

## **Curriculum Vitae**

**Stephen M. "Steve" Ashton**

**Accredited Accident Reconstructionist, A.C.T.A.R. # 1474**

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### **EXECUTIVE SUMMARY**

Reconstructed over 900 crashes involving passenger vehicles, tractor-trailers, pedestrians, motorcycles, trains, and a shopping cart. Deposited in Franklin County, Butler County, and Hamilton County, Ohio as well as Allen and Dearborn County, Indiana. Evidence given on the following issues: impact speed analysis, time/distance analysis, point of perception, seat-belt usage, point of impact placement, etc. Qualified Expert in Warren County Common Pleas, Butler County Common Pleas, Hamilton County Common Pleas, Montgomery County Common Pleas, Fairfield Municipal Court (Butler County) in Ohio, Allen County Common Pleas Court, Indiana, Shelby County, Memphis, Tennessee and U.S. Federal Court in Dayton, Ohio. One of first Accident Reconstruction Companies in Ohio to incorporate **FARO Focus 3d Laser Scanner** for Accident Scene Documentation and to create 3D models. We are also the 1<sup>st</sup> private Accident Reconstruction Business in the world to receive NFPA 2400 (Standards for **Small Unmanned Aircraft Systems** (sUAS) Used for Public Safety Operations) Certification.

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### **SUMMARY OF QUALIFICATIONS**

#### **Crash Reconstruction Experts**

*2016 - present*

#### **(formerly Crashteam Ohio & Southern Indiana)**

Formed new business upon decision to leave Crashteam franchise. Crash Reconstruction Experts continues to provide full-service crash, collision and accident investigation and reconstruction services with an emphasis on solving impact speeds, calculating point of impact, 3D Animations, 3D Scanning of any models and all other related accident reconstruction services.

- President of O.T.A.R.A. (Ohio Traffic Accident Reconstruction Association) incorporated 2008. Serves as a forum for education and mentoring those involved in crash investigation and reconstruction.
- Ohio State Licensed Private Investigator

- Total Station Forensic Mapping Certification – June 2005
- A.C.T.A.R. #1474 (Accreditation Commission for Traffic Accident Reconstruction) – September 2004
- Auto Accident Reconstructionist (I.P.T.M.) – July 2003

**Ashton Collision Reconstruction Technology**

2005 – 2008

Fairfield, Ohio

State Licensed and A.C.T.A.R. accredited auto accident reconstructionist business dedicated to the investigation and reconstruction of vehicle accidents involving passenger cars, motorcycles, trucks, pedestrians, and bicycles.

**Forest Park Police Department**

1980 - 2008

Forest Park, Ohio

Duties: Assigned to Traffic Division 1982 – Fatal Auto Accident Investigator; November 2005 – Lieutenant in charge of Road Patrol; December 1998 to November 2005 – Sergeant in Charge of Traffic Division; Auto Accident Reconstructionist, 2003 - 2008, President/Founder of O.T.A.R.A. (Ohio Traffic Accident Reconstruction Association), Write and Coordinate Traffic Grants, D.U.I. Taskforce Coordinator, C.A.L.E.A. Policy Accreditation Program Manager

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**F O R M A L E D U C A T I O N**

Certified Law Enforcement Executive, 2006

Police Executive Leadership College, 1999

University of Cincinnati, Cincinnati, Ohio, Criminal Justice, BS – 1990.

University of Cincinnati, Cincinnati, Ohio, Law Enforcement, AS – 1980.

University of Cincinnati, Cincinnati, Ohio, Psychology, 1974 – 1976.

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**C E R T I F I C A T I O N S**

NFPA 2400 sUAS (Drone) Certification – October 2020

FARO Scene and 3D X330 Scanner Certification – March 2016

N.H.T.S.A. D.W.I. Detection and Standardized Field Sobriety Testing Instructor Qualification - May 2011

ARAS360 Trainer Certification - April 2011

Bosch CDR Technician and Analyst Certification – February 2010, October 2016

Crash Data Retrieval (I.P.T.M.) – December 2008

Private Investigator (Ohio License # 200821001347) – May 2008

Visual Statement Accident Reconstruction Software Certification – September 2008

### **Crashteams Ohio & Southern Indiana**

2008 - 2016

Member of the largest crash reconstruction company in the world. Crashteams provides crash, collision and accident investigation and reconstruction services, including solving impact speeds, calculating point of impact, 3D Animations and all other related accident reconstruction services.

