CURRICULUM VITAE

Mark Paquette, B.A.Sc., CFEI, CVFI, P.Eng.

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EXPERT SUMMARY

Mr. Mark Paquette specializes in collision reconstruction and vehicle failure investigation. Prior to becoming a Forensic Engineer in 2008, Mark spent eight years in automotive product engineering, including new model development and testing in Canada and in the United States. He has undertaken vehicle testing of automobiles, snowmobiles, streetcars, and other heavy vehicles to better understand and quantify their capabilities. In addition to collision reconstruction, Mark has utilized his automotive background to investigate allegations of vehicle mechanical defects and their potential role in the cause of collisions and fires. Mark has been qualified as an Expert Witness in Ontario Superior Court, Ontario Court of Justice, and Provincial Offences Court, and is a member of the Professional Engineers of Ontario (PEO), the Ordre des ingénieurs du Québec (OIQ), and the Accreditation Commission for Traffic Accident Reconstruction (ACTAR).

SPECIALIZED PROFESSIONAL COMPETENCIES

- Vehicle Collision Reconstruction involving Automobiles, Motorcycles, Snowmobiles, Commercial Vehicles, Cyclists and Pedestrians
- Vehicle Mechanical Assessments and Alleged Failure Investigations
- Airbag Module Data Retrieval and Analysis
- Vehicle Testing, including Automobiles, Motorcycles, Buses, Streetcars and Snowmobiles
- Vehicle and Equipment Fire Investigations – Point of Origin and Fire Cause
- Investigations of Failures Involving Mechanical Engineering Systems

ACADEMIC BACKGROUND

Bachelor's Degree in Mechanical Engineering, Laval University, Quebec City, Quebec, 1998

ADDITIONAL COURSES

- Photogrammetry 1: PhotoModeler and SynthEyes for Forensic Video Analysis, Law Enforcement & Emergency Services Video Association (LEVA), Online, December 9 – 13, 2024
- European Association for Accident Research and Analysis (EVU) 32nd Annual Congress, Kufstein, Austria, September, 2024
- Canadian Association of Road Safety Professionals (CARSP) Conference, Ottawa, ON, June 2024

- Alternative Fuel Vehicles, Electric & Hybrid Vehicle Design Basics, Electric & Hybrid Vehicle Fires, Lithium-Ion Battery Fires, Motor Vehicles (Parts 1 & 2), Investigating Motor Vehicle Fires, NFPA 1033 & 921: 2022/2021 Editions Important Updates, International Association of Arson Investigators, online, June 2024
- World Reconstruction Exposition, Orlando, FL, May 2016 and April 2023
- Society of Automotive Engineers (SAE) World Congress, Detroit, MI, 2009, 2011, 2012, 2013, 2014, 2015, 2017, 2019, 2020, and 2021
- LEVA Level 1: Forensic Video Analysis and the Law, Law Enforcement & Emergency Services Video Association (LEVA), Toronto Police College, January 2022
- Webinar: Update on Electric Vehicle Fires in Canada, Canadian Association of Fire Investigators, April 2021
- Small Engines Course MVM5504, Algonquin College, Ottawa, ON, March 2020
- Racelogic Webinar Training Session, VBOX Automotive Data Logging, June 2019
- 24-hour Crash Data Retrieval (CDR) Analysis and Applications Course for Engineers, Crash Data Specialists LLC, Toronto, ON, February 2019
- PC-Crash 11.1 Workshop, MEA, Toronto, ON, June 2018
- Passenger and Commercial Vehicle Tires Seminar, Bridgestone Americas Tire Operations, Toronto, ON, June 2017
- European Association for Accident Research and Analysis (EVU) 25th Annual Congress, Bratislava, Slovakia, October 2016
- Reconstruction and Analysis of Motorcycle Crashes, SAE, Detroit, MI, April 2015
- Canadian Association of Technical Accident Investigators and Reconstructionists Conference, Aylmer, ON, August 2014
- Crash Data Retrieval (“Black Box”) Analyst Course, Crash Data Specialists LLC, Toronto, ON, October 2013
- Vehicle Fire, Arson and Explosion Science & Technology Seminar, NAFI, Kentucky, September 2011 and September 2019
- Human Factors and Explicit Road Safety, Human Factors North and Navigats, Toronto, ON, February 2011
- Snow School, Ontario Good Roads Association, Alliston, ON, October 2010
- Advanced Fire, Arson and Explosion Training Program, NAFI, Markham, ON, October 2009
- Heavy Vehicle Crash Reconstruction, NAPARS, Ocean City, MD, October 2009
- Bendix Air Brake Class, Ocean City, MD, October 2009
- Vehicle Accident Reconstruction Methods, SAE, Detroit, MI, April 2009
- PC – Crash 3-day Workshop, MEA, Toronto, ON, March 2009
- Crash Data Retrieval System – Technician and Analyst Courses, Collision Safety Institute, Toronto, ON, February 2009
- Basic Hybrid and Electrical Vehicle Safety Web Seminar, SAE, January 2009
- Forensic Analysis of Medical Records in Injury Biomechanics and Accident Reconstruction, SAE, Detroit, MI, December 2008

