

# ***ROBERTSON ENGINEERING INVESTIGATIONS, LLC (REI)***

**Forensic Engineering / Fire Investigation Origin & Cause / Product Failure Analysis / Accident Reconstruction**

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## **CALE ROBERTSON, MSME, PE, CFI-IAAI** **CFEI, CVFI, CFIL, ACTAR, HCRI**

### **LICENSES**

**Licensed Professional Engineer**, New Mexico and Texas

**Licensed Private Investigator**, New Mexico and Texas

**Certified Fire Investigator**, International Association of Arson Investigators

**Certified Roof Inspector – Commercial & Residential**, Haag Certified Roof Inspector Program

### **PROFESSIONAL DEVELOPMENT**

#### **CERTIFICATIONS**

- Certified Roof Inspector – Commercial & Residential, Haag Engineering HCRI # 201008215
- Certified Fire Investigator CFI, International Association of Arson Investigators IAAI # 31-100801
- Certified Traffic Accident Reconstructionist, Accreditation Commission for Traffic Accident Reconstruction (ACTAR) # 1774
- Certified Fire and Explosion Investigator, NAFI
- Certified Vehicle Fire Investigator, NAFI
- Certified Fire Investigations Instructor, NAFI
- Certified in Fire Pattern Recognition & Identification, PATC
- Certified Auditor of European Directives: 97/23/EC Pressure Equipment Directive (PED); 99/36/EC Transportable Pressure Equipment Directive (TPED); and 93/42/EC Medical Device Directive (MDD) – Apragaz (European Notified Body) Brussels, Belgium (Certified to audit and test products and product manufacturing activities for US companies marketing in the European Community)
- Certified for First Aid/CPR/AED, Red Cross

### **FIRE SCIENCE AND INVESTIGATION**

New Mexico International Arson Association of Arson Investigators (NM IAAI)

- 2014 Annual Training Conference 12/8-12/2014 in Ruidoso, NM
  - Forensic Photograph by Robert Rullan
  - NFPA921 Update by Randy Watson
  - Electrical Systems and Possible Electrical Failures that May Lead to Fire by Cale Robertson

New Mexico International Arson Association of Arson Investigators (NM IAAI)

- 2014 1<sup>st</sup> Quarter Training Conference
  - Hands On Fire Investigation Scene Examination Techniques (4 hrs)
    - Hands on investigation and analysis of test burned cells.

New Mexico International Arson Association of Arson Investigators (NM IAAI)

- 2013 Training Conference
  - Fire Investigation Training, Courtroom Testimony, Understanding Daubert, Serial Arson Investigation, Fire Death Investigation (40 hrs)

CFI Trainer. Net

- August 2013 – Ethics & Social Media (3 hrs)
- July 2013 – Investigating Fatal Fires (4 hrs)

New Mexico International Arson Association of Arson Investigators (NM IAAI)

- 2012 Training Conference
  - Interviewing and Interrogation for the Investigator (24 hrs)
  - Social Media for Investigators (8 hrs)
  - Latent Print Identification (4 hrs)

New Mexico International Arson Association of Arson Investigators (NM IAAI)

- Quarterly Training – Fire Investigation First-Aid & CPR (4 hrs)

New Mexico International Arson Association of Arson Investigators (NM IAAI)

- 2012 Training Conference – 2011 Ed. NFPA 921 Updates (16 hrs)

New Mexico International Arson Association of Arson Investigators (NM IAAI)

- 2010 Training Conference – Forensic Photography, Electrical Investigation, Fire Dynamics & Case Review

New Mexico International Arson Association of Arson Investigators (NM IAAI)

- Photovoltaic Power Systems, 2010

New Mexico International Arson Association of Arson Investigators (NM IAAI)

- Insurance and Arson, 2010

New Mexico International Arson Association of Arson Investigators (NM IAAI)

- 2009 Training Conference – “Live Burn O & C Investigation”, 2009

University of Maryland (UMD)

- Engineering Fire Protection (ENFP) 629D, 3 credit hours – Forensic Fire Scene Reconstruction, 2008
- Engineering Fire Protection (ENFP) 625, 3 credit hours – Advanced Fire Modeling, 2008
- Engineering Fire Protection (ENFP 629), 3 credit hours – Advanced Fire Dynamics, 2008

International Symposium of Fire Investigation Science and Technology (ISFI)

