www.asme.org/divisions/aerospace

MESSAGE FROM DIVISION CHAIR

■ ANDREW S. BICOS, PHD

We have just celebrated the 100th anniversary of the Wright Brothers' first flight on December 17, 1903. ASME is looking forward to celebrating its 125th anniversary in 2005. This past year was also a time of re-examination for ASME as it looks to its past successes and to its future challenges. As some of you may have heard, ASME is in the process of reorganizing itself to better respond to our membership needs in a rapidly changing world. ASME leadership has entitled this re-examination "Continuity and Change." It is important for any organization to continue doing what it does best but to be able to change certain aspects of itself to better adapt to the future so that it can be as successful in the future as it has been in the past. This is what ASME is doing. This process is currently proceeding and will result in a final organizational plan in March 2004. I would like to give you some initial results of this process and how I think the Aerospace Division can support it. See **http://www.asme.org/ change/** for more information on the ASME changes, to monitor these developments and to provide feedback.

The new ASME vision says who we want to be: The premier organization for promoting the art, science, and practice of mechanical *and multidisciplinary* engineering *and allied sciences* throughout the world.

ASME will continue using the existing vision statement but change it by adding the words I've italicized to emphasize that mechanical engineering has become a multidisciplinary field. This is an example of continuity and change. How does this affect the Aerospace Division? Aerospace has always been multidisciplinary and this change in the ASME vision acknowledges that and allows our better alignment with the overall ASME organization.

To fulfill the new vision, ASME will become a gateway of choice for:

- Acquisition and dissemination of engineering and scientific knowledge
- Advocacy on behalf of the public good, and
- Collaboration of related communities of practice throughout the world.

ASME will also become a market-driven organization so as to be agile and responsive to its members and other customer needs. This means that ASME will develop and implement better ways of gathering and providing technical information to all its constituents, e.g., multimedia distribution of products and services. ASME will also continue and strengthen its advocacy and government relations activities and develop and implement various venues, both real and virtual, for engineering and scientific communities with common interest around the world to come together to tap the inherent synergies that collaborative efforts can bring forth.

What does this mean for the Aerospace Division? Aerospace Division members and technical committees have been doing much of this in the past but with this new ASME direction, we can leverage the renewed strength of ASME to do a much better job. The Aerospace Division has been at the forefront of knowledge acquisition and dissemination but we can do better. We have been a strong presence in ASME government relations activities but we can do better. And we have been

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JOHN W. ROBINSON ■ Editor

ADMINISTRATIVE COMMITTEE REPORTS

2003 International Congress

Twenty four sessions were initially allocated to Aerospace Division. Structures and Materials committee added one additional session bringing the total session number to 25. Of these, 13 were allocated to Adaptive Structures and Material System Committee and 12 were allocated to Structures and Materials Committee.

The topic of the sessions included adaptive materials and structures, compliant mechanisms, structural health monitoring, dynamics and stability of adaptive structures, material and structural systems for hypersonic vehicles, space applications of composites, nano-structures, multi-functional aerospace structures and other related aerospace topics. Several of the above symposia were co-sponsored with Materials and Applied Mechanics Divisions to foster cross division technical exchange and interactions.

Honors & Awards

The ASME Committee on Honors has voted to present the St. Louis Medal every other year until adequate funding is available to resume annual awards. This is due to the fact that the funds have fallen very much below the required endowment funding minimum. Funds are currently being solicited from a number of sources and have been moderately successful. The Northrop Grumman Company has donated $25,000 in increments of $5,000 per year so that within a few years we will resume the annual awarding of the medal.

2003 Spirit of St. Louis Medal – Peretz Friedmann
For outstanding seminal contributions to aeroelasticity and structural dynamics, particularly as applied to analysis, design optimization, and vibration reduction in helicopters which have had exceptional impact on the understanding of aeromechanical behavior and the design of rotorcraft systems.

2003 Daniel Guggenheim Medal – Holt Ashley
For pioneering contributions to research, education, and engineering in aeroelasticity, unsteady aerodynamics, and aircraft design.

