

# Bruce F. McNally

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PO Box 310 • Rochester, New Hampshire 03866 • (603) 948-1292

**Traffic Accident Reconstructionist**  
ACTAR Accreditation, Registration No. 670  
National Headquarters, Hudson, Florida

Full accreditation as a Traffic Accident Reconstructionist through the Accreditation Commission for Traffic Accident Reconstruction. Initial accreditation awarded August 27, 1995.

## Professional Experience

**McNally & Associates Accident Reconstruction Services, LLC** **2004 to Present**

### **President**

Directs and coordinates overall company operations. Principal investigator, providing services to various federal, state, county and local law enforcement agencies, as well as to insurance companies and law firms that require accident reconstruction for use in civil litigation. Services include accident reconstruction, re-enactment animations, forensic mapping, professional photography, and computer-generated graphic accident reconstruction. Have consulted on or reconstructed over 3,700 collisions as a private sector accident reconstructionist.

**Northeast Collision Analysis, Inc.** **1994 to 2004**  
Rochester, New Hampshire

### **Director**

**2000 to 2004**

Directed and coordinated overall company operations. Principal investigator, who provided services to various federal, state, county and local law enforcement agencies, as well as to insurance companies and law firms that required accident reconstruction for use in civil litigation.

### **Director of Testing and Research**

**10/1995 to 2004**

Coordinated crash testing for corporation. Organized and interpreted crash test data and occupant data for use in accident reconstruction. Completed crash testing in the area of low speed rear-end impacts, lateral impacts, sideswipe impacts, and transit bus collisions. In this capacity I was directly involved with over 300 various crash tests. Also completed performance testing with various automobiles and motorcycles, as well as motorcycle drop tests to evaluate sliding friction levels.

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## Professional Experience - continued

### Northeast Collision Analysis, Inc. - continued

#### Senior Consultant

Conducted accident reconstruction for corporation. Provided services to various federal, state, county, and local law enforcement agencies, as well as to insurance companies and law firms that required the data for use in civil litigation.

### Millinocket Police Department

1987 to 1993

#### Patrolman

Responsibilities included all aspects of a law enforcement police patrol. Enforcement of traffic and criminal statutes of the State of Maine. Accident investigator, whose responsibility included investigating or assisting in the investigation of serious or fatal accidents. Shared the responsibility of reviewing and approving all accident reports for the police department. Investigated several hundred motor vehicle accidents including several fatalities.

Detective for the police department for approximately one year. Responsible for the investigation of all serious crimes including felony offenses and narcotics investigations. Also responsible for the review and supervision of all criminal investigations within the department.

## Instructor

Field training officer for new police officer. Assisted in the field training of new officer in the area of traffic law enforcement and accident investigation.

Instructor for the Millinocket Police Explorers. Gave several blocks of instruction in OUI enforcement and criminal investigation.

Instructed block of instruction in Constitutional Law and Search and Seizure Law at Stearns High School Adult Education Program.

Conducted seminars on questionable liability and low-velocity impacts for insurance companies. Topics included damage correlation, evidence collection, photography, occupant kinematics, and biomechanics. Have also completed numerous crash tests for these seminars.

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## Instructor - continued

Conducted seminar for a group of physicians on biomechanics and accident reconstruction of low velocity impacts.

Reconstruction of Low Speed Collisions, International Association of Accident Reconstruction Specialists (IAARS), July 13, 1998.

Reconstruction of Low Velocity Impacts, Vermont Trial Lawyers Association, October 8, 1999.

Accident Reconstruction in Insurance Fraud Investigations, Third Annual Insurance Fraud Directors Conference, State of New Hampshire Insurance Department, Bedford, NH, October 11, 2000.

Accident Investigation Report Writing, McIntosh College, Dover, NH, periodic lectures.

Motorcycle Momentum, 20<sup>th</sup> Annual Special Problems in Traffic Crash Reconstruction, IPTM, University of North Florida, April 15-19, 2002.

Reconstruction of Motorcycle Collisions, refresher for Belknap Regional Accident Investigation Team (BRAIT), June 5, 2002.

Motorcycle Sliding Friction, 21<sup>st</sup> Annual Special Problems in Traffic Crash Reconstruction, IPTM, University of North Florida, April 28-May 2, 2003.

Update on Trucking Litigation and Claims, New York State Bar Association, Syracuse, NY, November 16, 2006.

Momentum & Rotational Mechanics, use of linear and angular momentum in motorcycle crashes and comparison of methods used to estimate yaw moment of inertia, Midwest Association of Technical Accident Investigators Annual Conference, St. Paul, Minnesota, May 2007.

Reconstruction In-Service Training, presented advanced momentum techniques for active law enforcement Reconstructionist, as well as crash test results from tests we ran earlier in the year, Maine State Police, held at the Bangor Police Department, Bangor, Maine, September 2007.

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## Instructor - continued

Accident Reconstruction, National Tort Claims Training Conference, U.S. Army Claims Service, Office of Judge Advocate General, Baltimore, Maryland, November 2007.

An Examination of "Strange" Ford PCM Behavior, CDR User's Summit 2010, Houston, Texas, January 2010.

Forensic Animations and Effective Court Exhibits, 2010 Vehicular Homicide Conference, Wisconsin Department of Justice, Traffic Safety Resource Prosecutor Program, Stevens Point, Wisconsin, March 22-24, 2010.

Small Errors and Big Problems, A Defense Expert's Perspective, 2010 Vehicular Homicide Conference, Wisconsin Department of Justice, Traffic Safety Resource Prosecutor Program, Stevens Point, Wisconsin, March 22-24, 2010.

