



NICHOLAS J. SPRUILL, IAAI-CFI, CFEI STAFF CONSULTANT

njspruill@engsys.com

Nick Spruill, IAAI-CFI, is a Staff Consultant based in the Irvine, California office of ESi. His areas of expertise are fire investigations, failure analysis, safety investigations, and building construction. Mr. Spruill also has experience with appliances, plumbing systems, and battery cells and packs. He conducts field investigations, laboratory testing/analysis, and evidence collection. Mr. Spruill performs digital & optical microscopy, videography, and forensic photography. Mr. Spruill is certified as a FAA Part 107 sUAS (small unmanned aerial system) commercial drone operator and certified as a FARO Focus 3D Laser Scanner operator.

Mr. Spruill is a member of the National Association of Fire Investigators (NAFI), and holds their designation as a Certified Fire and Explosion Investigator (CFEI). He is also a member of the International Association of Arson Investigators (IAAI), and holds their designation of Certified Fire Investigator (IAAI-CFI). Mr. Spruill has experience assessing fire protection systems, building and life safety codes, and building construction. He is experienced in evaluating fires and explosion investigations for origin and cause of residential, commercial and industrial fires. Mr. Spruill evaluates issues related to ignition, fire growth, flame spread and material fire performance.

Areas of Specialization

Failure Analysis
Fire and Explosion Investigation
Mechanical Testing
Materials Testing

Education

B.A., History, California State University Fullerton, Fullerton, CA

Certifications

Certified Fire and Explosion Investigator (CFEI), NAFI 16135-8563
Certified Fire Investigator (IAAI-CFI), IAAI
FAA Part 107 sUAS Certified (Commercial Drone Operator)
FARO Focus 3D Laser Scanner Operator

Professional Affiliations/Honors

National Association of Fire Investigators (NAFI)

Certified Fire and Explosion Investigator (CFEI) 16135-8563
Member

National Fire Protection Association (NFPA)

Member

International Association of Arson Investigators (IAAI)

Fire Investigation Technician (FIT)
Member

California Conference of Arson Investigators (CCAI)

Member

Positions Held

Engineering Systems Inc., Irvine, California

Staff Consultant, 2022 – Present
Senior Technologist, 2016 – 2022
Senior Technologist/Office Manager, 2011 – 2016
Technologist, 2010 – 2011

Continued Education

Fire Chemistry – IAAI – CFITrainer.net – 2021

Fundamentals of Interviewing – IAAI – CFITrainer.net – 2021

Critical Evaluation and Testing of Commonly Reported Accidental Causes – IAAI – CFITrainer.net
– 2021

Effective Investigation and Testimony – IAAI – CFITrainer.net – 2021

Insurance and the Fire Investigation – CFITrainer.net – 2021

Understanding Undetermined – IAAI – CFITrainer.net – 2021

Charting Your Career Path in Fire Investigation – IAAI – CFITrainer.net – 2020

Fire Investigation for Fire Officers IAAI – CFITrainer.net – 2020

Fire Flow Analysis – IAAI – CFITrainer.net – 2020

Expert Witness Courtroom Testimony Course – IAAI & CCAI – San Luis Obispo, CA – 2019

Motor Vehicle Fire Investigation-3 Day – IAAI – CFITrainer.net – 2019

Explosion Dynamics – IAAI – CFITrainer.net – 2019

Fundamentals of Residential Building Construction – IAAI – CFITrainer.net – 2018

How First Responders Impact The Fire Investigation – IAAI – CFITrainer.net – 2018

Motor Vehicles: The Engine and the Ignition, Electrical, and Fuel Systems – IAAI – CFITrainer.net – 2018

Motor Vehicles: Transmission, Exhaust, Brake, and Accessory Systems – IAAI – CFITrainer.net – 2018

Wildland Fires Investigation – IAAI – CFITrainer.net – 2018

Writing the Initial Origin and Cause Report – IAAI – CFITrainer.net – 2018

What the Insurance Professional Needs to Know About Fire Investigation – IAAI – CFITrainer.net – 2018

Vacant and Abandoned Buildings: Hazards and Solutions – IAAI – CFITrainer.net – 2018

Using Resources to Validate your Hypothesis – IAAI – CFITrainer.net – 2018

Complex Fire Investigation for the Insurance Industry – IAAI – Huntsville, AL – 2017

Ethical Duties Beyond the Fire Scene – IAAI – CFITrainer.net – 2017

Investigating Natural Gas Systems – IAAI – CFITrainer.net – 2017

OSHA 30hr General Industry Safety Training – American Safety Council – OSHA Outreach Training Center University of South Florida – 2016

Residential Natural Gas Systems – IAAI – CFITrainer.net – 2016

Residential Electrical Systems – IAAI – CFITrainer.net – 2016

Basic Electricity – IAAI – CFITrainer.net – 2016

DNA – IAAI – CFITrainer.net – 2016

OSHA 30hr Construction Industry Safety Training – American Safety Council – OSHA Outreach Training Center University of South Florida – 2016

The HAZWOPER Standard – IAAI – CFITrainer.net – 2016

Preparation for the Marine Fire Scene – IAAI – CFITrainer.net – 2016

NFPA 921 and 1033 2014 Editions: Important Revisions – IAAI – CFITrainer.net – 2016

