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*Daniel N. Olson, M.S.M.E., P.E., CFEI, CVFI*

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Engineer: Mechanical, Agricultural & Safety

**Machinery Fire and Explosion Analysis: Origin and Cause**

**Vehicle Accident Reconstruction**

**Agricultural Accident Reconstruction**

**Industrial Accident Reconstruction**

**Failure Analysis**

**Machine Design**

**Products Liability**

**Training**

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## EDUCATION

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- 1990**                    **Master of Science in Mechanical Engineering**  
University of South Carolina
- 1970**                    **Bachelor of Agricultural Engineering**  
University of Minnesota

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## EXPERIENCE

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**January 1997 to Present**      The Warren Group, Inc., Columbia, South Carolina. Engineer performing specialized consulting and training related to property loss analysis, reconstruction of accidents and the analysis of designs with regard to safety.

### **Fire & Explosion Analysis**

- Determine origin and cause of fires and explosions, particularly involving machinery and mobile equipment.
- Determine the cause of fire spread.
- Relate injury or collateral property damage to the cause and spread of fires.
- Establish responsibility for fires involving agricultural, heavy equipment, vehicles and industrial machinery.

### **Accident Reconstruction**

- Traffic collision reconstruction using time and distance analysis, conservation of linear momentum, vehicle crush analysis, determination of principle direction of forces, vehicle dynamics, and analysis of brake effectiveness.
- Retrieval of crash data from automotive air bag control modules.
- Analysis of retrieved data from crash data collectors in automobiles, light trucks, and heavy truck Engine Control Modules.
- Industrial accident reconstruction.
- Agricultural accident reconstruction.
- Analysis of mechanical component malfunctions and failures related to accidents.

### **Property & Machinery Loss Analysis**

- Determine the cause of the loss, establish scope of damage, estimate cost and time to repair, evaluate replacement cost, establish actual value.

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## EXPERIENCE, Continued

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**January 1997 to Present Continued**

**Safety Design Analysis (both personal injury and property damage)**

- Industrial accident reconstruction, agricultural accident reconstruction, vehicle accident reconstruction, machine controls, warnings, OSHA compliance, standards and codes compliance, maintenance, fire and explosion analysis and products liability.

**Training**

- Accident reconstructions, hazard identification, risk assessment, engineering design for safety, standards and codes, and products liability.

**1993 TO 1996**

Midlands Technical College, Columbia, South Carolina. Department Chair for Engineering Technologies and for mechanical engineering technology. Supervision and guidance of 12 full-time and 10 adjunct faculty in the Engineering Technologies Department at Midlands Technical College. The department offered five associate degrees and three certificate programs. Responsibilities include administration of the department, course content, equipment selection and teaching courses.

**1990 TO 1993**

University of South Carolina, Columbia, South Carolina. Graduate Teaching Assistant. Adjunct faculty instructor of Measurements and Instrumentation to second and third year mechanical engineering students. Supervised the work of six other graduate teaching assistants. In April of 1993, was a finalist in the competition for the Educational Foundation's Outstanding Teacher Award for Graduate Assistants. Took the lead roll in applying total quality techniques in the classroom and prepared a manuscript to publish work and results in this area. Also served as adjunct faculty at Midlands Technical College teaching Kinematics.

**1987 TO 1990**

United States Air Force, Shaw AFB, South Carolina. Evaluator, Teacher and Inspector. Maintained a high level of technical competency as a pilot and flight leader in the multi-role F-16 advanced tactical fighter aircraft. As chief of the Inspector General's safety division, taught and evaluated mishap prevention methods and techniques at thirty-seven different Air Force units as part of a quality control function. Organized, planned, scheduled and supervised war readiness tests involving the deployment of twenty-four fighter aircraft and nine hundred people to a simulated combat area, culminating in up 150 simulated combat sorties. Completed all course work towards a Masters of Science degree in Mechanical Engineering at the University of South Carolina while traveling 160 days a year.

