



Rail Transportation

INCOMING CHAIR'S REMARKS Al Bieber



Greetings! It is with great anticipation that I begin my year as Chair of the Rail Transportation Division. I am looking forward to working with all of you and in particular the group of dedicated professionals who make up the Executive and General Committees.

Rail Transportation Division, indeed ASME International, faces many challenges. Engineering societies in order to be successful, need to be mindful of our customers' needs by providing value for the dollar and time spent participating in society activities. With this in mind, RTD's goals for fiscal year 2003-2004 need to be:

- Sponsoring Quality Conferences
- Timely Communications
- Increasing Membership

How do we translate these goals into meaningful action?

Quality Conferences -

Quality papers presented at IMECE and the JRC meetings are the key ingredient. Engineers attend conferences for a variety of reasons. First and foremost is that the presentations are of interest to them and the information obtained helps solve a day to day problem or allows them do their job in a better and more efficient way. Secondly, valuable contacts are made and one can interact with other professionals in the same field. Many problems have been solved in this manner; that is, by having contacts who can help. Third, even if the papers being presented don't appear to be of direct benefit, attending, listening and discussing the subject will encourage alternative thinking. The old adage, "the more you know, the more you know you don't know," still holds true. Finally, a quality conference will be one where the cost to attend is reasonable.

Communications -

We all need to know what RTD is about and what it is doing. One of the principle

means of letting you know is our website (www.asme.org/division/rtd/) and this Newsletter. Its goal is to provide information on current happenings, give you advance notice of future conferences (including program topics and registration), call for papers and how you may contact us. Timely notice of meetings as well as insuring that all members have an opportunity to participate as authors, session chairs or attending conferences will be our goal. We also need to know what you are thinking. How can we be more responsive to your needs? What topics would you (or your employer) like to see at a conference? What has kept you from attending in the past? Where would you like to see conferences held?

Membership -

All organizations need members to survive. In these challenging times it is incumbent upon all of us to encourage those we know, those we work with, and those we come into daily contact with who are engineers to become members of Rail Transportation Division. Rail transportation engineers exist world wide, yet our membership in other countries is very limited. We could all benefit if this statistic were improved. After all, rail transportation is an international endeavor and we need to interact with and invite our overseas colleagues to participate with us.

I shall look forward to meeting and working with all of you during the next year and hope you can join us in Erie, Washington and Baltimore. Please feel free to contact me with your thoughts and ideas. ▲

FUTURE MEETINGS

Joint Conference with IC Engine Div.,
Erie, Penn., September 2003

2003 IMECE will be held in
Washington, DC; November 16-21

2003 IEEE-ASME Joint Rail conference
Baltimore, MD; March/April 2004

ARNOLD STUCKI AWARD TO SAM WILLIAMS

The Arnold Stucki Award was presented by A.D. McKisic, General Manager of Engineering of the A.Stucki Company, to Sam Williams (retired, Timken Co.). This award is given for those engineers who have provided outstanding contributions to the rail engineering community, especially with regard to putting into practice engineering designs that have been needed and used by the industry. Sam has been involved with the ASME since 1959, including Section, Region, and Division responsibilities. He holds five patents and has provided the industry with many fine engineering designs and products. He has also authored 13 separate technical papers for the ASME and other professional organizations. In Sam's acceptance of the award, he gave recognition to the Timken Company, the staff that surrounded him during his years at Timken, and his family, whom all supported him during his stellar career. ▲

www.asme.org/divisions/rtd/

Our web site has recently been redesigned by the ASME staff to incorporate many new features to assist our members. It also is the place to find information about up coming ASME conferences and recent awards. Visit our RTD site often for the most up to the minute information about our division. ▲

RTD BEST PAPER AWARD

The Best Paper, or Rail Transportation Division Award, in April 2003 was presented to John A. Janiszewski, Steven M. Chrismer, and John B. Pearson, Jr. for their paper on "Investigation and Analysis of Structural Cracking in Transit Car Trucks". These authors were honored for their out-

standing paper because the Committee felt that they had given careful attention to detailed analysis of the problem they were facing and designed and carried out a test program that focused on the critical aspects of the component functionality. Their problem solving was based on sound engineering

fundamentals, and the fact that the repaired equipment has worked successfully for the past three years is a testimony to the quality of their engineering effort. They also did an outstanding job in preparing the written material for the paper as well as the presentation given at the 2002 Joint Conference. ▲

2003-2004 RAIL TRANSPORTATION DIVISION EXECUTIVE COMMITTEE

Chair

Allen C. Bieber
2580 Corvette Dr.
Erie, PA 16510
Tel: 814 825-5558
Email: ABieber@velocity.net

Secretary-Treasurer

Gary Wagner
Hadady Corp.
510 West 172nd Street
South Holland, IL 60473
Tel: 708 596-5668
Fax: 708 596-7563
Email: Wagnerg@hadadycorp.com

