



# ACCIDENT SCIENCE, INC.

Accident Reconstruction

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## CURRICULUM VITAE

### TIMOTHY J. REUST

*Accident Reconstruction  
Instrumented Vehicle Testing  
Event Data Recorder Downloading and Evaluation*

## EDUCATION

California State University Northridge  
**Bachelor of Science**, Engineering, Mechanical  
Northridge, California - 1989

Institute of Police Technology and Management  
**Investigation of Motorcycle Accidents**  
Jacksonville, Florida - August 1988

National Academy of Forensic Engineers  
**Accident Reconstruction**  
Culver City, California - October 1988

Engineering Dynamics Corporation  
**Computer Aided Accident Reconstruction**  
Northridge, California - January 1989

Institute of Police Technology and Management  
**Tire Forensics for the Accident Investigator**  
Arroyo Grande, California - February 1989

Engineering Dynamics Corporation  
**Computer Aided Accident Simulations**  
Portland, Oregon - August 1989

Association for the Advancement of Automotive Medicine  
**Crash Reconstruction**  
**Crash Performance Standards and the Biomechanics of Impact**  
Orlando, Florida - March 1990

Society of Automotive Engineers  
**Accident Reconstruction Photogrammetry**  
Dearborn, Michigan - September 1990  
Northwestern University Traffic Institute

**Traffic Accident Reconstruction II**  
San Diego, California - March 1991

Institute of Police Technology and Management  
**Commercial Vehicle Accident Investigation**  
Tallahassee, Florida - March 1992

University of California, Los Angeles  
**Scientific Aspects of Cycling**  
Los Angeles, California - April 1992

Society of Automotive Engineers  
**Heavy Truck Rollover**  
Atlanta, Georgia - April 1993

**The Nikon School**  
Los Angeles, California - November 1993

Texas A&M University, Engineering Extension  
**Pedestrian and Bicycle Accident Investigation**  
Austin, Texas - May 1994

Society of Automotive Engineers  
**Sensor Design for Automobile Air Bag Systems**  
Irvine, California - January 1995

Inter-Industry Conference on Auto Collision Repair (I-CAR)  
**Advanced Vehicle Systems**  
Anti-Lock Brakes and Passive Restraint Systems  
Valencia, California - May 1995

Bridgestone Winter Driving School  
**Performance Driving Program**  
Steamboat Springs, Colorado - January 1996

Bendix Commercial Vehicle Systems  
**Air Brake Systems School**  
Huntington, Indiana - September 2000

Detroit Diesel Corporation Training Center  
**Prodriver Reports & DDEC Data Reports**  
Detroit, Michigan - February 2001

Cummins Cal Pacific, Inc  
**INSITE Software Diagnostics**  
Irvine, California - August 2001

Engineering Dynamics Corporation  
**HVE Forum**  
Las Vegas, - April 2003

Cummins Cal Pacific, Inc.  
**INSITE 6.X SOFTWARE**

Irvine, California – February 2004

Finning Power Systems  
Caterpillar Electronic Data Extraction  
Vancouver, B.C. – May 2006

## **PROFESSIONAL EXPERIENCE**

1985 to present      **ACCIDENT SCIENCE, INC.**  
**ACCIDENT RESEARCH & BIOMECHANICS**  
**ACCIDENT RESEARCH & ANALYSIS**  
Santa Clarita, California  
*Accident Reconstruction Consultant*  
All phases of accident reconstruction, including Expert testimony (beginning in 1989). Analysis of accidents involving automobiles, motorcycles, bicycles, trucks, buses, trains, scooters and pedestrians. Photogrammetry. Computerized accident reconstruction. Instrumented vehicle testing, including passenger vehicles, commercial vehicles, trains, motorcycles, bicycles and scooters. “Black Box” collision data downloading and evaluation. Involved with research, lecturing and teaching.