2002-2003 Adaptive Structures and Material Systems Best Paper Awards Structures and Structural Dynamics Paper – Norman Wereley

2001-2002 ASME/Boeing Structures and Materials Best Paper Award – Young-Tai Choi and Norman M. Wereley, "Semi-Active Vibration Isolation using Magnetorheological Isolators," Presented at the 2001 ICAST meeting, October 2001

Marino Arroyo and Ted Belytschko

For the paper "Large Deformation Atomistic-Based Continuum Analysis of Carbon Nanotubes" as an outstanding paper presented at the 43rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference in 2002.

Aerospace Propulsion Technical Committee 2002 Best Paper Award – E. Chesta, J. Gonzalez del Amo, G. Janin and G. Saccoccia, for their excellent paper "A Full Solar Electric Propulsion Concept For Mars Exobiology" (AIAA 2002-4319)

Andy Bicos – **Honors & Awards** ■

TECHNICAL COMMITTEE REPORTS

Propulsion Technical Committee

The Propulsion Technical Committee consists of members from industry, universities and government who are engaged mainly in propulsion research and development activities. The committee deals with all aspects of vehicle propulsion including solid, liquid, ramjet, combined cycle, nuclear and hybrid rocket engines.

The Committee's main focus is developing and presenting technical papers at the Joint Propulsion Conference & Exhibit to promote the objectives of the propulsion-oriented technical committees of each of the sponsoring societies. For 2004, the 40th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit will be held July 11-14 in Fort Lauderdale, Florida (www.aiaa.org). The theme for this conference is "Aerospace Propulsion Defining the Future" and celebrates the 35th anniversary of the first manned lunar landing. As the propulsion community gathers to celebrate this historic event, it is appropriate to focus on developing future requirements and visions. The conference will feature over 750 papers covering all aspects of propulsion systems. The ASME Propulsion Best Paper Award offers national recognition to the author of one of the papers presented in one of the ASME sponsored sessions. ■

DR. CHARLES J. CROSS – Propulsion TC Chair

Crew Systems Technical Committee

Crew Systems is preparing for the next International Conference on Environmental Systems (ICES). The 34th International Conference on Environmental Systems (ICES) will be held at the Doubletree Hotel, Colorado Springs, Colorado, July 19-22, 2004 (www.sae.org/events/ice/). The conference is hosted and administered by SAE in co-sponsorship with AIAA, AIChE, ASME, and the International ICES Committee.

The conference will cover the following topics related to humans living and working in hostile environments with applications inside or outside of terrestrial or outer space habitats or vehicles: aerospace human factors; environmental

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REPORTS continued from page 2

control and life support system technology; environmental monitoring and controls; EVA system technology; life sciences; planetary habitats and systems; and thermal control systems technology for both manned and unmanned vehicles.

The conference is open to participants from any nation, including academic, government, and industry organizations. Individuals who wish to present a paper need not be affiliated with any of the sponsoring societies. Papers proposed will be evaluated solely on the basis of their suitability for inclusion in the program. Please note that only written papers will be accepted except for sessions indicated as panels.

There will be four days of technical presentations, with approximately 50 sessions. Papers to present technical developments and progress in any of the fields of environmental systems which make a new and original contribution to the state of the art or be a constructive review of the technical field. ■

PHIL SPAMPINATO
– Crew System TC Chair

"THANK YOU" TO BOEING AND LOCKHEED MARTIN

ASME International deeply appreciates the contributions made by The Boeing Company and Lockheed Martin Corporation in support of the Aerospace Division's honors and awards activities. The Boeing Company made a $1,000 contribution in support of the ASME/ Boeing Structures & Materials Award. The Lockheed Martin Corporation contributed $500 in support of the Division's Adaptive Structures & Material Systems Technical Committee activities. Boeing's and Lockheed's contributions are an investment in the future of mechanical engineering that will be quickly utilized for activities that will pay dividends for years to come. ■

JOIN THE AEROSPACE DIVISION

■ **JAY YOSHINAGA – Membership Development**

The underlying goal of the Aerospace Division is to develop its members and we need volunteers to help out. Join our Executive Committee and develop your career. There are many benefits available to you through active participation in Division activities.

