



**J. ROBERT McGRAW, Jr., P.E., NC-CFI, IAAI-CFI, CFEI**

**Education**

North Carolina State University - Raleigh, NC – B.S. Civil Engineering – Construction Option, 1997

University of Maryland at College Park, College Park, MD – M.S. Fire Protection Engineering, 1998

- Areas of concentration: Fire dynamics, flame spread, dehydration of gypsum wallboard, operation and use of the Cone Calorimeter (ASTM E-1354)

**Professional Experience**

Principal Engineer, Element Analytical, PLLC, Knightdale, NC – August 2008 to present: Management of engineering investigations and inspections with consultation in the solution of technical questions pertaining to fire origin and cause analysis, fire protection system evaluations, structural damage assessment, foundation damage, building material defects, water damage assessment, roofing/cladding exams, and appliance/product investigations.

Professional Engineer, Forensic Engineering Incorporated, Raleigh, NC – January 2002 to August 2008: Application of engineering knowledge and principles in the investigation, analysis, and solution of technical questions regarding vehicle accidents and accident reconstruction, fire cause and origin, fire suppression system evaluations, building material defects, structural failures, foundation failures, roofing examinations, exterior cladding inspections (including EIFS/DEFS), consumer product failures, and the interpretation of codes and standards. Supervision of other forensic investigators.

Engineer in Training, Forensic Engineering Incorporated, Raleigh, NC – January 1999 to January 2002: Application of engineering knowledge and principles in the investigation, analysis, and solution of technical questions regarding vehicle accidents and accident reconstruction, fire cause and origin, fire suppression system evaluations, building material defects, structural failures, foundation failures, roofing examinations exterior cladding inspections (including EIFS/DEFS), consumer product failures, and the interpretation of codes and standards.

Driver (former Deputy Chief/Assistant Chief/Captain/Firefighter), Swift Creek Fire Department, Wake County, NC – March 1999 to present: Provides emergency response, fire suppression, search and rescue, and medical care during fire, rescue, HAZMAT, and EMS calls. Conducts driver/operator operations, served as mentor for probationary firefighters, and presents departmental fireground and driving training. Assumes command, directs, and coordinates multi-agency response activities during emergency incidents as needed. Managed assigned project budget responsibilities.

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Element Analytical, PLLC  
Post Office Box 1091 Knightdale, North Carolina 27545  
(888) 875-5973 (phone/fax) [www.elementanalytical.com](http://www.elementanalytical.com) NC PE Firm #P-0658

*Providing Engineering Analysis, Investigation, and Inspection Solutions.*

February 8, 2025

**Professional Experience (continued)**

Firefighter, Greenbelt Fire Department and Rescue Squad, Inc., Prince George's County, MD – September 1997 to December 1998: Conducted emergency response, fire suppression search and rescue, and medical care during fire, rescue, HAZMAT, and EMS calls.

**Professional Development**

Commercial Kitchen Fires 2: Investigation– International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), January 27, 2025

Commercial Kitchen Fires 1: Fundamentals– International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), January 24, 2025

Fire Effects Part 1: Heat Effects on Fuels – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), December 11, 2024

Personal Protective Equipment for Post-Fire Scenes – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), December 11, 2024

Non-Destructive Testing Methodologies for Structural Assessments - ASCE North Carolina Section, Eastern Branch Meeting, November 21, 2024

HAZWOPER Refresher Special Operations Annual Recertification – Emergency Response Training, Sanford, NC, November 14, 2024

Engineering Ethics – Ethics in the Workplace (and Life), ASCE North Carolina Section, Eastern Branch Meeting, August 15, 2024

Subrogation and Restaurant Fire Suppression System Failures, Rimkus Consulting Group, webinar, <https://rimkus.com/webinars-and-seminars/>, April 3, 2024

The Yellow Signal Light – Physics, Red-Light Cameras and Engineering Malpractice, ASCE North Carolina Section, Eastern Branch Meeting, February 15, 2024

HAZWOPER Refresher Special Operations Annual Recertification – Emergency Response Training, Sanford, NC, November 16, 2023

NFPA 241 – A Tool for Subrogation!, National Association of Subrogation Professionals, <https://www.subrogation.org/>, September 12, 2023