## **PROFESSIONAL ASSOCIATIONS**

Society of Automotive Engineers  
Society of Forensic Engineers and Scientists  
Society of Accident Reconstructionists  
Southwestern Association of Technical Accident Investigators  
National Association of Professional Accident Reconstruction Specialists  
California Association of Accident Reconstruction Specialists

## **TEACHING and COUNSELING**

Commercial Vehicle Accident Investigation  
University of California, Riverside  
University Extension

Commercial Vehicle Event Data Recorders  
Ontario Provincial Police (OPP)  
Ontario, Canada

Merit Badge Counselor  
“Traffic Safety” and “Engineering”  
Boy Scouts of America

## **CERTIFICATES**

**Full Accreditation as a Traffic Accident Reconstructionist**  
**Accredited by the Accreditation Commission for Traffic Accident Reconstruction (ACTAR)**  
**Registration #109**

***Training Certificate***

**Crash Data Retrieval System (CDR) Training Seminar**  
**Vetronix Corporation**  
**Santa Barbara, California - June 2000**  
**Santa Barbara, California - June 2001**

**Crash Data Retrieval (CDR) Data Analyst**  
**Collision Safety Institute**  
**Las Vegas, Nevada - February 2006**

**PROFESSIONAL ACTIVITIES**

**Western Chapter, Association for the Advancement of Automotive Medicine**

**"Forensic Science Applications in Automotive Medicine"**  
**Los Angeles, CA - October 1985**

**"Human Tolerance, Laboratory Testing and Response Difference Between  
Cadavers and Anthropometric Dummies"**  
**Los Angeles, CA - February 1986**

**"Rollover Crash tests, Modified Roof Strength and Injury Mechanics"**  
**Los Angeles, CA - February 1987**

**"Reconstruction Animation Using Computers"**  
**Los Angeles, CA - October 1989**

**Society of Forensic Engineers and Scientists**

**"Forensic Wood Science"**  
**"Investigation of Helicopter Accidents"**  
**San Francisco, CA - January 1989**

**"Bicycle Accidents"**  
**Sacramento, CA - January 1990**

**"Bald Tire Testing in Wet and Dry Conditions"**  
**Testing Coordinator**  
**Sacramento, CA - July 1994**

**"Physical Evidence Applications to Vehicle Collisions"**  
**"Forensic Applications of Tracking"**  
**Shasta, CA - August 1994**

**"Aerodynamics of Bicycles"**  
**"Biomechanics of Bicycle Accidents"**  
**Morgan Hill, CA - October 1994**

**"Car Control Clinic"**  
**Willows, CA - July 1995**

**"Instrumentation for Low-Speed Crash Testing"**  
**"Kinematics of Air Bag Deployments"**  
**Monterey, CA - February 2001**

**"Pedestrian Impact Testing"**  
**"CDR, New Developments"**  
**San Diego, CA - January 2002**

**"Biomedical Forensics"**  
**"Air Bag Controllers"**  
**Solvang, CA - May 2003**

**"Medians and Cable Barriers"**  
**"Warning and Hazards"**  
**Mendocino, CA - April 2005**

**Texas A&M University, Engineering Extension**  
**"Staged Pedestrian and Bicycle Collisions"**  
**Agoura Hills, CA - December 1994**

#### **Society of Automotive Engineers**

**SAE Formula Vehicle Competition**  
**Responsible for concept, design and construction of a formula-style high performance race vehicle. Design of suspension, restraint system, seat, electrical, instrumentation and fire suppression systems.**  
**Senior Design Project, CSUN**  
**Northridge, CA - September 1987 through May 1988**

**SAE Accident Investigation Practices Committee**  
**Anti-Lock Brake Systems Workshop, Technical Advisor**  
**CHP Academy**  
**Sacramento, CA - December 1988**

**SAE International**  
**Highway Vehicle Event Data Recorder Symposium**  
**NTSB Academy at George Washington University**  
**Ashburn, VA - June 2004**

