

**William C. Wilson**  
**Investigative Mechanics, Inc.**  
13925 Main Street - P.O. Box 340  
Bath, Michigan 48808  
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bwilson@investigativemechanics.com

**Experience**     *Investigative Mechanics Inc.*     *Lansing, MI*

Owner, Operator, and Cause and Origin Investigator specializing in fire investigation and accident reconstruction of motor vehicles.

- Accident reconstruction based on physical evidence.
- Exemplar vehicle testing of accident reconstruction, steering, suspension, braking, cruise speed control, etc.
- Complete analysis of braking systems (Basic and ABS), hydraulic, mechanical, electronic failure and product liability
- Crash Data Retrieval from Sensing Diagnostic Module Event Data Recorder
- Carbon monoxide poisoning
- Engine and power train failures
- Electrical failures, Electrical arc analysis
- Sudden acceleration in cruise control
- Research for origin and cause of fire and mechanical failures
- Expertise includes: automotive, heavy truck, bus, farm machinery and off the road heavy equipment and motorized lifting equipment
- Research and development to determine cause of failure
- Consultant for law enforcement agencies, prosecuting attorneys, insurance companies
- Medicolegal investigation of injury and death relating to accident victims and vehicle crash
- Experienced witness testifying as an expert in Federal Court, Michigan and Out of State Courts both civil and criminal cases
- Michigan licensed mechanic #110349

2016     *Main Presenter – Michigan Council of Professional Investigators, Inc.* November 2, 2016, Novi, Michigan. Use of NFPA 921 Scientific Method in both Accident Reconstruction and Origin and Cause of Fire.

2014     *Presenter – 26<sup>th</sup> Annual FDSOA (Fire Department Safety Officers Association) Apparatus Specification & Safety Symposium*, January 19-22, 2014, Orlando, Florida, Vehicle Data Recorder, The Fire Chief's Friend,

2013     *Presenter - Saginaw Valley Insurance Adjusters Association*, Frankenmuth, Michigan, November 12, 2013 – Accident Reconstruction, Actual Case Studies - Motor Vehicle and Farm Equipment.

CEU Credits:

\*Michigan State University

\*\*University of Missouri

\*\*\*Macomb Community College

\*\*\*\*Wayne State University

- 2013 ***Instructor & Developer of Course Materials, Michigan State University, Highway Traffic Safety Programs, Accident Investigation & Reconstruction, AI-24, School Bus Reconstruction (HVEDR), August 26-28, 2013***
- 2008 - ***Instructor & Developer of Course Materials, Michigan State University, Highway Traffic Safety Programs, Accident Investigation & Reconstruction, Crash Data Retrieval, Introductory Course.***
- 2001 ***Presenter - Michigan Trial Lawyers Association Conference – April 20, 2001***  
 Investigative Mechanics presented Accident Reconstruction; New Technologies; Use of Forensic Techniques & Procedures in Investigations of Multi-Vehicle Accidents – Causation; Real Case Studies; Air Bag (Supplemental Restraint Systems) – Early Deployment, Late Deployment, Lack of Deployment - Just How Do We Figure It Out? Use of Animation in Court, How to Capture the 3-minute Window for the Jury; 3-D Modeling and 3-D Real-World Physics in Animation; Use of Video to Capture Testing Results.
- 1970- ***Bill & Charlie's Automotive Repair*** ***Lansing, MI***  
 2006 Owner/operator (mechanic) for 35 years.  
 Full service automotive repair facility with state of the art equipment.  
 Facility set up for investigations and research on motor vehicle and truck accident, fire, and mechanical failures.
- 1988- ***Subcontractor for Investigative Engineering and Consulting*** ***Bath, MI***  
 Present 13943 Lapham Dr., Bath, MI 48808 (517)641-4651  
 Consultant, Origin and Cause Investigator of accident, fire, and mechanical investigations
- 1994 ***People to People Citizen Ambassador Program*** ***Great Britain***  
 Delegate, International Association of Arson Investigators Delegation to England, Scotland, and Ireland.
- 1993 ***Michigan Association of Traffic Accident Engineers*** ***East Lansing, MI***  
 Developed and taught seminar for the 1993 Spring Conference. Basic and ABS Braking Systems: Investigation of Suspected Braking System Failures; Spoliation and Manipulation of Evidence and Preservation of Evidence at Accident Scene.
- 1978-1993 Developed and taught course on brake and braking systems which included mechanical applications, hydraulic applications, both mechanical and hydraulic system failure and diagnosis of Edge Branding and Coefficient of Friction.
- 1984-1988 ***Snell Environmental Group Engineering Division*** ***Lansing, MI***  
 Consultant, Cause and Origin Investigator of accident, fire, and mechanical investigations.

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1980-1981 **Michigan Department of Transportation** *Lansing, MI*  
Developed and taught course for auto and heavy truck diagnosis and service repair.  
Including diagnostic equipment and using diagnostic procedures.

1978-1980 **Sun Electric** *Lansing, MI*  
Developed and taught automotive and light truck courses at the Ford Training Center,  
Lansing, MI. Courses included: electrical theory, computer diagnosis, advance  
automotive testing, carburetion, fuel injection systems testing and diagnosis.

**Professional Affiliations** American Society for Testing and Materials – member since 2008  
Society of Automotive Engineers – member since 2000  
Michigan Association of Traffic Accident Investigators – Editor of “Reference Points”,  
Past Secretary of Board of Directors – member since 1995  
National Fire Protection Association – member since 1998  
American Society of Agricultural Engineers – member since 2000  
American Trucking Associations, Technology and Maintenance Council – member  
since 2017

**Education** **Society of Automotive Engineers, Western Michigan Chapter & ASM  
International, West Michigan Chapter, “Aspects of Mechanical and Metallurgical  
Testing,”** November 13, 2017.

