

ZACHARY J. JASON, PE, CFI, CFEI

Principal Engineer

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Mr. Jason is a Principal Engineer with AEI Corporation and has over 15 years of consulting experience providing mechanical engineering and forensic analysis for investigations throughout the U.S., as well as internationally. Throughout his career, Mr. Jason's primary focus has been in fire origin and cause determination, explosion investigations, and various other combustion incidents and thermal sciences. Mr. Jason has been retained as a consulting and testifying expert by law firms, insurance companies, and Fortune 500 companies in pre-litigation incident investigations and complex litigation matters involving property loss, severe burns/catastrophic injuries, and fatality accidents. His expertise spans various industries across the energy sector, including natural gas and propane utilities, oil and gas exploration and production (E&P), petroleum/petrochemical refining, pipeline transportation, mining, explosives, and product manufacturing. He specializes in the failure analysis of fuel-gas systems, appliances, controls, mechanical/HVAC systems, plumbing components, explosives, and theatrical fireworks/pyrotechnics.



Mr. Jason has qualified as an expert witness and provided testimony in numerous federal, state, and local jurisdictions, involving both criminal and civil matters. He has authored numerous technical papers, been published in peer-reviewed journals, presented to industry groups, and taught classes across the country involving his research and the various aspects of the forensic investigation of fires and explosions.

Mr. Jason is a Certified Fire Investigator (IAAI-CFI®) through The International Association of Arson Investigators and a Certified Fire and Explosion Investigator (NAFI-CFEI) through The National Association of Fire Investigators. As a fire and explosion investigator, he has investigated residential, commercial, industrial, and wildland fires using skills gathered from his work in the fire service and training as a forensic engineer. Mr. Jason has investigated numerous explosions ranging from small residential propane and natural gas incidents to large commercial accidents involving pipelines, oil wells, chemical manufacturing plants, petrochemical refineries, and other industrial facilities. Mr. Jason has designed and conducted various experimental tests related to these investigations, including full-scale fires and explosions, gas dispersion and migration studies, self-heating and thermal decomposition of reactive chemicals, flammable and combustible liquids, material ignitability, and gas-fired/wood-burning appliance failures.

Mr. Jason earned his Mechanical Engineering degree from the University of Denver in 2005. He is a licensed Professional Engineer (PE) in numerous states and is certified as a Model Law Engineer (MLE) through the National Council of Examiners for Engineering and Surveying (NCEES). He is nationally recognized as a Board Certified Diplomat in Forensic Engineer, through the National Academy of Forensic Engineers (NAFE). He also serves on the National Fire Protection Association Hazardous Materials Code Committee (NFPA 400), which establishes fundamental safeguards for the storage, use, and handling of hazardous materials in all occupancies and facilities.

In addition to his work consulting on a wide range of thermal sciences and failure analysis, Mr. Jason worked as a volunteer firefighter, and part-time as a pyrotechnic display technician. He is a Certified Fireworks/Pyrotechnics Display Operator in the state of Colorado and since 2001, he has successfully carried out over 50 fireworks shows and close proximity pyrotechnic displays. As a forensic engineer, he has investigated the cause of various pyrotechnic accidents throughout the country and has extensive experience with the codes and industry standards dictating the rules, regulations and procedures governing professional displays, pyrotechnic operators, and consumer fireworks.

AREAS OF EXPERTISE

Fire/Explosion Origin & Cause
Fuel-Gas System Analysis & Testing
Gas-Fired/Wood-Burning Appliances & Controls
Boilers & HVAC Systems
Petrochemical, Industrial, Oil & Gas Industry Accidents
Mechanical Systems & Component Failure Analysis
Carbon Monoxide Poisonings & Alleged Incidents
Explosives, Pyrotechnic & Fireworks-Related Accidents
Specialized Full-Scale Laboratory Testing, Accident Reconstruction & Data Acquisition/Instrumentation

EDUCATION & LICENSURE

BS, Mechanical Engineering, University of Denver, 2005
Licensed Professional Engineer (PE) – Colorado, Illinois, Missouri, North Carolina, New York, South Carolina, & Texas
Certified Model Law Engineer (MLE) – National Council of Examiners for Engineering and Surveying (NCEES)
Board Certified Diplomat in Forensic Engineering – National Academy of Forensic Engineers (NAFE), 2018
Certified Fire Investigator (IAAI-CFI®), International Association of Arson Investigators (IAAI), 2018
Certified Fire and Explosion Investigator (NAFI-CFEI), National Association of Fire Investigators (NAFI), 2006
Certified Fireworks Pyrotechnics/Display Operator, Colorado Division of Fire Safety, 2005
Certified in DOT HAZ-MAT Transportation, 49 CFR 172, 704 (1-4)
Certified in OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER), 29 CFR 1910.120(e)

WORK HISTORY

Principal Engineer, *AEI Corporation*, 2019 to Present
Senior Project Engineer, *AEI Corporation*, 2015 to 2018
Project Engineer, *AEI Corporation*, 2010 to 2015
Staff Engineer, *AEI Corporation*, 2005 to 2010
Engineering Technician, *Western Engineering & Research Corporation*, 2005
Forensic Engineering Intern, *Professional Investigative Engineers, Arvada, CO*, 2004
Pyrotechnic Display Operator, *Western Firework Enterprises Inc.*, 1999 to Present
Structural Firefighter, *Lake-Dillon Fire & Rescue*, Frisco, CO, 1997 to 2003
Wildland Firefighter, *Summit Fire Authority*, Summit County, CO, summers of 2000 to 2003