#### **SAE Congress**

**Detroit, Michigan - February 1990**  
**Detroit, Michigan - February 1993**  
**Detroit, Michigan - February 1994**  
**Detroit, Michigan - February 1995**  
**Detroit, Michigan - March 2004**  
**Detroit, Michigan - April 2006**

**3-D Computer Modeling and its Use in Photogrammetry**  
**Special Project, CSUN**  
**Northridge, CA - January 1989**

**Washington Association of Technical Accident Investigators  
Conference**

**"Tractor Trailer Testing"**  
**"Pedestrian Accident Reconstruction"**  
**"Bicycle Accident Reconstruction"**  
**"Ice Driving Testing"**  
**"Investigation into Seat Belt Usage"**  
**Seattle, WA - July 1989**

**BH2VK Engineering**

**"Staged Automobile Collisions"**  
**Riverside, CA - August 1992**

**Synectics Road Safety Research Corp.**

**"Bumper Underride Crash Testing"**  
**Vancouver, B.C. - October 1996**

**Southwestern Association of Technical Accident Investigators**

**"Staged Motorcycle collision"**  
**Phoenix, AZ - April 1990**

**"Staged Automobile Collision"**  
**Phoenix, AZ - July 1990**

**"Low Speed Crash Tests"**  
**"Airbags by TRW"**  
**"Motorcycle Accident Reconstruction"**  
**Phoenix, AZ - July 1996**

**"Anti Lock Brake Systems"**  
**"Commercial Vehicle Accident Investigation"**  
**"Trailer Side Underride Staged Collisions"**  
**Phoenix, AZ - July 1999**

**"Signal Timing for the Accident Investigator"**  
**"Pedestrian Accidents"**  
**San Diego, CA - November 1999**

**"Sudden Vehicle Acceleration"**  
**"Skid and Critical Scuff Testing"**  
**Laughlin, NV - March 2000**

**"Critical Speed Testing Results and Analysis"**  
**"Bumper Gun Electro-Mechanical Delay Time"**  
**"NHTSA NCAP Testing Procedures and Results"**  
**"Pole Impact Staged Collision"**  
**Phoenix, AZ - July 2000**

**"Crush and Energy Applications"**  
**"Pole Collisions"**  
**"Tire Design and Standards"**  
**Las Vegas, NV - March 2001**

**“CDR vs Instrumented Vehicle Crash Data”  
“Supplemental Restraint Technology”  
“GM Brake Failures”  
San Diego, CA – November 2001**

**“Human Factors”  
“Translational Yaw”  
Las Vegas, NV – March 2002**

**“Motor Vehicle Rollovers”  
“Commercial Vehicle Rollovers”  
Las Vegas, NV – March 2003**

**“Crash Data Recorders”  
“Speed Measurement Equipment”  
Phoenix, AZ – July 2004**

**“Commercial Vehicle Post-Accident Mechanical Inspection”  
“Commercial Vehicle Hours of Service”  
San Diego, CA – November 2004**

**“Pedestrian and Bicycle Collisions”  
Laughlin, NV – March 2005**

**“Human Factors”  
Laughlin, NV – March 2006**

**Texas A&M University, Engineering Extension**

**"CRASH 97"**

**College Station, TX - March 1997**

**"CRASH 98"**

**College Station, TX - October 1998**

**Society of Accident Reconstructionists  
Combined Conference**

**“Accidents Involving Vehicle Fire”  
“Visibility Issues in Accident Investigation”  
“Motorcycle Collisions”  
“Biomechanics in Low-Speed Collisions”  
Colorado Spring, CO - August 1998**

