



SUMMIT ENGINEERING, L.L.C.

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BRYAN R. DURIG, Ph.D., P.E.

Engineer: Mechanical, Metallurgical

Technical Investigations

Failure Analysis

Fire Investigations

Machinery & Equipment Accidents

Products Liability

Premises Liability

Education

- 1993 **Master of Business Administration**
University of South Carolina
- 1988 **Doctor of Philosophy in Mechanical Engineering**
University of South Carolina
- 1985 **Master of Science in Mechanical Engineering**
University of South Carolina
- 1984 **Bachelor of Science in Mechanical Engineering**
University of South Carolina

Experience

January 1994 to Present

Summit Engineering, L.L.C., Columbia, South Carolina. Consulting Engineer performing specialized consulting in the areas of: **Accident Evaluation, Failure Analysis and Products Liability:** (machinery, equipment and consumer products) analysis and evaluation of designs, component testing, controls, guards and warnings, standards and code compliance, and maintenance; **Fire Investigations:** industrial, commercial and residential.

April 1993 to December 1993

Laboratory Manager, Engineering Design & Testing Corp., Columbia, South Carolina. Responsible for management of the metallurgical laboratory including budgeting, personnel and reporting of results.

June 1991 to December 1993

Consulting Engineer, Engineering Design & Testing Corp., Columbia, South Carolina. Responsibilities included performing specialized consulting in the areas of design, engineering analysis, failure analysis and accident reconstruction. Clients included industrial manufacturing facilities, attorneys, insurance companies and adjusters.

June 1988 to May 1991

Research Engineer, Westinghouse Savannah River Company, Savannah River Laboratory, Aiken, South Carolina. Responsibilities included conducting thermal hydraulic research on SRS reactor assemblies and systems and analytical analyses of reactor hardware to support reactor operations.

January 1986 to May 1988

Research Assistant, College of Engineering, Columbia, South Carolina. Senior research assistant in a research group consisting of several graduate and undergraduate students working in the areas of biomechanics and fracture mechanics. Research consisted of Digital Image Processing and Computer Data Acquisition of fracture specimens and biological tissues.

June 1986 to July 1986

Scientist II, U.S. Naval Research Laboratory. Duties included setting up a digital image processing system (hardware/software) and finite element analysis.

January 1985 to December 1988

Administrative Assistant, College of Science and Mathematics, University of South Carolina. Primary responsibilities included general accounting of the College budget and transferring of the College budget to a Rainbow Personal Computer.

January 1984 to December 1984

Teaching Assistant, Engineering Department, University of South Carolina. Lab instructor for Microprocessor Lab. Duties included explaining and building of a circuit board using a Motorola 6801 chip for experiments such as controlling the speed of a motor and collecting data from a strain gage.

June 1980 to September 1983

(Summers)

Research Assistant, Chemistry Department, University of South Carolina. This research included the purification of chemical samples using a low pressure fractionation column, and performing chemical analysis on a Nicolet.

Courses and Seminars Presented

September 30, 1994

Seminar to University of South Carolina Senior Machine Design class on Products Liability and Design Safety.

December 6, 1994

Three-hour, State of North Carolina Approved Continuing Education Course entitled "Identification of a Products Liability Claim", Charlotte, North Carolina.

July 9, 1997

Three-hour, State of North Carolina Approved Continuing Education Course entitled "Identification of a Products Liability Claim", Charlotte, North Carolina.

May 3, 2003

The Absolute Litigators Conference VIII Course entitled "Fire Investigations", Las Vegas, Nevada.

October 12, 2009

Kitchen Fires and Subrogation, Columbia, South Carolina

Professional Organizations and Honorary Societies

American Society of Mechanical Engineers (Local Chapter Chairman 1992 - 1995)

International Associations of Arson Investigators

National Association of Fire Investigators

National Fire Protection Association

National Safety Council

Publications

"Flow in a Rectangular Closed-Loop with Vertical Heat Transfer Passages," Proceedings from A.S.M.E. Winter Meeting, Paper No. 86-WA/HT-78, 1986 (co-authored with M.A. Shadday).

"Conformational Studies Utilizing Asymmetric Torsional Frequencies," J. Mol. Struct., 126, 83 (1985), (co-authored with J.R. Durig, D.T. Durig and J.F. Sullivan).

"Determination of Mixed Mode Stress Intensity Factors Using Digital Image Correlation," Proceedings for Society of Experimental Mechanics, Spring 1988 Meeting (co-authored with W.H. Peters III, M.A. Sutton, S.R. McNeill and Y.J. Cho).

"Mechanical Testing of Soft Tissue," Proceedings for Society of Experimental Mechanics, Spring 1988 Meeting (co-authored with W.H. Peters III, L. Terracio and T.K. Borg).