Technical Program Chair

David Cackovic
Transportation Technology
Center, Inc.
55500 DOT Road
P.O. Box 11130
Pueblo, CO 81001
Tel: 719 585-1880
Fax: 719 585-1895
Email: David_Cackovic@ttci.aar.com

Member

Roger Sims
Sims Professional Engineers
2645 Ridge Road
Highland, IN 46322-1663
Tel: 219-838-0011
Fax: 319 838-0033
Email: RDS@simspe.com

Member

A.D. McKisic
2600 Neville Road
Pittsburgh, PA 15225

Manager Division Affairs

Grant H. Arrasmith
4012 S.E. 19th Ave, Apt. C203
Cape Coral Fl 33904
Tel: 239 945-0466
Fax: 239 540-9337
Email: Garrasm582@aol.com

Program Manager - ASME Staff

Elio Manes, ASME Staff
ASME International
Technical Affairs Dept. - M/S 22W3
Three Park Ave.
New York, NY 10016

Tel: 212-591-7797
Fax: 212-591-7671
Email: Manese@asme.org

RTD Rep 2003 IMECE

David Cackovic
Transportation Technology
Center, Inc.
55500 DOT Road
P.O. Box 11130
Pueblo, CO 81001
Tel: 719 585-1880
Fax: 719 585-1895
Email: David_Cackovic@ttci.aar.com

RR3 Advisory Committee

Swamidas K. Punwani
204 Battle St. SW
Vienna, VA 22180
Tel: 202 493-6369
Fax: 202 632-3854
Email: John.Punwani@fra.dot.gov

Budget

Roger Sims
Sims Professional Engineers
2645 Ridge Road
Highland, IN 46322-1663
Tel: 219-838-0011
Fax: 319 838-0033
Email: RDS@simspe.com

Long Range Planning

Roger Sims
Sims Professional Engineers
2645 Ridge Road
Highland, IN 46322-1663
Tel: 219-838-0011
Fax: 319 838-0033
Email: RDS@simspe.com

Annual Luncheon Chair

Brad Johnstone
Johnstone Associates, Ltd
23210 Pilcher Road
Plainfield, IL 60544
Tel: 815 439-0913
Fax: 630-232-3123
Email: Bjohnstone@attbi.com

Annual Luncheon Co-Chair

A.D. McKisic
2600 Neville Road
Pittsburgh, PA 15225

RR6 Membership

David Anderson
Miner Enterprises
P.O. Box 471
1200 E. State Street
Geneva, IL 60134
Tel: 630 232-3103
Fax: 630 232 3051
Email: dka28@ibm.net

ASME Rep 2003 JRC

David Cackovic
Transportation Technology
Center, Inc.
55500 DOT Road
P.O. Box 11130
Pueblo, CO 81001
Tel: 719 585-1880
Fax: 719 585-1895
Email: David_Cackovic@ttci.aar.com

RR7 Honors Awards

Roger Sims
Sims Professional Engineers
2645 Ridge Road
Highland, IN 46322-1663
Tel: 219-838-0011
Fax: 319 838-0033
Email: RDS@simspe.com

Rep Sperry Board

Thomas Harley
289 Belmont Road
King of Prussia, PA 19406
Tel: 610 265-5391
Fax: 610 687-1291

Alt. Rep Sperry Board

Richard Hawkins
TTX Co.
101 North Wacker Dr.
Chicago, IL 60606
Tel: 312 984-3803

RR2 General Committee Chair

Swamidas K. Punwani
204 Battle St. SW
Vienna, VA 22180
Tel: 202 493-6369
Fax: 202 632-3854
Email: John.Punwani@fra.dot.gov

Rep to E&T Group

Allen C. Bieber
2580 Corvette Dr.

Erie, PA 16510
Tel: 814 825-5558
Email: ABieber@velocity.net

Newsletter Chair

Thomas S. Guins
Trans. Tech, Center, Inc.
55500 DOT Road
P.O. Box 11130
Pueblo, CO 81001
Tel: 719-585-1893
Fax: 719 584-0791
Email: Tom_Guins@ttci.aar.com

Publicity Chair

Gary Wagner
Hadady Corp.
510 West 172nd Street
South Holland, IL 60473
Tel: 708 596-5668
Fax: 708 596-7563
Email: Wagnerg@hadadycorp.com

Audit

Roger Sims
Sims Professional Engineers
2645 Ridge Road
Highland, IN 46322-1663
Tel: 219-838-0011
Fax: 319 838-0033
Email: RDS@simspe.com

R10 History & Heritage Chair

Charles Smith
LTK Engineering
100 West Butler Ave.
Ambler, PA 19002
Tel: 215 542-0700
Fax: 215 542-7676
Email: Csmith@ltk.com