Event Data Recorders in Crash Investigations, 27th Annual Vermont Claims Association Seminar, Essex, Vermont, October 4, 2013

Electronic Crash Data in Commercial Vehicle Crashes, Vermont State Police, Royalton Barracks, Royalton, Vermont, July 21, 2015

## Professional Memberships

Fellow of the International Association of Accident Reconstruction Specialists (IAARS) (Since 1997)

Member of the Association for the Advancement of Automotive Medicine (AAAM) (Since 1997)

Member of the National Association of Professional Accident Reconstruction Specialists (NAPARS) (Since 1994)

Member of the Society of Accident Reconstructionists (SOAR) (Since 1994)

Member of Society of Automotive Engineers (SAE) (1994-2015)

Member of the National Committee on Uniform Traffic Laws and Ordinances (NCUTLO) (1997-2001)

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## **Recognized Expert**

Have testified as an Expert Witness in civil and/or criminal litigation in Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Delaware, Michigan, Illinois, Missouri, Kentucky, South Carolina, Alabama, Florida and Arizona.

Have testified as an Expert Witness in U.S. District Court, District of Vermont, Rutland, Vermont and U.S. District Court, District of Massachusetts, Boston, Massachusetts.

## **Certifications**

Certified Bosch/Vetronix CDR-Tool Technician

Certified Bosch/Vetronix CDR-Data Analyst

Certified Traffic Accident Reconstructionist since 1993

Certified in Police Photography by the Maine Criminal Justice Academy in 1990

Certified as Intermediate Officer by the Maine Criminal Justice Academy in 1990

Certified in Police Traffic Radar by the Maine Criminal Justice Academy in 1988

Certified as an Emergency Medical Technician in 1984

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## Education and Training

### **University of North Florida, Institute of Police Technology and Management**

#### *Symposium on Traffic Safety*

June 21-24, 2021, Orlando, Florida

Live instrumented crash testing; Preservation of Crucial Evidence in Commercial Vehicle Crashes; Kawasaki EDR; Accurate Timing From Video: The Limitations of Variable Refresh Rates; Accessing Toyota Vehicle Control History and Collision Avoidance Data; EDR Update 2021; Airbag Control Module EEPROM Chip Swaps for the Retrieval of Electronic Crash Data – Destructive and Non-Destructive Methods; Distracted Driving: Causes and Consequences; Full-Scale Crash Testing Through the Years; Airborne Vehicle Methodologies; Implementing a Drone Program for Crash Reconstruction; Cannabis-Related Traffic Collisions; Capturing Data Using UAV, GNSS, Scanner and Total Station Toolbox; Monte Carlo Simulations

### **EDR Summit 2020**

March 9-11, 2020. Houston, TX

Bosch CDR Tool update; CDR Technician update; Evaluating Ignition Cycles; Determining “End of Event” in EDR Reports; Locomotive Event Recorder Downloads; Crossing Signal Event Recorders; Legal Challenges Regarding EDR Data; Traffic Signal as an EDR; Testing and Validation of Toyota Vehicle Control History Data; ATV Rollover Case Study; Subaru ADAS System; Pedestrian Automatic Emergency Braking (P-AEB); Autonomous Emergency Brake Data; Tesla Update; Berla Update and Case Studies; Nissan Steering and Recording Threshold

### **Forensic Video Solutions, LLC**

#### *Video Examinations for the Police Investigator*

August 14-15, 2019, at Manchester Police Department, Manchester, New Hampshire

Digital Video Recorders; Vehicle/Surveillance/Body Camera video characteristics; Video Terminology; Video Codec Issues; Video Compression Issues; Proprietary Player Issues; Aspect Ratio and Lens Distortion Issues; Clipped Tonal Values; Interlaced Video; Methods of Spatial and Temporal Compression; Refresh Rates; Non-Destructive Video Analysis Methods; Non-Linear Editing (Zooming, Cropping, Concatenating); Sequencing; Subclip Generation; Image Enhancement for Detail Extraction; Video Hashing; Metadata Analysis; Input-Ace Software

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## Education and Training – continued

### University of North Florida, Institute of Police Technology and Management

#### *Symposium on Traffic Safety*

June 3-6, 2019, Orlando, Florida

Live instrumented crash testing; Cell Phone Call and Tower Mapping in Crash Investigation; The Use of ELD and Telematics Data in the Reconstruction of a Collision; Integrating Pix4D Point Clouds with Terrestrial Scan Data for Use in Crash Reconstruction Software; EDR Update 2019; Video Analysis for Collision Reconstruction; Misinterpretation of Video Evidence in Collision Investigations; Inline Collisions Solved Using Simultaneous Equations; EDR Data and Video Images: Synchronization and Analysis; Crash Injury Analysis: Background and Case Studies; Tesla EDR Case Study; The Effects of Pedestrian Deceleration Rates in Roadside Grass/Bushes on Projectile Speed Analysis; Forensic Mapping Solutions and Virtual Crash; Vehicle System Forensics in Crash Reconstruction; Load Shift and Rollover Collisions; Case Studies using EDR Information; Chip Level Digital Forensics of Heavy Vehicle Control Units; Crash Reconstruction and the Highly Automated Vehicle; Post Crash Data Analysis and Review