**Society of Automotive Engineers, Western Michigan Chapter & ASM  
International, West Michigan Chapter, “Application of X-Ray & CT Imaging for  
Failure Analysis,”** Larry Hanke, October 23, 2017

**Crash Data Retrieval User’s Conference**, March 6-8, 2017, Houston, Texas.  
Bosch CDR – Past, Present and Future, Bill Rose; Autonomonous Vehicles – How Close  
are We? Dirk Smith; Case Studies: Discovering and Analyzing Digital Data Acquired  
from Motor Vehicle Systems and Connected Mobile Devices, Ben LeMere; Getting  
Subaru & Mitsubishi EDR Data. Which cars have it, how to get it, and what you need  
to know to use it, Richard Ruth; Forensic Data from Heavy Vehicle Networks, James  
Johnson; An Overview and Update of the Volvo and Mack ECM EDRs, Matthew  
DiSogra; An Overview and Update of the Caterpillar ECM EDRs, Timothy Austin;  
Toyota GEN3 Pre-Crash Brake Data – Details and Application, David Hallman;  
Pre-Crash Data recorded by the ACM. Where does it come from? Kent Boots;  
Asynchronous Data Concepts in EDR Data, Chris Lutes; An Overview and Update of  
Cummins ECM and EDR Capabilities, William Messerschmidt; Atypical Airbag  
Deployment Cases, Lawrence Wilson; Hyundai and Kia EDR Data – Software Updates  
and Real World Applications, Shawn Gyorke; Forensic Methods for Dealing with  
Damaged ECM/EDR Components, Shanon Burgess; CDR Data Case Studies for Late  
Model GM, Toyota, BMW, and Ford Vehicles, Billy Cox; Case Study: Mercedes-Benz  
Crash Data, Kirk Lee; A Case Study Heavy Vehicle Crash Reconstruction  
Incorporating EDR ECM Data, Thomas Green & Michael DiTallo.

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**Society of Automotive Engineers, Western Michigan Chapter & ASM International, West Michigan Chapter, “Metallurgy and Fire Investigation: The Evaluation of Brass Artifacts from Fire Scenes, Elizabeth Buc, May 26, 2016.**

**Crash Data Retrieval User’s Conference, January 25-27, 2016, Houston, Texas.** CDR: Past, Present and Future, Bosch Diagnostics; Fiat Chrysler Automobiles (FCA) Update, Lisa Fodale; Data Privacy and New Laws? Scott Greene; Guide to Unsupported Ford EDR’s, a Compendium of all Known Unsupported For Modules, What they Contain, and Who to Contact to Get the Data Read, Rick Ruth; Digital Security, the Right Way the First Time, Steve Watson; Vehicle System Forensics + Crash Data = The Before, During and After, Ben Lemere; Process for Working on Damaged Modules Involved in Incidents Under Investigation, Paul Gullekson; Update on Successful Reprogramming of ACMs and the Addition of Unrelated Data for Imaging, Mike Merolli; Case Study: Data from a Car-to-Motorcycle Crash Test Highlighting Complementary Reconstruction Techniques and Applications, Adam Hyde/Mike Ditallo; Application of Crash Data from Non-supported Ford Vehicles, Shawn Gyorke/Mike Ditallo; CDR Tool Version History Highlighting Little Documented and Little Noticed Changes or Why it’s So Important to Use the Most Current Version of the Software, Rusty Haight; Back Powering Vehicles for Newly Added Systems, the Current State of the Art, Kent Boots; How Vehicle Systems Work Together or Is It Equipped?, Chris Guterrez; Hyundai/Kia Update, Shawn Gyorke; Testing and Analysis of Unsupported Kia Data, Wes Vandiver; Insurance and Fleet Management Update, Rusty Haight.

**Society of Automotive Engineers, Mid-Michigan Chapter, GM Telematics and Infotainment, Matt G. Przybylski, Director Global Infotainment and Telematics, General Motors, November 9, 2015.**

**Society of Automotive Engineers, Western Michigan Chapter & ASM International, West Michigan Chapter, “An Overview of a Remanufacturing Business, Jackie Earle, Product Support Manager, Remanufacturing & Components Division, Caterpillar Inc. November 5, 2015.**

**Michigan State University, Highway Traffic Safety Programs, Department of Civil & Environmental Engineering, May 18-22, 2015, AI-25 - Forensic Mapping (Total Station).** Instruction in the use of an electronic total station and data collector in the mapping of traffic and crime scenes; use of total station to determine vehicle crush; incident management skills; precise documenting of both “short-lived” and “long-term” evidence; downloading data collector information to diagramming and animation software; troubleshooting techniques; and courtroom demeanor as it relates to testimony about the forensic mapping process.\*

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**Event Data Recorder Use in Traffic Crash Reconstruction (Analyst Class),**

December 8-12, 2014, Institute of Police Technology & Management, University of North Florida, taught at MSU Highway Traffic Safety, East Lansing, Michigan. Reconstruction Review Relevant to EDR Data, The Bosch CDR Report, EDR Delta-V Analysis, EDR Pre-Crash Data Analysis, General Motors Data Analysis – SDM and ROS, Ford Data Analysis – RCM and PCM, Chrysler Data Analysis – ACM, Toyota Event Data Recorders, Honda, Nissan, Suzuki and Mazda Data Analysis, EDR Data Admissibility, Commercial Truck EDR Overview, Garmin GPS Data Retrieval and Analysis.

