



Sean M. McDonough, P.E., DFE



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- EXPERIENCE:** **Engineer** - Kineticorp, LLC, Denver, Colorado, January 2015 to Present
Fellowship – University of Colorado Denver, September 2013 – December 2014
Lead Automotive Technician – Tires Plus, June 2003 – May 2013
- EDUCATION:** **M.S. Mechanical Engineering** (2014), University of Colorado at Denver, Colorado
B.S. Mechanical Engineering (2013), University of Colorado at Denver, Colorado
- CERTIFICATIONS:** **Professional Engineer in the State of Colorado:** PE.0056825
Board Certified Forensic Engineer by the National Academy of Forensic Engineers (NAFE)
Accredited Traffic Accident Reconstructionist (ACTAR# 3407)
ASE Certified Master Automotive Technician: ASE ID# ASE-1410-2080
ASE Certified Master Medium/Heavy Duty Technician
ASE Advanced Engine Performance (L1), Advanced Diesel Performance (L2)
ASE Body Technician (B3, B4, B5)
Class A Commercial Driver’s License, with tanker, double/triples, Passenger Vehicle
Tire Industry Association (TIA) Certified Advanced Automotive Tire Service Instructor
Tire Industry Association (TIS) Certified Commercial Tire Service Instructor
Remote Pilot, Small Unmanned Aircraft Systems, Federal Aviation Admission (FAA)

FORENSIC MECHANIC: Mr. McDonough is an expert in automotive maintenance, service, and repair, and in automotive tire and commercial tire maintenance, repair and standard of care. He analyzes procedures and vehicle components to determine if the maintenance was performed in compliance with industry standards. Mr. McDonough earned the certification of Automotive Service for Excellence (ASE) Automotive Master Technician in May of 2006. An ASE Master Technician must have a minimum of 2 years on the job experience in all the following categories: Engine Repair, Automatic Transmission/Transaxle, Manual Drive Train and Axles, Suspension and Steering, Brakes, Electrical/Electronic Systems, Heating and Air Conditioning, and Engine Performance. Once the required experience is met a 1-2 hour test is given in each category. Once all 8 tests are passed, then the title of Master Technician is achieved. There are also specialized test levels. Mr. McDonough obtained an Automobile Advanced Engine Performance certification and Advanced Diesel Engine Performance certification. He has maintained his credentials through recertification exams every 5 years.

At Tires Plus, Mr. McDonough was responsible for properly diagnosing customer concerns with their vehicle. This included brake, steering, suspension, heating and cooling, transmission, engine, and electrical systems. His process included identifying the root cause of an issue, informing the customer of that issue, and communicating the repair options to the customer. Mr. McDonough was also responsible for training other associates on techniques used in the diagnostic process.

FORENSIC ENGINEERING: Mr. McDonough evaluates and reconstructs vehicular accidents involving passenger cars, medium to heavy duty tractors and trailers, motorcycles, pedestrians, and mechanical failures to determine the sequence of events leading up to an accident. Mr. McDonough’s current area of research include the use and extraction of data from vehicle infotainment systems, accuracy of smart phones to track movement, use of smart phones as a data acquisition system, and the acceleration properties of commercial vehicles. His research has been published through the Society of Automotive Engineers (SAE).

FELLOWSHIP: While obtaining his master’s degree, Mr. McDonough designed, analyzed, and manufactured medical devices used in neurosurgery. From the devices constructed, a provisional patent was obtained, and licensing negotiations are underway.

INSTRUCTOR: Mr. McDonough was a co-instructor of *Vehicle Instrumentation* at CU Denver and a teaching assistant for Senior Design from August 2013 – December 2014. He tutored students in dynamics, vibrations, heat transfer and vehicle dynamics. While at Tires Plus he trained numerous employees in diagnostic strategies, oscilloscope, electrical systems operation & diagnostics, engine repair, brake systems, ABS & traction control, air conditioning service & diagnostics, suspension systems, transmissions, and drivetrain repair.

AFFILIATIONS: National Academy of Forensic Engineers (NAFE), National Society of Professional Engineers (NSPE), Society of Automotive Engineers (SAE) member, International Automotive Technicians Network (IATN)

Publications

1. Danaher, D., Donaldson, A., and **McDonough, S.**, “*Acceleration of Left Turning Heavy Trucks*,” SAE Technical Paper 2020-01-0882, 2020, doi:10.4271/2020-01-0882
2. Danaher, D., **McDonough, S.**, Donaldson, D. “*Two Phase Heavy Truck Acceleration Model*”, SAE 2019-01-0411
3. Danaher, D., Neale, W., **McDonough, S.**, Donaldson, D. “*Low Speed Override of Passenger Vehicles with Heavy Trucks*”, SAE 2019-01-0430
4. **McDonough, S.**, Danaher, D., Neale, W. “*Mid-Range Data Acquisition Units Using GPS and Accelerometers*”, SAE 2018-01-0513
5. Bortles, W., **McDonough, S.**, Smith, C. “*An Introduction to the Forensic Acquisition of Passenger Vehicle Information & Telematics Systems Data*”, SAE 2017-01-1437
6. Neale, W., Danaher, D., **McDonough, S.**, and Owens, T. “*Data Acquisitions Using Smart Phone Applications*”, SAE 2016-01-1461

