

ALLISON ENGINEERING ASSOCIATES, INC.

CONSULTING TESTING AND SCIENTIFIC SERVICES

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DONALD E. ALLISON

Specialized Professional Competence

Failure analyses and accident reconstruction involving mechanical systems, products, structures, and vehicles using the disciplines of mechanical engineering and materials science. Testing and analysis of industrial equipment and consumer products. Application of engineering principles and science to forensic analyses and investigations. On-site inspections, evidence documentation, written and oral testimony. Accident analyses involving access equipment (e.g., elevating aerial devices), lifting equipment (e.g., cranes), and construction equipment (e.g., loaders), material handling equipment (e.g., forklifts), automobiles, tires/tire changing machines, trucks, pedestrians, off-road vehicles, agricultural equipment, railway and mass transit vehicles. HVAC equipment, hydraulics, firearms, medical products, electro-mechanical devices, processing equipment, turbines, fires, and explosions. Analysis of design processes, methods, and standards; patent evaluation. Mechanical metallurgy including material properties and failure mode assessment; microscopy; welded structures; corrosion; analytical and experimental stress analysis; fracture mechanics; fatigue analysis.

Research activities include corrosion fatigue of stainless steel, fatigue crack growth under variable amplitude loading, biaxial fatigue at elevated temperature, thermal fatigue of boiler tubes, hydrogen embrittlement of welded pressure vessels, and prediction methods for submarine hull structural integrity.

Background and Professional Honors

Ph.D. (Applied Mechanics), Lehigh University
M.S. (Engineering Mechanics), The Pennsylvania State University
B.S. (Engineering Mechanics), The Pennsylvania State University

President,
Allison Engineering Associates, Inc.
Senior Managing Engineer & Director, Boston Office,
Failure Analysis Associates, Inc.
Technical Staff Member,
Sandia Laboratories
Analytical Engineer, Structures: Technology and Research Group,
Pratt and Whitney Aircraft
Research Assistant,
Lehigh University
The Pennsylvania State University
Department of Energy Fellow,
Lehigh University
Teaching Assistant
The Pennsylvania State University

Registered Professional Mechanical Engineer, Massachusetts #30859
Registered Professional Mechanical Engineer, California #ME19819
Registered Hoisting Engineer, Department of Public Safety, Massachusetts (HE-168416)

DONALD E. ALLISON

Sigma Xi, Phi Kappa Phi, Tau Beta Pi, Sigma Tau

Member, American Society of Mechanical Engineers
Member, Society of Automotive Engineers
Member, American Society for Metals
Member, American Society for Testing and Materials
Member, Human Factors and Ergonomics Society
Member, Society of Manufacturing Engineers
American National Standards Institute, Subcommittees within A92, B11, B65
Member, National Fire Protection Association
National Safety Council
Member, International Fluid Power Society
Member, Scaffold & Access Industry Association

Selected Publications and Reports

"Failure Analysis Techniques for the Evaluation of Electrical and Electronic Components in Aircraft Accident Investigation, AF Wright Research and Development Center, Materials Laboratory Report No. WRDC-TR-90-4075, (April 1990), (with D. Galler, D. Mercaldi)
"Review of Computerized Fatigue Crack Growth Analysis Programs for Submarine Hull Structures, Appendix A: Review of Fracture Mechanics Technology Pertaining to Fatigue Crack Growth in Submarine Hulls", SBIR, Naval Sea Systems Command, (May 1989), (with W. Howerton, D. Harris)
"The Interaction of Crack Geometry and Electrochemical Processes in Corrosion Fatigue of AISI 304 Stainless Steel," Dissertation Abstracts, Ph.D. dissertation, Lehigh University, 1988.
"A Review of Fracture Mechanics Life Technology," NASA Publication MFS-27049, Marshall Space Flight Center, 1984 (with Failure Analysis Associates).
"An Engineering and Probabilistic Analysis of Tube Cracking Performance in Once-Through Steam Generators," Electric Power Research Institute NP-3065, 1982 (with C.S. Davis, S.W. Winder, and J.M. Thomas).
"Cost/Risk Analysis for Disk Retirement," Air Force Wright Aeronautical Laboratories, AFWAL-TR-83-4089, 1984 (with P.M. Besuner, S.W. Hopkins, and C.A. Rau, Jr.).
"A New Approach to Estimate Fatigue Crack Delay Due to a Single Cycle Overload," Engineering Fracture Mechanics, Vol. 9, 1977, pp. 647-654 (with A.E. Gemma and S.W. Hopkins).
"The Application of Fractional Calculus to Estimate the Delay Cycles Due to a Single Cycle Overload," Journal of Fracture, Current Research Section, June 1976 (with A.E. Gemma).
"Fatigue Crack Propagation of a Surface Flaw Rotated at Various Angles in a Biaxial Stress Field," Master's thesis, The Pennsylvania State University, November 1977.

Industrial Courses

Powered Industrial Truck Training and Operation Certification, Northland Industrial Truck Company, Massachusetts
Professional Operator Safety Training; Digger Derricks and Mobile Aerial Devices, Sentry Programs, Altec Industries
Mobile Elevating Work Platform Operator Training, Lift[^]Pro, Genie Industries
Telehandler Operator Training, Lift[^]Pro, Genie Industries
Occupational Safety & Health Administration (OSHA): 30 Hour Construction
"Vehicle Accident Reconstruction Methods", Society of Automotive Engineers, SAE International, Troy, Michigan
"PC-Crash Training Program: Special Essentials and Advanced Workshop", MEA, Toronto, Canada.
"Fire Investigation: Fire Origin and Cause Determination", California Fire Service Training and Education System, Office of the California State Fire Marshal
Practical Interpretation of Microstructures, ASM International

DONALD E. ALLISON

Lectures

"Jury Trials in the 21st Century: The Electronic Courtroom," The Association of the Federal Bar of the State of New Jersey, The Sixteenth Annual United States District Court Judicial Conference, April 1992.

"State of the Art Uses of Demonstrative and Testimonial Evidence at Trial," New York State Bar Association Seminar, Complex Product Liability Litigation: A Cost-Effect Approach for the 90's, October 1991