

Exponent®
Engineering & Scientific Consulting

Liz Colwell, P.E., CFEI, CVFI

Managing Engineer | Thermal Sciences
Bowie
lcolwell@exponent.com

Professional Profile

Mrs. Colwell is a licensed fire protection engineer that leverages her fire protection engineering expertise to assess and analyze building fire protection and life safety systems, evaluate the fire performance of various materials and products, and conduct origin and cause determinations for residential, commercial, and industrial fire and explosion events.

Mrs. Colwell's training and practical experience includes design and testing of automatic fire suppressions systems, fire pumps, and fire alarm systems; design and review of inert gas and clean agent fire suppression systems; national, state, and local fire and building code compliance; material fire performance; fire testing; and fire origin and cause investigations.

Mrs. Colwell provides expertise in the evaluation, inspection, and maintenance of residential, commercial, storage, manufacturing, and industrial occupancies and products for code compliance in accordance with National Fire Protection Association (NFPA) codes, International Code Council (ICC) codes, and state and local jurisdictions. Mrs. Colwell also has specific experience in providing consulting services to survey, assess, and evaluate existing or newly constructed health care facilities for compliance with the Life Safety Code and established accreditation criteria.

Mrs. Colwell uses her diverse background to investigate failures of wet, dry, pre-action, and deluge automatic sprinkler systems, including root cause failure analysis, water infrastructure and supply analysis, hydrant flow testing, sprinkler system water demand and water delivery analysis, construction and as-built drawing review, inspection, testing, and maintenance requirement analysis. This includes failures of automatic sprinkler systems to operate or perform in the event of a fire and inadvertent operation due to rust/oxidation, freezing, excessive heating, and mechanical damage. In addition, Mrs. Colwell has investigated fires involving operational failure of commercial kitchen and cooking fire protection equipment and cooking ventilation systems (hood, duct work, fans), fire alarm and detection systems, fire extinguishers, and consumer products. Her experience also includes the evaluation, inspection, and maintenance of buildings, facilities, hazardous materials including flammable and combustible liquids, flammable solids, flammable gases, oxidizers, and products for code compliance. Mrs. Colwell has also investigated explosions and fires involving the alleged failure of natural gas and liquefied petroleum (LP) regulators, gas piping systems, and cylinders.

Mrs. Colwell has a has both small- and large-scale fire research and testing experience with numerous national and international testing protocols and methods, including those published by the ASTM, NFPA, FM, UFAC, ISO, UL, and in the CFR. Mrs. Colwell actively participates in the development of fire protection standards through her participation on technical committees for the National Fire Protection Association (NFPA). She maintains her expertise by regularly attending conferences, seminars and continuing education training sponsored by professional and technical organizations including the NFPA, SFPE, IAAI, NAFI, AFSA, and NFSA among others.

© 2026 Exponent, Inc. All Rights Reserved

Prior to joining Exponent, Mrs. Colwell worked as a Senior Fire Protection Engineer (Lead Consultant, Fire and Life Safety Engineer) for an internationally recognized multi-disciplinary engineering firm focused on the design and engineering of complex building systems. In her previous role, Mrs. Colwell performed fire suppression, alarm, and life safety system consulting, design, testing, and coordination with architects, owners, and the authorities having jurisdiction (AHJs) at the local, state, and federal levels.

Academic Credentials & Professional Honors

M.S., Fire Protection Engineering, University of Maryland, College Park, 2016

B.S., Fire Protection Engineering, University of Maryland, College Park, 2014

Committee Memberships

Alternate Member: Technical Committee on Board and Care Facilities (BLD-SAF/SAF-BCF), NFPA 101: Life Safety Code and NFPA 5000: Building Construction and Safety Code, National Fire Protection Association, 2025-present.

Member: Committee on Continuing Professional Development (CPD), Society of Fire Protection Engineers (SFPE)

Member: RTM - Innovation and Emerging Technology, Society of Fire Protection Engineers (SFPE)

Awards

International Association for Fire Safety Science (IAFSS) Phillip Thomas Medal of Excellence – paper titled “Water Mist Suppression of a Turbulent Line Fire.” The Philip Thomas Medal of Excellence is awarded to the author(s) of the best paper presented at a previous IAFSS Symposium.

Licenses and Certifications

Professional Engineer, Arizona, #84671

Professional Engineer, Florida, #103221

Professional Engineer, Georgia, #PE052732

Professional Engineer, North Carolina, #047940

Professional Engineer Fire , South Carolina, #44721

Professional Engineer, Texas, #162897

Certified Fire and Explosion Investigator (CFEI)

Certified Vehicle Fire Investigator (CVFI)

Professional Affiliations

International Association of Arson Investigators – IAAI (member)

National Association of Fire Investigators – NAFI (member)

National Fire Protection Association – NFPA (member)

National Fire Sprinkler Association – NFSA (member)

Society of Fire Protection Engineers – SFPE (member)

Publications

White JP, Verma S, Keller EC, Hao A, Trouve A, Marshall AW. Water mist suppression of a turbulent line fire. Fire Safety Journal, Volume 91, July 2017, pp. 705-713.

