

# RTD

## *Rail Transportation Division Newsletter*

Spring 2006

### **CHAIRMAN'S MESSAGE**

Let's "Keep the Momentum Rolling"

That was theme of my introductory letter last fall, as we entered our fiscal year - 2006. It is my opinion that we have met this goal and have put in place several initiatives and plans to continue to "Keep the Momentum Rolling". As in sports, momentum is a powerful force, but it is one that shifts like the wind. Once you get passive and comfortable, BAM!!, it switched sides and you are now fighting an uphill battle to re-gain the momentum.

Due to the continued efforts of many individuals, we have kept the momentum rolling and have positioned RTD to thrive in the future.

The past 24 months have seen ASME corporate re-engineer itself to become a long-term viable entity. As a result, RTD has had to re-invent and streamline many of our operations and procedures. The simple summary of these efforts is that we have met the corporate ASME challenges and have become a stronger division because of them. As we progress into the next term of leadership, we will continue to see waves of change required to maintain our status as a world-class distributor of technical data and presentations for the betterment of the Rail Industry.

This electronic version of our newsletter is a prime example of the changes RTD is making as we enter a new era for ASME. Electronic communication will become more prevalent as we develop ways to disperse information in a real time mode with our membership. No doubt, you have seen an increase in the use of our "blast e-mail system" which allows us to periodically and effectively communicate with our

members as events require. Remember the old days (just 1-2 years ago) when we relied on the newsletter and/or conferences to communicate? RTD has transformed into an agile and flexible division rising to meet the needs of our members.

In early March, several members of our executive committee will be attending the Leadership Training Conference in Houston, Texas. You may not recognize the name of this conference that was formerly known as the WAM – Winter Annual Meeting. The name change emphasizes the conference will focus on the financial and operating changes circulating at ASME and will help train and educate the division leaders on how to implement the new procedures and requirements. I am confident our group will come away well prepared to meet the new challenges and to keep the momentum rolling.

The upcoming Joint Rail Conference (JRC) to be held April 4-6, in Atlanta, promises to be one of our biggest JRC's in the past 10 years. This year's theme - "Restoring and Upgrading Rail Infrastructure, Rolling Stock and Systems" has generated almost 40 technical papers that will be presented over the two days. In fact we have scheduled joint sessions to accommodate all the presentations. A tour of the MARTA maintenance facilities will provide additional benefit to those attending the conference. Visit the RTD web site to review the agenda and schedule of papers to be presented. If you have not made arrangements to attend, make sure you do so quickly, as this looks to be an exciting and educational conference.

Note – we have revised our Operating Manual and By-Laws. This

task has been completed and in large part due to the efforts of our Manager of Divisional Affairs - Sam Williams. This is important work as the manual and by-laws contain the procedures that reflect how the division is being run, governed and also to bring RTD up-to-date with the year 2006. They can be found on the ASME-RTD web site.

#### **In conclusion:**

It has been an honor to work with everyone not only for the past twelve months, but also during my entire tenure with RTD. I have learned a great deal about our division, developed lasting relationships, had a lot of fun along the way and hopefully, helped shape RTD for the future. As you know the best part of RTD are the people that make the division a success. I feel our ability (RTD's), to adapt can be benchmarked in the ASME family of technical divisions. I am proud to say I am associated with the RTD.

I wish to personally thank all the individuals, authors, committee members and RTD members who helped make the past twelve months a huge success. The hard work of many people has brought us to where we are and remember, let's "Keep the Momentum Rolling".

### **FUTURE MEETINGS**

- 2006 IEEE-ASME Joint Rail conference; April 4-6, Atlanta, GA
- 2006 IMECE will be held in Chicago IL, November 4-10
- 2007 IEEE-ASME Joint Rail Conference; Pueblo, CO, March-April
- 2007 IMECE will be held in Seattle, WA, November

## **JRC 2006**

### **April 4-6 Atlanta, Georgia.**

Make your plans now. Don't miss the 2006 Joint Rail Conference in Atlanta, Georgia. Register on-line Registration for the conference will be required if you wish to attend any of the technical sessions, luncheons, or tour of MARTA. See Conference Registration details at the following address: <<http://www.asmeconferences.org/JRC05/ConfRegistration.cfm>.