- "B" Class Vehicle Dynamics Driver Training, Transportation Research Center Inc., East Liberty, OH, December 2007
- "C" Class Vehicle Dynamics Driver Training, Transportation Research Center Inc., East Liberty, OH, November 2005
- Introduction to Brake Control Systems, SAE, Detroit, MI, March 2004
- Threaded Fasteners and the Bolted Joint, SAE, Alliston, ON, September 2004
- One Day Advanced Driver Training, Transportation Research Center Inc., East Liberty, OH, June 2004
- Six Sigma Black Belt Training, Ford Motor Company, Dearborn, MI, 2003

PROFESSIONAL EXPERIENCE

30 Forensic Engineering

Regional Director, National Capital Region
2019 – Present, Ottawa, ON

Technical Director, Collision Reconstruction
2023 – Present, Ottawa, ON

- Motor vehicle collision reconstruction
- Event Data Recorder (EDR) data retrieval and analysis
- Failure investigations involving mechanical considerations
- Vehicle mechanical assessments
- Vehicle and equipment fire investigations – point of origin and cause

Senior Associate, Collision Reconstruction
2014 – 2023, Toronto/Ottawa, ON

Associate, Collision Reconstruction
2012 – 2014, Toronto, ON

Arcon Engineering Consultants Limited

Forensic Engineer
2008 – 2012, Toronto, ON

- Investigation and analysis of vehicle collisions, including speed analysis, braking, skid analysis, course of travel and opportunity for collision avoidance
- Vehicle mechanical inspections and assessments, including brakes, steering, and throttle systems
- Fire origin and cause investigations involving vehicles and appliances
- Forensic engineering analysis of incidents and failures involving mechanical engineering considerations

Honda Motor Company

New Model Project Leader, Chassis
2007 – 2008, Pell City, Alabama, USA

- Responsible for new model activity of the Quality Analysis Chassis Group for the 2009 Honda Pilot
- Performed new model vehicle testing, including snow performance, drift, overall sensitivity, and ride evaluations

Product Engineering, Chassis
2003 – 2007, Alliston, ON

- New model development for various Chassis systems (drivetrain, controls, and brakes), including extensive testing, drawing and CAD reviews and past problem confirmation
- Warranty/market investigations for several models, including part analysis, dealer visits and vehicle testing for numerous Chassis systems

Ford Motor Company

Six Sigma Black Belt
2003, St. Thomas, ON

- Attended Six Sigma training regarding statistics, problem solving methodology and leadership, completed one project and mentored Green Belt projects

Product Vehicle Team, Chassis
2000 – 2003, St. Thomas, ON

- Responsible for chassis systems warranty investigation and factory support

Bombardier Aerospace

Methods Agent
1999 – 2000, Montreal, QC

- Confirmed design changes on the CL-415 “Water Bomber”