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### **SPECIALIZED COURSES/TRAINING**

*Course – “Investigation of Motorcycle Crashes,”* Topics: Turning and Straight Line Crash Analysis, Evidence from the Roadway, Motorcycle Tire Analysis, Operator and Human Factors, Helmets and Safety Equipment, Friction and Uniform Motion, Equations for Motorcycle Crash Analysis, Project-Single Motorcycle Crash, Project-Intersection Crash Analysis, Motorcycle Speed Analysis, Motorcycle Damage Analysis. Butler Tech Academy, Dates: May 23-27, 2022. Instructor – IPTM (James Sloan, ACTAR 1018). (40 hours).

*Course – “Clearly Visible Presentation/Optics, Lighting, Visibility, and Digital Photography for Forensic Investigators,”* Lighting and Photometry, Basic Real-World Basics, The Human Visual System, Light Sources and Atmospheric Influences, Light Measurement, Digital Scene Photography. West Chester PD, Dates: July 13-15, 2021, Instructor: James Sobek, P.E. (24 hours).

*Course – “Tire Analysis,”* Tire Performance Requirements, Load Index, Tire Deflection, Tire Repairs, Air Pressure Effects on Tires, P-Metric vs. Euro Metric vs. Light Truck tires, New Tire Technology, Motorcycle Tire Application, Tire Construction Basics, How to Examine a Tire, Tire Examination Tools, Vehicle Door Placard, Tire Application Guidelines. Butler Tech Academy, Dates: June 28-29, 2021, Instructor: T.J. Tennent (The Tire Guy), (16 hours)

*Course – “Pix4D Drone Mapping Software,”* Understanding User Interface, Creating Projects, Marking Ground Control Points, Implementing Scale and Orientation Constraints, Mission Planning, Types of Missions, Quality Report and Processing Options, Verifying Accuracy, Outputs/Workflow, Creating Ortho-Mosaic, Merging Projects, Importing Total Station Data, Determining Flight Altitude for Optimum Ground Control Sampling. Butler Tech

May 30, 2022

Academy, Dates: April 14-16, 2021. Instructor: Trooper Jared Sharp (Oklahoma State Highway Patrol/Forensic Mapping Solutions), (24 hours)

*Course – “Commercial Vehicle Crash Investigation,”* Identifying and Documenting relevant Scene Evidence, Event Data Recording Capabilities, Preserving EDR Data, Examination of the Truck and Trailer, Tools for Brake Examination, CDL Rules, Acceleration, Steering and Braking Calculations. West Chester Police Department, Instructor: Charlie Scales, OSP (retired). Date: April 12, 2021 (8 hours).

*Course – “NFPA 2400 sUAS Certification”,* Program Development, Management and Maintenance, Operations Risk Assessment, Mission Planning, Communications, Flight Fundamentals, Equipment, Hands-on Outside Flight Operations including Maneuverability, Vehicle Scenario, Building Search, Wide Area Search, Missing Persons Scenario, Haz-Mat scenario, Written Test. Location: Scarlet Oaks/Woodlawn Fire Department, Instructors: Lt. Steve Schueler (BAPD), Chief Amos Johnson (Woodlawn Fire), Firefighter/Paramedic Katie Gausmann Thielmeyer (Woodlawn Fire). Dates: Oct. 5 – 9, 2020 (40 hours).

*Course – “Energy Methods and Damage Analysis in Traffic Reconstruction,”* Topics: Energy Concepts and Analysis, Speed Analysis Using Energy Techniques, Introduction to Rotational Mechanics, Crush Measuring and Measuring Techniques, Understanding and Determining Stiffness Coefficients, Using Simultaneous Equations to Solve In-Line Collisions. Location: West Chester PD/OTARA, Instructor: John Daily, IPTM, Dates: Oct. 28 – Nov. 1, 2019 (40 CEU's).

*Course – “Faro Zone 3D Software,”* Topics: *Importing Point Cloud File, Working in 3-D, Creating a Faro Zone 3D Deliverable.* Location: Summit Park, Blue Ash, OH., Instructor: Russell Boynton, Faro Engineer, Dates: June 17-18, 2019 (14 CEU's).