Live Perspective Webinar: A Large-scale Sprinklered Fire Test of Lithium-ion Cells in Plastic Trays within a Rack Storage Test Configuration, Society of Fire Protection Engineers, June 7, 2023

Advanced Investigative Approaches – International Association of Arson Investigators, NC Chapter, Sanford, NC, May 15-19, 2023

Mold Matters: The Effect of Fungi on Building Materials, Eurofins, recorded webinar [www.EurofinsUS.com/CEI](http://www.EurofinsUS.com/CEI), May 15, 2023

Ethics in Engineering, ASCE North Carolina Section, Eastern Branch Meeting, April 27, 2023

Critical Evaluation and Testing of Commonly Reported Accidental Causes – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), April 17, 2023

Fire Chemistry – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), April 12, 2023

Pipe Freeze Investigations – Rimkus Consulting, webinar, March 25, 2023

Fire Flow Analysis - International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), March 11, 2023

Vacant and Abandoned Buildings: Hazards and Solutions – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), March 10, 2023



**Professional Development (continued)**

- NFPA 18A: The Lithium-ion Battery Fire Solution – Hazard Control Technologies, webinar, March 9, 2023
- Evaluating Hail Damage – Rimkus Consulting Group, webinar, <https://rimkus.com/webinars-and-seminars/>, February 23, 2023
- The Impact of Li-Ion Energy Storage Systems on Residential Garage Fire Dynamics – Society of Fire Protection Engineers, February 23, 2023
- Science of Fire and Explosion Hazards from Lithium-Ion Batteries, Fire Safety Research Institute, webinar, <https://fsri.org/research-update/online-training-available-science-fire-and-explosion-hazards-lithium-ion-batteries>, February 4, 2023
- HAZWOPER Refresher Special Operations Annual Recertification – Emergency Response Training, Sanford, NC, November 17, 2022
- Fundamentals of Fire Investigation - The Relationship Between Compartment Fire Dynamics and Resulting Post-Incident Damage Patterns– Society of Fire Protection Engineers, webinar, <https://www.pathlms.com/sfpe/courses/44314/webinars/30534> , August 24, 2022
- NFPA 1033 & 921: 2022/2021 Editions Important Updates, – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), July 26, 2022
- Propane Explosions: Investigation, Failure Modes, Scene Exam, and Litigation Essentials – National Association of Subrogation Professionals, <https://www.subrogation.org/>, June 14, 2022
- Dust Explosion: Hazard Recognition, Assessment, and Management – Society of Fire Protection Engineers, webinar, <https://www.pathlms.com/sfpe/courses>, June 13-July 25, 2022
- Classification of Origin and Cause, Advanced Investigative Approaches – International Association of Arson Investigators, NC Chapter, Sanford, May 5, 2022
- Marine Fire Investigations, Advanced Investigative Approaches – International Association of Arson Investigators, NC Chapter, Sanford, May 3, 2022
- Medical Examiners Role in Fire Death Investigations, Advanced Investigative Approaches – International Association of Arson Investigators, NC Chapter, Sanford, May 2, 2022
- Designing for Fire Protection – HalfMoon Education, Inc., webinar, <https://halfmoonseminars.org/>, April 21-May 1, 2022
- Gas System Check – Propane Education and Research Council, webinar <https://training.propane.com>, March 23, 2022
- Gas Appliance System Check – Propane Education and Research Council, webinar <https://training.propane.com>, March 14, 2022
- HAZWOPER Refresher Special Operations Annual Recertification – Emergency Response Training, Sanford, NC, November 11, 2021
- Combustion By-Products Testing – Eurofins, recorded webinar [www.EurofinsUS.com/CEI](http://www.EurofinsUS.com/CEI), October 28, 2021
- Lithium Batteries and the Investigation of Related Fires – International Association of Arson Investigators, NC & SC Chapters, Myrtle Beach, SC, October 21, 2021
- Wildland Serial Fire Case Study – NC/SC IAAI, recorded webinar of May 10, 2021, viewed July 2, 2021
- Preparing for Expert Witness Testimony – NC/SC IAAI, live webinar, June 14, 2021
- CSST Examinations – NC/SC IAAI, live webinar, June 7, 2021
- NFPA 1033: Update and New Information – NC/SC IAAI, live webinar, May 24, 2021
- Lithium Ion Battery Fires – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), May 17, 2021