"Digital Image Correlation Measurements of Strain in Bovine Retina," Optical Testing and Metrology, Proceedings of the International Symposium on Optical Engineering and Industrial Sensing (SPIE), Vol. 954, pp. 438-443, 1988 (co-authored with W.H. Peters III and M.E. Hammer).

"Experimental Mechanics in Biomechanics," Proceedings for Society of Experimental Mechanics Spring 1989 Meeting (co-authored with W.H. Peters III, M.A. Sutton, J.L. Turner, T. Borg, L. Terracio and E. Berg).

"A Study of Mixed Mode Fracture in Photoelasticity and Digital Image Analysis," Optics and Lasers in Engineering, Vol. 14, pp. 203-215, 1991 (co-authored with W.H. Peters III, F. Zhang, S.R. McNeill and Y.J. Choa).

"Mechanical Stress Relaxation of the Retina," submitted to Journal of Investigative Ophthalmology, April 1989, (co-authored with W.H. Peters III and M.E. Hammer).

"Fracture of Wire Rope Drum Shaft Due to Fretting Fatigue," Proceedings from A.S.M.E. Winter Meeting, Paper No. 93-WA/DE-9, 1993 (co-authored with T.A. Jur).

Materials for Department of Insurance, State of North Carolina, Approved Continuing Education Course entitled "Identification of a Products Liability Claim", Course Number 03489, Provider Number 0445, Date Approved: September 29, 1994.

Registration

Registered Professional Engineer in South Carolina (#14877)
Registered Professional Engineer in North Carolina (#022737)
Registered Professional Engineer in Georgia (#PE030339)
Registered Professional Engineer in Tennessee (#110004)
Registered Professional Engineer in Alabama (#28023-E)
Registered Professional Engineer in Florida (#75756)
Registered Professional Engineer in Mississippi (#21174)
Registered Professional Engineer in Ohio (#84631)
Registered Professional Engineer in Kentucky (#35487)
Registered Professional Engineer in Maryland (#62984)

Continuing Education

December 1991	ASM International Seminar on "Principals of Failure Analysis"
May 1993	Algor Finite Element Training

October 1993	Richardson Engineering Services "General Construction and Process Plant Estimating"
December 1993	Mitchell International's Seminar on Ford Diagnostics
January 1996	Electrical Fire Investigations, International Association of Arson Investigators, Inc.
July 1996	Sprinkler System Design Compliance, Society of Fire Protection Engineers
May 1997	HVAC Plant Improvement, Boiler Efficiency Institute
May 1998	Vehicle Fires, S.C. Chapter IAAI
August 1998	Sponsored and attended "Fire Dynamics-Small Group Seminar", Lilly & Associates
October 1998	Investigation of Electrical Appliance Related Fires, IAAI/Association of Home Appliance Manufacturers
July 1999	Sponsored and attended "Appliance Fires -Small Group Seminar", Jack Sanderson
September 1999	IAAI Annual Seminar; Beckley, West Virginia
September 2000	Sponsored and attended "Electrical Fires - Small Group Seminar", Jim Finneran
November 2000	Investigation of Vehicle Fires, Lee S. Cole & Associates, Inc.
April 2001	Basic Industrial Electricity, Lewellyn Technology, Inc.
September 2001	Electrical Fire Investigation, Tom R. Bradshaw, CFI and Jim Elkins, CFI
October 2001	Sponsored and attended "Electrical Fire Causes - Small Group Seminar", Chris W. Korinek, P.E.
September 2002	DRI Fire and Casualty Seminar, New Orleans, Louisiana
June 2003	Sponsored and attended "Fire Explosion - Small Group Seminar", John DeHaan, Ph.D.

October 2003	7 th Annual Fire Investigative Approaches; “Practical Aspects of Fuel Gas Explosions”, Dave Lilley.
October 2003	7 th Annual Fire Investigative Approaches; “Gas Appliance Failure – Product Liability”, Jack Sanderson.
April 2004	Sponsored and attended “The Physics of Electrical Fires”, Vytenis Babrauskas, Ph.D.
November 2004	NFPA Certified Fire Protection Specialist; Certification Number: 2100
September 2005	Inspection, Testing and Maintenance of Fire Alarm Systems Seminar, NFPA, Charlotte, North Carolina
November 2005	DRI Fire and Casualty Seminar, Chicago, Illinois
June 2006	Sponsored and attended “Flammable Gas Explosions”, John L. Schumacher, MChE, PE, CFI
June 2006	International Symposium on Fire Investigation Science and Technology, Cincinnati, Ohio
June 2007	Sponsored and attended “The Ignition of Gases, Liquids and Solids by Hot Bodies”, Vytenis Babrauskas, Ph.D.
March 2008	South Carolina Association of Arson Investigators & South Carolina Insurance Fraud Investigators 1 st Quarter Training, Monks Corner, South Carolina
September 2008	Sponsored and attended “Understanding Post-Flashover Fires” - Small Group Seminar”, Carman & Associates
November 2008	DRI Fire and Casualty Seminar, Chicago, Illinois
Year 2009	Sponsored and attended “Residential Electrical Fire Safety - Small Group Seminar”, Charleston, South Carolina
Year 2010	Postflashover Fires, CFITrainer Arc Mapping Basics, CFITrainer International Symposium on Fire Investigation Science and Technology, University of Maryland