- ISFI, 2008
- ISFI, 2006

University of Cincinnati (University Recognition for advanced participation in ISFI)

- Independent Research in the Fire Service, 2008
- Incendiary Fire Analysis and Investigation, 2006

California Conference of Arson Investigators (CCAI)

- IAAI Expert Witness Courtroom Testimony Course, 2007

Public Agency Training Council (PATC)

- L.P. and Gas Explosion Investigations & Flashovers and Unusual Patterns, 2007
- Hands-On Vehicle Fire / Arson Investigation, 2007
- Vehicle Fire Investigation, 2006
- Fire Pattern Recognition and Identification, 2006
- Arson Case Management, 2006

New Mexico International Arson Association of Arson Investigators (NM IAAI)

- Electrical Utility Generation, Distribution, Facilities and Safety, 2009
- Dual Origin Natural Gas House Fires, 2009
- Origin and Cause, Electrical Fire Investigation, Subrogation & Explosive Recognition, 2008
- Insurance Fraud, 2008
- Fire Fighter Arson, K-9 Hydrocarbon Detection, Geographic Profiling, 2006

National Association of Fire Investigators (NAFI)

- National Seminar on Fire Analysis Litigation, 2006
- National Fire, Arson, and Explosion Investigation Training Program, 2006

Fire Findings Laboratories

- Investigation of Gas and Electric Appliance Fires, 2006 (2.5 Continuing Education Units from Western Michigan University)

C.F.I.Trainer

- Digital Photography and the Fire Investigator, 2006

Lee S. Cole & Associates, Inc.

- Investigation of Vehicle Fires Class, 2004

### **VEHICLE ACCIDENT/ACCIDENT RECONSTRUCTION**

Northwestern University

- Traffic Accident Reconstruction 1, 2005
- Traffic Accident Reconstruction 2, 2005

Institute of Police Technology and Management (IPTM)

- Inspection and Investigation of Commercial Vehicle Crashes, 2005

Southwestern Association of Technical Accident Investigators, Inc. (SATAI)

- Vehicle Crash Tests, 2004
- Crash tests and data collection, 2004
- Criminal vs. Civil Investigations, Evidentiary Differences, 2004
- Test Crash Data, by W.R. "Rusty" Haight, 2004

Collision Safety Institute (CSI)

- Crash Data Retrieval (CDR) System Operator, 2004

Detroit Diesel

- DDEC Reports/Data Extraction Class, 2004

ARC-CSI

- ARC-CSI Crash Conference, Las Vegas, NV, 2009

Institute of Police Technology and Management (IPTM) – 40 hrs

- Traffic Crash Reconstruction Update, Scottsdale, AZ, 2011

Southwestern Association of Technical Accident Investigators, Inc. (SATAI), 9/28-29/12

- Vehicle Crash Tests
- Commercial Vehicle Systems

SATAI – Tire Mechanics and Inspection / Forensic Tire Examination presented by TRGtech Tire Consulting, LLC Thomas Giopinni Sept. 23-25, 2014 in Glendale, AZ

## **GENERAL ENGINEERING**

Paul Davis Emergency Services, 5/9/12

- How the Water Source Affects the Claim (3 hrs)

Fraud Education by NATG

- Ethics for Private Investigators (PI)(NM) (2 hrs) 11/15/11

Texas Association of Licensed Investigators

- Insurance Fraud Investigations, 6/24/11 (6 hrs)
- An Investigator's Guide to Skip Tracing, 6/24/11 (6 hrs)

Haag Engineering

- Haag Certified Roof Inspector - Commercial, Aug. 2010
- Haag Certified Roof Inspector – Residential, Mar. 2011

Wendell Hull & Associates, Inc.

- Oxygen Hazard Awareness and Failure Analysis of Aluminum Bodied Regulators, Jan. 2008
- New Mexico Radiation Safety Standards and Protection X-Ray Training Course, May 2007

Rio Rancho Department of Public Safety

- Clandestine Laboratory Awareness, 2006

Sunwest CAD, Inc. – Solid Works Authorized Training, Testing and Support Center

- Essentials: Parts and Assemblies, Volume I and II, 2005
- Essentials: Drawings, 2005
- Advanced Part Modeling, 2005
- Advance Assembly Modeling, 2005