**Professional Development (continued)**

Investigator Health and Safety – NC/SC IAAI, live webinar, May 17, 2021  
Corrosion and Freeze Protection in Fire Sprinkler Systems – PHCP Pros/AGF Manufacturing, live webinar  
AGF University [www.agfmfg.com](http://www.agfmfg.com), April 22, 2021  
Combustion By-Products Analysis and Overview – Eurofins, recorded webinar  
[www.EurofinsUS.com/CEI](http://www.EurofinsUS.com/CEI), April 22, 2021  
NCBELS Best Practices for Remote Work – PENC, [www.penc.org](http://www.penc.org), virtual meeting platform, December  
14, 2020  
Electrical Conductor Evaluation and Arc Recognition – NC/SC IAAI, virtual meeting platform, December  
14, 2020  
Post Blast Investigations – NC/SC IAAI, virtual meeting platform, December 7, 2020  
NFPA 921 Updates 2021 – NC/SC IAAI, virtual meeting platform, November 16, 2020  
HAZWOPER Refresher Special Operations Annual Recertification – Emergency Response Training,  
Sanford, NC, November 6, 2020  
NFPA 70-E and Arc Flash – Energy Applications, Sanford, NC, August 20, 2020  
West Cabarrus Street Redevelopment Project – ASCE North Carolina Section, Eastern Branch Meeting,  
May 21, 2020  
Hurricane Resistant Glazing Systems – How to Ensure Installation of a Safe and Secure Building  
Envelope, <http://mylearning.asce.org/>, December 28, 2019  
Tools to Ensure Effective Preparation and Testimony as an Engineering Professional – American Society  
of Civil Engineers, <http://mylearning.asce.org/>, December 17, 2019  
HAZWOPER Refresher Special Operations Annual Recertification – Emergency Response Training,  
Sanford, NC, November 8, 2019  
The Basics of Building Moisture Inspections – Infrared Training Center, [www.infraredtraining.com](http://www.infraredtraining.com),  
August 6, 2019  
The Basics of Infrared Thermography – Infrared Training Center, [www.infraredtraining.com](http://www.infraredtraining.com), August 6,  
2019  
Understanding Undetermined – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net),  
February 28, 2019  
HAZWOPER Refresher Special Operations Annual Recertification – Emergency Response Training,  
Sanford, NC, November 2, 2018  
Asbestos Awareness – The National Environmental Trainers, [www.natlenvtrainers.com](http://www.natlenvtrainers.com), July 7, 2018  
The Testifying Investigator, Advanced Investigative Approaches – International Association of Arson  
Investigators, NC Chapter, Burlington, NC, May 4, 2018  
Scissor Lift Safety – Compliance Training Online, [www.ComplianceTrainingOnline.com](http://www.ComplianceTrainingOnline.com), March 6, 2018  
Zone Fire Modeling and CFD Analysis – CIBSE ASHRAE Group, Webinar, December 13, 2017  
Motive, Means, and Opportunity, Determining Responsibility in an Arson Case – International Association  
of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), November 30, 2017  
NCBELS Rules of Professional Conduct – ASCE North Carolina Section, Eastern Branch Meeting,  
November 16, 2017  
HAZWOPER 40 Hour Certification – Emergency Response Training, Sanford, NC, November 9-11, 2017  
Examination of the Impact of Ventilation on Room Fires in Full Scale Structures – International  
Association of Arson Investigators, NC & SC Chapters, Myrtle Beach, SC, October 18, 2017  
Fire Investigator Scene Safety – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net),  
September 14, 2017



