASA JSC

Heat Flux Sensor Testing
D.W. Clark, NASA MSFC

Thermal/Fluid Analysis of a Composite Heat Exchanger for Use on the RLV Rocket Engine
Dalton Nguyen, NASA MSFC

Thermal Analysis in Support of the Booster Separation Motor Crack Investigation
Darrell Davis and Terry Prickett, NASA MSFC

Fundamental Boiling and RP-1 Freezing Experiments
Brian Goode, NASA MSFC

Thermal and Chemical Characterization of Non-metallic Materials Using Coupled Thermogravimetric Analysis and Infrared Spectroscopy
Timothy L. Huff, NASA MSFC

Thermal Analysis of the MC1 Engine Turbopump
Jose Roman, NASA MSFC

Thermal Analysis of a Carbon Fiber Rope Barrier for Use in the Reusable Solid Rocket Motor Nozzle Joint-2
J. Louie Clayton, NASA MSFC

Corrections of Heat Flux Measurements on Launch Vehicles
Dr. Thomas R. Reinarts, Monique L. Matson, and Laurie K. Walls, NASA KSC
MDA PANEL DISCUSSION SESSION

Introduction
Robert Garcia, NASA MSFC

Loci: Logic Programming for Computational Field Simulations
Edward Luke, Mississippi State University

MDICE An Integrated Framework for Multidisciplinary Engineering Simulations
V. Sarathy, M. Underwood, and V. Harrand, CFD Research Corporation

NPSS Overview to TAFW Multidisciplinary Simulation Capabilities
Karl Owen, NASA Glenn Research Center

Recipe® Collaborative Engineering Environment
International Space Systems, Inc.

Rethinking the Design Process iSIGHT Framework
Mark Prow and Dr. Therese Rhodes, Engineous Software

iMAN
Mitchell Bailey, UGS

Robust Design Computational System (RDCS)
Kadambi (Raj) Rajagopal, Boeing

SPACECRAFT and PAYLOAD THERMAL SYSTEMS DESIGN, ANALYSIS, and TEST PAPER SESSION

Assessment and Accommodation of Thermal Expansion of the Internal Active Thermal Control System Coolant During Launch to On-Orbit Activation of International Space Station Elements

Thermal Technology Development Activities at the Goddard Space Flight Center–2001
Dan Butler, NASA GSFC

Analysis of Pool Boiling in Microgravity During Loss of Cooling for the Quench Module Insert (QMI)
Richard D. Horton, Tec-Masters, Inc.

Thermal Examination of an Orbiting Cryogenic Fuel Depot
Patrick V. Hull and Steven L. Canfield, Tennessee Technological University, Connie Carrington and John Fikes, NASA MSFC

X–38 Deorbit Propulsion Stage MLI Performance Test
Ken Kittredge, NASA MSFC

Space Station Environmental Control and Life Support System Pressure Control Pump Assembly Modeling and Analysis
R. Gregory Schunk, NASA MSFC
Thermal Analysis of Next-Generation Space Telescope (NGST) Mirrors During Optical Testing in the X-Ray Calibration Facility (XRCF)
    Tim Page, NASA MSFC and Steven Sutherlin, Raytheon ITSS

Comparison of Analytical and Numerical Performance Predictions for an International Space Station Node 3 Internal Active Thermal Control System Regenerative Heat Exchanger
    Stephen A. Wise, Qualis Corporation and James M. Holt, NASA MSFC

Thermal Design, Analysis, and Testing of the Quench Module Insert Bread Board
    Shawn Breeding and Julia Khodabandeh, NASA MSFC

Thermal Design Overview of the Mars Exploration Rover Project
    Glenn Tsuyuki, Jet Propulsion Laboratory, California Institute of Technology

Use of Blackbody Optical Fiber Thermometers in High-Temperature Environments
    Matthew R. Jones and David G. Baker, Brigham Young University