*Course – “Heavy Truck Crash Reconstruction with Digital Forensics,”* Topics: Truck Dynamics, Truck Tire Friction properties, jack-knife vs trailer swing, Alternate braking systems, Project 1, Braking Efficiency Calculations with Dynamic Stroke, Braking Efficiently with Heat Effects, Disc Air Brakes, ABS braking systems, KE Speed Energy Loss Calculations (project 7), Axle Weight reconstruction with load, Axle weight reconstruction accounting for dynamic truck rollover, Dynamic Truck Rollover Calculations, Trailer Stability, Off-tracking and Gear Ratio Speed Analysis, Side and Rear Under-Ride speed Calculations (project 11), Post- crash Inspections, HVEDR Analysis, Location: Nashville South Metro Police Headquarters, Instructors: Scott Skinner and Tony Becker, Feb. 6-8, 2018 (21 CEU's)

*Workshop – “FARO Point Cloud Workshop,”* Topics: Evaluate Laser Scanners vs Total Stations, Best Practices in Setting up Scanner in Complicated Scenes, Practical Exercise (Set-up Scene and Implement Best Practices), Creating Accurate Exhibits from Point Clouds, Exporting Point Cloud to Reality and FARO Zone 3D, Working in Common Diagramming and Animation Software. Location: West Chester PD, Instructor: Warren Helm, FARO Instructor (8 hours)

Conference – “*Traffic Crash Reconstruction Conference*,” Topics: The Acquisition and Analysis of Infotainment and Telematics Data Using the Berla iVe System, Modern Motorcycle Technology and Technologies, Adaptive Intersections and Light Timing, Vehicle Headlights; Illuminating the Future, Animation Considerations and Validation, ABS Testing Summary, Crash Test Summary. Illinois Association of Technical Accident Investigators, Springfield, Ill., October 4-6, 2017 (20 CEU Hours)

Course – “*Using Microsoft Excel for Traffic Crash Reconstruction*,” Topics: Using Excel for Spin Analysis, Wooden Utility pole break fracture energy equations, simple damage analysis, Calculation of stiffness coefficients from NHTSA barrier crash test data, creating Monte Carlo analysis and sensitivity analysis through finite differences in Excel, programming user-defined functions in Excel, use of charts, data tables. Instructor: Andy Rich, ACTAR, BSME. November 2-4, 2016 (24 hours)

Course – “*Crush and Energy*,” Topics: Tumbas-Smith Damage Measurement Protocol, Balancing Forces, Calculating Stiffness Coefficients from NHTSA crash tests, Crash3 Impact Model for one and two car crashes. Instructor: Andy Rich, ACTAR, BSME, November 1, 2016 (8 hours)

Course – “*Event Data Recorder Use in Traffic Crash Reconstruction*,” Topics: Bosch CDR Report, EDR Delta-V Analysis (generic to any manufacturer), EDR Pre-Crash Data Analysis, GM Data Analysis, Ford Data Analysis, Chrysler Data Analysis, Toyota Event Data Recorders, Honda, Nissan, Suzuki, and Mazda Data Analysis, EDR Data Admissibility, Commercial Vehicle EDR Overview, Garmin GPS Data Retrieval and Analysis. I.P.T.M. Instructors: Rick Ruth, Andy Rich, October 17-21, 2016 (40 hours)

Conference – “*WREX2016 World Reconstruction Exposition*,” Breakout Topics Attended; Live Crash Testing, Event Data Recorder, Air and Disc Truck Brakes, Speed from Motorcycle Deformation, I-94 Super Crash, Rollover Crashes, Video Analysis of Traffic Collisions, Motorcycle Reconstruction, EDR Survivability, Visual Amodal Perception. Instructors (various). May 2-6, 2016 (40 hours)

Course – “*Investigation and Reconstruction of Pedestrian and Bicycle Collisions*,” Topics; Motorized Bicycles and Mopeds, Pedestrian and Cyclist Injuries in Motor Vehicle Collisions, Vehicle Inspections and Measurements, Bicycle Inspections After Traffic Collisions, Bicycle Braking, Pedestrian and Bicycle Speed Time and Distance, Pedestrian and Bicyclist Visibility, Evidence from the Scene, Speed Estimates, **Pedestrian Throw Kinematics** in Forward Projection Collisions, Written Exam. Instructor: Ron Thayer, May 23-27, 2016. (40 hours)

Course – “*FARO Scene and Focus X330 Laser Scanner*,” Topics: Scanner Hardware, Scanner Software, Project Planning, SCENE workflow, SCENE Registration Workflow,

Exporting, Computer Exam. Instructor: Senior FARO Engineer Todd Wilson, March 1-3, 2016. (24 hour) (Certification)