Annual Report 2003-2004

Allen Bieber - Outgoing Chair
Dave Cackovic - Incoming Chair

RR11 Scholarship Chair

David Cackovic
Transportation Technology
Center, Inc.
55500 DOT Road
P.O. Box 11130
Pueblo, CO 81001
Tel: 719 584-0553
Fax: 719 584-0770
Email: David_Cackovic@ttci.aar.com

JOINT CONFERENCE WITH INTERNAL COMBUSTION ENGINES DIVISION



A Joint Conference with Internal Combustion Engine Division is scheduled for the week of September 7-10, 2003 in Erie, Pennsylvania. There will be two days of IC Engine papers and one day of RTD papers. Two field trips are planned, one to GE's locomotive assembly and test facility and the other to GE's diesel engine plant. Al Bieber, retired from GE, will be a conference Co-Chair and Paul Flynn of GE will be the other co-chair. The preliminary program is available online at <http://www.asmeconference.org/icert03/>.

Fall 2003 IMECE — PRELIMINARY RTD PROGRAM

Washington Marriott Wardman Park and Omni Shoreham Hotels

Washington, D.C., USA, November 16-21, 2003

For most updated information, visit <http://www.asmeconferences.org/congress03/>

SESSION 1

CRASHWORTHINESS I

Design of an Emergency Egress System for Locomotive Cabs
Locomotive Cab Occupant Protection Strategies
Analysis of Collision Safety Associated with CEM and Conventional Cars Mixed within a Consist

SESSION 2

CRASHWORTHINESS II

A Fundamental Approach to Design for Passenger Train Crashworthiness
A Design and Implications of APTA S-034 Compliant Collision and Corner Posts for Cab Cars
Locomotive Grade Crossing Tests at the Transportation Technology Center

SESSION 3

PROGRESS PAPERS

Progress in Freight Car Engineering
Progress in Passenger Car Engineering
Progress in Locomotive Engineering
Status of the Advanced Locomotive Propulsion System (ALPS) Project

SESSION 4

PERFORMANCE ENHANCEMENT MONITORING I

Field Testing of a Track Geometry Car-Based Real-Time Dynamics Simulator using Multiple Vehicle Types
Economics of Wayside Inspection Systems
Pilot for a National Detector Database To Enhance Safety and Promote Preventive Maintenance

SESSION 5

PERFORMANCE ENHANCEMENT MONITORING II

The Next Generation of Gage Restraint Measurement Systems
Revenue Service Demonstration of On-Board Condition Monitoring System
The Development of a Wayside Detection System for the Identification of Hunting Rail Car Trucks
Vehicle Health Monitoring System Development

SESSION 6

PASSENGER CAR ENGINEERING

Qualification and Acceptance Testing of a High-Speed Passenger Locomotive Using Instrumented Wheelsets
Curving Performance of Newly Trued Wheels of Commuter Rail Passenger Cars
Dynamic Analysis of KTX Vibration at the Tail of the Train under the Cold Weather.

SESSION 7

RAILWAY ENGINEERING — DYNAMICS AND STRUCTURES I

Performance Simulation and Emulation of Low-Floor Extension to Existing Light Rail Cars
Full Scale Tank Car Coupler Impact Tests
Using Parametric Simulation to Optimize Suspension Design

SESSION 8

RAILWAY ENGINEERING — DYNAMICS AND STRUCTURES II

Adaptive Mechatronic Suspension of Railway Vehicles – Focus on Lateral Dynamics
The Kinematic Basis for an Improved Friction Wedge Model
Parameter Identification of Lateral Vibration Model for Carbody Using Neural Network

PRELIMINARY ANNOUNCEMENT AND

CALL - F O R - P A P E R S

2004 ASME/IEEE Joint Rail Conference Baltimore, MD March/April 2004

The annual IEEE/ASME Joint Rail Conference, sponsored by the Land Transportation Division of the IEEE Vehicular Technology Society and the ASME Rail Transportation Division, offers a unique and comprehensive technical forum. Join your peers to share information, learn about technological progress, and share operating experience at the 2004 Joint Rail Conference, in Baltimore, Maryland in the Spring of 2004.

You are invited to submit papers for presentation and discussion at the Conference. Papers are solicited from members of the supply industry, rail transportation corporations and rail transit agencies, governmental agencies, consulting/engineering firms, academia, technical organizations, and others. Papers should cover topics of current interest. Topics may include:

- Freight and passenger car dynamics.
- Freight and passenger car engineering (design, etc.).
 - Vehicle crashworthiness.
- Wheel and bearing component performance.
 - Locomotive dynamics and performance.
- Monitoring and fault detection, safety and quality assurance programs.
- Rail transportation, high-speed passenger rail, rail transit, light-rail systems.
 - Other applications of mechanical engineering in rail transportation.

