

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 Droege 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

Robert Minor, NASA MSFC, Stuart Nelson and Andy Johnston, Sverdrup Technologies, Inc.

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. Harrant, 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

J. Darryl Edwards, Sverdrup Technology, Inc., Eugene K. Ungar, Ph.D., NASA JSC,
and James M. Holt, NASA MSFC

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