Presentations

1. “*Two Phase Heavy Truck Acceleration Model*” SAE Technical Paper Presentation, 2019 Society of Automotive Engineers World Congress, Detroit, MI, April 11, 2019
2. “*Mid-Range Data Acquisition Units Using GPS and Accelerometers*” SAE Technical Paper Presentation, 2018 Society of Automotive Engineers World Congress, Detroit, MI, April 3, 2018
3. “*The Role of Vehicle History and Maintenance Information in Litigating a Product Liability Claim*” American Bar Association – Emerging Issues in Motor Vehicle Product Liability Litigation, Phoenix, AZ, April 5, 2018
4. “*EDR and Accident Reconstruction*” Next Generation Lead Products Litigation Lawyer Summit, Phoenix, AZ, April 5, 2017
5. “*Data Acquisitions Using Smart Phone Applications*” SAE Technical Paper Presentation, 2016 Society of Automotive Engineers World Congress, Detroit, MI, April 13, 2016.

Technical Conferences and Seminars

1. Interactive Driver Response Research (IDRR) Updates, Research and Training, Presented by Jeffrey Muttart, February 22-25, 2021 via ZOOM
2. Advanced Crash Reconstruction Utilizing Human Factors Research, Presented by Jeffrey Muttart, August 10-14, 2020 via ZOOM
3. Vehicle Communication Diagnosis, Real World Training Professional Technician’s Seminar, Presented by Calvin Higgins, January 30, 2020.
4. Commercial Vehicle Braking Systems, Society of Automotive Engineers, Presented by Paul Johnston, April 30 – May 2, 2019
5. Society of Automotive Engineers World Congress 2019, Detroit Michigan, April 2019
6. Commercial Tire Service Instructor Training, Tire Industry Association (TIA), Presented by Cory Wood, March 12-15, 2019
7. Automotive Tire Service Advanced Instructor Training, Tire Industry Association (TIA), Presented by Matthew White, August 21-24, 2018.
8. Air Brakes Certification, Colorado Motor Carriers Association, Presented by Lonnie Schneider of Downtime Defender, August 4, 2018.

9. Society of Automotive Engineers World Congress 2018, Detroit Michigan, April 2018
10. Vehicle Dynamics for Passenger Cars and Light Trucks, Society of Automotive Engineers, Presented by Richard Lundstrom, August 7-10, 2017
11. Accessing and Interpreting Heavy Vehicle Event Data Recorders, Society of Automotive Engineers, Presented by John Steiner, Timothy Cheek, David Plant, and Tim Austin, May 17-20, 2016
12. Applying Automotive EDR Data to Traffic Crash Reconstruction, Society of Automotive Engineers, Presented by Rick Ruth, April 20-22, 2016
13. Reconstruction and Analysis of Rollover Crashes of Light Vehicles, Society of Automotive Engineers, Presented by Nathan Rose, April 15, 2016
14. Society of Automotive Engineers World Congress 2016, Detroit Michigan, April 2016
15. Crash Data Retrieval (CDR) Technician Level 2, CSI Collision Safety Institute, Longmont, Colorado, March 30, 2016
16. Crash Data Retrieval (CDR) Technician Level 1, CSI Collision Safety Institute, Longmont, Colorado, March 29, 2016
17. PC Crash Online Training, Vehicle Control, November 17, 2015, On-Line Training
18. Vehicle Crash Reconstruction Methods, Society of Automotive Engineers, Presented by Raymond and Matthew Brach, June 22-24, 2015
19. Digital Oscilloscope, Pro Auto Tech, Presented by Kevin Markel, Denver, Colorado
20. Millennium Diagnostics, Pro Auto Tech, Presented by Kevin Markel, Denver, Colorado
21. Hybrid Vehicle Service HYB-200, Car Quest Technical Institute, Presented by Don McDonald, Denver, Colorado
22. Network Diagnostic Strategies, Professional Technician's Seminar, Presented by R. Barrett, Denver, Colorado, October 27, 2009
23. Delphi VI ABS & Traction Control Seminar, Presented by Chuck Kennedy, Denver, Colorado, May 4, 2009
24. Diagnostic Strategies, Professional Technician's Seminar, Presented by Michael E. McDonald, Denver, Colorado, September 25, 2006
25. Bendix Brakes Training Course, Import Car Braking Systems, Presented by Thomas Card, Denver, Colorado, May 10, 2005
26. Automotive Air Conditioning Diagnostics & Service AC-200, Car Quest Technical Institute, Denver, Colorado
27. Vehicle Driven Brakes, Car Quest Technical Institute, Denver, Colorado
28. Suspension Systems, Car Quest Technical Institute, Denver, Colorado