**26<sup>th</sup> Annual FDSOA (Fire Department Safety Officers Association) Apparatus Specification & Safety Symposium,** January 19-22, 2014, Orlando, Florida. Roadway Incident Safety, Jack Sullivan (Loss Control Innovations); “Identity Crisis – Fire Service Looking for its Future” Chief Brian Crawford (Plano Fire Dept.); NFPA Updates, Ken Holland (NFPA) & Ryan Depew (NFPA); “Apparatus Seating & Occupant Restraints”, Jim Chinni (IMMI), Jeff Krueger (USSC) & Jeremy Andringa (Pierce Mfg.); 2014 Engine Changes to Meet EPA Regulations, Chris Crowel (Cummins) and Creighton Pritzlaff (Navistar); Apparatus Safety Feature Specification, Roger Lackore (Oshkosh); Legal Implications of Apparatus Specs, James Juneau, Attorney (Juneau, Boll, Stacy & Ucherek, PLLC); Fleet Maintenance Software, Brian Brown (South Metro Fire Rescue); Engine DPF & SCR Guidance, Chris Crowel (Cummins) & Wes Chestnut (Spartan); NFPA 1917, Standard for Automotive Ambulances, Ken Holland (NFPA); Apparatus Replacement Criteria, Stone Smith (Henrico, VA); Fleet Maintenance with a Reduced Budget, Mike Stankus (Washington Fire Mechanics).

**Crash Data Retrieval User’s Conference,** January 21-23, 2013, Houston, Texas. CDR: Past, Present and Future, Bosch Diagnostics; SAE EDR Committee and NHTSA Part 563 Update, Brian Everest; Clipped data - what is it and what does it mean to a reconstruction? Rusty Haight; OE Updates, General Motors, Chrysler & Toyota; Contents of the Help file and Data Limitations, links and disconnects for the end user, Shawn Gyorke; Advanced re-powering techniques; strategies for newly supported OE lines, Kent Boots; Examples of data from non-CDR Tool supported OEs/modules, Wes Vandiver; An overview of crash sensing and deployment algorithm design, Jeffrey Rochette; Examples showing confirmation of CDR veracity for difficult GM analysis cases, Bill Rosenbluth; A comparison of CDR Tool data to a crash reconstruction - common error, George Hall; Use of Ford PCM data in crash analysis confirmation, Mike Merolli; Crash data from motorcycles, Bill Mael; An analysis of low delta-V impacts and its relationship to CDR data, Billy Cox, Jr.; An examination of data from 'cleared' airbag control modules, Mike DiTallo; Toyota crash data recording - thresholds and overwriting process, Rusty Haight/Bob Anderson.

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**Crash Data Retrieval User's Conference**, January 16-18, 2012, Houston, Texas. SAE EDR Committee and NHTSA Part 563 Update, Brian Everest; OE Update: Chrysler, Jim Bielenda; Toyota Update and Comparison of Toyota ROT and CDR Data, Kent Boots; A Comparison of Raw Data in ECUs versus Data Found, or Not Found in CDR Reports and Considerations of Possible Challenges to Investigator Integrity, William Rosenbluth; Using the Monte Carlo Method with Crash Event Data, Roger Barrette; Chip Swapping: Risk v Reward, David Little; The Ford PCM Restrain Deployment Signal: Expectations Versus Reality, Bruce McLaughlin & Rusty Haight; CDR Data from more than One Car? Fitting it Together, Ray Wangler; Is a Search Warrant Required? Case Law Review, Chuck Gillingham; Frye/Daubert and the Admission of Expert Testimony, Thomas Bohan; CDR Admission and Expert Testimony, Bill Melkonian; RE-powering 101, Kent Boots ; RCM & PCM Putting it Together, by Rusty Haight.

**Crash Data Retrieval User's Conference**, January 17-19, 2011, Houston, Texas. The CDR Product Past, Present and Future, Instructor: Bill Rose; New Training Overview; Live Crash Tests (Tests 1, 2 and 3), Evaluation of Torque Data Recorded by a Ford PCM, Instructor: Eric Deyerl; CDR: Insurance and Legal Issues, Instructors: Mike Merolli & David Brink; Vehicle Post-Crash Documentation; Hands-on-Lab: Instructor-led CDR Imaging; CDR Data Momentum Solutions: Thinking Inside the Triangle, Instructor: Steve St. Amand; Case Studies Including Toyota EDR Data, Instructor: Brad Muir; GPS Navigation Units Provide Data for Use in Accident Reconstruction, Instructor: Tim Reust; Preserving Heavy Truck ECM Files, Instructor: Gary Johnson; Applying Heavy Vehicle EDR Data in the Real World, Instructor: William Messerschmidt; Crash Data Collection Guide for GM Airbag Electronic Control Units, Instructor: Don Floyd; Chrysler Non-deployment Data: How to Identify It and What Does It Tell You, Instructor: Rusty Haight.

**International Association of Arson Investigators**, 60<sup>th</sup> Annual Conference, May 17 – May 22, 2009, Arlington, Texas. Documentation, Instructor: Dr. John DeHaan; UL for Fire Investigator, Instructor: John Bender; Avoiding Spoliation of Evidence, Instructor: Roger Higgins; Wind-Driven Fires, Instructor: David Icove; Collection of Electrical Evidence, Instructor: Lou Bilancia; Identifying the Source, Instructors: Dr. Andrew Armstrong, Jeremy Rummel, Kelly Wouters; Fire Protection Systems, Instructor: Jay Kramarczyk; Seen on Scene, Instructor: Bob Toth; Being an Expert, Instructor: Gary Jensen; Scientific Method, Instructor: Lou Bilancia; Explosion Investigation, Instructor Ross Brogan. 36 Hours.