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## EXPERIENCE, Continued

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- 1984 TO 1987** United States Air Force, Shaw AFB, South Carolina. Supervisor, Manager and Instructor. Led a 14-person safety division that investigated three major aircraft mishaps, two on-the-job fatal mishaps, and numerous minor mishaps. This division inspected 13 subordinate units for compliance with safety standards and the effectiveness of safety education programs. Served as a mentor for other investigators and oversaw the development and implementation of numerous engineering and procedural mishap prevention initiatives.
- 1981 TO 1983** United States Air Force, Hill AFB, Utah. Instructor Pilot and Flight Safety Officer. Selected for F-16 instructor pilot duty as it was entering the inventory. Certified as an Air Force Flight Safety Officer through courses taught by the University of Southern California. These courses concentrated on accident reconstruction and flight mishap prevention. Called to investigate two major F-16 mishaps. Both investigations culminated in sound mishap prevention initiatives.
- 1979 TO 1981** United States Air Force, Bergstrom AFB, Texas. Management Evaluator. Evaluated mid-level management of flight training, scheduling, weapons employment and tactics for quality and effectiveness. Organized and planned five war readiness tests.
- 1976 TO 1979** United States Air Force, England AFB, Louisiana. Flight Commander and Instructor Pilot. Flight instructor in the A-7 tactical fighter aircraft. Supervised seven other fighter pilots. Managed flight simulator training. Served as recorder for a major aircraft accident investigation.
- 1972 TO 1976** United States Air Force, Bergstrom AFB, Texas. Instructor, Supervisor and Manager. Proposed and implemented an innovative organizational change that was highly successful in improving morale and unit effectiveness. This change was adopted in similar units worldwide. Supervised 150 enlisted men as a junior officer. Managed a training course for officers and airmen.
- 1972** United States Air Force, Bien Hoa AB, Republic of Vietnam. Combat Duty. Flew 177 Vietnam combat missions in the A-37 tactical fighter aircraft as squadron pilot and flight leader. Twice decorated with the Distinguished Flying Cross for gallantry in action.
- 1970** Allis-Chalmers Manufacturing Company, Independence, Missouri. Design Engineer. Successfully designed the installation of a hydrostatic drive transmission in the hillside version of the Gleaner Model G combine, during the six weeks between graduation from college and joining the Air Force.

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## EXPERIENCE, Continued

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**1965 To 1970** University of Minnesota and Allis-Chalmers Manufacturing Company. Cooperative Education. Designed a belt drive configuration on a Gleaner combine that was still in production as of 1986. Also worked in the Agricultural Engineering and Civil Engineering Departments.

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## PROFESSIONAL ORGANIZATIONS

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American Society of Mechanical Engineers  
American Society of Safety Engineers  
National Association of Fire Investigators  
National Safety Council  
Society of Automotive Engineers

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## REGISTRATION

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Professional Engineer in Alabama (#26192-E)  
Professional Engineer in Georgia (#PE029375)  
Professional Engineer in South Carolina (#15284)  
Certified Fire and Explosion Investigator (#5654-2666)  
Certified Vehicle Fire Investigator (#5654-2666V)

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## CONTINUING EDUCATION

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**April 13 – 24, 1998**

“Collision Reconstruction Course,” Texas A&M University System, Amarillo, Texas

**February 22 - 26, 1999**

“Commercial Vehicle Collision Reconstruction Level I Course,” Texas A&M University System, Houston, Texas

**March 22-25, 2000**

2000 National Advanced Fire, Arson and Explosion Investigation Science and Technology Program, Eastern Kentucky University

- Electrical Fire Causes
- Explosion Investigation
- Fire Scene Analysis
- Computer Fire Modeling

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**CONTINUING EDUCATION (Continued)**

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**August 20 - 24, 2001**

“Advanced Traffic Crash Reconstruction with WinCrash,” Institute of Police Technology and Management, University of North Florida

**September 30-October 2, 2002**

“Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar,” Eastern Kentucky University,

**July 28 - 31, 2003**

“Southeastern Collision Reconstruction Conference (S.C.A.R.S),” Charleston, South Carolina (32 hrs)

**August 1 - 2, 2003**

“Crash Data Retrieval System,” Operator's Certification Course, 2003 Collision Safety Institute Charleston, South Carolina (16 hours)

**October 7, 2003**

“Root Cause Failure Analysis: A Key Element of Systematic Failure Elimination,” ASME Technical Presentation, Columbia, South Carolina

**October 9, 2003**

“Law School for Experts,” SEAK Legal Seminar, Columbia, South Carolina

**September 16, 2004**

“Report Writing,” SEAK, Inc., Columbia, South Carolina

**December 7-8, 2004**

“Forensic Fire Scene Reconstruction,” American Academy of Applied Forensics at Central Piedmont Community College, Huntersville, North Carolina

**December 13, 2005**

“Introduction to Renewable Energy and Greenhouse Gas Rules for Engineering Professionals,” UNC Charlotte Uptown, Charlotte, North Carolina

**June 26-28, 2006**

2006 International Symposium on Fire Investigation Science and Technology (ISFI), University of Cincinnati, Cincinnati, Ohio

**April 20, 2007**

“Fires, Explosions and Electricity: Intensive Instruction in Irmo,” Inner Circle of Investigators, 2007 Annual Conference, Irmo, South Carolina

**April 28 & 29, 2008**

“Corporate Forensic Engineering Training for The Warren Group,” SEAK, Inc., Irmo, South Carolina

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**CONTINUING EDUCATION (Continued)**

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**July 11, 2008**

“Intermediate Motorcycle Class,” Motorcycle Safety Foundation Rider Course, Midlands Technical College, Columbia, South Carolina

**September 1, 2009**

“Condition Evaluation of Existing Structures,” American Society of Civil Engineers, ASCE Web Seminar, Reston, Virginia

