Review of Department of Transportation Testing of Electronically Controlled Pneumatic Brakes

Committee

Louis J. Lanzerotti

Chair

Louis J. Lanzerotti, Chair, is Distinguished Research Professor in the Department of Physics at the New Jersey Institute of Technology. He is a retired Distinguished Member of Technical Staff of Bell Laboratories Lucent Technologies, where his responsibilities included supervision of laboratories and research and development. His principal research interests include space plasmas, geophysics, and engineering problems related to the impacts of atmospheric and space processes and the space environment on space and terrestrial technologies. He has served as chair of a number of NRC Boards and Committees, including the Space Studies Board, the Committee on Electric Vehicle Controls and Unintended Acceleration, the Committee on the Assessment of Options for Extending the Life of the Hubble Space Telescope, and the Committee on Safety and Security of Commercial Spent Nuclear Fuel Storage. Dr. Lanzerotti also served as a member of the Academies' Report Review Committee. He has been principal investigator on NASA and commercial space satellite missions, including PI for instruments on the currently-flying NASA dual spacecraft Van Allen Probes mission. Dr. Lanzerotti was elected to the National Academy of Engineering in 1988. He received a Ph.D. in physics from Harvard University.

Mehdi Ahmadian

Member

Mehdi Ahmadian is Dan Pletta Professor of Mechanical Engineering at Virginia Tech, where he also holds the position of Director of Center for Vehicle Systems and Safety (CVeSS), and the Railway Technologies Laboratory (RTL). He is the founding director of CVeSS, RTL, Virginia Institute for Performance Engineering and Research (VIPER), and the Advanced Vehicle Dynamics Laboratory (AVDL). Prior to joining Virginia Tech, Dr. Ahmadian worked as Lead Design Engineer at General Electric Transportation System and in various engineering and management positions at Lord Corporation. Dr. Ahmadian has authored more than 130 archival journal publications and more than 250 conference publications, including a number of keynote lectures. He has edited 6 technical proceedings and has made more than 300 technical presentations in topics related to advanced technologies for ground vehicles. He holds 10 U.S. and international patents, and has edited four technical volumes. He currently serves as Editor for the International Journal of Vehicle System Dynamics, Editor-in-Chief for Journal of Vibration and Control, and Editor-in-Chief of Shock and Vibration journal. In the past, he has served as Editor-in-Chief for Advances in Automobile Engineering (2010 – 2014), Associate Editor for the ASME Journal of Vibration and Acoustics (1989 – 1996), the AIAA Journal (2000 – 2008), and journal of Shock and Vibration (2003 – 2011). Dr. Ahmadian is Fellow of American Society of Mechanical Engineers (ASME), Fellow of the Society of Automotive Engineers (SAE International), and Associate Fellow of the American Institute for Aeronautics and Astronautics (AIAA). His most recent professional awards include the 2008 Society of Automotive Engineers (SAE International) Forest R. McFarland Award, the 2014 SAE International L. Ray Buckendale Award with a plenary lecture on “Integrating Electromechanical Systems in Commercial Vehicles for Improved Handling, Stability, and Comfort,” and the 2015 SAE Lloyd L. Withrow Distinguished Speaker Award. Dr. Ahmadian is an active member of SAE International. His activities include: Member, Executive Nominating Committee; Member-at-Large, SAE Membership Board; Executive Council Member, SAE International Commercial Vehicle Engineering Congress (COMVEC); Activity Chair, COMVEC 2015; Activity Chair, COMVEC 2010; and past Chair of the SAE Chassis and Suspension Committee. He received a Ph.D. in mechanical engineering from the State University of New York at Buffalo.

