

**ENGINEER:
MECHANICAL**

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EDUCATION:

1995 MBA Frostburg State University
 Frostburg, Maryland

1987 M.S.M.E. Mechanical Engineering
 West Virginia University, Morgantown, WV

1985 B.S. Mechanical Engineering
 West Virginia University, Morgantown, WV

EXPERIENCE:

March 2016 **Engineering Design & Testing Corp.**
to Present **Cleveland, Ohio**

Consulting Engineer. Specialized consulting in the reconstruction of vehicle accidents involving automobiles and heavy vehicles, the mechanical evaluation of hydraulic and pneumatic braking systems, and the analysis of occupant dynamics. Analyses include accident investigation, acceleration and deceleration of vehicles, failure analysis of vehicle components, analysis of collision speed, and motion analysis of vehicles and occupants. Data recovery from sensing and diagnostic modules. Mechanical evaluation of damage to machinery, equipment, components, and systems including origin and cause, damage assessment, repair/reconstruction monitoring, and safety program and procedure assessment.

February 2011 **Engineering Design & Testing Corp.**
to March 2016 **Charleston, West Virginia,**

January 2007 **Alliant Techsystems**
to May 2010 **Rocket Center, West Virginia**

Production Program Manager. Production management of tactical rocket motors and warheads. Coordinated cross functional groups consisting of quality, safety and environmental, production and manufacturing, material control, scheduling, purchasing, and configuration control. Developed and implemented rocket motor and warhead propellant and explosive mixing, casting and cure processes. Developed and implemented assembly and pack-out procedures and accompanying quality documentation. Developed rocket motor testing

procedures for Lot Acceptance Testing (LAT). Monitored and inspected the various subcomponents for quality issues.

January 2001
to Dec. 2007

Alliant Techsystems
Rocket Center, West Virginia

Senior Development Design Engineer. Developed new technologies for use in rocket motor manufacturing. Transferred key technology for bonding a metal closure into a composite rocket motor case from an offsite plant and perfected this bonded end closure technology. This technology was used on all new rocket motor programs such as RAAM Block II, GMLRS, NLOS, and IM Hellfire.

Authored successful IR&D proposals for gas generators for the Kinetic Energy Interceptor (KEI). Acted as Lead Engineer on KEI gas generator program, developing the initial design through the final successful testing; authored and presented all intermediate design reviews to senior management and customers.

Designed rocket motor cases using alloy steels such as 4130 and 4340 grades, Ti-6Al-4V, and composite materials. Designed case insulators using EPDM rubbers, and also designed nozzles using phenolics, tungsten, and other materials. Familiar with O-rings design and application in high pressure environments.

January 1995
to Dec. 2000

Alliant Techsystems
Rocket Center, West Virginia

Project Engineer. Lead engineer for gun launched rocket motors. Developed a discard system to remove rocket motor components from a lethal penetrator after rocket motor operation. To initiate the discard system, developed an electronic timer to signal rocket motor discard at desired time. These components were designed to withstand the high acceleration gun environment (15,000g).

Maintained design authority, developed configuration drawings, presented and defended designs to customers and peer groups, developed testing plans, created and maintained bill of materials, built prototype units, and tested prototypes to verify design.

January 1991
to Dec. 1994

Alliant Techsystems
Rocket Center, West Virginia

Ballistic Analyst. Conducted rocket motor ballistic analysis and thermal structural analysis. Developed innovative numerical propellant burn rate model. Supported production and IR&D programs. Maintained ballistic design authority of key rocket motor programs.

January 1987 **Alliant Techsystems**
to Dec. 1990 **Rocket Center, West Virginia**

Thermal Structural Analyst. Conducted thermal/structural analysis of aerospace structures. Provided design guidance for SRAM II rocket motor. Tools included the use of finite element analysis (ABAQUS, IDEAS, and other software such as AutoCAD).

PROFESSIONAL ORGANIZATIONS:

American Society of Mechanical Engineers (ASME)
Society of Automotive Engineers (SAE)
National Association of Professional Accident Reconstructionist (NAPAR)
National Association of Fire Investigators (NAFI)
National Fire Protection Association (NFPA)

CERTIFICATIONS:

NAFI Certified Fire and Explosion Investigator (CFEI #16707-9045)
NAFI Certified Vehicle Fire Investigator (CVFI #16707-9045v)

REGISTRATIONS:

Registered Professional Engineer in West Virginia (#016217)
Registered Professional Engineer in Maryland (#31467)
Registered Professional Engineer in Kentucky (#27900)
Registered Professional Engineer in Ohio (#75822)
Registered Professional Engineer in Pennsylvania (#PE079007)
Registered Professional Engineer in Virginia (#0402051102)
Registered Professional Engineer in Michigan (#6201064001)
Registered Professional Engineer in Alabama (#34100)
Registered Professional Engineer in Indiana (PE11600217)

CONTINUING EDUCATION:

Expert Witness Courtroom Testimony Course, International Association of Arson Investigators, Crofton, Maryland, 2016

Investigation of Appliance Fires Course, Fire Findings, Benton Harbor, Michigan, 2012

National Expert Witness Conference, SEAK, Cape Cod, Massachusetts, 2012

CONTINUING EDUCATION (continued):

Event Data Recorder Use in Traffic Crash Reconstruction, Institute of Police Technology & Management, University of North Florida, Rick Ruth, Orlando, FL, 2012

Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, National Association of Fire Investigators (NAFI), National Fire Protection Association (NFPA), Lexington, KY, 2011

Advanced National Fire, Arson & Explosion Investigation Training Program, National Association of Fire Investigators (NAFI), National Fire Protection Association (NFPA), Sarasota, FL, 2011

Engineering Ethics Seminar, Jimmy H. Smith Ph.D., P.E., Professor of Civil Engineering at Texas Tech University and Director of the National Institute of Engineering Ethics, February, 2011.

Insurance Coverage Issues that Consultants Need to Know, Richard G. Urquhart, P.E., J.D., February 2011.

Vehicle Dynamics of Passenger Vehicles, Kenny A. McClure, MSME, PE, February 2011.

Confined Spaces Training, National Safety Council, Columbia, South Carolina, 2011

Introduction to Rocket Motor Ballistics, Alliant Techsystem, ABL, November 2009.

PUBLICATIONS:

“Affordable High Performance Composite Case Rocket Motor Manufacturing,” AIAA-2005 3610, July 2005.