The ASME Online Conference Planning Tool will be utilized for this conference. Details will be included in the Final Announcement and Call for Papers. In response to this Preliminary Announcement and Call for Papers, prior to setup of the ASME Online Tool, you may do the following:

Author to submit 200-300 word abstracts to:
(Abstracts will be due by December 1, 2003
in the ASME Online Planning Tool)

David Cackovic
ASME/RTD Technical Program Chair
Transportation Tech. Center, Inc.
55000 DOT Road
Pueblo, CO 81001
Phone: (719) 585 – 1880
Fax: (719) 585 – 1895
Email: david_cackovic@ttci.aar.com

Final notification of paper acceptance will be made by December 15, 2003. Selected papers must be submitted in an acceptable electronic format, by January 15, 2004 for publication in the Conference Proceedings (CD format). Lead author Advanced Registration for the Conference will be required. All forms and papers should be submitted to the ASME/RTD Technical Program Chair. ▲

CHARLIE SMITH RECEIVES THE DISTINGUISHED SERVICE AWARD

The ASME Rail Transportation Division Distinguished Service Award was given to Charlie Smith at the ASME-IEEE Joint Conference held in Chicago on April 23 and 24, 2003. Charlie has been a member of the ASME for 41 years and continues to serve on the General Committee of the Division. He is also currently the Chairperson for the History and Heritage Committee of the Division and has most recently completed an Oral History of David G. Blaine, which is posted on the RTD web site and will appear in the next proceedings of the Division. In addition to Charlie's professionalism, reliability, and stellar attendance record at meetings, he has been a past contributor of a regular Division paper on the progress of passenger rail equipment. Charlie is also a passenger rail devotee, as he travels to most meetings by Amtrak, thus supporting the system for which he makes major engineering contributions. ▲



TRANSIT CAR TRUCKS TO FULFILL BALANCE OF FLEET'S LIFETIME, DESPITE SIDE FRAME CRACKS

ABSTRACT OF BEST PAPER - 2002

In early 1999 the Port Authority Transit Corporation (PATCO), a transit line running from Philadelphia to Lindenwold, NJ, began finding cracks in several of its truck side frames during routine maintenance. PATCO called on LTK Engineering Services, a rail transportation consulting firm in Philadelphia with offices across the United States, to study the problem and recommend future activities for continued safe operation of its car fleet.

The cracks were all located at the spider to side frame weld, directly under the motor mount. Originating at the toe of the weld and following relatively straight paths, the cracks were vertical in nature, approximately three to six inches in length.

Metallurgical examination of a cracked side frame determined that (1) the crack extended through the entire thickness of the side frame and (2) the crack surface was flat with beach marks indicating crack progression by fatigue and crack origination on the outer surface of the side frame at the toe of the weld.

Strain gauges and accelerometers were installed on a good truck to measure stresses and accelerations during test runs designed to simulate passenger-loaded operation of

the car. It was determined that peak stresses occurred at the toes of the welds and that these stresses occurred infrequently and could be associated with track curves and consequent lateral loads. The position of the truck with respect to the car and the position and orientation of the car within the train had no discernible effect on measured strain values. Similarly, car speed and acceleration and braking were not shown to be significant factors.

ASTM hole drilling procedures for residual stress testing showed tensile residual stresses high enough to cause the toe of the weld to be in tension at all times during service, even though the applied stresses were compressive. By causing a compressive residual stress layer at the surface of the weld toe area, the application of shot peening proved to be effective in lowering the residual stress at the weld toe.

Stress range data showed relatively few high stress values and considerably more occurrences of low stress values. By comparing the fatigue life analysis containing all stress values with an analysis excluding the high stress values, it was determined that the high stresses had little effect. Instead, most of the fatigue damage resulted from

the accumulation of many low-stress cycles over the entire truck lifetime rather than from a few high-stress cycles. Fatigue analysis further showed that the mean lifetime (50% failure) was only five years greater than the 2% failure level, which meant that additional cracks could soon be expected in a large percentage of the fleet.

AWS testing determined that cracked side frames could be weld repaired and that postweld heat treatment had no effect on residual stress levels. Thus, cracked side frames were weld repaired. Also, the welds were ground to provide a smooth transition between the side frame and spider plate. This was done at the time of repair on cracked trucks or as preventive maintenance during scheduled overhauls on uncracked trucks. After grinding, the weld and one inch into the base metal was shot peened, leaving compressive residual stresses at the surface.

Now four years later, LTK reports that with the implementation of the selected weld repairs and preventive grinding and shot peening, PATCO continues to successfully and safely operate its vehicles, and expects to do so over the balance of the fleet's lifetime. ▲

PRESORTED
FIRST CLASS
U.S. Postage
PAID
Syracuse, N.Y.
Permit No. 3893

www.asme.org/divisions/rtd
Three Park Avenue, New York, NY 10016-5990

ASME International 