### EDR Summit 2019

March 4-6, 2019, Houston, TX

Bosch CDR Tool update; EDR and U-Haul 26-ft Box Trucks; Analyzing Steering, Yaw and Lateral Accel Stability Control Systems Data; Update on Reconstruction of Autonomous Vehicle and ADAS Technology; Velocity Analysis from Video Cameras; Bosch CDR 900 Technical Discussion and Demonstration; Tesla Case Studies and Reconstruction Techniques; A Generational Review of Collision Mitigation Systems in Heavy Vehicles; Validation and Analysis of Vehicle Speed Data Acquired with the Berla iVe System; Infotainment and EDR Correlation; Car Fire = No EDR, Infotainment, or other Electronic Data; EDR Reprogramming; CDR Technician Troubleshooting & Advanced Data Collection Techniques; Determining Vehicle Speed from an Audio Recording; Impact Dynamics of Passenger Vehicle in Guardrail and Guardrail End Terminal Crashes; Motorcycle Accident Reconstruction – Incorporating Struck Vehicle EDR Data; EDR Data - Applications Beyond Impact Speed

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## Education and Training – continued

### **Crash Safety Solutions, LLC**

#### *Human Factors for Traffic Crash Reconstruction*

July 10-14, 2017, at University of New Hampshire, Durham, New Hampshire  
History and Foundation of Reaction Time Research, Understanding Driver Response Terms and Definitions, Weather Influences and Driver Response, Evaluating a Response during Nighttime Driving, Headlight Beam Analysis, Evaluating Path Intrusion Crashes, Acceleration Rates of Drivers and Gap Acceptance, Driver Search Patterns, Driver Response to Lead Vehicles and Traffic Signals, Nighttime Response Scenarios and Documentation, I.DRR Software Tutorial

### **EDR Summit 2017**

March 6-8, 2017. Houston, TX

Bosch CDR product update; Autonomous Vehicles; Case Studies: Discovering and Analyzing Digital Data Acquired from Motor Vehicle Systems and Connected Mobile Devices; Subaru & Mitsubishi EDR Data; Forensic Data from Heavy Vehicle Networks; Overview and Update of the Volvo and Mack ECM EDRs; Overview and Update of the Caterpillar ECM EDRs; Toyota GEN3 Pre-Crash Brake Data, Details and Application; Pre-Crash Data recorded by the ACM, Where does it come from?; Asynchronous Data Concepts in EDR Data; Overview

### **EDR Summit 2017 continued**

and Update of Cummins ECM EDR Capabilities; Atypical Airbag Deployment Cases; Hyundai/Kia EDR Data Software Updates & Real World Applications; Forensic Methods for Dealing with Damaged ECM/ECU Components; CDR Data Case Studies for Late Model GM, Toyota, BMW and Ford Vehicles; Case Study: Mercedes-Benz Crash Data; A Case Study Heavy Vehicle Crash Reconstruction Incorporating EDR ECM Data

### **CDR User's Summit 2014**

January 27-29, 2014, Houston, TX

The CDR product Past, Present and Future; SAE EDR Committee and NHTSA Part 563 Update; OE Updates from General Motors and Chrysler; Assessing and Accessing the DLC/OBDII Port; Integrating CDR Data in an Analysis and Report Narrative; Toyota Brake Data; Overview of data from CDR supported European vehicles sold in North America; Hyundai/Kia EDR Data; Legal Update; Validating CDR Data through Crash Testing; Narrow Overlap Data Discrepancies.

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## Education and Training – continued

### **Navistar Education**

March 17, 2013

#### *ServiceMaxx Introduction and Usage*

Introduction to basic features and functions of Navistar ServiceMaxx diagnostic software, used to diagnose and retrieve engine data from all electronically controlled International-Navistar engines. Topics included features and functions of ServiceMaxx, use of ServiceMaxx Sessions, Vehicle Parameters and Signals.

### **CDR User's Summit 2013**

January 21-23, 2013, Houston, TX

The CDR product Past, Present and Future; SAE EDR Committee and NHTSA Part 563 Update; Clipped Data; OE Updates from General Motors, Chrysler and Toyota; Advanced Repowering Techniques; Non-CDR supported OE's/ modules; Confirmation of CDR veracity in GM cases; Comparison of CDR data to a crash reconstruction; Crash Data from Motorcycles; Analysis of low delta-v impacts and CDR data; Examination of data from "cleared" airbag control modules; Toyota crash data recording thresholds and overwriting process.

### **University of North Florida, Institute of Police Technology and Management**

#### *Heavy Vehicle Electronic Control Module Data Use In Crash Reconstruction*

May 29 – June 1, 2012, Jacksonville, Florida

Methods and Procedures for Retrieving Data from Caterpillar, Mack, Volvo, International, Cummins and Detroit Diesel Engines; Use of Caterpillar Electronic Technician, Cummins PowerSpec, Cummins Insite, Detroit Diesel DDEC Reports, Detroit Diesel Diagnostic Link and International ServiceMaxx software packages; Field Testing of Caterpillar, Cummins and Detroit Diesel Engines; Analysis of Heavy Vehicle ECM Data.

### **Collision Safety Institute**

#### *Crash Data Retrieval Data Analyst Certification Course*

February 13-17, 2012, Worcester, MA

Updated Analyst Training in Reading and Interpreting CDR Reports for GM, Ford, Chrysler and Toyota Modules.