Course – “*Using EDR Delta-V to Determine Closing Speed and Impact Speed,*” Topics: Vector Math Review, Calculating Closing Speeds for In-line Collisions, Restitution, Effective Mass Ratio, Analyzing Collisions that Involve Rotation and Restitution and Special Considerations When Working with EDR Delta-V. Instructor: Andy Rich, BSME, ACTAR 1776, November 6, 2015. (8 hour)

Webinar – “*FARO Reality for Crash Scene Reconstruction,*” Topics: Reality Interface and Tools, Class Projects, Line Coding, Animations, Working with Point Clouds. Instructor: Mike Greenfield, May 13-15, 2015. (14 Hour)

Course – “*Occupant Kinematics for the Traffic Crash Reconstructionist,*” Topics: Case Study/Interior Inspection, Medical Records, Injury Types, and Scaling, Laws of Motion, Occupant Movement, Occupant/Vehicle Interaction/Forensic Examination, Anatomy, Injury and Injury Mechanisms (Head and Neck, Torso and Limbs), Calculation of PDOF, Delta V and EDR Data, PDOF Case Studies, Reading Autopsy Reports, Occupant Restraints and Crash Kinematics, Rollover Crash Investigation, Testing, Injury Reference Values and Future Trends, Out of Position Occupants, Advanced Case Studies. IPTM (Greensburg, PA, Pennsylvania State Police Academy), February 10-14, 2014. (40 Hour)

Conference – “O.T.A.R.A. Annual Trainer,” Topics: ACTAR Preparation/Review, Total Station, Occupant Kinematics, Expert Witness Testimony. West Chester Police Department, November 6-8, 2013. (20 Hour)

Course – “*Applied Physics for Traffic Crash Investigators,*” Topics: Intro to Physics, Dynamics and Newton’s Laws of Motion, Concepts of Weight and Friction, Work, Energy and Power, Rectilinear Motion and Time Distance Analysis, Rotational Mechanics, Uniform Projectile Motion and Airborne Analysis, Collision Analysis Using Conservation of Linear Momentum, Uniform Circular Motion, Tire Forces and Critical Speed Yaw Analysis. IPTM, Jacksonville, FL., August 26-30, 2013. (40 Hour)

Conference – “*Ohio Crash Conference on Commercial Vehicles,*” Topics: Introduction to Commercial Motor Vehicle ECM’s, Viacom Computer Testing with Commercial Vehicles, Hybrid Trucks, Role of the FMCSA and Commercial Vehicle Technology, Commercial Motor Vehicle Brake Testing and Crash Testing, Commercial Motor Vehicle Testing Data Review. OPOTA, London, OH. June 25-27, 2013. (24 Hour)

Conference – “*Special Problems in Traffic Crash Reconstruction,*” Topics: Advanced Momentum Concepts, Occupant Kinematics Case Studies, Special Problems with Applying ECM Data to a Heavy Truck Collision, Motorcycle Modifications and How They Can Affect Your Reconstruction, Friction and Determining Deceleration Factors, Case Studies in

Applying EDR to Traffic Crash Reconstruction, The Effect of Tinted Headlights, Investigating Pedestrian/Bicycle Crashes Requiring Special Considerations, Offset Collinear Collision Analysis-Working Offset Head-On Collisions, 2 Staged Crashes and Presentation of Data. IPTM, Tampa, Fl., May 20-24, 2013. (36 Hour)

Course – “*Pedestrian Crash Investigation*,” Topics: Pedestrian Dynamics, Vehicle Damage and Injury Patterns, Identifying Useful Evidence, Documenting Evidence, Speed Estimates, Case Studies. O.T.A.R.A. West Chester, Ohio Police Department, Instructor: Sgt. Charles Scales, Ohio State Highway Patrol Reconstruction Supervisor. (8 Hours)

Course – “*Grade Crossing Collision Investigation*,” Topics: Highway-Rail Grade Crossing Collisions, Signage and Laws, Responding to an incident, Elements of a Collision, Data Collection and Investigation, Rail Nomenclature, Included Mock Train Crash. O.T.A.R.A. West Chester, Ohio. Instructors Norfolk-Southern Railroad Special Agents Chad Hiser, Thomas Sharp, Ryan Conlon and Attorney KathieJane Oehler, April 22-24, 2013. (24 hours).