**Professional Development (continued)**

- Basic Electricity – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), September 12, 2017
- Investigating Natural Gas Systems – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), July 12, 2017
- Residential Natural Gas Systems – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), July 12, 2017
- Appliance Fires – International Association of Arson Investigators, NC Chapter, Burlington, NC, May 3, 2017
- Moisture Intrusion and High Ambient Humidity Causation Analysis – Decatur Professional Development, LLC, PDHengineer.com, January 19, 2017
- Thermometry, Heat and Heat Transfer – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), January 18, 2017
- Electrical Engineering for Non-Electrical Engineers – SEM-Train, LLC, Raleigh, NC, November 1-2, 2016
- Forensic Electrical Surveys & Arc Mapping for the Fire Investigator – International Association of Arson Investigators, NC & SC Chapters, Myrtle Beach, SC, October 19, 2016
- Kirk's Fire Investigation Update – International Association of Arson Investigators, NC & SC Chapters, Myrtle Beach, SC, October 20, 2016
- Large Loss Fires – Managing Complex Fire Investigations, International Association of Fire Investigators, Webinar, July 27, 2016
- Ethical Duties Beyond the Fire Scene – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), June 13, 2016
- The HAZWOPER Standard – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), June 13, 2016
- NFPA 70: National Electrical Code (NEC): Conductor Sizing (2014) – National Fire Protection Association, [www.nfpa.org](http://www.nfpa.org), June 13, 2016
- NFPA 70: National Electrical Code (NEC): Equipment Grounding and Bonding (2014) – National Fire Protection Association, [www.nfpa.org](http://www.nfpa.org), June 9, 2016
- NFPA 70: National Electrical Code (NEC): Overcurrent Protection (2014) – National Fire Protection Association, [www.nfpa.org](http://www.nfpa.org), June 9, 2016
- NFPA 70: National Electrical Code (NEC): General Installation Requirements (2014) – National Fire Protection Association, [www.nfpa.org](http://www.nfpa.org), June 3, 2016
- Introduction to the 2014 NFPA 70 NEC: National Electrical Code – National Fire Protection Association, [www.nfpa.org](http://www.nfpa.org), June 3, 2016
- X-ray/CT Training – Nikon Metrology, SAFE Laboratories and Engineering Corporation, Sanford, NC, May 2-5, 2016
- Structural Investigation into Farmville Silo Fire – ASCE North Carolina Section, Eastern Branch Meeting, February 18, 2016
- Fire Investigative Approaches – International Association of Arson Investigators, NC & SC Chapters, Myrtle Beach, SC, October 19-22, 2015
- Investigating Residential Dryer Fires – Fire Findings Laboratories, Benton Harbor, MI, September 22-23, 2015
- NFPA 70: National Electrical Code (NEC) System Grounding and Bonding (2014) – National Fire Protection Association, [www.nfpa.org](http://www.nfpa.org), September 17, 2015



**Professional Development (continued)**

- Introduction to Evidence – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), July 17, 2015
- Wind Energy in NC and the Southeast – ASCE North Carolina Section, Eastern Branch Meeting, July 16, 2015
- Radar Rainfall Estimation for Modeling and Design – American Society of Civil Engineers, <http://mylearning.asce.org/>, June 24, 2015
- Advanced Investigative Approaches – International Association of Arson Investigators, NC Chapter, Burlington, NC, May 4-8, 2015
- Evaluating Damage and Repairing Metal Plate Connected Wood Trusses – American Society of Civil Engineers, <http://mylearning.asce.org/>, April 10, 2015
- Underpinning and Strengthening of Foundations Trouble – American Society of Civil Engineers, <http://mylearning.asce.org/>, March 13, 2015
- Structural Building Condition Surveys: Looking for Trouble – American Society of Civil Engineers, <http://mylearning.asce.org/>, February 6, 2015
- Petrographic Analysis of Concrete Deterioration – American Society of Civil Engineers, <http://mylearning.asce.org/>, February 6, 2015
- Electrical Forensics Engineering – Decatur Professional Development, LLC, PDHengineer.com, February 5, 2015
- Fire Investigative Approaches – International Association of Arson Investigators, NC & SC Chapters, Myrtle Beach, SC, October 20-22, 2014
- Design, Construction, and Troubleshooting of Concrete Slabs-On-Grade + Pervious (Porous) Concrete – North Carolina State University, August 25, 2014
- Physical Evidence at the Fire Scene – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), July 17, 2014
- Residential Electrical Systems – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), July 17, 2014
- The Practical Application of the Relationship Between NFPA 1033 and NFPA 921 – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), July 15, 2014
- Advanced Investigative Approaches – International Association of Arson Investigators, NC Chapter, Burlington, NC, May 5-9, 2014
- Fire Investigator Scene Safety – International Association of Fire Investigators, Webinar, April 14, 2014
- How First Responders Impact the Fire Investigation – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), April 8, 2014
- Fire Investigative Approaches – International Association of Arson Investigators, NC & SC Chapters, Myrtle Beach, SC, October 14-16, 2013
- Fundamentals of Residential Building Construction – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), June 13, 2013
- NFPA 1033 and Your Career – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), June 11, 2013
- Electrical Safety – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), June 7, 2013
- Using Resources to Validate your Hypothesis – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), June 5, 2013
- Car Fires and Vehicle Ignition Analysis, Advanced Investigative Approaches – International Association of Arson Investigators, NC Chapter, Burlington, NC, May 8, 2013