#### **Conference Schedule:**

##### Tue April 4:

12:45 pm – Bus leaves hotel for MARTA's Armour Yard tour.  
4:00 pm – Approximate bus arrival back at hotel  
6:45 pm – ASME RTD General Committee Meeting

##### Wed April 5:

7:00 - 7:45 am – Authors' Breakfast  
8:00 - 9:45 am – Session 1-1 (ASME)  
10:00 - 11:45 am – Conc. Sessions 1-2 (ASME) / 2-1 (IEEE)  
12:00 - 2:15 pm – IEEE Reception & Luncheon  
2:30 - 4:15 pm – Session 1-3 (ASME)  
4:30 - 6:15 pm – Conc. Sessions 1-4 (ASME) / 2-2 (IEEE)  
7:00 pm – ASME RTD General Committee Dinner

##### Thu April 6:

7:00 - 7:45 am – Authors' Breakfast  
8:00 - 9:45 am – Session 2-3 (IEEE)  
10:00 - 11:45 am – Session 1-5 (ASME)  
12:00 - 2:15 pm – ASME Reception & Luncheon  
2:30 - 4:15 pm – Conc. Sessions 1-6 (ASME) / 2-4 (IEEE)  
4:30 - 6:15 pm – Session 1-7 (ASME)

#### **JRC Luncheon speaker:**

The speaker for the JRC Luncheon will be Calvin L. Cox, Assistant Vice President-Mechanical, Norfolk Southern:

Upon graduating from the University of Virginia's School of Engineering and Applied Science with a BS in Mechanical Engineering, Calvin began his railroad career in 1979 with Southern Railway, a Norfolk Southern predecessor, working in the Mechanical Department. He has been assigned to Mechanical Department staff, field operations, and locomotive shop positions at various locations within the Norfolk Southern system. During his career with Norfolk Southern, he also spent several years in the Human Resources Department working in the disciplines of hiring and training. In his current role as Assistant Vice President-Mechanical, Calvin is responsible for field operations and locomotive repair facilities.

Calvin is married with three children. In May, his wife and daughter will graduate with their BA degrees.

## **Tour of MARTA Armour Yard Rail Services Facility**

The JRC will start with a tour of the new MARTA (Metropolitan Atlanta Rapid Transit Authority) Armour Yard Rail Services Facility, which opened in 2005, with storage capacity for over 100 rail cars on 12,000 feet of track. This 33-acre state-of-the-art facility includes a 208,000 sq. ft. Maintenance and Overhaul Facility, Control Tower, Traction Power Substation, Gap Breaker Building, Train Wash, Cleaner Building, Blow Down Pit, Maintenance of Way Building, and Petroleum Oils and Lubricants Building. MARTA is the ninth largest transit system in North America and transports an average half million passengers daily. MARTA rail service began in 1979 and operates 38 rail stations over nearly 48 miles of track.

The JRC conference offers you three ways to promote your company

#### **Luncheon/Reception Sponsorship:**

Sponsorship opportunities are available for the conference luncheons and receptions, IEEE on Wednesday, April 5, and ASME on Thursday April 6, 2006. Sponsorships are \$150, and each contributor company will be acknowledged at the receptions and luncheons and in the ASME RTD Newsletter. For additional information, contact Monique Stewart via email at: [monique.stewart@fra.dot.gov](mailto:monique.stewart@fra.dot.gov), or Nick Darien via email at: [ndarien@ctlgroup.com](mailto:ndarien@ctlgroup.com).

#### **Advertising Opportunity:**

Business card sized advertisements are being accepted for the conference printed program at a cost of \$100. Copy must be received no later than March 1, 2006. For additional information, contact Nick Darien via email at: [ndarien@ctlgroup.com](mailto:ndarien@ctlgroup.com).

#### **Exhibit Opportunity - Tabletop Display:**

What better way to promote your company name to the railroad community and the Rail Transportation Division professionals than to sponsor a tabletop exhibit at the 2006 JRC, a railroad technical conference in Atlanta? The conference, April 4-6, is being held jointly with the Land Transportation Division of IEEE, so your exposure is increased. The cost to exhibit is \$100 per foot of tabletop space. For additional information, contact Gary Wagner via e-mail at: [wagnerg@hadadycorp.com](mailto:wagnerg@hadadycorp.com).