**Crash Data Retrieval User's Conference**, January 26-28, 2009, Houston, Texas. The CDR Product Past, Present and Future—Future Releases and Product Support, CDR Legal Issues Update, EDR Data & Collision Reconstruction Analysis: A Criminal Investigation Study, ACM Reprogramming, Using Ford PCM Data to Evaluate Deceleration Rates and Braking Distance, Results of Full Scale Chrysler Crash Tests, Signal Processing Applied to Vehicle Speed Measurement and Recording, Accuracy of Selected 2008 Chrysler Airbag Control Module EDR Pre-crash Speed Data During Braking, OEM Updates as They Relate to CDR (GM, Ford and Chrysler). Application

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Workshops: CSV Export Functionality for CDR including Version 3.1 Support from Chrysler, Advanced Data Collection Techniques, GM Rollover Sensor (ROS) applications. 20 Hours.

**International Association of Arson Investigators**, 59<sup>th</sup> Annual Conference, April 27 – May 2, 2008, Denver, Colorado. Fire Investigation Problem Solving Techniques, Instructors: Jim Allen and Joseph Konefal. Topics included Fire Origin and Cause, Ignition, NFPA 921 Guide for Fire and Explosion 2008 Edition, Fire Behavior/Fire Dynamics, Synthetic Fuels, Ventilation, Floor Patterns, NFPA Standard 1033 2003 Edition, Curriculum Vitae, Wall Patterns, Evidence Collection for the Investigator, Explosion Investigation, Vehicle Fire Investigation, and Incendiary Devices. 36 Tested Training Hours.

**Crash Data Retrieval User's Conference**, January 28-30, 2008, Houston, Texas. Introduction to Version 3.0, GM Rollover Sensor (ROS) EDR Data, Chrysler 3.0 Release, "The Answer May be Outside the Box and Within the Triangle," CDR Case Study: Failure to Finish, Dealing with Severely Damaged ACMs, PCM Data Overview, 3.0 PCM Workshop, Using the CSV Export Function 3.0 Ford PCM Data, Accuracy of Ford PCM Speed Data During Hard ABS Braking, The Accuracy of Speed Recorded by a PCM and the Effects of Brake, Yaw and other Factors, Real World Applications of Crash Data Including Ford PCM, GM CDR Case Study, Vehicle Speed Sensor Calibration and its Potential Effect on Pre-Crash Vehicle Speed Data as Recorded by an EDR. 20 Hours.

**International Association of Arson Investigators**, 58<sup>th</sup> Annual Conference, April 29 - May 4, 2007, Victoria, British Columbia. Problem Solving Techniques in Fire Investigations. Instructors: Jim Allen and Joseph Konefal. Topics included Fire Behavior, Scientific Method, NFPA 921 Guide for Fire and Explosion Investigations 2004 Edition and NFPA 1033 Standard for Professional Qualifications for Fire Investigator 1998 Edition, Burn Pattern Indicators, Ventilation, Evidence, Fatal Fire Investigation and Origin and Cause. 36 Tested Training Hours.

**Crash Data Retrieval User's Conference**, January 29-31, 2007, Houston, Texas. Vetronix/Bosch—The Future of the CDR System, GM Vehicles: When Non-deployments are saved or not saved and the GM Logic; The Accuracy of General Motors Event Data Recorders in NHTSA Frontal Barrier Tests; Detailed Evaluation of Vehicle Speed and Speed Recorded by an SDM; Average Daily Ignition Cycles in SDM-Equipped, GM Vehicles; Two-dimensional Analyses of EDR Information; New Vetronix Releases of Ford Event Data Recorders; When do Airbags Deploy? Final NHTSA Ruling and Its Implications; Survivability Aspects of the 563 Rule; Using Diagnostic Tools with the Crash Data Retrieval System.

**Fall School of Evidence Photography and Imaging 2006**, November 16-19, 2006, Long Beach, California. 21<sup>st</sup> Century Digital Imaging; The Business of Evidence; Keeping Your Batteries in Shape; Investigating and Documenting the Scene of a Crime/Accident; Preparation for and Documentation of Terrorist Activities and the

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Aftermath of Disasters and/or Mass Destruction; Marine and Underwater Crime Accident Scene Identification and Documentation; Firearms Certification, Identification, Documentation and Ballistic Signature; Accident and Crime Scene Investigation for Re-creation; UVIR—a New Way of Looking at Things; Night Documentation and Photography; Fire, Explosion and Arson Investigation; Proper Methods for Documentation and Analysis of Personal Injuries and Cause of Pattern Injuries; 3-D Photography, The Importance of Documentation and Visualization in 3-D; PowerPoint Methods for Presentation of Crime Scene Evidence; The Investigator/Attorney Relationship; Truth in Imaging; Small Caliber Bullet Wound Documentation; Litigation Graphics and Technologies Shotgun Wound Evaluation, Weapon and Ammunition Identification.

**CDR User's Conference 2006**, February 13-14, 2006, Dallas, Texas. Vetronix CDR System update; Incorporating CDR Services in an Existing Forensic Practice; Implementing Policy for Crash Data Retrieval; CDR as a Tool for Intelligent Transportation Systems & Human Factors Issues; A Review of Various ACM Module Types and Data Recorded; Motorcycle Collinear Collisions Involving Motor Vehicles Equipped With Event Data Recorders; Analysis of the GM Sensing & Diagnostic Module in 360° Linear Momentum Collisions: Real Case Analysis; CDR Data Presentation & Validation in Legal Proceedings; Legal Implications of Data Collection; Comparison of Airbag Control Modules to Flight Data Recorders—the “Black Box” Misperception; Investigation into the Durability of ACMs; Quantifying Uncertainties in Ford and General Motors Event Data Recorders; The Accuracy of Speed Recorded by an SDM & the Effects of Brake & Yaw Events; Overview of New GM Modules Using CAN Bus Technology; and Practical Applications for CDR Gathered CAN Bus Data.