Accreditation, Certification, and Certificates – IAAI – CFITrainer.net – 2016

“Burn to Learn” – CCAI – San Luis Obispo, California – 2016

3D Laser Scanning FARO Focus Training – FARO – Los Angeles, California – 2015

40- Hour Fundamentals of Fire Investigation – IAAI – Bowie, Maryland – 2015

Understanding Fire Through the Candle Experiments – IAAI – CFITrainer.net – 2015

Crash Data Retrieval (CDR) Technician 1 – Collision Safety Institute – 2014

PC-832 Laws of Arrest – Sheriff-Coroner Department – Orange County, California - 2014

Traffic Crash Reconstruction 1 – Northwestern University Center for Public Safety (NUCPS) – 2014

National Electrical Code (NEC) Essentials – Anaheim, California – National Fire Protection Association (NFPA) – 2014

Fire Investigation 2A – California Fire Service Training and Education System (CFSTES) – California State Fire Marshal – October 2013

Investigating Motor Vehicle Fires – IAAI – CFITrainer.net – 2013

Ethics & Social Media – IAAI – CFITrainer.net – 2013

Evidence Examination: What Happens at the Lab? – IAAI – CFITrainer.net – 2013

Fire Investigation 2B – California Fire Service Training and Education System (CFSTES) – California State Fire Marshal – June 2013

Fire Investigation 1B – California Fire Service Training and Education System (CFSTES) – California State Fire Marshal – November 2012

The Practical Application of the Relationship Between NFPA 1033 and NFPA 921 – IAAI – CFITrainer.net – 2012

Physical Evidence at the Fire Scene – IAAI – CFITrainer.net – 2012

NFPA1033 and Your Career – IAAI – CFITrainer.net – 2012

The Potential Value of Electronic Evidence in Fire Investigations – IAAI – CFITrainer.net – 2012

Arc Mapping Basics – IAAI – CFITrainer.net – 2012

Fire Investigation 1A – California Fire Service Training and Education System (CFSTES) – California State Fire Marshal – March 2012

2011 NFPA 921: Fire and Explosion Investigations Seminar
Anaheim, California – National Fire Protection Association – 2011

Fire Investigator Scene Safety – IAAI – CFITrainer.net – 2011

Electrical Safety – IAAI – CFITrainer.net – 2011

Documenting the Event – IAAI – CFITrainer.net – 2011

Fire and Explosion Investigations: Utilizing NFPA 1033 and 921 – IAAI – CFITrainer.net – 2011

The Scientific Method for Fire and Explosion Investigation – IAAI – CFITrainer.net – 2011

Ethics and the Fire Investigator – IAAI – CFITrainer.net – 2011

Introduction to Evidence – IAAI – CFITrainer.net - 2011

Digital Photography and the Fire Investigator – IAAI – CFITrainer.net – 2011

Q-318 Fire Service Supervision – National Fire Academy – 2011

Q-534 Emergency Response to Terrorism: Self Study – National Fire Academy – 2011

ICS-200, Basic NIMS ICS for Operational Fire Responders – National Fire Academy – 2011
ICS-100, Introduction to ICS for Operational First Responders – National Fire Academy – 2011
2010 Canadian National Advanced Fire, Arson & Explosion Training Program
Toronto, Canada – Fire Facts Inc. and the National Association of Fire Investigators – 2010
Fire Fighter 1 Training / Fire Academy, Santa Maria, California – Allan Hancock College – 2001

Related Experience

Car customizations of SEMA show vehicles; customizing Jeeps and trucks for 4-wheeling;
Supervising Off-Highway driving events

Small vessel customization and maintenance

Experience with high-pressure gases and multi stage regulator systems: Including industrial, medical, and self-contained compressed air systems like SCBA and SCUBA.

Welding and fabrication

Selected Project Experience

- Vehicle fire cause and origin determination
- Residential fire cause and origin determination
- Commercial fire cause and origin determination
- Electrical fire cause investigation and testing
- Lithium-Ion battery fire cause investigation and testing
- Destructive mechanical examination of appliances suspected of starting a fire
- Field topographical surveys of accident site
- Failure analysis of household plumbing valves and plumbing systems
- Load testing hardware to failure
- Construction of test fixtures and load testing electro-magnetic latches
- 3D laser scanning of alleged failed equipment
- Testing scaffolding beyond specifications
- Digital Microscopy and 3D rendering of fossilized remains
- Testing the rate of gas exchange in a sleeper cab truck
- Harvest construction defect related material and perform detailed analysis
- Create molds and castings of failed components for detailed analysis
- Inspect and take samples of a floating reservoir cover for UV degradation analysis
- Photo document and inspect a commercial water tanks that failed
- Torque testing consumer hand tools for potential failure modes
- Testing load deformation of pipe couplings
- 3D scanning damaged vehicles and crash scenes
- 3D scan tunnel and tunnel boring equipment

- Investigate transportation related mechanical damage
- Document, inspect and sample commercial plumbing systems for lab analysis
- Investigate electrical systems for potential failure modes
- Document and test solar panels for alleged failure modes
- Investigate post-incident damage from motor vehicles for causes leading to failure
- Investigate agricultural equipment fires including debris collection sites
- On site construction of sifting equipment to sift fire debris for large scale incidents
- Explosion documentation and investigation
- Coordinate with Federal agencies and Law Enforcement on sensitive site documentation
- Manage logistics of large multiparty sites