- Broaden your technical skills and keep pace with the latest technology in Aerospace engineering to grow in career and professional status
- Meet and interact with aerospace leaders at local, regional and national meetings
- Have opportunities to make contributions to the profession by participation in technical symposia as organizers and chairmen
- Demonstrate your professional knowledge by writing and presenting technical papers
- Broaden your management capability by participating on committees and working groups to plan and carry out the Aerospace Division program
- Achieve increased professional status with your employer and industry peers

We welcome your participation. Contact any of the Executive Committee Members or Technical Committee Chairs listed in this Newsletter to see how you can participate and grow your career.

You'll find that ASME.org Offers a wealth of information for the mechanical engineering professional, whether a ASME member or not. ■

Visit the Aerospace Division Website http://www.asme.org/divisions/aerospace/.

MESSAGE FROM DIVISION CHAIR

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working with other divisions and with other societies around the world to form new technical communities and conferences/symposia for evolving areas of joint interest but we can do better. Over the next year we will be developing some new initiatives that will help the Aerospace Division support the vision and goals of the new ASME.

Finally, these changes at the highest levels of ASME will also result in organizational changes throughout the upper levels of the ASME organization. The Council on Engineering and the Groups (the Aerospace Division is part of the Environment & Transportation Group) will be transformed to better support the new ASME. The structure of the divisions and technical committees are not envisioned to change, so for most members many of these transformations will be transparent other than ASME providing more and more value over time to our members. As these changes occur, watch future newsletters for a discussion of them.

Please check the website given above for the latest information on these changes and our website for the latest Aerospace Division information at http://www.asme.org/divisions/aerospace/. ■

CALL FOR PAPERS 2005 Joint Propulsion Conference

The 41st Joint Propulsion Conference & Exhibit, to be held in July, 2005 in Tucson, Arizona, is a joint activity with the ASME Aerospace Division and AIAA, SAE and AAES. Papers are being solicited for the following areas, which compromises 17 tracks:

- **Air Breathing Propulsion Sessions** —Lance Chenault
- **Hypersonic and Combined Cycle Propulsion Sessions** —Dick Kazmar
- **Energetic Components and Systems Sessions** —John Burchett
- **Electric Propulsion Sessions** —Mark A. Cappelli
- **Liquid Rocket Propulsion Sessions** —John Garvey
- **Hybrid Rocket Propulsion Sessions** —Martin Chiaverini
- **Solid Rocket Propulsion Sessions** — Mike Kaiserman
- **Nuclear and Future Flight Propulsion** — Brice Cassenti
- **In-Space Propulsion Technologies** — Wilda Davis
- **Advanced Propulsion Concepts for Future Flight Sessions** – John W. Robinson, ASME Propulsion Committee
- **Propellants and Combustion Sessions** — Luc Bauwens
- **System Concepts and Supporting Propulsion Technologies Sessions** –Dr. Bruce M. Steinetz, ASME Propulsion Committee
- **Space and Earth-to-Orbit Vehicle Systems Sessions** —James T. Nichols
- **History Sessions** – Anthony Springer AIAA History T/C
- **Propulsion Education Sessions** – Robert A. Frederick, Jr., ASES
- **Ground Test** — Jean Bianco
- **Liquid Propellant Committee on Standards for TBD** — Kurt Rathgeber

The ASME participation is focused on Advanced Propulsion Concepts for Future Flight, System Concepts and Supporting Propulsion Technologies, and Space and Earth-to-Orbit Vehicle Systems. Sessions are sponsored by the ASME Aerospace Division's Propulsion Committee.

Advanced Propulsion Concepts for Future Flight Sessions

Organizer, John W. Robinson, The Boeing Company

Unique Propulsion Systems

Papers are invited that address unique propulsion systems and innovative or nonconventional engine concepts. Some specific topics include design and development of systems for prime movers for: Earth launch systems, Space systems and Advanced compact systems.

For more information, contact:
John W. Robinson
714/896-1292, john.w.robinson2@boeing.com

Innovative Confinement Concepts for Fusion Propulsion

Papers are solicited on the subject of innovative or emerging plasma confinement concepts for fusion-based space propulsion. Topics of interest for these sessions include, but are not limited to, the following: Theoretical Concept Development, Computational Results, Proposed Experimental Facilities, Experimental Results, Mission Analysis and Diagnostic Techniques.