**Michigan Association of Traffic Accident Investigators**, Fall 2005 Training Conference, September 26-27, 2005, Boyne Mountain Resort, Michigan, “Workin’ The Zone”: Recent Development of Tires & Tire Issues, Michigan “Andy’s Law”, Basic Work Zone Concepts, Work Zone Layout, Field Exercise and Overview, and Michigan Manual on Uniform Traffic Control Devices – Part 6.

**National Fire Protection Association**, Fall Education Conference 2004, November 14-17, 2004, Miami Beach, Florida, The National Preparedness Standard: 9-11 Commission Report—Private Sector Emergency Preparedness, NFPA 1600 and the Emergency Management Accreditation Program, Spoliation Do’s and Don’ts, Managing Rail Transportation Emergencies, Human Behavior in Fires, Securing the Homeland in Challenging Times, Including an Overview of Florida’s Recovery from the 2004 Hurricanes.\*\*

**Michigan Association of Traffic Accident Investigators**, Fall 2004 Training Conference, October 27, 2004, East Lansing, Michigan, The National Safety Council Defensive Driving Program, Graduated Driver’s License Program, SDM Download Update, Michigan Vehicle Code and Uniform Traffic Code.

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**Michigan State University, Highway Traffic Safety Programs, Department of Civil & Environmental Engineering**, June 22-24, 2004,

**Police Traffic Accident Investigation 22**, Emergency Vehicle Accident Investigation. Model Policies & Procedures, Fire/EMS Policies & Training Requirements, Emergency Vehicle Operator Training, Michigan Emergency Vehicle Statutes & Case Law, Legal Aspects of Investigative Procedures, Investigative Procedures On-Scene Follow-up, Investigative Procedures Crash Data Retrieval Passenger Cars & Trucks, Emergency Vehicle Audio & Visual Factors\*

**Michigan Association of Traffic Accident Investigators**, Spring 2004 Training Conference, April 30, 2004, East Lansing, Michigan, Michigan Rules of Evidence 703, Vehicle Modification for Handicapped Occupants, Police Package Vehicle Specifications, and Railroad Grade Crossing Crashes.

**Michigan Association of Traffic Accident Investigators**, Fall 2003 Training Conference, October 3, 2003, Sterling Heights, Michigan, Accident Injuries, Serology and Trace Evidence, Evidence Collection at Accident Scene, Biomechanics and Loading Forces, Computer Simulation of Vehicles and Occupants in Rollover Crashes.

**CATAIR – Ontario Region Annual Conference 2003, August 19-24, 2003**, Airborne Equations, Human Factors, Total Station, Night Visibility Testing, Crash Data Retrieval System Update (2.0 Ford), Momentum Review, Crash Tests with CDR/EDR Vehicles, New Vehicle Technology, Accelerometers for Testing, CAD Programs, Excel Applications for Reconstruction, Human Factors, Fire Service Extrication.

**Michigan State University, Highway Traffic Safety Program, Department of Civil & Environmental Engineering and Collision Safety Institute**, June 2-3, 2003, Vericom Familiarization, Accelerometers and other Sensors for Traffic Crash Investigation.

**Michigan Association of Traffic Accident Investigators**, Spring 2003 Training Conference, May 16, 2003, East Lansing, Michigan, Facilitator. School Bus Regulations, Compartmentalization/Structural Integrity, Center of Mass Presentation, Mirrors/Visibility, Skid Tests, Bus Stops & Routes.

**Certified Vetronix Crash Data Retrieval System Training Course**, Vetronix Corporation, March 12, 2003, Michigan State University, Highway Traffic Safety Program.

**Michigan State University, Highway Traffic Safety Program, Department of Civil & Environmental Engineering and Collision Safety Institute**, March 12, 2003, **Police Traffic Accident Investigation 19 Update**, Crash Data Retrieval Updates for General Motors, Ford and Isuzu vehicles. Investigative Mechanics LLC assisted in crash vehicle procurement and documentation of tests.\*

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**Canadian Association of Technical Accident Investigators & Reconstructionists Fall/Winter Seminar 2002**, December 4, 2002, Oshawa, Ontario, Canada, Estimating Driver Perception Times, Day and Night Time Solutions.

**Michigan State University, Highway Traffic Safety Program, Department of Civil & Environmental Engineering, and Collision Safety Institute**, October 24-25, 2002, **Police Traffic Accident Investigation 19**, Crash Data Retrieval Training using the Vetronix Crash Data Retrieval (CDR) toolkit to operate and utilize the CDR tool. Specific focus areas included why Event Data Recorders are being installed in private vehicles, overview of historical development of in-vehicle event data collection, data sources within the vehicle, types of data collected, mechanics of data collection using a toolkit and what the data means – basic data interpretation with a reinforced focus on appropriate collision reconstruction methodologies to effectively apply that interpretation.\*

**Michigan Association of Traffic Accident Investigators**, Fall 2002 Training Conference, October 4, 2002, East Lansing, Michigan. Polarizing Light/Night Vision, Agency/OHSP Liaison for Alcohol Enforcement, New Developments in Accident Investigation & Reconstruction, Court Preparation & Testimony for Police Witness, Legal Updates – governmental Immunity Re: Traffic Crashes, Occupant Kinematics: Cooperative Relationship between Investigator & ME, and Electrical Evaluation of Downed Power Lines.

**International Association of Arson Investigators**, 53<sup>rd</sup> Annual Conference and Seminar, May 19-24, 2002, Milwaukee, Wisconsin. 32.5 hours. Electrically Caused Ignitions—A Systematic View of the Underlying Physics, Fire Deaths: Investigation & Reconstruction, Decisions and Orders Issued by the Courts to Exclude Expert Testimony, Evidence Spoliation Do's and Don'ts, Criminal Prosecutor vs. Defense, "DNA" for the Fire Investigator, Insurance Company's Claim Responsibility in Working with Law Enforcement in Fire Investigations, Laboratory Analysis of Fire & Explosion Related Evidence, Traits and Characteristics of Bombing Offenders, Fire Investigation Involving Chemicals used as Incendiary Devices.