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## Education and Training – continued

### **CDR User's Summit 2010**

January 25-27, 2010, Houston, TX

The CDR product Past, Present and Future; An Examination of "Strange" Ford PCM Behavior; CDR Exclusion Case Study; Chrysler Data Reliability from Crash Tests; Insurance Applications for Crash Data Retrieval, Legal Considerations; Seat Belt Systems and Their Interface with CDR Data; Ford PCM Data - The Restraint Deployment Signal (RDS) and Impact Speed Timing Considerations; Case Study: Two-Vehicle Fatal Crash Investigation and Non-Deployed Air Bag Results in a Recall; Wet or Frozen ACM Access Considerations; Data from non-CDR System OEM's; Ford RCM Runtime Considerations Based on Testing; Retrieving & Translating Event Data from non-CDR-Vehicles, including 2003-2005 Ford Explorer & Various Toyota, Hyundai and Mazda Models; OEM Updates as They Relate to CDR (GM, Ford and Chrysler).

### **Crash Data Retrieval User's Conference**

January 26-28, 2009, Houston, TX

The CDR Product Future Releases and Product Support; CDR Legal Issues Update; EDR Data & Collision Reconstruction Analysis: Toyota Case Study; The Affect of ACM Reprogramming on Stored Crash Data; 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 Pre-Crash Speed Data During Braking; OEM Updates.

### **Collision Safety Institute**

#### *Crash Data Retrieval Data Technician Course*

January 14, 2008, Chantilly, VA

CDR System Operations, Current Coverage, Connectivity Collection Methodology, Legal Considerations.

#### *Crash Data Retrieval Data Analyst Certification Course*

January 15-18, 2008, Chantilly, VA

Legal Considerations, Terms and Conventions, Airbag Control Algorithms, Reading and Interpreting CDR Reports for GM, Ford and Chrysler Modules.

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## Education and Training – continued

### **SAE International**

#### Highway Vehicle Event Data Recorder Symposium

September 5-6, 2007, Ashburn, Virginia

EDR and Legal Issues, EDR Standards Update, EDR Data Validity, Global Initiatives and Perspectives, Insurance Industry Perspectives, Passenger Car EDR Data Case Studies, Commercial Vehicle EDR Applications.

### **Cummins Northeast**

#### Insite Orientation

May 21, 2007, Dedham, MA

Basic Operation of Cummins Insite, Connection Methods, Troubleshooting, Bench Downloads, Use of Work Orders, Communication Protocols.

### **Midwest Association of Traffic Accident Investigators**

#### Annual Conference

May 15-18, 2007, St. Paul, Minnesota

Crashzone Version 8 Overview, Seatbelts Analysis in Frontal Collisions and Rollovers, Non-Conforming Pedestrian Impacts, Forensic Friction, Bicycle Acceleration, Momentum & Rotational Mechanics, Driver Fatigue, Highway Sightline Determination, Issues Regarding Post-Impact Trajectories.

### **The Accident Reconstruction Network (ARC Network) & Collision Safety Institute (CSI)**

#### Crash Data Retrieval User's Conference

January 29-31, 2007, Houston, Texas

Future Release of Vetronix CDR System Updates, Accuracy of Vehicle Speed and Delta-V in GM EDR's, Average Daily Ignition Cycles, Two Dimensional Analysis of EDR Data, New Ford PCM and RCM Event Data Recorder Capabilities, Final NHTSA Ruling on EDR's, Using Diagnostic Tools with CDR System, Airbag Deployment Algorithms.

### **Maine State Police & National Association of Professional Accident Reconstruction Specialists, Inc. (NAPARS)**

#### Commercial Vehicles

May 15-19, 2006, Augusta, Maine

Heavy Truck Nomenclature, Air Brake Systems, Antilock Braking Systems and Stability Control Systems, Braking Performance and Maintenance, Retrieval of Data From Heavy Truck Engine Control Modules, Tractor-trailer Skid Testing.

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## Education and Training – continued

### **The Accident Reconstruction Network (ARC Network) & Collision Safety Institute (CSI)**

#### *Crash Data Retrieval User's Conference*

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 and Human Factors Issues, A Review of Various ACM Module Types and Data Recorded, Motorcycle and Motor Vehicles Equipped With EDR's, Analysis of the GM Sensing and Diagnostic Module in 360° Linear Momentum Collisions: Real Case Analysis, CDR Data Presentation and Validation in Legal Proceedings, Legal Implications of Data Collection, A 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 EDR's, The Accuracy of Speed Recorded by an SDM and the Effects of Brake and Yaw Events, Overview of New GM Modules Using CAN Bus Technology, Practical Applications for CDR Gathered CAN Bus Data.

### **Sokkia Corporation**

#### *Total Station Mapping*

February, 2005, Dover, New Hampshire

Completed 16-Hour Equivalency Course Presented by Sokkia Corporation in the Use of Their Instruments For Total Station Scene Mapping.

### **Tony Foale Designs**

#### *Motorcycle Dynamics Seminar*

November 13-14, 2004, New York City, New York

Motorcycle Tire Characteristics, Front and Rear Suspension Systems and Settings, Motorcycle Geometry, Suspension Kinematics and Dynamics, Steering and Cornering, Damping Methods and Adjustments, Rear and Front Braking Characteristics, Drive Systems.

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## Education and Training – continued

### **University of North Florida, Institute of Police Technology and Management**

#### *Special Problems in Traffic Accident Reconstruction*

April 28-May 2, 2003, Jacksonville, Florida

Motorcycle Brake Testing, Validation of Spin Model, Rollover Testing and Analysis, Geometric Design of Streets and Highways, 3-Point Trajectory For Vaulting Vehicles, Photogrammetry, Occupant Kinematics, NHTSA Crash Test Data, Vehicle Instrumentation and Data Analysis, Pedestrian Amputation and Speed Association, Motorcycle Impact Friction Values, Vetronix CDR-Tool Ford Update.