Britain West Motorsports

Formula Ford 1600 Racing Series, Team Member
1996 – 2000

- Responsible for vehicle set ups, including alignment, weight distribution, ride height and gear ratios, and repairs as needed

PROFESSIONAL SOCIETIES AND ASSOCIATIONS

- Professional Engineers of Ontario (PEO)
- Ordre des ingénieurs du Québec (OIQ)
- Accreditation Commission for Traffic Accident Reconstruction (ACTAR)
- Society of Automotive Engineers (SAE)
- Canadian Association of Technical Accident Investigators and Reconstructionists (CATAIR)
- European Association for Accident Research and Analysis (EVU)
- Certified Fire and Explosion Investigator (CFEI)
- Certified Vehicle Fire Investigator (CVFI)
- National Association of Fire Investigators (NAFI)

PUBLICATIONS AND SPEAKING ENGAGEMENTS

Speaking Engagements

- "Collision Reconstruction: Motorcycle and ATV Collisions", Graduate Course MIE1708H, University of Toronto, Toronto, ON, March 2018, 2019, 2020, 2021, 2022, 2023 & 2024
- "Forensic Biomechanics: Collision Reconstruction", Undergraduate Course KIN 471, University of Waterloo, Waterloo, ON, February 2018, 2019 & 2021
- "Event Data Recorders / Vehicle Data Forensics", Defence Counsel Association of Ottawa 33rd Criminal Law Conference, October 2021
- Ontario Provincial Police Technical Traffic Collision Course Level III (Instructor), Snowmobile and ATV Collision Investigations, Aylmer, ON, October 2018

Peer-Reviewed Publications

- "Pole/Tree Impact Analysis" (Voted 2nd best technical paper), M. Paquette, N. Young, G. Prentice & M. Fabbroni, 32nd Annual Congress of the European Association for Accident Research and Analysis (EVU)
- "Naturalistic Evaluation of the Lateral Acceleration Experienced by Snowmobiles with One and Two Occupants," M. Paquette, B. Sinclair, CARSP 2024
- "Motorcycle and SUV Braking on a Gravel Road," M. Paquette, Accident Reconstruction Journal, March/April 2024
- "Snowmobile Pole Crash Tests: Additional Testing and Analysis," H. Griffiths, M. Paquette, SAE Technical Paper 2023-01-0626
- "Snowmobile Pole Crash Tests," M. Paquette, H. Griffiths, D. Wong, Anderson, S., Wright, M., SAE Technical Paper 2021-01-0876
- "Snowmobile Lane Change Dynamics with One and Two Occupants," M. Paquette, H. Griffiths, SAE Technical Paper 2019-01-0429
- "Comparison of Snowmobile Braking Deceleration with One and Two Occupants," M. Paquette, H. Griffiths, Accident Reconstruction Journal, November/December 2018

- "A Study of In-Service Truck Weights," M. Fabbroni, J. Rovt, M. Paquette, SAE Technical Paper 2017-01-1424
- "Brake Timing Measurements and the Effect of Brake Lag on Deceleration Rates for Light Passenger Vehicles," M. Paquette, D. Porter, Accident Reconstruction Journal, March/April 2014

Other Publications

- "Investigating Automotive Product Defects," M. Paquette, D. Porter, The Litigator, March 2015
- "The Curious Case of the Vehicle Fire," Without Prejudice, December 2012

EXPERT TESTIMONY

- Qualified by the Ontario Superior Court of Justice in collision reconstruction, determination of collision forces, seatbelt usage assessment, occupant motions during a collision and interpretation of 'black box' data
- Qualified by the Ontario Court of Justice in the preparation of computer-generated graphic representations of accident reconstructions
- Qualified by the Ontario Provincial Offences Court in the operation and function of motorcycles and automotive braking systems, and in collision reconstruction of heavy trucks and commercial vehicles