**Michigan Association of Traffic Accident Investigators**, Spring 2002 Training Conference, May 10, 2002, East Lansing, Michigan. Fleet Safety Programs and Driver Training; Tripmaster Corporation—Black Box Electronic Recording; Michigan Department of State Police Motor Carrier Division—What Motor Carrier Can Do For Truck Accidents; Tanker Familiarization, Truck Familiarization; Securing and Controlling Accident Scenes; Truck Inspection; Hazardous Material Handling.

**Michigan State University, Highway Traffic Safety Program, Department of Civil & Environmental Engineering**, March 11-15, 2002. AI 3-6 (see below)

**Police Traffic Accident Investigation #3** – Accident Photography; topics included basic camera familiarization, daytime photography, nighttime (flash) photographs and existing light photography.\*

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**Police Traffic Accident Investigation #4** – Perspective Grid Mapping of Evidence; focuses upon using a camera and perspective grid to record measurements at serious accident scenes, assembly of perspective grids and how to grid perspective photographs.\*

**Police Traffic Accident Investigation #5** – Tire Dynamics and Examination; determining whether tire failure contributed to an accident and, if so, whether the failure took place before, during or after the collision. Includes role of tires in vehicle handling.\*

**Police Traffic Accident Investigation #6** – Lamp Examination, included determining whether vehicle lamps were “on” or “off” at time of impact, proper procedure for removing and storing damaged vehicle lamps.\*

**Michigan Association of Traffic Accident Investigators**, Fall 2001 Training Conference, November 9, 2001, Okemos, Michigan. Trace Evidence Collection/DNA, Biomechanics in Traffic Crash Reconstruction, Multi Car/Chain Reaction Crash, and Lamp Examination.

**Michigan Association of Traffic Accident Investigators**, Spring 2001 Training Conference, June 15, 2001, Charlotte, Michigan. SUV Rollovers including: Factors Which Influence Rollover Dynamics, Types of Rollovers, Rollover Sequence, Acceleration(s) and Effect(s) on Occupants, Physical Evidence One Might Recover and What It Can Mean; How Occupants Move in Rollovers, What Injuries and How Those Are Caused, Rollover Testing as Described in FMVSS 208.

**Society of Automotive Engineers**, Lightweight-Materials for Advanced Vehicles TOPTEC, February 15-16, 2001, Toronto, Canada. Topics covered: Light-Weight Applications of Basic Materials, Forming/Manufacturing, Recyclability/Stewardship, Light-Weight Energy Management, Automotive Design Opportunities for Light-Weight Materials, Light-Weight Parts in Vehicle Design/Assembly.

**Fire Litigation 2000**, November 1, 2000, Patrick, Johnson & King, P.C., Attorneys at Law, Southfield, MI. Topics covered: Expert Witnesses in Federal and State Courts including Admissibility of Opinions Testimony, Qualifications of Experts under Federal and State Rules of Evidence, Federal Procedure Rules for Expert Witnesses; Reliability Requirements for Fire Experts including the Scientific Method, Gatekeeping Functions under Daubert and Other Appellate Court Decisions, Recent Court Decisions; Spoliation Issues including Collection and Storage of Physical Evidence, when to Leave or Retrieve, Notification to “Potentially Interested Parties”, Fire Science Methodologies and Investigations including Documenting the Fire Scene, Investigating the “Negative Corpus” Fire, Applying NFPA Standards and Guidelines, and Transforming the Investigation into Admissible Testimony.

**Michigan Association of Traffic Accident Investigators**, Spring 2000 Training Conference, Motorcycle Crash Investigation and Reconstruction. Motorcycle Helmet

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Examination Following the Crash, Motorcycle Crash Injury Patterns, Trike Design Handling and Use, What Information the Attorney Needs from the Motorcycle Investigator/Reconstructionist to be able to Successfully Prosecute and/or Defend the Involved Parties, The Results of Improper Use of Motorcycle Brakes and What Tire Mark Evidence to look for at the Scene, Motorcycle Training in Michigan.

**Fire Arson Investigation**, May 19, 2000, 26 hours. Macomb Community College Criminal Justice Training Center, Macomb Fire and Training Institute.\*\*\*

**International Association of Arson Investigators**, 51<sup>st</sup> Annual Conference and Seminar, May 15-19, 2000, Grand Rapids, Michigan. 30 hours. Insurance Fraud, Vehicle Fire Investigations & Security Systems, Case/Witness Preparation “Use & Misuse of NFPA 921”, “SCANS” Scientific Content Analysis, Comprehensive Report Writing, Determining Cause & Origin, Trail Tactics for the Investigator & Legal Update, Serial Arsonist – “The John Orr Case,” Electrical Fire Investigations, LP Gas Fire Investigations, Laser Mapping, Natural Gas Appliances – Fire Investigations, Insurance for the Public Sector Investigator, Financial Fraud.

**Institute of Traffic Accident Investigators**, 1999 Conference, November 19-21, 1999, Telford, England. Presentations included UDS Accident Data Recorder; Determination of a Vehicle’s Speed at the start of Emergency Braking; Effect of Age and Defective Vision upon Performance; Development of Roadside Impairment Testing for Drivers; Equations of Speed, Time and Distance for Vehicles Under Maximum Acceleration; Trauma Involvement as a Factor in Eye-Witness Accounts; 3-Dimensional Simulation in Vehicle Design & Highway Safety; Analysis of the Vehicle-Pole Crash by means of EES Parameter; Technical Proof of Faked Accidents; Forensic Damage Analysis for Fraud Detection and Evidence Gathering to Prove Criminal Fraud; Highways Liability – Understanding the Issues; Comparison of Measurement Methodologies for Estimation of Change in Speed from Vehicle Damage; Seeing but not Perceiving.