**December 22, 2009**

“Investigating Motor Vehicle Fires,” online course presented by CFITrainer.net

**June 10, 2010**

“Arc Mapping Basics,” online course presented by CFITrainer.net

**December 16, 2010**

“Documenting the Event,” online course presented by CFITrainer.net

**December 16, 2010**

“Effective Investigation and Testimony,” online course presented by CFITrainer.net

**December 16, 2010**

“Explosion Dynamics,” online course presented by CFITrainer.net

**December 6, 2011**

“Fire and Explosion Investigations: Utilizing NFPA 1033 and 921,” online course presented by CFITrainer.net

**December 6, 2011**

“Preparation for the Marine Fire Scene,” online course presented by CFITrainer.net

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## COURSES, SEMINARS AND LECTURES PRESENTED

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*Three-hour seminar, approved by the North Carolina Department of Insurance, Continuing Education Agency Services Division, entitled "Collision Reconstruction"*

**November 8, 2001** Companion Property & Casualty, Columbia, South Carolina  
**January 23, 2002** Farm Bureau Insurance, Charleston, South Carolina  
**February 21, 2002** Carolina Claims Services, Columbia, South Carolina  
**February 27, 2002** Travelers Insurance, Charlotte, North Carolina  
**April 25, 2002** North Carolina Adjusters Association, Charlotte, North Carolina  
**May 1, 2002** Montgomery Mutual Insurance, Charlotte, North Carolina  
**May 8, 2002** Liberty Mutual Insurance, Matthews, North Carolina  
**March 20, 2003** AIG, Charlotte, North Carolina  
**May 7, 2003** Occidental Fire & Casualty Insurance, Raleigh, North Carolina  
**May 19, 2003** Crawford & Company, Charlotte, North Carolina  
**October 15, 2003** Royal & SunAlliance, Charlotte, North Carolina  
**November 2, 2004** Horace Mann, Charlotte, North Carolina  
**May 2, 2005** Raleigh Claims Association, Raleigh, North Carolina  
**May 9, 2006** Kemper Auto and Home Group, Charlotte, North Carolina  
**October 2 & 4, 2007** Travelers Insurance, Columbia, South Carolina

*Two-hour seminar, approved by the North Carolina Department of Insurance, Continuing Education Agency Services Division, entitled "Time and Distance Analysis"*

**August 20, 2008** Liberty Mutual Insurance, Charlotte, North Carolina  
**March 10, 2009** The Hartford, Charlotte, North Carolina  
**May 19, 2009** Kemper Auto and Home Group, Charlotte, North Carolina

### **September 4, 1997**

Four-hour course presented in conjunction with the University of South Carolina and the American Society of Mechanical Engineers student section on "Hazard Identification, Risk Assessment and Safety Through Design," Columbia, South Carolina.

### **October 3, 1997**

Four-hour course entitled "Industrial Machine Safety: The Fundamental of Hazard Identification, Risk Assessment and Safety through Design" presented to manufacturing engineers, Gaffney, South Carolina.

### **December 12, 1997**

Three-hour seminar entitled "Fire Investigations: Identifying Cause and Responsibility" presented to the International Association of Arson Investigators, South Carolina Chapter, Columbia, South Carolina.

### **May 15, 2002**

One-hour talk entitled "Collision Reconstruction" presented to the Farm Bureau Insurance, Rock Hill, South Carolina.

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## COURSES, SEMINARS AND LECTURES PRESENTED (Continued)

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### March 31, 2005

One-hour talk entitled "Collision Reconstruction" presented to Horace Mann, Charlotte, North Carolina

### April 20, 2007

Presentation entitled "Mobile Equipment Fires: Lawn Mower to Cotton Picker" presented at the Inner Circle of Investigators 2007 Annual Conference, Irmo, South Carolina

### February 23, 2010

One-hour talk entitled "Mobile Equipment Fires: Lawn Mower to Cotton Picker" was presented at the Fires, Explosions & Electricity 101 Course, The Warren Group, Irmo, South Carolina

### October 21, 2010

"Reconciling Conflict in Collision Litigation" presented at the Large Loss and Complex Claims Seminar, Columbia, South Carolina

### May 5, 2011

Discussion Panelist at South Carolina Defense Trial Attorneys' Association, *Deposition Boot Camp*. Topics were: Do you need an expert? Hiring an Expert and Working with an Expert, Columbia, South Carolina

### December 2, 2011

"Putting The Pieces Together: Accident Reconstruction" presented to Hedrick Gardner, Charlotte, North Carolina

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## PUBLICATIONS

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"Fracture Testing of Rat Tibiae", M.S. Thesis, University of South Carolina, 1990

"Settling Complex Claims with the Responsibility Matrix", The Analyst Newsletter, June 1998

"Getting the Whole Picture," The Analyst Newsletter, November 1998

"Putting the Pieces Together: Vehicle Accident Reconstruction," The Analyst Newsletter, June 2000

"Who Else Owns This Vehicle Loss? Assigning Responsibility with Accident Reconstruction," Subrogator, Volume II, Issue III, publication by the National Association of Subrogation Professionals