

## High Attendance Marks 52<sup>nd</sup> JANNAF Propulsion and Inaugural Liquid Propulsion Subcommittee Meetings

Nearly 600 U.S. industry representatives attended the 52<sup>nd</sup> JANNAF Propulsion Meeting (JPM) and 1<sup>st</sup> Liquid Propulsion Subcommittee (LPS), held jointly at the Flamingo Las Vegas Hotel from 10-13 May 2004. Ms. Barbara Marsh of the Army Missile Research, Development, and Engineering Center (AMRDEC) Propulsion & Structures Directorate at Redstone Arsenal served as the chair of the 52<sup>nd</sup> JPM, while James Cannon of NASA Marshall Space Flight Center and Jeffrey Thornburg of the Air Force Research Laboratory co-chaired the LPS Meeting. Nearly 200 papers were presented in 40 technical sessions evenly divided between JPM and LPS. The JPM agenda included full sessions on tactical propulsion, missile defense and strategic propulsion, gun propulsion, nozzles and control systems, airbreathing/hypersonic propulsion, in-space propulsion, advanced concepts, propellant and ingredients, motor case and insulation technology, service life, and propulsion options for space access and crew safety.

The JPM Keynote Address was given by USAF Maj. Gen. John L. Barry (Retired), Executive Director of the Columbia Accident Investigation Board (CAIB), who presented “When the Right Stuff Goes Wrong” that was based upon the findings of the Shuttle STS-107 accident investigation. Barry reprised the popular address that was given at the December 2003 meeting of several JANNAF subcommittees in Colorado Springs.

Mr. Parker Buckley of the Air Force Research Laboratory at Wright-Patterson Air Force Base and current chairman of the JANNAF Executive Committee also addressed the collective JPM audience with a future vision of JANNAF and a call to action to assist in the implementation of this vision. Participants were asked to complete a brief survey to obtain input in helping to maintain JANNAF’s position as the primary vehicle to advance U.S. rocket propulsion and energetics technologies.

In observance of the aerospace industry’s recently celebrated first century of powered flight, the 52<sup>nd</sup> JPM organized a Propulsion History Legacy Session. A spin-off of the popular legacy series conducted at the JANNAF subcommittee level, this JPM session featured four historical presentations on the respective advances and milestones in solid propulsion, ramjet propulsion, gun propulsion, and small liquid propellant thrusters. The extended length technical papers resulting from the legacy session will be separately published on CD-ROM as part of CPIA’s recurrent Chemical Propulsion Technology Review (CPTR) series.

Several JPM specialist sessions were also held. The ***Emerging Modeling and Simulation Developments for Solid Rocket Propulsion*** highlighted recent progress in the advancement of analysis tools and data needed to support development of solid rocket motors and their components. A full day debrief on the recent successful flight of the ***X-43A Hyper-X*** scramjet test vehicle was also held at nearby Nellis Air Force Base (see related article in this issue). JANNAF participants and their guests were also treated to a Wednesday evening reception and buffet in the large outdoor pool area of The Flamingo.



*JPM propulsion history legacy speakers (l-r) Al Horst, Ron Fry, Leonard Caveny, George Sutton, Russ Ellis, Bob Geisler, and Tom Moore (session chairman).*



*JPM Meeting chair Barbara Marsh, Keynote speaker John Barry, CPIA Director Bill Hufferd, and Meeting Coordinator Debbie Eggleston.*



*The JANNAF vision was presented by Parker Buckley, Executive Committee Chairman.*



*A large audience attended the opening JPM sessions at The Flamingo.*

## 1<sup>st</sup> Liquid Propulsion Subcommittee Meeting



*LPS Keynote Speaker Dan Dumbacher, NASA MSFC*



*LPS Award Recipients and Officials (left to right): Norman Lee, Capt. Aaron Norris, Steve Ebert, Jerry Arszman, Dan Dumbacher (Keynote), James Cannon (LPS Co-Chair), Jeff Thornburg (LPS Co-Chair), Laura Brozowski, and Don McAlister.*

The Liquid Propulsion Subcommittee got off to an outstanding start with its first meeting in Las Vegas, hosting over 300 participants and attendees for the keynote and awards ceremonies, technical sessions and panel meetings.

Dan Dumbacher, the NASA X-37 program manager from the Marshall Space Flight Center, gave the inaugural keynote address for the LPS, on “The Challenges and Rewards of Space Exploration.” Over 150 people came to hear Mr. Dumbacher describe NASA’s new vision for space exploration, and to share his insights on how NASA will achieve its new goals for exploration and settlement by continuing to pursue new technologies, new opportunities, and leveraging international cooperation.

Following the keynote address, the LPS held its first awards ceremony to recognize outstanding achievements in the field of liquid propulsion. Jerry Arszman was presented the LPS Award for Outstanding Personal Achievement for his continuing dedication to the development of gel propulsion technology for tactical applications. Jerry’s outstanding leadership on US Army gel programs has shepherded the technology from its infancy to a fully mature technology on the cusp of implementation.

The RS-68 Engine Development Team was presented the LPS Outstanding Achievement Award in the Flight Systems Hardware Development category, for the successful development of the world’s largest hydrogen-oxygen rocket engine, achieving successful first flight in only six years of development while achieving significant cost savings over previous heritage programs. Norman Lee of the Aerospace Corp., Capt. Aaron Norris of the U.S. Air Force Space and Missile Systems Center, and Steve Ebert of Boeing Rocketdyne accepted the award.

The Boeing Rocketdyne Integrated Powerhead Demonstrator (IPD) Turbomachinery Team was presented the LPS Outstanding Achievement Award in the Research and Development Program category for the successful assembly and testing of the IPD Oxidizer Turbopump, which demonstrates both an oxidizer-rich turbine drive as part of a full-flow staged-combustion cycle, and the first liquid oxygen turbopump with the rotor fully supported by hydrostatic bearings. Don McAlister and Laura Brozowski, both of Boeing Rocketdyne, accepted the award.

The LPS technical program included the presentation of 100 technical papers in 18 sessions. Sessions covered a wide range of liquid propulsion interests, including: System Analysis and Trades, System Components, Tactical Systems, IPD System Reviews, Health Management and Controls, Combustion Devices, Test Practices and Standards, and Advanced Materials.

Six LPS Panel meetings were also held in conjunction with the conference, including meetings of the: In Space Propulsion Panel, the Tactical Propulsion Panel, the Hydrocarbon Fuels Panel, the Hydrogen Peroxide Panel, the Advanced Materials Panel, and the Test Practices and Standards Panel. Panel chairs unanimously expressed excitement at the overwhelming support for these LPS activities.

In all, the first meeting of the LPS was deemed an overwhelming success, and it is clear that the subcommittee is off to an excellent start.

The proceedings of this meeting will be published on CD in [August?] 2004. For ordering information, contact CPIA Customer Service at 410-992-7300 ext. 202 or 211.

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