**University of California, Riverside  
University Extension**

**“Commercial Vehicle Accident Investigation”  
“Acceleration and Skid Testing”**

**March Air Force Base, CA - March 2000**

**“Advanced Commercial Vehicle Accident Investigation”  
“Skid Testing”**

**March Air Force Base, CA -June 2000**

**California Association of Accident Reconstruction Specialists**

**“Acceleration and Skid Testing”**

**“Critical Cornering Testing”**

**Stockton, CA - April 2000**

**“2001 A Collision Odyssey”**

**Concord, CA – October 2001**

**“Truck’n with CAARS”**

**Anaheim, CA – October 2002**

**“CARRS vs Bikes”**

**Anaheim, CA – October 2003**

**“Investigating Emergency Vehicle Coliisions”**

**Temecula, CA – October 2005**

**Santa Clarita Sheriff Traffic Unit**

**“Skid Testing”**

**“Critical Cornering Testing”**

**Saugus, CA - June 2000**

**Canadian Multidisciplinary Road Safety Conference XII**

**London, Ontario, Canada - June 2001**

**Safety Solutions**

**“Advanced Heavy Vehicle Reconstruction”**

**Santa Rosa, CA – October 2002**

**ARC-CSI Crash Conference 2003**

**“Collision Trauma Biomechanics”**

**“CDR System: GM and Ford”**

**Las Vegas, NV – June 2003**

**ARC-CSI Crash Conference 2004**

**“Crash Data Retrieval System”**

**“Commercial Vehicle EDR Systems”**

**“Legal Implications of CDR Data”**

**“Restraint Evaluation for Collision Analysis”**

**Las Vegas, NV – June 2004**

**ARC-CSI Crash Conference 2005**

**“Airbag Deployment Decisions”**

**“Child Safety Seats”**

**“Pedestrian Crash Reconstruction”**

**“CDR System Developments”**



Las Vegas, NV – June 2005

ARC-CSI Crash Conference 2006

“Motorcycles”

“Curb Impacts”

Las Vegas, NV – June 2006

CATAIR Annual Conference

“Human Factors, Night Visibility”

“CDR System: GM and Ford”

Burlington, Ontario, Canada – August 2003

Heavy Truck Test Group (HTTG)

East Liberty, Ohio – August/September 2004

VBox USA Users Meeting

Torrance, CA – November 2005

ARC-CSI Crash Data Retrieval User’s Conference

Dallas, Texas – February 2006

F3T2 Conference

Houston, Texas – September 2006

### **ASSOCIATED PUBLICATIONS, PAPERS AND PRESENTATIONS**

"Speed from skids"

Northridge, CA - March 1988

"Light bulb Filament Deformation Due to Impact"

Northridge, CA - September 1988

"Verification of the Basic Skid Formula"

Presentation of in-depth testing and analysis of speed determination from vehicle skid marks

Northridge, CA - fall 1988

"Road Friction Theory"

Technical Advisor and Lecturer

Society of Forensic Engineers and Scientists

Long Beach, CA - October 1988

"Anti-Lock Brake Systems; Results of Recent Testing"

Society of Forensic Engineers and Scientists

Las Vegas, Nevada - April 1989

Hight, P.V., Reust, T.J., et al. "Asymmetric Water Drag, the Latent Cause of some Accidents"

Canadian Multidisciplinary Road Safety Conference VI

Fredericton, New Brunswick, Canada - June 1989

Hight, P.V., Reust, T.J., *et al.* "The effects of Right Side Water Drag on Vehicle Dynamics and Accident Causation"

SAE Congress

Detroit, Michigan - February 1990

Hight, P.V., Reust, T.J., *et al.* "Automobile Damage Scales and their Correlation"

Canadian Multidisciplinary Road Safety Conference VII

Vancouver, Canada - June 1991

"Results and Findings of the Bald Tire Testing in Wet and Dry Conditions"

Society of Forensic Engineers and Scientists

Sacramento, CA - August 1993

"Reverse Projection Photogrammetry"

Presenter and Workshop Coordinator

Society of Forensic Engineers and Scientists

Sacramento, CA - August 1993

"Light Bulb Filament Analysis"