## **GENERAL**

Texas Continuing Education

- Surveillance 101, September 2009

Dale Carnegie Classes

- High Impact Presentation, September 2005
- Effective Communications and Human Relations, January, 2005 (received the “Human Relations” award)

## **PROFESSIONAL EXPERIENCE**

**Principal Forensic Engineer (June 2008 – Present)**

Robertson Engineering Investigations (REI) (Robertson Engineering Investigations, LLC as of 1/1/11), Las Cruces, New Mexico

- Forensic Engineering Consultant
- Fire Origin and Cause Investigation and Analysis
- Vehicle Component and Equipment Fires
- Vehicle Accident Investigation and Reconstruction
- Scene Surveys and Diagramming
- Equipment and Mechanical Component Failure Analysis

- Roof Inspector
- Engineering Consultant

**Forensic Engineer and Accident Reconstructionist (May 2004 – June 2008)**

Wendell Hull & Associates, Las Cruces, New Mexico

- Forensic Engineering Consultant
- Fire Origin and Cause Investigation and Analysis
- Vehicle Component and Equipment Fires
  - Vehicle Accident Investigation and Reconstruction
  - Scene Surveys and Diagramming
  - Equipment and Mechanical Component Failure Analysis
- Engineering Consultant

**Engineering Research Specialist (August 2002 – May 2004)**

Border Technology Deployment Center – Physical Science Laboratory – New Mexico State University, Las Cruces, New Mexico

- Pioneered an infrared imaging Commercial Vehicle Brake Inspection System framework for an international border crossing and inter-state ports of entry
- Responsible for Technologies and Deployment research including:
  - Thermo, Dynamics, and Heat Transfer issues
  - Weigh in motion, especially focusing on use of fiber optics
  - Fiber optics
  - Biometrics
  - Other homeland security technologies applications
- Coordinated and communicated with various organizations and interested parties to organize Technology Workshops varying in size from 5 to 125 people
- Built database of information concerning Homeland Security issues using End Note Bibliographic software

**Engineering Co-op (August 2000 – December 2000 and February 2002 – August 2002)**

Dometic Corp., El Paso, Texas

- Performed laboratory testing and reports – designed component testing plans, tested component systems, and wrote detailed reports to present to superiors on testing methodology, component performance, and conclusions and suggestions
- Performed stress analysis and designed feasibility studies for various components
- Designed and produced prototypes
- Performed 3-D Modeling using Mechanical Desktop to design, model, and produce dimensioned drawings for use in prototyping and manufacturing
- Implemented new product designs
- Designed for manufacturability – including touring manufacturing plants and communicating suggested part design and re-design with plant managers

**PRESENTATIONS AND PUBLICATIONS**

**“Electrical Systems and Possible Electrical Failures that May Lead to Fire,”** presented to the NMIAAI Annual Training Conference for 4 credit hours of tested training, presented on 12/12/14 by Cale Robertson, co-author Dwane Legg

**“Electrical Systems and Possible Electrical Failures that May Lead to Fire,”** presented to the NMIAAI for 4 credit hours of tested training, presented on 4/11/14 by Cale Robertson, co-author & co-presenter Dwane Legg

**“Forensic Engineering and Fire Investigation,”** presented to the NMSPE for Engineer’s Week, presented on 2/24/14 by Cale Robertson

**“Plumbing Failure Investigation,”** presented to the CAEP for 1 credit hours, presented by Cale Robertson, authored by Cale Robertson, 7/11/12

**“Technical Review of Various Property Claims,”** presented to the CAEP for 1 credit hours, presented by Cale Robertson, authored by Cale Robertson, May 2011

**“Basics of Accident Investigation and Documentation,”** presented to the CAEP for 2 credit hours, presented by Cale Robertson, authored by Cale Robertson, June 2010

**“Basics of Accident Investigation and Documentation,”** presented to the City of El Paso, TX, presented by Cale Robertson, authored by Cale Robertson, September 2009

**“Analysis Fire Loss Investigation and Subrogation Factors,”** presented to the CAEP for 2 credit hours, presented by Cale Robertson, authored by Cale Robertson, April 2009

**“Analysis of Ethylene Glycol-Based Engine Coolant as a Vehicle Fire Fuel,”** published in ISFI 2008 Proceedings, International Symposium on Fire Investigation Science and Technology; presented at the ISFI, Biennial Symposium, co-authors J. Mullen, B. Sidwell, J. Stradling and W.C. Hull, May 2008