Marshall Beck

Member

Marshall Beck, of M Beck Consulting, LLC, is the former Senior Vice President of Marketing and Sales at New York Air Brake Company (retired). During his 25 year career at New York Air Brake, Mr. Beck provided leadership on corporate vision and product innovation efforts, including the design and launch of the locomotive Computer Control Brake (CCB II), EP-60, and LEADER train handling technologies. Mr. Beck also holds a number of related patents. Prior to New York Air Brake, Mr. Beck was the Director of Marketing at Bombardier, where he was responsible for passenger rail in both Commuter and Intercity markets. Mr. Beck has a master’s degree and a bachelor’s degree in mechanical engineering from the Royal Military College of Canada.

Philip J. Daum

Member

Philip J. Daum is a Principal at Engineering Systems Inc. (ESI) who specializes in mechanical engineering, research, development, and experimental testing. He has conducted complex, multidisciplinary research and failure/accident investigations pertaining to freight and transit railroads, cargo and portable tanks, transportation equipment systems and components, and hazardous materials. His evaluations include the areas of reliability, durability, crashworthiness, security performance and regulatory compliance. His 35 years of industrial experience includes design of railroad rolling stock, truck/bogies, brakes, draft systems, valves, pressure relief devices, safety equipment, and operating components/systems. He is also experienced in technology evaluations, intellectual property analysis, equipment qualification, health monitoring, and maintenance. Mr. Daum received a BS in mechanical engineering from the University of Illinois at Urbana-Champaign and holds Professional Engineering licenses in Illinois and California.

Jenny Ferren

Member

Jenny L. Ferren is the manager of the Structural Dynamics and Product Assurance Section at Southwest Research Institute (SwRI). She leads a team of engineers and technicians engaged in applied research, development and independent testing services for the aerospace, automotive, nuclear, roadside safety, telecommunications, marine, and oil and gas industries, and for the U.S. military. She has more than 20 years of experience in experimental structural dynamics, physical environmental testing, failure mode analysis, data acquisition, and analysis, as well as mechanical design and product development for which she holds two patents. Her project work at SwRI has primarily included engineering stress screening and qualification testing to assess functionality, structural integrity and compatibility of equipment subjected to extreme environmental conditions. She also oversees reliability evaluations, as well as model validation testing to support structural and dynamic analysis of large-scale systems. Ms. Ferren is responsible for business development efforts, including financial growth and promotional activities for the section, and serves as the system administrator responsible for maintaining the Structural Engineering Department’s ISO 9001, ISO 17025 and NQA-1 quality programs. Ms. Ferren received a BS in mechanical engineering from Texas A&M University and an MBA from Texas A&M University-San Antonio.

Roger L. McCarthy

Member

Roger L. McCarthy, of McCarthy Engineering, is a private engineering consultant and a director of Shui on Land, Ltd., which is involved in large-scale urban redevelopment in the People's Republic of China. Dr. McCarthy has substantial experience in the analysis of failures of an engineering or scientific nature. He has investigated the grounding of the Exxon Valdez, the explosion and loss of the Piper Alpha oil platform in the North Sea, the fire and explosion on the semisubmersible Glomar Arctic II, and the rudder failure on the very large crude carrier Amoco Cadiz. Previously, Dr. McCarthy was chairman emeritus of Exponent, Inc., and chairman of Exponent Science and Technology Consulting Company, Ltd. (Hangzhou, China). In 1992, he was appointed by the first President Bush to the President's Commission on the National Medal of Science. Dr. McCarthy served as a member of the National Academy of Engineering and National Research Council Committee for Analysis of Causes of the Deepwater Horizon Explosion, Fire, and Oil Spill to Identify Measures to Prevent Similar Accidents in the Future, and the Committee on Options for Implementing the Requirement of Best Available and Safest Technologies for Offshore Oil and Gas Operations. He also served as a member of the Committee on the Evaluation of the Federal Railroad Administration Research and Development Program. Dr. McCarthy received a Ph.D. in mechanical engineering from MIT. He was elected to the National Academy of Engineering in 2004.