Registration for the conference will be required if you wish to attend any of the technical sessions, luncheons, or tour of MARTA See Conference  
<<http://www.asmeconferences.org/JRC05/ConfRegistration.cfm>  
Registration for details.

## Conference Sessions:

### RT-1 Freight Car Performance and Longevity

- The Effect of Wedge Friction Conditions on the Dynamic Wheel-Rail Contact Force on Short Wavelength Defects, Yan Quan Sun
- Finite Element Analysis of Freight Car Structures for Fatigue Life Prediction, Shaun Richmond
- Understanding the Benefits of Long Travel Constant Contact Side Bearings, Darrell Iler
- Side Bearing Set-Up Height Adjustment and the Need for Level Track, William O'Donnell

### RT-2 Wheels - making them last -

- Wheel wear prediction—comparison between analytical approaches and field tests, Ali Asadi
- Detecting flat wheels with a fiber-optic sensor, Duwayne Anderson
- Further Studies of Forged Wheel Steel High Temperature Properties for Improved Finite Element Analysis Simulations, Cameron Lonsdale

### RT-3 Freight Car Safety Issues

- Hose Strap Reaction Forces in Railroad Freight Cars, Lin Hua
- Simplified Representation of Rigging Efficiency in Brake Force Calculation, Graydon Booth
- Self-Powered Brake Shoe Force Measurement System, Chris Ludlow

### RT-4 Minimizing Wear

- Determination of the Wear Criterion for Tehran Metro, Masoud Ansari
- Simulation and Full-Scale Measurement of the Wear in Curved Tracks, Masoud Ansari
- Investigation and Field Measurement of the Wear Trend in Train Wheels, Masoud Ansari
- Wheel Wear Losses from Bogie Rotation Resistance, effects of Cant and Speed, Scott A. Simson

### RT-5 Operators and Passenger's Safety

- Effectiveness of Alternative Crashworthiness Strategies, Karina Jacobsen
- Overview of a Specification for Passenger Rail Equipment Crash Energy Management, Karina Jacobsen
- Applying CEM Design Standards to Improve Vehicle Crashworthiness, Martin Schroeder
- Development of Airbags for Locomotive Crew Protection, Srinivasan Kasturi

### RT-6 Measuring Performance Enhancements

- The effects of the contact friction between frame and adapters on the performance of three-piece truck, Fujie Xia
- Optimizing Vehicle Dynamics Through A Switch While Maintaining Existing Switch Lead Length, Allan Zarembski
- Managing the Gross Weight on Rail, Harold Harrison
- Prospects for dynamic brake energy recovery on North American freight locomotives, Travis Painter

### RT-7 Specifics for more Reliability

- Lateral Stability Performance in Uni Directional Rolling stock, Scott A. Simson
- Improving Axle Reliability in North American Freight Service, Stephen Brister
- The Effect of Sustained Wheel Impacts on Tapered Roller Bearing Cages, Matthew G. Dick

## REFLECTIONS ON HISTORY - WHAT MIGHT HAVE BEEN

Last night President Bush, in his State of the Union message, stated the need to reduce our dependence on Mideast oil.

I recently came across copies of papers by Dr. Yellott, and Msrs. Broadley and Meyer of the Locomotive Development Committee, Bituminous Coal Research, Inc., presented by the Gas Turbine Division at the 1954 Fall Meeting of the ASME. Entitled "Acceptance and Operational Tests of a 4250 HP Coal Burning Gas Turbine. This turbine was intended for locomotive use, and nine of the major Eastern Class 1 coal-hauling railroads, and five of the major coal companies sponsored the research.

The abstract of this paper stated: "The Locomotive Development Committee of Bituminous Coal Research, Inc. has run more than 1500 hours of acceptance and operational tests on a 4250 hp Allis-Chalmers gas turbine power plant. The first of these two papers presents the results of the oil-fired acceptance test in which the turbine shaft output at contract conditions was found to be 4257 hp, or 13.5% above the warranted 3750 hp.