### **University of North Florida, Institute of Police Technology and Management**

#### *CDR Tool - User Certification Course*

November 20-22, 2002, Jacksonville, Florida

History and Background of CDR Technology, Technical Information on Current CDR Data, Data Recovery Techniques, Practical Download Field Exercises, Real-world Case Studies.

### **University of North Florida, Institute of Police Technology and Management**

#### *Special Problems in Traffic Accident Reconstruction*

April 15-19, 2002, Jacksonville, Florida

Motorcycle Crash Tests, Commercial Vehicle ABS Braking and Skid Tests, Heavy Truck Rollover Mechanics, Human Factors, Energy Methods in Collisions, Error Analysis, Motorcycle Momentum, Train Collisions, Pole Impacts, Rotational Mechanics, Drag Sled Validity and Case Law Updates.

### **The Texas A&M University • Texas Engineering Extension Service**

#### *World Reconstruction Exposition 2000*

September 24-29, 2000, College Station, Texas

Conference Focused on Crash Testing of Motorcycles at Various Speeds and Configurations; Skid Tests at Low-End Moderate Speeds With Different Tires; High Speed Vehicle-to-Vehicle Crash Tests; Crash Data Retrieval Systems; Full-Scale Force/Weight Tests of Air-Braked Trucks, Truck Tractors, and Semi-trailers Compared to Automobiles.

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## Education and Training – continued

### **Physical Medicine Research Foundation**

#### Whiplash Associated Disorders World Congress

February 7-11, 1999, Vancouver, British Columbia

Attended Presentation of Research Papers in the Traffic Safety and Auto Engineering section. Papers Included Experimental Studies-Human Volunteers; Child Occupant Protection; Experimental Studies-Human Cadavers; Mathematical Modeling and Other Computer Studies; Anthropometric Test Dummies; Regulations and Prevention.

### **The Texas A&M University • Texas Engineering Extension Service**

#### CRASH 98

October 19-23, 1998, College State, Texas

History of Crash Testing, Overview of “CRASH” Concepts, Validation of CRASH Algorithm, Vehicle Measurement Protocol, CRASH III Applications in Europe, Total Station Applications for Vehicle Measurement, Car-to-Car and Car-to-Barrier Crash Tests, Derivation of Crush Stiffness Coefficients, Overview of HVE Software, Application of WinCrash Software, and Applications of PC-Crash Software.

### **International Association of Accident Reconstruction Specialists (IAARS)**

#### Annual Conference

July 13-17, 1998, Boston, Massachusetts

Biomechanics of Low Speed Impacts, Low Velocity Impacts and Insurance Fraud, Elderly Driving Issues, Issues of Driver Awareness and Traffic Control Devices, Transfer and Trace Evidence, Blood Evidence, Tire Dynamics, and Crash Testing.

### **Midwest Association of Traffic Accident Investigators (M.A.T.A.I.)**

#### 11<sup>th</sup> Annual Conference

May 18-20, 1998, Kansas City, Missouri

Momentum, Energy and Restitution in Accident Reconstruction.

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## Education and Training – continued

### **Society of Automotive Engineers and Wayne State University**

#### **School of Medicine**

##### *Whiplash 98*

November 5-6, 1998, Tempe, Arizona

Anatomy of the Cervical Spine; Biomechanics of Neck Injury; Physiology of Pain; Psychology of Pain; Biomechanics of the Cervical Facet Capsule; Radiological Aspects of Whiplash; Whiplash Injury Mechanisms; MRI of Soft Tissue Injuries; Osteopathic Manipulation and Whiplash; Neck Injury Risks in Low Speed Rear Impacts; Rehabilitation in Whiplash; Low Speed Rear-end Collisions - Neck Injury Mechanisms and Dummy Design; Headaches and Whiplash; CNS Problems Related to Whiplash; Age and Gender Affects of Whiplash in Low Velocity Collisions; Injuries to the Cervical Plexus and Temporomandibular Joint; Biomechanics of the Temporomandibular Joint; Mechanisms of Injury; and Whiplash Associated Dynamics of the Head, Neck and Mandible.

### **41<sup>st</sup> Annual Stapp Car Crash Conference**

November 13-14, 1997, Lake Buena Vista, Florida

Biomechanics of Child Injuries, Biomechanics of Side Impacts, Interaction of Air Bags With Upper Extremities, Biomechanics of Lower Extremities, Restraint System Performance, Biomechanics of Head Injuries, Biomechanics of the Neck in Rear Impacts, Neck Modeling, and Injury Tolerance.

### **2<sup>nd</sup> Child Occupant Protection Symposium**

November 12, 1997, Lake Buena Vista, Florida

Air Bags and Seating Position - Effect on Child Injury; Restraint Use, Usability and Tether Performance; Restraint Misuse and Injury Patterns; Restraint Test Procedures and Child Dummies.

### **Association for the Advancement of Automotive Medicine**

#### *41<sup>st</sup> Annual Conference*

November 10-11, 1997, Lake Buena Vista, Florida

Alcohol-related Studies, Impaired Driving, Crash Injury Data Sources and Epidemiology, Bicycle/Pedestrian Injuries, Driver Characteristics and Vehicle Interaction, Cost of Traffic Injuries, Injury Patterns and Mechanisms: Field Studies, Biomechanical and Experimental Studies, Occupant Restraints and Air Bag Effectiveness.