For more information, contact:
Uri Shumlak
206/616-1986
shumlak@aa.washington.edu.

In Situ Propellants for Lunar & Mars Missions

Papers are solicited that investigate all aspects for utilizing indigenous space materials for propulsion for lunar and Mars missions. Topics of interest for these sessions include, but are not limited to, the following: Production of propellants, Theoretical and experimental designs, and evaluations of engine performance and Analyses on the benefits of in situ technologies for current future missions.

For more information, contact:
Diane L. Linne
216/977-7512
Diane.L.Linne@nasa.gov

Space and Earth-to-Orbit Vehicle Systems Sessions

Space vehicle technologies are those needed for reliable, cost-effective upper stages, and vehicles for Earth-orbit operation; transfer to and return from the moon, Mars, and other planets; and ascent/descent vehicles for planetary surface operations. Suggested topics should focus on technologies for space vehicles and should include, but are not limited to, propulsion system concepts, operational efficiency, and autonomous and fault-tolerant systems.

For more information contact:
John W. Robinson
714/896-1292
john.w.robinson2@boeing.com

Heat Transfer and Chemical Reactions in Supercritical Fluids

Transport phenomena (mass, heat, momentum, and/or species transport) in supercritical fuels and other supercritical fluids; thermochemical and transport properties of supercritical fluids; modeling of chemical reactions of supercritical fuels; computational fluid dynamics modeling and measurements of heat transfer and chemical reactions in supercritical fluids.

For more information, contact:
Lea D. Chen
319/335-5674
ldchen@icaen.uiowa.edu

Advanced Fuel Injection

Advanced fuel injection systems for gas turbines, rocket engines, and internal combustion engines such as direct injection diesels; numerical modeling of fuel injectors; fuel sprays/combustion systems; novel fuel injection techniques; experimental studies and techniques for advanced fuel injection

systems; high airflow fuel injectors (direct lean injection); improvements to fuel and air mixing control; new measurement techniques; fuel injector advancements for the control of combustion instabilities.

For more information, contact:
Gerald J. Micklow
704/687-6889
gjmicklo@uncc.edu

Rocket/Air Breathing Propulsion and Reactive/Multi-Phase Flows

Papers are solicited on recent accomplishments in all areas related to turbulent, combusting, multi-phase propulsive flows. These topics include recent theoretical developments, experimental methods, and CFD methodology, as well as application oriented studies. Contributions are sought that describe new concepts and analyses, insight into fluid physics, and novel experimental and computational techniques. Of special interest are the following topics: CFD/experimental investigations of rocket motors/exhaust plumes and jets; /experimental studies of high-speed air breathing ramjet/scramjets, component integration, off-design operation, etc.; interactions with combustion in propulsive devices, combustion instability, droplet/spray combustion, etc.; Applications of active/passive control systems for controlling combustion instability, mixing enhancement, etc.; Numerical techniques for turbulent combusting flows with emphasis on large-eddy simulation (LES) advanced turbulence models, multi-phase flows, etc.; and, applications of novel, non-intrusive diagnostic techniques.

For more information, contact:
Neeraj Sinha
sinha@craft-tech.com or
Ashvin Hosangadi
hosangad@craft-tech.com
Combustion Research and Flow Technology Inc. (CRAFT Tech)
215/766-1520
FAX: 215-766-1524

System Concepts and Supporting Propulsion Technologies Sessions

Organizer Dr. Bruce M. Steinetz,
NASA Glenn Research Center

Control and Analysis of Propulsion Systems

Papers are invited in all areas dealing with the analysis and design of control systems. Both theory and application papers are welcome, provided there is a connection to air, land, sea, or space propulsion. Topics include modeling for control, system identification, optimal control, fault detection and recovery, and real-time implementation issues.

For more information contact:
Al Behbahani
al.behbahani@wpafb.af.mil
Tel: (937) 255-5637

Aerospace Systems Condition Monitoring

Session will focus on condition monitoring technologies for aircraft and space vehicles. Papers are solicited that address and quantify the safety, reliability, maintainability, and operability improvements that have been realized through the development and use of condition monitoring technologies. Of special interest are papers describing the successful application of techniques to space and aero-propulsion systems.