"The second paper describes two coal-burning operational tests. 178 hours of part-load operation on coal, with oil pilot flames in the combustors, resulted in negligible blade erosion and complete absence of deposits. 750 hours of high-load, high-temperature operation were run on coal alone. 1066 tons of high volatile bituminous coal was burned, generating 2,070,750 hp-hr at an average specific fuel rate of 1.03 lb per hp-hr.

"Inspection of the turbine after the 750 hour test showed that ash separator malfunctioning had resulted in excessive turbine blade erosion. A new multi-tube separator has been installed and the plant returned to service. Preliminary test data are given for the new separator."

One may ask, "What if research had been continued and the coal burning locomotive gas turbine had been perfected?"

First, if all Class 1 United States freight haulage in 2004 had been done by coal burning gas turbine locomotives, our consumption of petroleum would have been reduced by only 1.5%.

Second, these papers are silent on the exhaust emissions of these turbines, but the same products that caused blade erosion would ultimately have escaped to the atmosphere. What would current regulations have to say about them?

Perhaps such locomotives would have improved current conditions, but they would not have solved them. -- Charles M. Smith

## IMECE 2005 SUMMARY

The 2005 ASME International Mechanical Engineering Congress and Exposition, held in sunny Orlando last November, drew a crowd of more than 3,000 and featured more than 600 technical sessions, and 200 committee meetings, forums, and lectures.

The event was highlighted by a special State of the Society Address, given by ASME President Richard E. "Gene" Feigel, and the keynote speech that followed, presented by NASA Shuttle astronaut Col. Mike Mullane. More than 500 attended this event, which took place on Monday, Nov. 7 and preceded the opening of the exposition hall.

At the ASME Student Design Competition finals, the team from the University of New Orleans, which weathered Hurricane

Katrina and made it to the competition, took top honors in the contest with its prototype of a bulk material transporter. The team won the \$3,000 cash first prize, while their student section received \$1,000. Student teams from North Carolina State University and North Dakota State University placed second and third in the design contest finals, respectively.

At the Honors Assembly, 10 top honorees, including the president and chief executive officer of Ford Motor Co. and a former White House chief of staff, received awards.

The Rail Transportation Division organized 8 sessions, with 23 technical papers on wheel performance, track structure, and passenger safety and protection, plus a panel session on wayside and on-board detection. The RTD Luncheon guest speaker was Mr. Dan Welsh, project engineer at Walt Disney World, who presented an interesting overview of their Monorail System.

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## Call for Papers: Rail Transportation Division

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The 2006 Congress is scheduled for Sunday, November 5 through Friday, November 10, 2006 in Chicago, IL. The Rail Transportation Division (RTD) sessions are scheduled for 7-8 November 2006. Chicago has a long and storied history as North America's major railroad hub and this makes the city an ideal, symbolic location for a gathering of the railway industry's technical professionals in the 21<sup>st</sup> century.

Authors and presenters from railroads, rail transit agencies, the railway supply industry, academia, technical organizations, consulting/engineering firms and government agencies are invited to participate in this event to expand international cooperation, understanding, and promotion of efforts and disciplines in the area of Rail Transportation. Dissemination of knowledge by presenting research results (conceptual, analytical or testing), new developments, and novel product concepts in Rail Transportation will serve as the foundation upon which the conference program of this subject area will be developed. Papers should cover topics of current interest.

Abstracts must be submitted by March 6, 2006, draft papers must be submitted by May 30, 2006, and final acceptance of papers will be made by July 28, 2006. Final versions of papers must be submitted by August 21, 2006. Other details, along with instructions for completing and submitting the required copyright Form 1903 (due August 7, 2006), are located on the ASME website.

Abstracts are invited for presentation and publication on the following key topics:

- 1) Environmental and Noise Concerns
- 2) Engineering for Improved Railway Safety
- 3) Improving Life and Reliability of Wheel set Components
- 4) Freight Car, Passenger Car and Locomotive Performance Improvements
- 5) Designs and Systems for Improved Reliability
- 6) Considerations for Heavy Axle Load Train Operations
- 7) Considerations for High Speed Train Operations

### ABSTRACTS

**Authors should submit a 400-word text-only abstract to:**

**<http://www.asmeconferences.org/Congress06>**

**ABSTRACT DUE DATE: March 6, 2006**