PROFESSIONAL AFFILIATIONS

National Academy of Forensic Engineers (NAFE)
American Society of Mechanical Engineers (ASME)
National Society of Professional Engineers (NSPE)
International Association of Arson Investigators (IAAI)
National Association of Fire Investigators (NAFI)
National Council of Examiners for Engineering and Surveying (NCEES)
National Fire Protection Association (NFPA)
National Propane Gas Association (NPGA) Colorado Division of Fire Safety
Colorado Oil and Gas Association (COGA)

PUBLICATIONS

Z.J. Jason, J.L. Schumacher, & S.A. Sapp, *The Fire and Explosion Risks Associated with Cannabis/Hash Oil Extraction – A Technical Guide for a Forensic Investigation*, 7th International Symposium on Fire Investigations Science and Technology, National Association of Fire Investigators, Scottsdale, AZ, September 2016

Z.J. Jason, D.E. Shelp, J.L. Schumacher, & T.J. Hedglin, *Ignition Propensity Of Cannabis (Marijuana) Cigarettes*, 6th International Symposium on Fire Investigations Science and Technology, National Association of Fire Investigators, Hyattsville, MD, September 2014

D.E. Shelp, J.M. Freeman, J.L. Schumacher, & **Z.J. Jason**, *All Up In Your Grill, A Look At Gas Grills and Fire Incidents*, 6th International Symposium on Fire Investigations Science and Technology, National Association of Fire Investigators, Hyattsville, MD, September 2014

Z.J. Jason, J.L. Schumacher, M.L. Brown, D.E. Shelp, *The Effects of Assembly Torque and Polyethylene Pipe Insertion Depth on Service Head Adapter Performance*, 5th International Symposium on Fire Investigations Science and Technology, National Association of Fire Investigators, Hyattsville, MD, October 2012.

J.L. Schumacher & **Z.J. Jason**, *Aluminum Phosphide-Based Fumigants as an Ignition Source in Agricultural Commodity Storage Structure Fires*, 5th International Symposium on Fire Investigations Science and Technology, National Association of Fire Investigators, Hyattsville, MD, October 2012.

J.M. Freeman, J.L. Schumacher, D.E. Shelp & **Z.J. Jason**, *Conditions that Allow the Flow of Air into a Closed Gas System Through Appliance Control Valves*, Fire Technology, Volume 46, Number 1, 2012.

J.M. Freeman, J.L. Schumacher, D.E. Shelp & **Z.J. Jason**, *How Does Air Get Into A Sealed Gas System – Testing vs. Theory*, 4th International Symposium on Fire Investigations Science and Technology, National Association of Fire Investigators, Hyattsville, MD, September 2010.

D.E. Shelp, J.L. Schumacher, J.M. Freeman & **Z.J. Jason**, *Fuel Gas Overpressure As It Relates to Regulator Function*, 4th International Symposium on Fire Investigations Science and Technology, National Association of Fire Investigators, Hyattsville, MD, September 2010.

J.L. Schumacher, D.E. Shelp, J.M. Freeman & **Z.J. Jason**, *Telltale Signs of Water Heater Gas Control Valve Overpressurization*, 4th International Symposium on Fire Investigations Science and Technology, National Association of Fire Investigators, Hyattsville, MD, September 2010.

J.L. Schumacher, J.M. Freeman, D.E. Shelp & **Z.J. Jason**, *Comparison of Measured and Calculated Gas Concentrations from Flammable Gas Leaks in a Manufactured Home*, 3rd International Symposium on Fire Investigations Science and Technology, National Association of Fire Investigators, Cincinnati, OH, May 2008.

PRESENTATIONS

Help Me Help You – From Investigation through Trial: How to Better Utilize Your Expert Witness and Common Pitfalls to Avoid

Defense Research Institute (DRI) Product Liability Conference, Austin, TX – February 2019

The Fire and Explosion Risks Associated with Cannabis/Hash Oil Extraction – A Technical Guide for a Forensic Investigation

7th International Symposium on Fire Investigation Science & Technology, College Park, MD – September 2016

Investigation of Butane Hash Oil (BHO) Extraction Fires & Explosions

Natural Gas Claims and Litigation Association Annual Meeting, Tucson, AZ – April 2016

The Forensic Approach to Investigating Hash Oil Fires & Explosions

Propane Gas Defense Association Annual Conference, Albuquerque, NM – October 2014

Chartered Property Casualty Underwriter Society, Colorado Chapter, Denver, CO – November 2014

Society of Fire Protection Engineers, Rocky Mountain Chapter Meeting, Denver, CO – March 2014

Ignition Propensity of Cannabis (Marijuana) vs. Tobacco Cigarettes

6th International Symposium on Fire Investigation Science & Technology, College Park, MD – September 2014

Investigating an Alleged Satellite System Fire

Satellite Broadcasting & Communications Association, Risk & Safety Summit, Denver, CO – June 2014

Oil & Gas Industry Accident Investigations

AEI Corporation, Denver, CO – May 2014

Fire Origin & Cause Investigations

AEI Corporation, Denver, CO – February 2014

Engineering & Legal Aspects of Pyrotechnic & Fireworks-Related Accidents

National Association of Subrogation Professionals Annual Conference, San Diego, CA – November 2013

Fuel-Gas Systems & Gas-Fired Appliances

AEI Corporation, Denver, CO – June 2013

Investigation of Pyrotechnic & Fireworks-Related Incidents

64th Annual IAAI Annual Training Conference, International Association of Arson Investigators, Orlando, FL – May 2013

The Effects of Assembly Torque and Polyethylene Pipe Insertion Depth on Service Head Adapter Performance

5th International Symposium on Fire Investigation Science & Technology, College Park, MD – October 2012

Investigation of Fuel-Gas Related Fires & Explosions

Mountain West Farm Bureau Insurance Company Annual Meeting, Steamboat Springs, CO – June 2011