	A Ventilation-Focused Approach to the Impact of Building Structures and Systems on Fire, CFITrainer.net
Year 2011	Understanding Fire Through the Candle Experiments, CFITrainer.net Explosion Dynamics, CFITrainer.net Digital Photography and the Fire Investigator, CFITrainer.net Documenting the Event, CFITrainer.net
Year 2012	International Symposium on Fire Investigation Science and Technology, University of Maryland
Year 2013	Critical Thinking Solves Cases, CFITrainer.net Electrical Safety, CFITrainer.net Evidence Examination: What Happens at the Lab, CFITrainer.net Physical Evidence at the First Scene, CFITrainer.net
Year 2014	Florida Engineers Laws & Rules Engineering Ethics Energy Performance of LEED for New Construction Buildings 2010 ADA Standards for Accessible Design Part 1
Year 2015	2010 ADA Standards for Accessible Design Part 2 Safeguarding Equipment: Protecting Workers from Amputations OSHA – Stairway and Ladders Materials Handling and Storage Fire Protection and Prevention During Construction Fall Protection in Construction Engineering Ethics for the North Carolina Controlling Electrical Hazards
Year 2016	Introduction to Piping Engineering Florida Engineer Laws & Rules Ethics for U.S. Engineers What Every Engineer Should Know About Fire Protection Electrical Engineering Fundamentals for Non-Electrical Engineers Asbestos Fundamentals
Year 2017	Solar Power Part 1 HVAC Design – Fundamentals HVAC Design – Industrial Ventilation Intellectual Property and Patents for the Professional Engineer

	Forensic Analysis Involving Fugitive Natural Gas and Propane
Year 2018	Practical Design Guide for Welded Connections Part 1 Practical Design Guide for Welded Connections Part 2 Work Zone Traffic Control Manual on Uniform Traffic Control Devices Ethics for Engineer Florida Engineering Laws and Rules Repair Techniques for Wood Trusses Part 1 Introduction to the Design of Wood Trusses Pavement Markings Traffic Signs
Year 2019	Introduction to the Analysis and Design of Bolted Connections Transformers- What Every Engineering Should Know Introduction to Heat Transfer in Structure Files Welding Technology A Case Study in Engineering Ethics: The Deepwater Horizon Disaster
Year 2020	Walkway Safety Auditor Repair Techniques for Metal Plated Wood Trusses Part 2 Forklift Operator Certificate Ethics in Design and Oversight: The Case of the Florida International University Bridge Collapse
Year 2021	Florida Laws & Rules for 2021 Introduction to Electrical Theory and DC Circuits What Ever Engineer Should Know About Structures- Part D - Bending Fundamentals of Steel – Part A Fundamentals of Steel – Part B Engineering Ethics
Year 2022	Forensic Engineering Part A - Conducting Failure Analyses of Metallic Materials Forensic Engineering Part B - Four Classes of Metallurgical and Mechanical Failures Forensic Engineering Part C - Case Histories: Metallurgical & Mechanical Failure Analyses Forensic Engineering Part D- Case Histories: Corrosion Failure Analyses The Citicorp Tower: Professional Ethics and Disaster Averted Interior Lighting Design: The Fundamentals Wind Force Calculations on Low Rise Buildings Interior Lighting Design The Fundamentals

The Citicorp Tower: Professional Ethics and Disaster Averted

Year 2023

Florida Engineering Laws & Rules
Practical Forensic Engineering Property Part 1
Practical Forensic Engineering Property Part 2
Slips Trips and Falls International Conference (Virtual Appearance)
Florida's Mandatory Structural Inspections
Ohio Engineering Ethics

Year 2024

Certified Forensic Slip Expert (CFSE) certification
OSHA 10-Hour Construction training/class
Ethics in Practice of Engineering
International Symposium of Fire Investigation Science and Technology

Year 2025

Safety in Design
Fundamentals of Concrete
Permitting for Engineers
An Engineer's Guide to Municipal Zoning Ordinances
Spillway Design for Small Dams
North Carolina Rules for Professional Conduct
North Carolina Laws and Rules for Engineers
Ohio Engineering Laws and Rules
Ethics for Engineers – Part 2

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