Verma S, White JP, Keller EC, Marshall AW, Sunderland P, Trouve A. Measured and simulated temperature statistics in a buoyancy-driven turbulent line fire. Proceedings of the 10th U.S. National Combustion Meeting, April 23, 2017.

Presentations

Keller EC, Brumback M, Riley D, Skarin J. A Sprinkler Activation – Four Viewpoints from Four Perspectives. 2019 Claims Litigation Management (CLM) Southeast Conference, Orlando, Florida October 3-4, 2019.

Keller EC, Gilyeat SG. The Impact the Reference Standards in the 2012 Edition of NFPA 101 have on the Operation of Healthcare Facilities: NFPA 13, 25, and 72. North Carolina Healthcare Engineers Association (NCHEA) Spring Seminar, Pinehurst, North Carolina, March 15, 2018.

White JP, Verma S, Keller EC, Hao A, Trouve A, Marshall AW. Water Mist Suppression of a Turbulent Line Fire. 12th International Symposium on Fire Safety Science (IAFSS), Lund University, Sweden, June 12-16, 2017.

Verma S, White JP, Keller EC, Marshall AW, Sunderland P, Trouve A. Measured and Simulated Temperature Statistics in a Buoyancy-driven Turbulent Line Fire. 10th U.S. National Combustion Meeting, College Park, Maryland, April 23, 2017.

Blum AF, Keller EC, Long RT. Large Loss Fires and their Connection with Fire Sprinkler Performance. National Fire Protection Association Conference and Exposition, Chicago, Illinois, June 10, 2013.

Reports

Utiskul YP, Wu NP, Keller EC. “Fire Department Connection (FDC) Inlet Flow Assessment, Final Report.” National Fire Protection Association Fire Protection Research Foundation, January 2016.

Additional Education & Training

Research in Fire Engineering: Understanding Fire Growth an Flame Spread in Developing a Design Fire, Society of Fire Protection Engineers (SFPE) webinar, July 30, 2024.

Protecting Flammable and Combustible Liquids, Society of Fire Protection Engineers (SFPE) in-person seminar, February 27, 2024.

Construction Fire Safety Best Practices, Society of Fire Protection Engineers (SFPE) webinar, December 15, 2023.

19th Annual SFPE GAC Fire Safety Conference, Society of Fire Protection Engineers (SFPE), March 14-15, 2023.

Healthcare Facilities – A Holistic Fire Protection Approach, Society of Fire Protection Engineers (SFPE) webinar, December 14, 2021.

Linear Heat Detection and Design and Use in Modern Applications, Society of Fire Protection Engineers (SFPE) webinar, December 14, 2021.

DRI Fire Science and Litigation Seminar, September 9-11, 2021 (speaker and fire protection demonstration room coach).

Vehicle Fire Investigation Training Program, National Association of Fire Investigators (NAFI), September 16-19, 2019.

Asbestos Awareness Training, in accordance with OSHA 29 CFR 1910.1001, 29 CFR 1915.1001, 29 CFR 1926.1101, 40 CFR Part 763 G, and State OSHA/EPA Regulations, April 24, 2019.

Certification in Hazardous Waste Operation and Emergency Response through completion of OSHA 40-hour HAZWOPER course, in accordance with 29 CFR 1910.129(e)(3).

International Associated of Arson Investigators (IAAI)/CFITrainer.net:

• Understanding Undetermined, November 20, 2019, 3 hour tested training

• Critical Evaluation and Testing of Commonly Reported Accidental Causes, November 20, 2019, 3 hour tested training

• Charting Your Career Path in Fire Investigation, November 20, 2019, 3 hour tested training

• 2019 ITC Vehicle – Electrical Systems & Hot Surface Ignition Heat Sources, April 29, 2019, 2 hour tested training

• 2019 ITC – The Impact of Ventilation on Fire Patterns in Full-Scale Structures, April 29, 2019, 2 hour tested training

• 2019 ITC – Spontaneous Heating Fire with Vegetable Oils-Fats, April 29, 2019, 2 hour tested training

• 2019 ITC – Patterns of Heat Flow and Melted Conductors, April 29, 2019, 4 hour tested training

• 2019 ITC – Marine Surveying for Fire Investigators, April 29, 2019, 2 hour tested training

• 2019 ITC – Investigating Natural Gas Events, April 29, 2019, 4 hour tested training

• 2019 ITC – Flame Jetting Awareness and Investigative Challenges, April 29, 2019, 4 hour tested training

• 2019 ITC – Explosions and Bombings: A Fire Investigator’s Perspective, April 29, 2019, 2 hour tested training

• 2019 ITC – Arc Mapping: New Technology or Myth & Copper Conductor, April 29, 2019, 4 hour tested training

• Live Event-Artificial Intelligence, September 12, 2024, 2 hour tested training

• Live Event-Digital Forensics, June 13, 2024, 2 hour tested training

• Commercial Kitchen Fires 1: Fundamentals, February 27, 2024, 3 hour tested training

• Ethics & Social Media, December 20, 2022, 3 hour tested training

- Ethics and the Fire Investigator, December 20, 2022, 3 hour tested training
- Digital Photography and the Fire Investigator, December 19, 2022, 4 hour tested training