Course - “*Photo Documentation – A Holistic Approach*,” O.T.A.R.A., West Chester, Ohio Police Department, Instructor: Lt. David Tinn, March 22, 2013. (7 Hours)

Course - “*CRASH3 Impact Model and Advanced Momentum Techniques for Traffic Crash Reconstruction*,” Topics: Multiplying Vectors, Laws of Sines and Cosines, Momentum and Secondary Slap, Determining PDOF, External Force Implications and Momentum, Restitution, Effect of Rotation and Momentum, Momentum and CDR Implications. O.T.A.R.A., Columbus Police Academy, Instructor Andy Rich, Bergen County, NJ Prosecutor's Office, November 21, 2012. (6 Hours)

Course - “*Motorcycle Crash Investigation*,” Topics: Roadway Evidence, Tiremarks, Roadway Scars, Gouges, Scrapes, Acceleration Rates, Motorcycle Dynamics, Lean Angle, Obstacle Avoidance, Braking, Rider Vault/Throw, Friction Values, Motorcycle Familiarization, Motorcycle Examination/Damage Analysis, Helmets, Motorcycle Accident Equations, Motorcycle Modifications, Field Testing, Final Exam. O.T.A.R.A., West Chester, Ohio Police Department, Instructor: Greg Sullenberger, April 2-6, 2012. (32 Hours)

Course - “*Electronic Data Recorder*,” Topics: Passenger Vehicle EDR Data, CDR System Overview, Seat Belt Pre-Tensioners, Algorithm Enable, Deployment vs. Non-Deployment Events, Diesel Engine ECM's - Overview, Non-ECM, and Aftermarket EDR's, GPS Units and Crash Investigation, Train Crashes and EDR Application. Columbus Police Academy, Columbus, OH., Instructor: Chuck Veppert, March 9, 2012. (8 Hours)

Course - “*National Highway Safety Administration DWI Detection and Standardized Field Sobriety Testing Instructor Course*,” Topics: Concepts of Adult Learning and Teaching, The SFST Curriculum Package, Teaching Preparation Techniques, Techniques for Effective Classroom Presentations, Planning and Managing a Live Alcohol Workshop, Conducting

Video Training Options for the S.F.S.T. Drinking Subject Testing Sessions, Practice Teaching, Written Examinations. Hilton Inn, Irvine, California, Instructor Robert LaPier, May 18 - 21, 2011. (36 Hours)

Course - "*National Highway Safety Administration DWI Detection and Standardized Field Sobriety Testing*," Topics: Introduction and Overview, Detection and General Deterrence, Legal Environment, Overview of Detection, Note Taking and Testimony, Phase One - Vehicle in Motion, Phase Two - Personal Contact, Phase Three - Pre-Arrest Screening, Concepts and Principles of the Standardized Field Sobriety Tests, Test Battery Demonstrations, Dry Run Practice Session, "Testing Subjects" Practice Session One, Processing the Arrested Suspect and Preparation for Trial, "Testing Subjects" Practice Session Two, Review and Proficiency Examinations, Written Examination. Crowne Plaza, Blue Ash, Ohio, Instructor Robert LaPier, April 29 - May 1, 2011. (27 Hours)

Course – "*ARAS360 Advanced 3D Computer Diagramming for Crash Reconstruction - Train the Trainer Course*," Topics: Toolbar Interface, Class Projects, Drawing Tools, Surfacing, Adding Points, Animation, Simulation, Syncing Objects, Pedestrian Crashes, Camera Operation and Views, Momentum Tool, ARAS Genius Math Software Introduction, Merging Measurement Logs, Creation of AVI video files. ARAS360 Headquarters, Kamloops, BC, Canada, Instructor: Mike Kennedy (CEO). April 25-27, 2011. (24 Hours)

Course: "*Advanced Crash Reconstruction Utilizing Human Factors Research*", Topics: Nighttime Recognition, Headlight Analysis, How to Objectively Account for Expectancy, Pedestrian Walking Speeds, Driver Response to Potential Hazards, Acceleration Rate Research, Perception-Response Time, Brake Response Time, Leg Movement Time, Vehicle Latency Times, Time to Search, Crash Rate due to Speed Choice, Preparing Displays and Videos for Proper Court Perspective, Speed Estimation, Influence of Weather on Speed Choice, Distraction versus Visual Noise and Effect on Driver Response, Scientific Support for Starting Point for Time/Distance Calculations, Avoidance Analysis. Northwestern University Center for Public Safety, Instructor: Jeff Muttart, March 21-25, 2011. (40 Hours)