**Introduction to Traffic Signs & Pavement Markings**, October 26, 1999. Highway Traffic Safety Programs, Federal Highway Administration and Civil & Environmental Engineering, Michigan State University, East Lansing, MI. Course included MMUTCD (Michigan Manual of Uniform Traffic Control Devices) General Provisions, Standards, Regulatory Signs, Warning Signs, Guide Signs, Pavement Markings, Reflectivity, Railroad Crossings, and Inventories.\*

**Introduction to Traffic Signals**, October 27, 1999. Highway Traffic Safety Programs, Federal Highway Administration and Civil & Environmental Engineering, Michigan State University, East Lansing, MI. Course included Signal Warrants, Signal Terms & Types, Signal Studies, Signal Phasing, Signal Timing, Progression, and Time Space Diagram.\*

**Michigan Association of Traffic Accident Investigators**, Fall 1999 Training Conference, Pedestrian Accident Dynamics, History of Safety Testing, Spreadsheet

CEU Credits:

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\*\*University of Missouri

\*\*\*Macomb Community College

\*\*\*\*Wayne State University

Analysis for AR, Crush Analysis, Pavement Stress Identification, Pedestrian Crash Testing.

**Michigan Association of Traffic Accident Investigators**, Spring 1999 Training Conference, Airborne Equations, methods for determination of speed in cases involving falls, flips and vaults. Live automobile vault testing at Michigan State University testing facility.

**Pavement Rehabilitation**, December 1-2, 1998; Highway Traffic Safety Programs, Civil & Environmental Engineering, Michigan State University, East Lansing, MI. Course included MDOT Highway Preventive Maintenance Program Guidelines, Techniques for Pavement Rehabilitation, Overlays AASHTO 1993, AC Overlay of AC Pavements Mechanistic-Based Approach, Rigid Pavements, Composite Pavements, Flexible Pavements, and Project Scoping Process Michigan Practice. This course is a prerequisite for Class on Pavement Management for Traffic Investigation.\*

**National Fire Protection Association**, 1998 Fall Conference, November 14-18, Atlanta, GA. Overview of NFPA 921; Legal Aspects of Fire Investigation; Data Management-Collection, Analysis and Reporting; Legal Issues in Today's Fire Service; Amtrak's Emergency Response System; Forensic Fire Scene Reconstruction; Case Studies in Motor Vehicle Fires; ATF-Fire Investigation Training CD; The "Code Footprint".\*\*

**Michigan Association of Traffic Accident Investigators**, Fall 1998 Training Conference Photogrammetry; Legal Presentation: Defense; Legal Presentation: Prosecution; Internet Search Techniques; Truck Speed Determination; Night Vision.

**International Association of Arson Investigators**, 49<sup>th</sup> Annual Conference and Seminar, May 10-15, 1998, Portland, Oregon. 30 hrs. Fire Dynamics, Surface Analysis of ARC Residues in Fire Investigation, Investigation of Marine Fires, Fire Accident Investigation Full Scale Test Results, Applications of Fire Research, Fire Testing for Fire Investigations, Fire Investigator Occupational Health & Safety, Proving Financial Motive in Arson Fires, Forensic Mapping, Behavior of Metals in the Fire Scene, Cigarettes As an Ignition Source, Memory, Incorporating Heat Release Rate Aspects into Fire Investigations. Film & Digital Camera Technologies for Fire Investigation

**Professional Automotive Career Training (PACT)**, March 30, 1998. Air Bag/Passive Restraint Systems: Components, Deployment Sequence, Special Handling Instructions, Power-down and Power-up Procedures, System Diagnostics, Safety Procedures, System Readiness Testing, Crash Event Recording. Instructor: Jim Kidd.

**Michigan Association of Traffic Accident Investigators**, Fall 1997 Training Conference Handicap-equipped Vehicles and Investigation of Accidents Involving Handicap-Equipped Vehicles, Legal Update, Use of Global Positioning Satellite for Accident Investigation Site Work, Occupant Kinematics and Injury Patterns.

CEU Credits:

\*Michigan State University

\*\*University of Missouri

\*\*\*Macomb Community College

\*\*\*\*Wayne State University

**Michigan Association of Traffic Accident Investigators**, Spring 1997 Training Conference for Low Speed Automobile Accidents, Performance and Use of Child Restraint Systems, Seat Belts, and Air Bags for Children in Passenger Vehicles. Live Low Speed Vehicle Crash Test and Air Bag Deployment.

**International Association of Arson Investigators** 48<sup>th</sup> Annual Conference and Seminar, May 11-16, 1997, Toronto, Ontario, Canada. 30 hrs. The Team Approach, Effective Case Management, Scene Investigation, Pyrolysis and Fire, Using the Internet as a Tool in Fire Investigation, NFPA 921.

**DOT Hazardous Materials Management and Emergency Response Recertification Certificate #11041**, January 29, 1997. See Details of Education.

**Vehicle Fire Seminar**, December 5-6, 1996 Washington, DC. Lee Cole and Associates Investigation of Motor Vehicle Fires, Ford Ignition Switch Steering Column Fires.

**Michigan Association of Traffic Accident Investigators**, Fall 1996 Training Conference New Technology including presentations on Digital and APS Photography, Electronic and Laser Measuring Equipment, Digital Rectification and 3-D Forensic Animation Capabilities of the Michigan State Police.

**Michigan Association of Traffic Accident Investigators**, Mid-winter Training Conference, February 1996. Investigation of Patrol Car Accidents.