Raul A. Radovitzky

Member

Raúl A. Radovitzky is the Associate Director, Institute for Soldier Nanotechnologies, and a Professor of Aeronautics and Astronautics, Massachusetts Institute of Technology (MIT). He joined MIT's Department of Aeronautics and Astronautics in 2001 as the Charles Stark Draper Assistant Professor. Professor Radovitzky's research interests are in the development of advanced concepts and material systems for blast, ballistic and impact protection. To this end, his research group develops theoretical and computational descriptions of the physical event and its effects on structures and humans, including advanced computational methods and algorithms for large-scale simulation. The resulting models help to improve the understanding of the various physical components of the problem and thus to design protective systems. Professor Radovitzky's educational interests include computational mechanics, continuum mechanics, aerospace structures, mechanics of materials, numerical methods, and high-performance computing. He is a member of the American Institute of Aeronautics and Astronautics, International Association of Computational Mechanics, American Academy of Mechanics, Materials Research Society, U.S. Association of Computational Mechanics, and American Society of Mechanical Engineers, He has served on these previous National Academies committees: the Committee to Review of Test Protocols Used by the DOD to Test Combat Helmets and the Committee on Opportunities in Protection Materials Science and Technology for Future Army Applications. Professor Radovitzky received a PhD in aeronautical engineering from the California Institute of Technology.

Patrick J. Student

Member

Patrick J. Student is former Director of Hazardous Material and Hazardous Materials Management, Union Pacific Railroad Company (retired). He has more than 41 years of experience in hazardous materials transportation by rail. He was responsible for interpreting hazardous materials regulations and railroad operating rules, and developing systems for compliance with them. He was also a consultant on tank car issues and properties of materials being transported. Mr. Student has served as Chairman and Member of the American Association of Railroads (AAR) Hazardous Materials Committee and AAR Tank Car Committee, as well as Chairman or Member of many of their task forces. He was a member of the Next Generation Rail Tank Car project and is a member of the Advanced Tank Car Collaborative Research Project. He is a developer of structured electronic data interchange (EDI) for hazardous materials transportation, and has served as Chairman of the AAR EDI Hazardous Materials Technical Advisory Group. Mr. Student holds a BS in Chemistry from the University of Missouri, Rolla.

Gerhard A. Thelen

Member

Gerhard A. Thelen is the former Vice President of Operations Planning and Support for Norfolk Southern Corporation, where he was responsible for operations planning, policies, budgets, research and tests, and quality management functions from 2006 until he retired in 2013. Mr. Thelen joined Norfolk Southern in 1977 and served in quality, engineering, research, and mechanical positions—including the Assistant Vice President of Research and Tests—before being named Vice President, Mechanical in 2004. Norfolk Southern began running unit trains with electronically controlled pneumatic brakes on certain lines in late 2007. He served as a member of the National Academies Committee to Review USDOT Five-Year RD&T Strategic Plan and the Committee for Review of the Federal Railroad Administration Research, Development, and Demonstration Programs. Mr. Thelen has a master’s degree in industrial engineering from Pennsylvania State University.

Elton Toma

Member

Elton Toma is a senior engineer at the Automotive and Surface Transportation portfolio at the National Research Council Canada. At NRC Canada he has worked on research projects related to the testing and analysis of all modes of surface transportation, including freight and passenger rail vehicles, heavy-haul highway trucks, and off-road military vehicles. Most recently,r he has worked closely with Transport Canada on guidelines for the marshaling of trains to reduce in-train forces, on the analysis of emergency stopping distances of freight trains, and on route risk analysis. Previously, he was a vehicle dynamics analyst at the Transportation Technology Center, Inc. (TTCI) in Pueblo, Colorado. At TTCI he was involved in the on-track testing and computer modeling of freight and passenger rail vehicles. He has a Ph.D. in mechanical engineering from Queen’s University. His Ph.D. research focused on the analysis of train derailments, where his work produced a computer model of a train derailment, at the time the only model available for derailment simulation.