Course: "*Rotational Mechanics*." Topics: Use of Radians, Rectilinear Motion vs. Rotational Mechanics, Determining Revolutions, Review of Quadratic Equation, Explanation of Moment Arm, Angular Momentum, Parallel Axis Theorem, Speed Calculations Using Angular Momentum and Rotational Mechanics. Columbus Police Academy, Instructor: Det. Andrew Rich, BSME, ACTAR, February 11, 2011. (6 Hours)

Course - "*Visual Statement Edge FX 3D Computer Diagramming*," Topics: Intro to Edge Fx, Basic Drawing Projects, Merging Measurement Logs, Total Station Practical Application, Total Station Downloading, Creation of Crime Scene Image Using 3D, Creating 3D Surface. Butler Tech Public Safety Building, Instructor: Rick Dowsett. January 24-28, 2011. (40 Hours)



Course - "*ARAS360 Advanced 3D Computer Diagramming*", Topics: Basic Drawing/Projects, Advanced Drawing Elevations, Basic Animation, Google Earth Importing, Animation, Momentum Tool, Importing Measurement Logs, Merging a Photo from Total Terrain, Animation Project, Total Station Downloads. Evansville, Indiana Police Department, Instructor: Dan Billington. November 30-December 3, 2010. (32 Hours)

Course - "*Advanced Commercial Vehicle Crash Investigation*," Topics: ABS Airbrake System, Quasi-Static and Dynamic Rollover, Equilibrium Equations, Axle Weight Analysis, Speed from Gear Reduction Ratios, Low Speed and High Speed Off-Tracking, Vehicle Dampening Ratios, 2-days of practical field exercises. I.P.T.M. Jacksonville, Fl., Instructors David Brill, and Walter Dobbs. November 1-5, 2010 (40 hours)

Course - "*Vehicle/Pedestrian/Bicycle Accident Reconstruction*," Topics: On-Scene Investigation, Evidence, Photographing the Scene, Injury Types, Trajectories for Frontal Collisions, Vehicle Speed Calculations, Bicycle Crash Investigation and Bicycle Nomenclature. West Chester P.D., Instructors: Kevin Bryant and Mark York. Sept. 10, 2010, (3 Hours)

Course – "*Reconstruction of Commercial Vehicle Crashes*," Topics: Commercial Vehicle Operations, Hours of Service, Parts and Accessories, Air Brake System, Dynamics, Physical Evidence, Speed Calculations, Outside Testing, Hydroplane, Trailer Under-ride, Center of Mass Calculations, Rollovers. I.P.T.M. Jacksonville, Fl., Instructors James Sloan, and Ward Holten. March 29 – April 2, 2010 (40 hours)

Course – "*CDR Technician Certification*," Topics: Operation of CDR System Including Evaluation of the Vehicle Being Examined for Download and Application of the Software and Hardware for GM, Ford and Chrysler Vehicles, Functions of the CDR Program, Access Considerations for the PCM, ACM and ROS. Troubleshooting and Solving Hardware and Software Issues when Using the Bosch CDR System, Hands-on in Class Downloads of Airbag Control Modules and Powertrain Control Modules. Fairfax County Justice Academy, Fairfax, VA., February 15, 2010. Instructor Bill Davies (8 hours)

Course – "*CDR Data Analyst Certification*," Topics: General Legal Considerations Related to CDR Data Admissibility, Types of Data Collected Generally for GM, Ford and Chrysler Vehicles Accessible using the Most Current Version of the Bosch CDR System, Reading, Interpreting, and using the Accessible GM, Ford, and Chrysler Vehicle CDR Reports with a Situationally Complete Collision Reconstruction, Understanding, Identifying and Dealing with Anomalous Data from GM, Ford, and Chrysler Vehicle CDR Reports., Fairfax County Justice Academy, Fairfax, VA., February 16-19, 2010. Instructor Rusty Haight (32 hours)

Course – "*Microsoft Excel for the Traffic Crash Reconstructionist*." Topics: Use of Tables, Conditional Formatting, Writing Formulas in Excel, Writing User-Defined Functions Using Visual Basic Applications (VBA), Using Statistic Functions in Excel, Using Excel to Analyze

Instrumented Skid Tests, Using What-If-Scenario Manager, Goal Seeker and Solver, Using 2-D and 3-D Excel Charts to Visual Data and Perform Sensitivity Analyses. Columbus Police Academy, January 22, 2010, Instructor: Det. Andrew Rich, BSME, ACTAR (8 hours),

