

**R. Patrick Donahue, P.E., CFEI, CVFI**  
**Electrical Engineer**  
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## **EDUCATION**

B.S. Electrical Engineering, GMI Engineering & Management Institute (Kettering University),  
Flint, Michigan

## **SUMMARY**

Electrical Engineering professional with more than 15 years experience in the automobile industry, with assignments in manufacturing, design and testing environments. Expert at analyzing, testing and troubleshooting all aspects of a vehicle electrical system. Broad base of experience with integration and testing of electrical and electromechanical systems.

## **PRINCIPAL AREAS OF EXPERIENCE**

Design and analysis of vehicle electrical systems. Testing and troubleshooting of vehicle electrical systems, both in the laboratory and in the field. Automated laboratory testing of software and hardware for vehicle control systems, including those for power train, HVAC, ABS, traction control and stability control. Design and testing of vehicle braking systems, Bosch CDR System.

## **EXPERTISE**

Vehicle Electrical Systems  
Laboratory Test Equipment  
Charging Systems  
Sensors  
Displays  
Automated Testing  
Electromechanical Systems  
Vehicle Controls  
Vehicle Base Braking Systems  
Vehicle Fire Investigation

## **LICENSES and CERTIFICATIONS**

Licensed Professional Electrical Engineer in the State of Arizona. License # 53693

Berla Certified Vehicle System Forensic Operator (CVSO)

Berla Certified Vehicle System Forensic Technician (CVST)

Berla Certified Vehicle System Forensic Examiner (CVSE)

Certified Fire and Explosion Investigator

Certified Vehicle Fire Investigator

Bosch Crash Data Retrieval System Analyst

NGVi, Certified CNG Fuel System inspector

CDR System Operator; Collision Safety Institute

## **PROFESSIONAL EXPERIENCE**

- 2004-Present Electrical Engineer, Augspurger Komm Engineering, Phoenix, Arizona  
Performed forensic and investigative consulting for various clients,  
Including insurance adjusters and attorneys.  
Provided expert testimony at deposition and trial when required.
- 2007-2008 Electrical Engineer, Engineering Institute, LLC, Farmington, Arkansas  
Performed forensic and investigative consulting for various clients, including  
Insurance adjusters and attorneys. Designed and prototyped the entire electrical  
system for an off-highway vehicle intended for production.  
Provided expert testimony at deposition and trial when required.
- 2002-2003 Sabbatical - Preplanned tour of twenty-two countries, including Africa, Asia,  
Northern Europe and the Middle East.
- 1999-2001 Senior Development Engineer, General Motors, Desert Proving Grounds  
Automotive Testing Facility, Mesa, Arizona  
Performed testing of prototype and production braking systems for light duty  
trucks. Troubleshoot hardware/software problems with anti-lock braking systems.  
Organized and led braking system test trips to Death Valley. Responsible for  
braking system compliance with Federal Motor Vehicle Safety Standards.  
Performed testing on base braking systems, including brake balance and Federal  
Motor Vehicle Safety Standards 135 and 105. Recommended and implemented  
design changes.  
Tested for performance and compliance with government regulations.  
Identified and determined the root causes of problems with electronic anti-lock  
braking systems and chassis control systems for cars and light trucks.
- 1994-1999 Senior Project Engineer, Microcomputer Laboratory, General Motors, Great  
Lakes Technology Center, Flint Michigan  
Managed simulator laboratory. Interfaced with design and release engineers to

prevent, identify, and solve problems with prototype, pilot, and production level hardware and software. Tested and troubleshot power train, chassis, and Heating, Ventilation and Air Conditioning (HVAC) control systems. Tested hardware and software on simulator and system bench to determine if systems were performing to specifications and compatible with each other. Analyzed data obtained from simulator. Identified problems and recommended changes to hardware and software. Oriented, trained and managed new employees. Peers recognized laboratory as the most capable site within GM.

Increased testing capability of simulator to include stability control, HVAC, and adaptive radar cruise systems. Changes were implemented at over 7 simulator laboratories throughout GM.

Procured funding and purchased equipment to increase testing capabilities of the lab.

Used simulator to accelerate development of Alpha, Beta, and prototype level software and hardware.

Used rapid prototyping controller to emulate HVAC controller to test and demonstrate software algorithms prior to availability of prototype hardware, enabling clearer communication of requirements to vendors.

Designed and performed field tests on Anti-lock Braking Systems, Traction Control Systems, Ignition Control Systems, and HVAC systems to gather data for correlation and improvement of simulator models.