For more information, contact:
Donald J. Malloy
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931/454-4112
donald.malloy@arnold.af.mil or
Randall L. Bickford
Expert Microsystems, Inc.
916/989-2018
rbickford@expmicrosys.com

Sensors and Measurement Technologies

Papers are invited in all areas of instrumentation and measurement technologies related to propulsion systems. Specific areas include, but are not limited to: advanced sensors and measurement techniques/technologies for aircraft (ram/scram, turbine, or piston) and rocket (liquid, solid, or nuclear) propulsion systems; instrumentation for use during ground testing and/or flight of the propulsion system; capabilities to monitor and measure propulsion system performance, health, and safety; and innovative applications of "conventional" propulsion-related instrumentation.

For more information, contact:
John Wrbanek
NASA Glenn Research Center
216/433-2077
John.D.Wrbanek@nasa.gov

Advanced Seal Technology

Propulsion/airframe systems envisioned for next-generation turbine engine and access-to-space programs require significant advancements in the basic components and the supporting subcomponents, including seals. Papers describing recent developments in the following areas are requested: System-level trade studies evaluating competing sealing approaches on the basis of performance metrics(specific fuel consumption, specific impulse, direct operating cost savings, thermal management, other); New turbine or structural seal design concepts and sealing approaches showing promise of meetingperformance requirements; Methods for seal design and predicting seal performance under service conditions; Coupled techniques (experimental or analytical) to assess the interaction between the seal, cavity, and main flows; Test results demonstrating concept feasibility under simulated/actual conditions. Description of novel test rigs used to evaluate seal concept performance; and, Seal material advancements, including improved materials for low wear and long life and seal tribological evaluations.

For more information, contact:
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FAX 216/433-3954,
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Patrick Dunlap
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FAX 216/433-3954 ■

Visit the Aerospace Division Website Http://www.asme.org/divisions/aerospace/

PLANNED TOPICS FOR 2004

ASME International Mechanical Engineering Congress and RD&D Expo

Engineered Nanosystems, Manufacturing and Related Education
Nano Track Chairman: Ajay P. Malshe
SERC for Durable Micro and Nano Systems, Mechanical Engineering, University of Arkansas

www.asmeconferences.org/congress04/

"Engineered Nanosystems and Related Education for Nanomanufacturing of Durable Products" is the theme for IMECE 2004 Nanotracks. This theme was carefully chosen based upon the incredible enthusiasm experienced during IMECE 2003, through innovations demonstrated by engineers, scientists and business leaders in nanomanufacturing processes and systems.

Nanomanufacturing of Engineered Systems: "Science and engineering of manipulation, application, scale up and measurements when integrating nano building blocks (atoms, molecules, DNAs, particles, and crystals), through suitable processing methods for realization of heterogeneous and durable systems" is the main theme of these sessions. In this highly interdisciplinary, "subject multi-lingual" area, the leading edge discoveries in nano-science and engineering arising out of diverse disciplines will be highlighted and discussed through technical paper presentations, panel discussions and related activities. This year, in addition to scientific issues, there will be special emphasis on educational aspects, societal impact and student sessions. Also, the fabric of this Nanotrack is planning to bring in various divisions and sub-divisions of ASME to further expand the opportunities of this theme.

In special sessions, small and large-scale industry leaders, engineers and scientists from national and international organizations, and policy makers will address applications and paths leading to product realization, job creation, education requirements, and societal impact.

These tracks are vital as nanomanufacturing is projected globally as the foundation of a new nanotechnology based economy, where engineers, particularly mechanical engineers have a tremendous role to play for systematically engineering nanosystems and educating the next generation workforce for applications such as aerospace, automotive, biomedical engineering, homeland security, etc. These innovations are particularly key and timely when retaining and creating high quality jobs in the US is a national priority.