Society of Forensic Engineers and Scientists

Shasta, CA - August 1994

"Accident Reconstruction Techniques Unique to Bicycle and Motorcycle Collisions"

Consumer Attorneys Association of Los Angeles

Los Angeles, CA - March 1995

"Trial by the Masters"

Mock Trial, Expert Witness

Los Angeles County Bar Association

Los Angeles, CA - June 1999

"Trailer Under ride Crash Testing"

Southwestern Association of Technical Accident Investigators

Phoenix, AZ - July 1999

"Critical Speed Testing Results and Analysis"

"Bumper Gun (Chalk Gun) Electro-Mechanical Delay Time"

Southwestern Association of Technical Accident Investigators

Phoenix, AZ - July 2000

"Performance Characteristics of Two-Wheeled Push-Type Razor Scooters"

"Black Box Accident Information from Cars and Trucks"

Society of Forensic Engineers and Scientists

Monterey, CA - February 2001

Reust, T.J., "Performance Characteristics of Two-Wheeled Push-Type Razor Scooters"

Canadian Multidisciplinary Road Safety Conference XII

London, Ontario, Canada - June 2001

"Use of the Black Box to Investigate Automobile Product Liability Cases"

Consumer Attorneys Association of Los Angeles

Las Vegas, NV - September 2001

**"Critical Speed Testing Results and Analysis"**  
**2001 A COLLISION ODYSSEY**  
California Association of Accident Reconstruction Specialists  
Concord, CA - October 2001

**"Commercial Vehicle Air Brake Testing"**  
**"Black Box Validation Study"**  
Society of Forensic Engineers and Scientists  
San Diego, CA - January 2002

**"Commercial Vehicle Air Brake Testing"**  
Southwestern Association of Technical Accident Investigators  
Las Vegas, NV - March 2002

**First Quarter Training Session**  
**"Event Data Recorders"**  
**"Pre-Visible Tire Mark Energy Loss"**  
California Highway Patrol, Costal Division MAIT  
Paso Robles, CA - March 2002

**"Instrumented Tractor-Trailer ABS Brake Testing"**  
**"Commercial Vehicle Air Brake Testing"**  
**"Commercial Vehicle Event Data Recorders"**  
**"Vehicle Speed Calculation Using Running Gear Specifications"**  
Truck'n with CAARS  
California Association of Accident Reconstruction Specialists  
Anaheim, CA - October 2002

**"Commercial Vehicle Event Data Recorders"**  
Society of Forensic Engineers and Scientists  
Solvang, CA - May 2003

**"Commercial Vehicle Event Data Recorders"**  
ARC-SCI Crash Conference 2003  
Las Vegas, NV - June 2003

**"Commercial Vehicle Event Data Recorders"**  
CATAIR Annual Conference  
Burlington, Ontario, Canada - August 2003

**"Commercial Vehicle Event Data Recorders"**  
California Trucking Association  
Sacramento, CA - September 2003

**"Performance Characteristics of Two-Wheeled Push-Type Razor Scooters"**  
**"Bicycle Performance Information"**  
**"Motorcycle Brake Tests"**  
CAARS vs Bikes

**California Association of Accident Reconstruction Specialists  
Anaheim, CA - October 2003**

**Reust, T.J. "The Accuracy of Speed Captured by Commercial Vehicle Event Data Recorders"  
SAE Congress, Paper Number 2004-01-1199  
Detroit, Michigan – March 2004**

**"Commercial Vehicle Event Data Recorders"  
SAE International - Highway Vehicle Event Data Recorder Symposium  
NTSB Academy at George Washington University  
Ashburn, VA – June 2004**

**"Commercial Vehicle EDR Systems"  
ARC-CSI Crash Conference 2004  
Las Vegas, NV – June 2004**

**"Speed Measurement Equipment"  
Southwestern Association of Technical Accident Investigators  
Phoenix, AZ – July 2004**