Conference – “*NAPARS Combined Conference*,” Topics: Commercial Vehicle Electronic Data, DDEC Reports and Hours of Service Compliance, Newton and Collision Reconstruction, Combining Aerial Photography and Forensic Mapping Data, Newton and an Analysis of COLM restrictions on Mass Differences, ECM Test Results, Software Analysis of ECM Data, Staged Commercial Vehicle Crashes. Ocean City, Md., October 7-9, 2009. (18 hours)

Course – “*Bendix Commercial Air-Brake System*,” Charging system, Primary System, Secondary System, Parking System, Trailer System, ABS systems, Bendix Spicer Foundation Brakes. John C. Hawker, Bendix Service Engineer. Ocean City, Md., October 6, 2009 (8 hours)

Course – “*Reconstruction of Collisions Involving Airbornes*,” Physics behind Uniform Projectile Motion, Applying Rotational Mechanics to Airborne Trajectories, Calculating minimum speeds for vehicles to become airborne, Sensitivity of airborne equations to measurement uncertainties, Methodologies of determining distance and height of motor vehicles during airborne trajectories, Motor vehicle airborne testing. Instructor: Det. Andrew Rich, BSME, ACTAR. O.T.A.R.A. sponsored training, O.P.O.T.A. Tactical Center, London, Oh., July 24, 2009.

Course – “*Momentum and Energy*,” Topics: Vector diagramming, Conservation of Linear Momentum, Coefficient of Restitution, **Occupant Kinematics**, Energy in crashes. Instructor: Dr. Jeremy Daily PHD, O.T.A.R.A. Training Course, West Chester, Ohio, June 17, 2009

Conference – “*2nd Annual Crashteam Conference*,” Topics: Crafting excellent reconstruction reports and demonstrating various examples, Case reviews by partners, Biomechanics, Time/Distance case presentation, Photogrammetry, Spin Analysis presentation, Advanced FX diagramming, Creating positive business meetings. Puerto Villarta, Mexico, March 23-27, 2009.

Course – “*Methodology and Techniques of Crash Data Retrieval*,” Topics: Background of event data recorders (EDRs), Event data collected in passenger vehicles, proper use of EDR imaging tools, Hands-on EDR imaging techniques, practical application of EDR data to a complete traffic crash reconstruction, Delta V, Principal direction of force, momentum. Cincinnati Regional Emergency Operations Center, December 8-12, 2008, I.P.T.M., Instructors: Rick Ruth, Bill Wright, Bruce Gadzick (40 hour)

Conference – “*1st Annual Crashteam Conference*,” Topics: Leica Laser Mapping, Crashteam rail, Crashteam Air, Crashteam Pacific Northwest (Engineer), Crashteam Global Presentation, Meeting Clients for the 1<sup>st</sup> Time, Record Keeping and Reporting. Kamloops, British Columbia, Canada, August 11-15, 2008.

Course – “*Visual Statement Advanced Crash Training with Total Station,*” Topics: diagramming, 3d animation, simulation, 2d animation, damage modeler, Hawkeye, photofx adding/merging measurement logs, surface fx, smart roads and smart rooms. Springdale, Ohio, Sept. 29 – Oct. 3, 2008, Instructor Bryce Adams (40 hour)

Course – “*Data Analysis for Accident Reconstruction,*” Topics: Standard Deviation, Quantifying Uncertainty, Central Tendency, Uniform Distribution, Monte Carlo, Linear Regression, Pole Crashes. West Chester Police Department, Ohio, September 4, 2008, Instructor: Andy Rich (New Jersey) (8 hour)

Course – “*Motorcycle Crash Investigation,*” Topics: Motorcycle Identification and Orientation, Motorcycle Dynamics, Evidence from the Roadway, Evidence from the Vehicle, Motorcycle Tires, Motorcycle Practicum, Practicum Review and Calculations, Motorcycle Formulas, Helmets, Class Project, Test and Review. Staged Motorcycle drag factor testing, Motorcycle Braking using different surfaces, Motorcycle acceleration and deceleration testing. Ohio State Highway Patrol Academy, Columbus, Ohio, July 18-22, 2007, Instructors P.S.P. Cpl. Sullenberger, O.S.P. Sgt. Horvath (40 hour)

