



BENJAMIN A. ROYALL, EI
STAFF CONSULTANT

baroyall@engsys.com

Mr. Royall is a Staff Consultant for Engineering Systems Inc. (ESi) where he assists the Automotive Research and Accident Reconstruction team. He performs vehicle and site inspections, site surveys using FARO Focus 3D laser scanner and Total Station equipment. He produces vehicle event data recorder images on automobiles, trucks, and heavy vehicles. As a proficient computer aided design (CAD) technician, Mr. Royall creates model scenes and vehicles used for reporting, analysis, and courtroom displays. He is a licensed class A commercial vehicle operator with endorsements for doubles, triples, tankers, and passengers, as well as motorcycles. He has experience in instrumentation and data collection, and has assisted with driving tests and flight tests. He has more than 10 years of experience as a machinist and toolmaker.

Prior to joining ESi, Mr. Royall was the senior research technician for the Center for Aircraft Structural Life Extension (CAStLE) at the United States Air Force Academy. He designed and fabricated test fixtures for aircraft structures testing. During his time at CAStLE he assisted in aircraft structure research and failure analysis. Mr. Royall is a member of an amateur race team, acting as a car builder, mechanic, and driver. A registered Engineering Intern with the State of Colorado, Mr. Royall is currently studying Transportation Engineering as part of a Masters' Program at Ohio University.

Areas of Specialization

Vehicle and site inspections
Heavy equipment and machine inspections
Vehicle event data downloads
Commercial vehicle operations and regulations
Machine shop and fabrication
Computer modeling with Inventor, MasterCAM, Rhinoceros, SolidWorks, and 3d Studio Max
Test fixture design
Finite Element Modeling (FEM)
3D laser scanning and scene preservation
Automotive research and accident reconstruction
Graphics and visualization
Heavy trucking and commercial vehicles
Mechanical engineering
Mechanics and materials
Manufacturing processes

March 2019



Education

B.S., Mechanical Engineering, University of Colorado at Colorado Springs, 2014
Certificate, Mill Journeyman; Lathe Journeyman; CAD/CAM, Pikes Peak Community College,
2006

Professional Affiliations/Honors

American Motorcycle Association (AMA)
Society of Automotive Engineers (SAE)

Positions Held

Engineering Systems Inc., Colorado Springs, Colorado

Staff Consultant, July 2017 - present
Engineering Intern and Senior Technologist, January - June 2017
Technologist, 2014 - 2016

Center for Aircraft Structural Life Extension (CAStLE), USAF Academy, Colorado

Master Research Specialist, 2010 - 2014
Research Technician, 2006 – 2010

Excalibur Machining and Sheetmetal, Colorado Springs, Colorado

Machinist, 2006 - 2006

Okeefe's Ceramics, Woodland Park, Colorado

Machinist, 2005 - 2006

Continued Education

Certificate of Training, Traffic Crash Reconstruction for the Forensic Engineer, Northwestern
University Center for Public Safety, Ann Arbor, MI, March 2019

Certificate of Training, Human Factors in Traffic Crash Reconstruction, Institute of Police
Technology and Management (IPTM), University of North Florida, November 2017



Certificate of Training, Acquiring and Analyzing Data from Sensors and In-Vehicle Networks, Society of Automotive Engineers (SAE), October 2017

Certificate of Training, Accessing and Interpreting Heavy Vehicle Event Data Recorders, Society of Automotive Engineers (SAE), October 2016

Certificate of Training, FARO Focus 3D Scanner, FARO Company, February 2016

Certificate of Training, Digital Forensics of Heavy Vehicle Event Data, University of Tulsa, December 2015

Certificate of Training, Entry Level Commercial Motor Vehicle Operator, CDL College, June 2015

Certificate of Training, Bosch Full CDR Technician, Institute of Police Technology and Management (IPTM), February 2015

Certificate of Training, Bendix Comprehensive Air Brake Systems, Bendix, January 2015

Certificate of Training, Linear Analysis with MCS Patran/Nastran, MSC Software, December 2013

Publications

“Fracture Toughness and MixedMode Failure of 7079-T6 Thin Sheet Aluminum”,
Shah, S.R., Walters, M.R., Hammond, M.J., **Royall, B.A.**, Fawaz, S.A. (2008)
Center for Aircraft Structural Life Extension, United States Air Force Academy, Colorado
USAFA TR 2008-07

“Effects of Cold Expansion on T-38 Steel Dorsal Longeron near Fatigue Critical Location B-12”,
W. Ponzoha, M. Hammond, J. Greer, Jr., S. Shah, and **B. Royall**, US Air Force
Academy, Co (2010) USAFA-TR-2010-05

“Structural Teardown Analysis Program Report for KC-135, S/N 57-1505”,
USAFA-TR-2013-02 Volume I, II, III

Related Experience

Team member, Project Yellow Racing, 2008 – Present
Car builder, mechanic, and driver