**International Association of Arson Investigators**, 47<sup>th</sup> Annual Meeting and Seminar, April 1996, St. Louis, Missouri, 28 hrs. Motive-Based Offender Analysis of Serial Arsonists, Shipboard Arson Research, Large Fire Loss Investigation & Management, Collection and Preservation of Evidence from the Fire Scene, Fraud Investigation, Camera Techniques at Fire Scenes and Sketching the Fire Scene.

**Wayne State University School of Medicine**, Medicolegal Investigation of Death, March 1996. Forensic Pathology including Collection and Preservation of DNA Evidence.\*\*\*\*

**Michigan Association of Traffic Accident Investigators**, Fall 1995 Training Conference, Train Accident Investigation including Overall Investigation Procedure, Railroad Crossing Regulations, Sight Distance Evaluation and Requirements at Crossings.

**Advanced Explosive Investigative Techniques**, International Training Association. 40 hrs. Daytona Beach, Florida, March 1995. Live Bomb Explosions, Explosion/Fire Scene Investigation, Kinesic Interview Techniques, Link Analysis, and Legal.

**International Association of Arson Investigators**, Regional Training Seminar, Live Burn Vehicles, February 1995, Gulf Shores, Alabama. 40 hrs. See Details of Educational Courses.

CEU Credits:

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**Michigan Association of Traffic Accident Investigators**, June 1995 Training Conference. Motorcycles including Dynamics, Injury Patterns, Motorcyclist Conspicuity/Visibility Issues, Skid Testing: ABS vs. Conventional Braking Systems, Legal Update including Impact of New Rules Regarding Pre-trial Discovery of Defense Experts' Reports in Criminal Cases plus Evidence Spoliation.

**Michigan Association of Traffic Accident Investigators**, Fall 1994 Training Conference on Anti-Lock Braking, Class 8 Heavy Truck at Eaton Corporation, Michigan Center for Decision Driving, Marshall, Michigan.

Federally Certified in Hazardous Materials Management and Emergency Response 1993, Certification #10527.

**Marion County Prosecutor's Arson Seminar**, International Arson and Accident Investigators, Indiana Chapter, 1991. Interviewing/Interrogation, Vehicle Fires, Paradigms. Instructor: John Barracato.

General Automotive Mechanic Certification from National Institute for Automotive Service Excellence.

CEU Credits:

\*Michigan State University

\*\*University of Missouri

\*\*\*Macomb Community College

\*\*\*\*Wayne State University

### **Details on Education Courses:**

Advanced Explosive Investigative Techniques, International Training Association, 40 hour seminar, March 13-17, 1995. Daytona Beach, Florida. Seminar included:

- Legal Update  
Fourth Amendment, Criminal Search Warrants, Miranda v Arizona, knowledge of Federal and state laws in the field of arson, explosive and fraud investigations.
- Scene Search Techniques and Fusing/Firing Systems Practical Exercise  
One hundred step guide in processing explosive scenes, photographing and videoing, practicing basic photography rules, identifying the fusing and firing systems from bomb debris and explosives.
- Computer Use for Complex Investigations  
Complex case investigations, using the computer for collecting, analyzing, preserving, presenting, packaging and transmitting information.
- Link Analysis  
Collecting and organizing information for complex explosive investigations using link analysis, analytical techniques such as: link analysis objectives, link association matrix, criminal link, matrix organization, link diagram matrix.
- Telephone Toll Analysis  
Techniques of using telephone tolls as a method of developing new leads and confirming ties between known suspects, method gathering information for a telephone toll analysis, computer program called "Pen-Link", telephone toll matrix analysis
- The Kinesic Interview Technique  
The I.S.A.T. method featuring the Core Assessment Technique & the Look Profile System, Self-Initiated Verbal Behaviors, Structural Questions, Non-verbal Behaviors (body language), Five Moods of a Liar
- Practical Bomb Scene Search and Investigation  
Functions of a task force member at a bomb scene, investigative skills in a complex exercise involving a vehicle bombing, identify and communicate investigative leads to others and help solve complex crime
- Explosive Materials and Theory  
Explosives and their categories, sheet explosive, military dynamite, blasting agents, TNT, Composition C-4, detonating cord, binary, seismic explosive, boosters, slurries explosives, blast pressures and their effects, thermal, fragmentation, positive and negative pressure waves

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Vehicle Fires – “Live Burn Exercises”, International Association of Arson Investigators, Inc., 40 hour seminar, February 1995. Gulf Shores, Alabama. Seminar included:

- Vehicle Identification Vehicle Theft – National Automotive Theft Bureau, National Automotive Theft Bureau, National Insurance Crime Bureau
- Vehicle Steering Column Examination
- Insurance Role in Vehicle Fire Investigation
- Interviews, History/Documentation
- Use of Forensics in Vehicle Fire Investigations
- Fires Involving Inertia, Switches and Safety Devices
- Vehicle Electrical Fires and Electrical Theory
- Live Fire Demonstrations  
Vehicle Fires, Live Burns with Temperature Monitoring Devices, Steering Columns  
Evidence Collection; Use of Canine Dogs and Detectors Investigation of Vehicle  
Fires

DOT Hazardous Materials Management and Emergency Response Recertification Certificate #11041, January 29, 1997. Hazardous Materials Management Training, Certified in the following areas in compliance with DOT requirements to be trained and tested in:

- General Awareness and Familiarization
- Hazardous Materials Table
- Packaging; marking and Labeling
- Shipping Papers; Placards; Loading, Unloading, Stowing
- Safe Handling of Hazardous Materials
- Emergency Response; as Updated through October 1996

CEU Credits:

\*Michigan State University

\*\*University of Missouri

\*\*\*Macomb Community College

\*\*\*\*Wayne State University