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## Education and Training – continued

### **Society of Automotive Engineers (SAE)**

#### *Air Bag Design and Performance TOPTec*

August 14-15, 1997, Costa Mesa, California

Air Bags: How and Why They Work; Regulatory History; Depowering Air Bags; System Level Design of Occupant Restraints; Fatalities Associated with Air Bag Deployments; Crash Sensor Performance; Air Bag Injuries in Head-On Crashes; Air Bag Performance in the Real World; Auditory and Visual System Injury Potential; Smart Restraint Systems; Air Bag Deployment Demonstration; Field Investigation of Air Bags, Seat Belts, and Interior Markings.

### **Association for the Advancement of Automotive Medicine**

#### *Car Crashes and Occupant Injuries: A Team Approach to Crash Investigation*

April 24-25, 1997, Tempe, Arizona

Crash Scene Evidence; Investigating Crashes by Type; Post-Crash Examination of Vehicles (Hands-On); Multiple Collisions; Tree/Pole Impacts; Compatibility Issues; New Techniques for Crash Investigation; Defining Crash Mode, Its Frequency and Injury Risks; Change in Velocity; Principal Direction of Force; Restrained Versus Unrestrained Occupant Kinematics; Importance of Seating Position; and Physiological Variation. Aspects Specific to Crash Type Such as Far-Side and Near-Side Occupants, Seat Performance, and Roof Crush. Hands-On Examination of Vehicles Involved in Different Types of Collisions With Specific Emphasis on Vehicle Damage, Occupant Kinematics, and Injury Risk.

### **The Texas A&M University • Texas Engineering Extension Service**

#### *CRASH 97*

March 24-28, 1997, College Station, Texas

Commercial Vehicle Under-ride Collisions, Commercial Vehicle Under-ride Crash Tests, Human Acceleration Thresholds, Nighttime Visibility and Reaction Times, System Based Energy & Momentum, Low Speed Crash Tests, Air Bag Deployment Test Impact.

### **Society of Automotive Engineers (SAE) International Congress and Exposition**

February 24-27, 1997, Detroit, Michigan

Attended Presentation of Papers on Automotive Safety and Accident Reconstruction.

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## Education and Training – continued

### **MacInnis Engineering Associates, Ltd.**

#### *PC-Crash and PC-Rect Workshop*

February 25, 1997, Detroit, Michigan

Training on the Computer Accident Simulation Program (PC-Crash) and the Photo-Rectification Program (PC-Rect).

### **University of North Florida, Institute of Police Technology and Management**

#### *Advanced Accident Reconstruction and Collision Prediction*

#### *(Simulation) with WinSmac*

November 11-14, 1996, Jacksonville, Florida

Classification of Prediction Programs, Damage Prediction, Pre-Impact Analysis, Post-Impact Analysis, Practical Application, Single Vehicle Motion, Use of Prediction in Occupant Injury Severity Analysis, Validation Strategies, Limitations of Prediction Programs.

### **University of North Florida, Institute of Police Technology and Management**

#### *Applied Physics for Traffic Accident Investigators*

September 9-13, 1996, Jacksonville, Florida

Work-Energy Relationships, Conservation of Linear Momentum/Impulse, Uniform Projectile Motion, Uniform Circular Motion, Tire Forces and Tire Mark Evidence, Energy Losses in Collisions/CRUSH, Rotational Mechanics, Occupant Kinematics, Low-Speed Collision Considerations.

### **Society of Automotive Engineers International (SAE)**

#### *Low Speed Collision TOPTEC (with crash testing)*

August 19-20, 1996, Vancouver, British Columbia

Injury, Understanding "Whiplash," Human Volunteer Testing, Structures and Injuries of the Neck, Dynamic Requirements of Automobile Seat backs, Dummy Development, Reconstruction of Minor Collisions, Comparison of Car Seats Regarding Head-Neck Kinematics During Rear-End Impacts.

### **The National Institute of Forensic Studies**

#### *Biomechanics of Injury from Traffic Collisions*

May 6-8, 1996, Orange, California

Injury From Vehicle Collisions, Physics and Mathematics of Vehicle Collisions, Occupant Kinematics, Analysis of Restraining Systems, Biomechanics of Low Speed Rear-End Collisions.

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## Education and Training – continued

### **Association for the Advancement of Automotive Medicine**

#### *39th Annual Conference*

October 16-18, 1995, Chicago, Illinois

Alcohol's Role in Driving and Injuries, Seat Belt Usage Studies, Injury Patterns and Mechanics, Intelligent Restraint Systems, Crash & Vehicle Characteristics and Injury Risk, Injury Outcome Studies, Fatality Risk Studies, Driver Licensing and Impairment.

### **University of North Florida, Institute of Police Technology and Management**

#### *Special Problems in Traffic Accident Reconstruction*

April 22-26, 1996, Jacksonville, Florida

Human Factors/Perception and Response, Hydroplaning, Low Speed Impact Analysis with Crash Testing, Pedestrian Hit-and-Run Investigation, Vehicle Mechanical-Failure Analysis, Computer-Aided Collision Prediction, Effects of Aerodynamics on Vehicles, Tire Retread Technology.

### **SOAR/WATAI/TAARS**

#### *1995 Combined Conference*

August 24-26, 1995, Charlottesville, Virginia

Vehicle Research Center, Insurance Institute for Highway Safety; National Crash Analysis Center and Research Library, George Washington University, Automobile Collision Estimating and Evaluation of Written Repair Estimates.