Conference – “*Special Problems in Traffic Crash Reconstruction,*” Topics: Digital Photography for the Crash Investigator; Interviewing Techniques for the Crash Investigator, Spin Analysis Case Study; Balancing Collision Forces in Crush/Energy Analyses; Forensic Animation: Visual Statement; Crash Investigation Overview (NHTSA); Proper Application of Drag Coefficients to ABS Affected Yaw and Skid; A Fresh Approach into the Reconstruction of Pedestrian/Bicycle Collisions; Staged Bus/Vehicle Crash, Staged Wooden Pole Crashes. University of North Florida, I.P.T.M., Jacksonville, Fl., April 2007 (28 Hour)

Course – “*Technology in Accident Reconstruction,*” hosted by Centerville Police Department by Northcoast Polytechnic Institute, Instructor Henry Lipian, ACTAR #83. November 13, 2006 (8 hour)

Course – “*Expert Testimony in Accident Reconstruction,*” hosted by Centerville Police Department by Northcoast Polytechnic Institute, Instructor Henry Lipian, ACTAR #83. October 25, 2006 (8 hour)

Conference – “*Pennsylvania State Police Collision Reconstruction Seminar,*” Topics: Biomechanics in Collision Reconstruction by Dr. Richard Nelson; Railroad Collision Investigation by Bob Halsted, Today’s Reconstruction Formulas by John Daily & Nate Shigemura; Calculating Heavy Truck Braking by Wade Bartlett. (State College, PA.). September 26-28, 2006 (24 hour)

Course – “*Total Station Forensic Mapping Certification,*” Boone County Sheriff’s Office by Officer John Smoot (Lexington, Ky. PD). June 2005 (32 hour)

Conference – *Crash Investigation & Reconstruction Update,*” Topics: CDR System Overview; Commercial Vehicle EDR’s; Commercial Airbrake Systems; DNA Evidence in Fatal Crashes; Rotational Mechanics; Criminal Prosecution in Fatal Crash Cases; Drag Sled Comparisons with test skids, VC3000 & Escort G-Timer, Staged Airbag Equipped Vehicle Crashes. Ohio State Highway Patrol Academy, Columbus, Oh., June 2005 (16 Hour)

Conference – *“Special Problems in Traffic Crash Reconstruction,”* Topics: Drag Sled Analysis/Validation; Airborne Validation; Automobile Glass Strengths and Weaknesses. Uniform Circular Motion; Effective Use of Published Motorcycle Data; Staged Under-ride Collision. University of North Florida, I.P.T.M., Jacksonville, Fl., April 2005 (28 Hour)

Course – *“Vehicle Crush Dynamics and Determination of Speed from Vehicle Crush,”* Ohio Peace Officer Training Academy, Richfield, OH., October 2004. (40 Hour)

Conference – *“Special Problems in Traffic Crash Reconstruction,”* Topics: Testing & Review of Uniform Circular Motion – Lateral Lane Changes & Critical Speed; Commercial Vehicle Data Recorders; Travel Speed Calculations with Skids and Impact; Vehicle Autopsy and Hydroplane. University of North Florida, I.P.T.M., Jacksonville, FL., April 2004. (28 Hour)

Course – *“Auto Sketch C.A.D. Drawing,”* Raymond Walters College, Blue Ash, OH., October 2003. (40 Hour)

Course – *“Vehicle Crush Dynamics and Determination of Speed from Vehicle Crush,”* Westchester Police Department, Westchester, OH., July 2003. (24 Hour)

Course – *“Auto Accident Reconstruction,”* I.P.T.M. Montgomery, OH., July 2003. (80 Hour)

Course – *“Commercial Motor Vehicle Enforcement,”* Butler County Sheriff, Hamilton, OH., June 1993. (24 Hour)

Course – *“Technical Auto Accident Investigation,”* Ohio State Highway Patrol, Columbus, OH., September 1981. (154 Hour)

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#### **P R O F E S S I O N A L M E M B E R S H I P S**

A.C.T.A.R. (Accreditation Commission for Traffic Accident Reconstruction, ACTAR # 1474)

N.A.P.A.R.S. (National Association of Professional Accident Reconstructionist Society)

I.N.C.R. (International Crash Reconstruction Forum) – Approved Member

O.T.A.R.A. (Ohio Traffic Accident Reconstruction Association) – Founder and President

ARC Network ([www.accidentreconstruction.com](http://www.accidentreconstruction.com))

I.A.T.A.I. (Illinois Association of Technical Accident Investigation)

H.C.P.A. (Hamilton County Police Association)

F.O.P. (Hamilton County, Lodge 74)

GWRRA (Goldwing Road Rider Association) Rider Education Program