**"Commercial Vehicle Event Data Recorders"  
Southwestern Association of Technical Accident Investigators  
San Diego, CA – November 2004**

**"Pedestrian and Bicycle Collision"  
Test Methods and Results  
Southwestern Association of Technical Accident Investigators  
Laughlin, NV – March 2005**

**"Speed Measuring Devices"  
Society of Forensic Engineers and Scientists  
Mendocino, CA – April 2005**

**"Commercial Vehicle EDR Systems"  
ARC-CSI Crash Conference 2005  
Las Vegas, NV – June 2005**

**"ECM's and Reconstruction – The Digital Witness"  
American Trucking Association  
La Jolla, CA – July 2005**

**"Event Data Recorder (EDR) Downloads for Emergency Vehicles"  
CAARS Training Conference  
Temecula, CA – October 2005**

**"Commercial Vehicle Event Data Recorders"  
Accident Reconstruction Symposium  
SAE International  
Ventura, CA – November 2005**

**"The Accuracy of Speed Recorded by an SDM and the Effects of Brake, Yaw and Other  
Factors"  
Crash Data Retrieval User's Conference**

**Dallas, Texas – February 2006**

**“Electronic Stability Control Systems”**

**“Yaw and Brake Test Results”**

**Southwestern Association of Technical Accident Investigators**

**Laughlin, NV – March 2006**

**Reust, T.J. “Commercial Vehicle Event Data Recorders and the Effect of ABS Brakes During Maximum Brake Application”**

**SAE Congress, Paper Number 2006-01-1129**

**Detroit, Michigan – April 2006**

**“Deceleration Rates of Modern Passenger Vehicles During Straight Line Braking and Yaw Events”**

**ARC-CSI Crash Conference 2006**

**Las Vegas, NV – June 2006**

**“Commercial Vehicle Event Data Recorders”**

**“Tractor/Trailer Test Results”**

**F3T2 Conference**

**Houston, TX – September 2006**

**"The Accuracy of Speed Recorded by an SDM and the Effects of Brake, Yaw and Other Factors”**

**Society of Forensic Engineers and Scientists**

**Kona, HI – January 2007**

**"Detailed Comparison of Vehicle Speed and the Speed Recorded by an SDM”**

**Crash Data Retrieval User’s Conference**

**Houston, Texas – January 2007**

**“Critical Speed Science”**

**CATAIR Annual Conference**

**Ontario Police College**

**Aylmer, Ontario, Canada - August 2007**

**“Commercial Vehicle Accident Reconstruction Factors”**

**“Commercial Vehicle Acceleration and Deceleration Test Results”**

**“Passenger Vehicle Acceleration and Deceleration Test Results”**

**CAARS TOOLBOX**

**California Association of Accident Reconstruction Specialists**

**Anaheim, CA - October 2007**

**"The Accuracy of Speed Recorded by a Ford PCM and the Effects of Brake, Yaw and other Factors”**

**Crash Data Retrieval User’s Conference**

**Houston, Texas – January 2008**

**Ruth, R.R., Reust, T.J., et al. “Accuracy of Powertrain Control Module (PCM) Event Data Recorders”**

**SAE Congress, Paper Number 2008-01-0162**

**Detroit, Michigan – April 2008**

**"The Digital Witness"**  
**CALTRANS Tort Conference 2008**  
**Sacramento, CA – May 2008**

**"Engine Idle Acceleration"**  
**ARC-CSI Crash Conference 2008**  
**Las Vegas, NV – June 2008**

**"Update on Passenger Vehicle Black Boxes"**  
**Society of Forensic Engineers and Scientists**  
**Santa Rosa, CA – October 2008**

**"Using Ford PCM Data to Evaluate Deceleration Rates, Brake Time and Impact Speeds"**  
**Crash Data Retrieval User's Conference**  
**Houston, Texas – January 2009**