**“Analysis and Model Testing of a Dual Origin Natural Gas Fire with Remote Fuel Source and Remote Piloted Ignition Mechanism,”** published in ISFI 2008 Proceedings, International Symposium on Fire Investigation Science and Technology; co-authors J. Mullen, B. Sidwell, J. Stradling and W.C. Hull, May 2008

**“Non-SGFP Neon Transformer Electric Arc Fire Hazards,”** presented at the NFPA, Mexico Fire and Safety Expo in Mexico City, co-authors D. Pippen, J. Stradling and W.C. Hull, June 2006 (Presented entirely in Spanish)

**“Neon Transformer Electric Arcs as Viable Ignition Mechanisms for Wood Structural Members,”** published in ISFI 2006 Proceedings, International Symposium on Fire Investigation Science and Technology; presented at the ISFI, Biennial Symposium, co-authors D. Pippen, J. Stradling and W.C. Hull, June 2006

**“Black Boxes and a Summary of Modern Accident Reconstruction,”** presented to the Dona Ana Bar Association, co-author W.C. Hull, March 2005

**“Crash Data Retrieval of Black Box Information,”** presented to the New Mexico Claims Association, co-author W.C. Hull, February 2005

**“Evaluation of Commercial Vehicle Brake Performance,”** presented to Wendell Hull & Associates, Inc., 2004

**“Thermal Inspection Systems,”** presented as an Oral Defense, New Mexico State University, Spring 2004

**“Dynamically Evaluating Commercial Vehicle Brake Performance at a Port-of-Entry,”** presented to the New Mexico Border Authority, co-author M. Noonchester, 2004

**“Traffic Technology Applications at an International Port of Entry,”** presented to the New Mexico Department of Transportation in Santa Fe, New Mexico, co-author M. Noonchester, 2004

**“Dust Storms and Highway Safety,”** presented to the New Mexico Highway Department in Deming, New Mexico, co-author M. Noonchester, 2003

### **PROFESSIONAL ORGANIZATIONS**

National Association of Fire Investigators (NAFI)

International Association of Arson Investigators (IAAI)

New Mexico International Association of Arson Investigators (NMIAAI)

- Acting/Elected Treasurer for the NMIAAI – September 2007 – October 2010
- Acting/Elected Member of Board of Directors for NMIAAI – November 2011 – Present

National Association of Professional Reconstruction Specialists, Inc. (NAPARS)

Southwestern Association of Technical Accident Investigators (SATAI)

Pi Tau Sigma, Engineering Honors, Scholastic Honor Society (PTS) – past member

New Mexico State University Sociedad de Ingenieros (Society of Engineers) – past member

American Society of Mechanical Engineers (ASME) – past member

Society of Automotive Engineers (SAE) – past member

### **EDUCATION**

**Master of Science, Mechanical Engineering,** New Mexico State University, Las Cruces, New Mexico, 2004, 3.5/4.0 GPA

**Bachelor of Science, Mechanical Engineering, (minor in Mathematics),** New Mexico State University, Las Cruces, New Mexico, Crimson Scholar, 2002, 3.5/4.0 GPA

**Fundamentals of Engineering (FE),** National Council of Examiners for Engineering and Surveying Exam, exam passed 2001

### **ADDITIONAL INFORMATION**

#### **Other Experience**

#### **Mobile Home Component Failure Analysis & Design Problem Evaluations, 2000 – 2007 (part-time)**

- Plumbing Problems; including leaks due to types of material used in manufacture
- Roofing Problems; caused by air conditioner leaks, age, etc.
- Siding Problems; including swelling/rotting of fiber board
- Flooring Problems; including holes, causes and repairs
- Blocking; including stacking, spacing, anchoring, etc.

#### **Construction Experience, 1994 – 2007 (part-time)**

- Residential and Commercial
- Wood/Metal Framing
- Concrete Block and Adobe Construction; including Stucco finish
- Roofing; metal and shingle
- Plumbing and Electrical
- Tractor and Back Hoe Operation
- Metal Fabrication; including welding, shaping, cutting, machining and design

**Automotive Mechanic, 1996 – 1997**

- Diagnosis/Preventative Maintenance
- Vehicle repairs including engine overhaul and replacement

**Languages (in addition to English)**

Spanish – fluent; familiar with Mexican culture

*Updated 01/29/15*