Managed and trained students and Application Engineers.

Specified testing scripts to control simulator and verify software for target Controllers.

Reduced field problems due to software bugs on test and calibration trips by more than 80%.

Identified and resolved field problem with ABS 5.0 system. Rapid identification minimized cost of manufacturing downtime and subsequent recall.

1990-1994 Project Engineer, Analysis Department, General Motors, Great Lakes Technology Center, Flint, Michigan

Analyzed analog and digital electrical circuits using Saber analysis software.

Optimized designs of future vehicles circuits and systems.

Installed and managed real-time hardware-in-the-loop vehicle simulator.

Configured simulator to interface with power train, anti-lock brakes, chassis and HVAC control systems.

Troubleshoot, redesigned and tested fuel pump speed control module.

Developed Saber software models for electrical and electromechanical components and systems to improve accuracy of simulations.

- 1988-1990 Associate Engineer, Analysis Department, General Motors, Great Lakes Technology Center, Flint, Michigan  
Analyzed analog and digital electrical circuits using SYSCAP circuit analysis software. Optimized designs of future vehicles circuits and systems.  
Troubleshoot problems encountered in operations of automotive electrical systems.  
Troubleshoot and redesigned analog twilight sentinel module to solve field problem. Developed SYSCAP software models for electrical and electromechanical components and systems to improve accuracy of simulations.
- 1983-1988 Cooperative Student, General Motors, Central Foundry Division Iron Casting Foundry, Saginaw, Michigan  
Assignments in quality, maintenance, finishing, plant engineering and annealing departments.  
Supervised production lines with up to 50 employees.  
Troubleshoot problems in operations of manufacturing equipment and controls.  
Collected, prepared and analyzed metallurgical samples used for process control.  
Designed and implemented a measurement device calibration program for the entire plant, resulting in improved process control.

### **SEMINARS, CONFERENCES AND TRAINING**

Berla iVe Course, Las Vegas, NV, March 27-31, 2023  
Bosch Crash Data Retrieval (CDR) Tool Operator/Technician 16-hour Specialized Course, Glendale, AZ, April 28-29, 2022  
SATAI Winter 2018 Crash Test Conference, Glendale, AZ, January 25-27, 2018  
CSI [Collision Safety Institute] 40 Hour Crash Data Retrieval Data Analyst Course, November 6-10, 2017, Glendale, AZ  
ARC-CSI Crash Conference, Las Vegas, NV, September 18-21, 2017  
NGVi, Natural Gas Institute, Certified CNG Fuel System Inspector, February 1, 2017  
ARC-CSI Crash Conference, Las Vegas, NV, May 23-26, 2016  
ARC-CSI Crash Conference, Las Vegas, NV, January 25 – 27, 2016  
ARC-CSI Crash Conference (Presenter) Las Vegas, NV, June 1-4, 2015  
CDR Summit, Crash Data Retrieval User's Summit, Houston, Texas, January 26-28, 2015  
IAAI; Vehicle Fire Investigations Seminar, Phoenix, AZ 10/30/2014  
CDR Summit, Crash Data Retrieval User's Summit, Houston Texas, January 27-29, 2014  
NAFI Certified Vehicle Fire Investigator Training. Sept 30- Oct 3, 2013, Lexington, Kentucky  
ARC-CSI Crash Conference, Presenter, May 13-16, 2013, Las Vegas, Nevada  
CDR Summit, Crash Data Retrieval User's Summit, Houston, Texas. January 21-23, 2013  
Collision Safety Institute Conference, Crash Data Retrieval Analyst Course, CDR System Operator Certification, Glendale, Arizona, October 1-5, 2012  
ARC-CSI Crash Conference, Las Vegas, NV, June 4-7, 2012  
Collision Safety Institute, Bosch CDR User's Summit, Houston, Texas January 16-18, 2012

**SEMINARS, CONFERENCES AND TRAINING-continued**

ARC-CSI 8<sup>th</sup> Annual Crash Conference, Las Vegas, NV, June 1-4, 2009

Collision Safety Institute, Bosch CDR (Crash Data Retrieval), System Technician Certification Course, Whittier, California, April 13-17, 2009

Collision Safety Institute, Bosch CDR System Data Analyst Certification Course, Whittier, California, April 13-17, 2009

Investigation of Vehicle Fires Seminar, Lee S. Cole & Associates, Las Vegas, Nevada November 3-5, 2004

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