### **Colorado School of Mines**

#### *Forensic Physics Applied to Accident Reconstruction*

August 1-4, 1995, Golden, Colorado

Vector Analysis and Application, Kinematics, Newton's Laws, Applications of Newton's Laws, Coefficient of Friction and Drag Factors, Law of Conservation of Linear Momentum, Law of Conservation of Energy, Case Studies.

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## Education and Training – continued

### **The Texas A&M University • Texas Engineering Extension Service**

#### *Bio-Mechanics of Accidents*

June 12-16, 1995, College Station, Texas

Traffic Accident/Medicine Link, Physicians' View of Auto Accidents, Injury Classification Systems, PDOF and Occupant Response, Occupant Dynamics, Blunt and Sharp Injuries, Mechanics of Materials, Analysis and Documentation of Evidence, Occupant Restraint Systems, Occupant Restraint Testing, Physical Evidence and Emergency Care, Introduction to Forensic Toxicology, Medico-Legal Autopsy Report.

### **Association for the Advancement of Automotive Medicine in Cooperation with International Research Council on the Biomechanics of Impact**

#### *Biomechanics of Impact and Current Occupant Restraint Issues*

April 6-7, 1995, Washington, DC

Biomechanics, Occupant Kinematics and Crash Testing Assessment, Anatomy, Injuries and their Mechanisms. Cervical Spine and Injury Mechanisms and Spine Tolerance Limits. Seat Belt and Air Bag Performance.

### **The Texas A&M University • Texas Engineering Extension Service**

#### *Pedestrian/Bicycle Accident Reconstruction*

March 20-24, 1995, El Paso, Texas

Vehicle Documentation, Body Movement and Trajectories, Perception and Reaction, Bicycle/Vehicle Theory, Cyclist Riding Dynamics, Pedestrian Conspicuity, Pedestrian Behavior, Walking and Running Speeds, History of Pedestrian Collision Analysis, Reconstruction Methodology, Crash Testing.

### **Institute of Police Technology and Management at the Massachusetts State Police Academy**

#### *Advanced Traffic Accident Reconstruction with Microcomputers*

February 27 to March 3, 1995

Introduction to Slam, Right Hand Cartesian Coordinate System, Vector Analysis, Engineering Definition, Kinetic Energy and Crush Analysis, A and B Stiffness Coefficients, Practical Reconstruction Projects Using SLAM, Linear Momentum Using SLAM.

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## Education and Training – continued

### **The Society of Automotive Engineers International (SAE)**

#### *Low Speed Impact Collision (with crash testing)*

August 7-9, 1994, Irvine, California

Accident Reconstruction of Low Velocity Rear-end Impacts, Occupant Kinematics, Cervical Injuries, Crash Severity, and Injury Frequency. Current Research, Staged Collisions at Low Speeds, Role of the Bumper in a Crash, Estimating Impact Severity and Injury Potential.

### **University of North Florida, Institute of Police Technology and Management**

#### *Traffic Accident Reconstruction*

November 8-19, 1993, Jacksonville, Florida

Formula Derivations, Motorcycle Speed Estimates, Conservation of Linear Momentum, Weight Shift, Vehicle Behavior in Collisions, Interpretation of Scene Evidence, Vector Analysis Theory and Crush Analysis.

#### *Advanced Accident Investigation*

October 25 to November 5, 1993, Jacksonville, Florida

Introduction to Vehicle Dynamics, Human Factors, Conservation of Linear Momentum, Slips, Falls and Vaults, Time/Distance Analysis, Vehicle Damage Analysis, Interpretation of Roadway Evidence.

### **University of North Florida, Institute of Police Technology and Management**

#### *At-Scene Accident Investigation*

March 30 to April 10, 1992 at Maine Criminal Justice Academy, Waterville, Maine  
Speed from Skids, Critical Speed, Documentation of Scene Evidence, Preparation of Scale Diagrams, Human Factors, Identification and Interpretation of Physical Evidence from the Traffic Way and the Vehicle, Accident Photography and Case Preparation.

### **University of North Florida, Institute of Police Technology and Management**

#### *Drug Unit Commander Seminar*

May 1991 at Maine Criminal Justice Academy, Waterville, Maine

### **Federal Bureau of Investigation**

#### *Investigation of Sexual Exploitation of Children*

September 1990 at Maine Criminal Justice Academy, Waterville, Maine

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## Education and Training – continued

### **Millinocket Fire Department**

*Hazardous Material Training, National Fire Academy*

December 1989, Millinocket, Maine

### **Portland Area Center for Training, Portland Police Department**

*Advanced S.R.T. Training*

August 1989, Portland, Maine

### **Maine Criminal Justice Academy**

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April 1989, Waterville, Maine

### **Portland Area Center for Training, Portland Police Department**

*SRT Tactical Training*

November 1988, Portland, Maine

### **Kennebec Valley Vocational-Technical Institute**

*First Responder Course*

May 1988 at Maine Criminal Justice Academy, Waterville, Maine

### **Maine Criminal Justice Academy,**

59th Municipal/County Basic Police School, 1988

### **Maine Criminal Justice Academy**

*Reserve Officer Training Program*

October 1987, Waterville, Maine

**University of Maine,** Legal Technology Program, 1985

**Katahdin High School,** Sherman Station, Maine, 1984

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## Training in Photography

### **The Nikon School of Photography**

#### *Introduction to Digital SLR Photography*

March 4, 2006, Boston, Massachusetts

### **Eos Systems Technology**

#### *PhotoModeler*

January 24-26, 2006, Jacksonville Florida

Photography Techniques, Scene Diagramming and Mapping From Photos, Scene and Crush Measurements, Evaluating Accuracy and Developing Standard Operating Procedures, Exporting to a CAD Package for Further Enhancement and Diagramming, Measurements From Single Photos and/or Photos From Unknown Camera, Photo-realistic Surfacing for Visualizations and Rendering, Nighttime Photography and the Use of Sub-pixel Marked, Retro-reflective Targets, Ortho-photo and Rectified-photo Generation, Admission of Photogrammetry and PhotoModeler Into Court.