List of Topical Areas

- Design and fabrication techniques
- Modeling and experimental validation
- Engineering and analysis of novel nano building blocks: quantum dots, molecules, DNAs, particles, etc.
- Fabrication, and directed and self-assembly tools and processes at nanoscale
- Diagnostics and measurement techniques and requirements of standards
- Issues related to integration across scale (nano, micro, meso and macro) boundaries
- Durability and reliability measurements and models
- Product commercialization: Opportunities and Challenges
- Education in Nanomanufacturing
- Environmental Aspects
- Societal Impact
- Student Session
- Road mapping and research issues

CONTINUITY & CHANGE MOVES FORWARD

Following months of Society-wide preparation and review the Board of Governors voted on March 13 to approve a new organizational structure ASME. During their two-day meeting, which took place in New York City, on March 12-13, the Board of Governors assessed the proposed plan for change and debated the various issues surrounding the organizational restructuring.

The transition to the new ASME organizational structure will be complete and in place by July 1, 2005. With a 15-month transition now just beginning, the entire organization is set for the next phase of the Continuity and Change Initiative. President Reginald Vachon will appoint a Project Management Task Force to implement the transition to the Society's new structure.

The Project Management Task Force, comprised of Senior Vice Presidents and their senior staff counterparts, has authority for overall coordination and communication of transition projects with BOG and members/customers. The Task Force will identify and task transition project teams, and will report to the Board of Governors on timely basis to ensure the established transitional timeline is met. In addition to approving the proposed organizational structure and forming the Project Management Task Force, the Board also revised the Society's core values and new vision statement as they were published under the Continuity and Change Initiative to reflect ASME's commitment to diversity as an organizational strategy.

For further details from the Board of Governors meeting and specific materials on Continuity and Change visit www.asme.org/change. ■

MEMBERSHIP

The Aerospace Division is the third largest Division with 6,559 members. The Management Division is the largest with 11,717 members and Design Engineering Division 2nd largest with 13,105 followed by the Aerospace Division with Applied Mechanics 5,971 members and Power 5,865 members closely behind.

DIVISION	MEMBERS	DIVISION	MEMBERS
APPLIED MECHANICS	5971	PROCESS INDUSTRIES	1409
FLUIDS ENGINEERING	3479	MANUFACTURING ENGINEERING	3778
BIOENGINEERING	2149	TEXTILE ENGINEERING	157
HEAT TRANSFER	412	PLANT ENGINEERING & MAINTENANCE	3798
TRIBOLOGY	570	MATERIALS	2281
INTERNAL COMBUSTION ENGINES	2370	PRESSURE VESSELS & PIPING	3580
FUELS AND COMBUSTION TECH	1574	NDE ENGINEERING	311
NUCLEAR ENGINEERING	1714	PIPELINE SYSTEMS	387
POWER	5865	DESIGN ENGINEERING	13105
PETROLEUM	1668	DYNAMIC SYSTEMS & CONTROL	2174
ADVANCED ENERGY SYSTEMS	1266	COMPUTERS & INFO. IN ENGRG.	2421
SOLAR ENERGY	752	ELECTRONIC & PHOTONIC PKG	835
OCEAN, OFFSHORE & ARCTIC ENGRG.	750	FLUID POWER SYSTEMS & TECHNOLOGY	702
AEROSPACE	6559	INFORMATION STORAGE & PROCESSING SYSTEMS	305
RAIL TRANSPORTATION	766	MICROELECTROMECHANICAL SUB-DIV	359
ENVIRONMENTAL ENGINEERING	1378	GAS TURBINE INSTITUTE	2515
SOLID WASTE PROCESSING	315	NANOTECHNOLOGY INSTITUTE	95
NOISE CONTROL AND ACOUSTICS	697		
MANAGEMENT	11717	**TOTAL IN DIVISIONS**	**95078**
SAFETY ENG & RISK ANALYSIS	1263	NO TECH DIV INTEREST ON FILE	5411
TECHNOLOGY & SOCIETY	592		
MATERIALS HANDLING ENGRG	1330	**GRAND TOTALS—>**	**100489**

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ASME'S CAPITOL UPDATE

ASME's Capitol Update includes articles regarding aviation and aeronautics research and policy issues. For those who want a better look try the following web site: **http://www.asme.org/gric/update.html**. Capitol Update is publication of the ASME Council on Public Affairs and offers weekly legislative and regulatory information from Washington. ■

AEROSPACE DIVISION - 2003-2004

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