**Professional Development (continued)**

- Defense Position to Fire Investigation (Anatomy of a Defense) – Forsyth County Emergency Services & Wait Law, PLLC, Winston-Salem, North Carolina, July 10, 2012
- Emergency Response to Railcar Incidents – Norfolk Southern Railway Company & DuPont, Raleigh, North Carolina, June 12, 2012
- California Emergency Management Agency (CalEMA) Safety Assessment Program (SAP) – National Council of Structural Engineers Associations, Webinar, May 18, 2012
- Writing the Initial Origin and Cause Report – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), March 26, 2012
- Fire Protection Systems – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), February 27, 2012
- Fire Dynamics Calculations – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), February 14, 2012
- Understanding Fire Through the Candle Experiments – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), February 13, 2012
- Charleston Sofa Superstore Fire – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), February 9, 2012
- Documenting the Event – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), February 9, 2012
- Fundamentals of Interviewing – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), February 8, 2012
- Fire Investigative Approaches – International Association of Arson Investigators, NC & SC Chapters, Myrtle Beach, SC, October 17-18, 2011
- The Fire Investigator & the 2011 NFPA 921 Changes – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), July 18, 2011
- Residential Electricity for Fire Investigators – Fire Findings Laboratories, Benton Harbor, MI, April 13-14, 2011
- Digital Photography and the Fire Investigator – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), April 6, 2011
- Explosion Dynamics – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), April 6, 2011
- Fire Investigative Approaches – International Association of Arson Investigators, NC & SC Chapters, Myrtle Beach, SC, October 18-20, 2010
- Wildland Fires Investigation – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), September 28, 2010
- Ethics and the Fire Investigator – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), September 28, 2010
- Evidence Examination: What Happens at the Lab? – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), July 7, 2010
- Post-flashover Fires – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), June 7, 2010
- A Ventilation-Focused Approach to the Impact of Building Structures and Systems on Fire – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), June 7, 2010
- Basic Interviewing, Advanced Investigative Approaches – International Association of Arson Investigators, NC Chapter, Burlington, NC, May 4, 2010



**Professional Development (continued)**

- Investigation and Repair of Fire-Damaged Framing – American Society of Civil Engineers, Webinar, March 4, 2010
- 2010 Business Environmental & Safety Training (BEST) Conference – Wake County Local Emergency Planning Committee (LEPC), Raleigh, NC, February 10, 2010
- 5<sup>th</sup> Congress on Forensic Engineering – American Society of Civil Engineers, Washington, DC, November 12-14, 2009
- Fire Investigative Approaches – International Association of Arson Investigators, NC & SC Chapters, Myrtle Beach, SC, October 19-21, 2009
- Effective Investigation and Testimony – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), September 30, 2009
- Arc Mapping Basics – International Association of Arson Investigators, [www.CFITrainer.net](http://www.CFITrainer.net), September 29, 2009
- Hydrogen Cyanide in Fireground Operations - North Carolina State Fireman's Association, 122<sup>nd</sup> Annual Conference, Raleigh, NC, August 21, 2009
- Managing Transition – North Carolina State Fireman's Association, 122<sup>nd</sup> Annual Conference, Raleigh, NC, August 19, 2009
- Advanced Investigative Approaches – International Association of Arson Investigators, NC Chapter, Burlington, NC, May 5-7, 2009
- Wood Solutions Fair – Woodworks for Non-Residential Construction, Raleigh, NC, February 24, 2009
- Forensic Fire Engineering Analysis – Society of Fire Protection Engineers, Annual Meeting, Charlotte, NC, October 16-17, 2008
- Advanced Investigative Approaches – International Association of Arson Investigators, NC Chapter, Burlington, NC, May 5-9, 2008
- Non-Destructive Testing of Roadway and Airfield Pavements – ASCE North Carolina Section, Eastern Branch Meeting, April 17, 2008
- United States Fire Administration Incident Command System 400 – Morrisville Fire Department Fire/Rescue, Morrisville, NC, November 13, 2007, and December 3, 2007
- Advanced Investigative Approaches – International Association of Arson Investigators, NC Chapter, Burlington, NC, May 7-11, 2007
- United States Fire Administration Incident Command System 300 – Wake County Public Safety Fire/Rescue, Fuquay-Varina, NC, April 13-24, 2007
- Investigation of Gas and Electric Appliance Fires – Fire Findings Laboratories, Benton Harbor, MI, April 18-21, 2006
- 14<sup>th</sup> Annual National Expert Witness Conference – SEAK, Inc., Hyannis, MA, June 16-17, 2005
- Expert Report Writing Workshop – SEAK, Inc., Hyannis, MA, June 15, 2005
- Advanced Investigative Approaches – International Association of Arson Investigators, NC Chapter, Burlington, NC, May 2-6, 2005
- Fundamentals of Construction Safety – North Carolina State University, Raleigh, NC, June 28, 2004
- Advanced Investigative Approaches – International Association of Arson Investigators, NC Chapter, Burlington, NC, May 3-7, 2004
- Advanced Investigative Approaches – International Association of Arson Investigators, NC Chapter, Burlington, NC, May 5-9, 2003
- Lightning 101 Seminar – Vaisala, Inc., Raleigh, NC April 30, 2003