### **Morgan Press**

#### *How to Control from Monitor to Printer*

April 12, 2005, Manchester, New Hampshire

Attended a Seminar Addressing the Matching of Scanned/Digital Images to Final Output, Specific Areas of Concentration Included Color Gamuts and Profiles, Limitations and Strengths of Various Color Spaces, and Output Techniques Designed to Increase Impact and Accuracy.

### **The Nikon School of Photography**

January 6, 2001

Regis College, Weston, Massachusetts

### **Polaroid School of Law Enforcement Imaging**

#### *Basic Theories and Principles*

June 1992

### **Maine Criminal Justice Academy**

#### *Police Photography*

October 1990, Waterville, Maine

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## Publications

**The Trailer Hitch Failure and the EDR File, A Case Study**, by Wade Bartlett, Richard McAlister and Bruce McNally, Accident Reconstruction Journal Volume 30, No. 1, January/February 2020

**Retrieving and Interpreting Data from Ford Powertrain Control Modules using the Bosch Crash Data Retrieval Tool**, by Bruce F. McNally, Collision Volume 5, Issue 1, Spring 2010

**Estimating the Yaw Moment of Inertia of Typical Passenger Vehicles**, presented at the Midwest Association of Traffic Accident Investigators Annual Conference, St. Paul, Minnesota, May 2007

**Motorcycle Sliding Coefficient of Friction Tests**, presented at the 21<sup>st</sup> Annual Special Problems in Traffic Crash Reconstruction at the Institute of Police Technology and Management, University of North Florida, April/May 2003. (Published in Accident Reconstruction Journal, March/April 2007, Volume 17, No. 2, pages 47-49.)

**Summary of Motorcycle Friction Tests**, presented at the 21<sup>st</sup> Annual Special Problems in Traffic Crash Reconstruction at the Institute of Police Technology and Management, University of North Florida, April/May 2003

**Reconstruction of Motorcycle Collisions**, handout materials for lecture, Belknap Regional Accident Investigation Team, (BRAIT) June 5, 2002

**Motorcycle Speed Estimates Using Conservation of Linear and Rotational Momentum**, presented at the 20<sup>th</sup> Annual Special Problems in Traffic Crash Reconstruction at the Institute of Police Technology and Management, University of North Florida, April 2002

**Accident Investigation Report Writing**  
Materials for lecture at McIntosh College, August 2001

**The Accident Reconstructionist's Role in Automobile Fraud Cases**  
Teaching materials for the Third Annual Insurance Fraud Director's Conference, October 2000

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## Publications – continued

### Low Speed Impacts Using Human Volunteers

by Bruce F. McNally, Robert A DuBois, Joseph S. DiGregorio, Sr., and Gary J. Phillips, submitted to Accident Reconstruction Journal, 1999

### IAARS Annual Conference Crash Test Results

by Bruce F. McNally and Joseph S. DiGregorio, Sr., August 1998

### Coefficient of Restitution Values in Low Velocity Impacts

by Bruce F. McNally, Robert A. DuBois, and Joseph S. DiGregorio, Sr., submitted to Accident Reconstruction Journal, 1998

### Reconstruction of Low Speed Impacts

Teaching materials for IAARS Conference, July 1998

### Further Discussion of 'Normal' Acceleration Rates

Letter to the editor, Accident Investigation Quarterly, Winter 1997

### Insurance Fraud and Motor Vehicle Collisions

by Robert A. DuBois and Bruce F. McNally, Prokit 1997

### Low Velocity Collisions

by Bruce F. McNally and Robert A. DuBois, Prokit 1997

### Who's the Driver?

by Bruce F. McNally, Nightstick, 1997

### Photography and Measuring Protocol

by Bruce F. McNally and Joseph S. DiGregorio, Sr., Northeast Collision Analysis, Inc. Proper photography and examination techniques to document low velocity impacts. Used as teaching material at SIU and claims seminars nationwide, 1997.

### Low Velocity Car-to-Bus Test Impacts

Details the results of 18 test impacts where a typical passenger vehicle struck the rear of a stopped transit bus. Testing included measurement of the velocities and acceleration experienced by the test vehicles, the damage sustained by the test vehicles, and videotape recordings of the occupants of the test vehicles. September/October 1996, Accident Reconstruction Journal pp. 44-51.



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## Publications – continued

### For Your Information (FYI)

Publication submitted to Low-Velocity Claims Handlers that critiques two articles, one by Dr. Baxter W. Paschal on the physics of rear-end collisions, and one on whiplash and neck sprain injuries by Kosterman Chiropractic Clinic, PA, March 1996, Northeast Collision Analysis, Inc.

## Honors and Awards

- Salutatorian, Class of 1984, Katahdin High School
- Bausch and Lomb Honorary Science Award
- Academic Achievement Award, Maine Criminal Justice Academy, R.O.T.P.
- President, National Honor Society, Katahdin Chapter

Revised: July 21, 2021