**Professional Development (continued)**

Solving Water Intrusion and Mold Problems in North Carolina – Lorman Education Services, Raleigh, NC, July 30, 2002  
Fire Investigation (NFPA 921) – Alamance Community College, Burlington, NC, February 20-22, 2002  
Structural Condition Assessment of Existing Structures – American Society of Civil Engineers, Charlotte, NC, September 20-21, 2001  
PC-CRASH Advanced Training Workshop – MacInnis Engineering Associates, Ltd., Vancouver, BC, August 31 & September 1, 2000  
Advanced Investigative Approaches – International Association of Arson Investigators, NC Chapter, Burlington, NC, May 1-5, 2000  
Arson Awareness for Firefighters – Maryland Fire and Rescue Institute, College Park, MD, February 21-22, 1998

**Professional Registrations**

Registered Engineer in Training in North Carolina – 1997  
Licensed Professional Engineer in North Carolina – 2002  
Licensed Professional Engineer in Virginia – 2002  
Licensed Professional Engineer in South Carolina – 2010

**Certifications**

Fire/Arson Investigator (North Carolina Fire and Rescue Commission [NCFRC]) – 2003  
Certified Fire and Explosion Investigator (NAFI [CFEI]) – 2006  
Certified Fire Investigator (IAAI-CFI) – 2008  
Hazardous Materials Responder Level I, (NCFRC) – 1999  
Firefighter Level II, (NCFRC) – 2003  
Fire Officer Level I, (NCFRC) – 2003  
Fire Instructor Level II, (NCFRC) – 2006  
Fire Officer Level II (NCFRC) – 2007  
Disaster Service Worker Volunteer, State of California Safety Assessment Program (CalEMA) – 2012 (not currently maintained)

**Professional Associations**

American Society of Civil Engineers (ASCE)  
National Fire Protection Association (NFPA)  
Society of Fire Protection Engineers (SFPE)  
Chi Epsilon, National Civil Engineering Honor Society  
Salamander, Fire Protection Engineering Honor Fraternity  
International Association of Arson Investigators (IAAI)  
North Carolina Chapter of the International Association of Arson Investigators (NCIAAI)  
National Association of Fire Investigators (NAFI)  
Order of the Engineer  
American Institute of Steel Construction (AISC)



**Publications**

McGraw, J. Robert McGraw, Jr., *Flammability and Dehydration of Painted Gypsum Wallboard Exposed to Fire Heat Fluxes*, MS Thesis, University of Maryland - College Park, 1998.

Mowrer, F. W. and McGraw, Jr, J. R., “Flammability of Painted Gypsum Wallboard Subjected to Fire Heat Fluxes,” *Interflam '99 – Proceedings of the eighth international conference*, 1999.

McGraw, J. Robert McGraw, Jr., and Mowrer, F. W., “Flammability and Dehydration of Painted Gypsum Wallboard Subjected to Fire Heat Fluxes,” *International Association for Fire Safety Science (IAFSS) – Proceedings of the sixth international symposium*, 1999.

