Adam R. Hall, P.E., CFEI, CVFI

Principal Consultant

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Background

Along with a B.S. and an M.S. degree in Mechanical Engineering, Mr. Adam Hall is a registered professional engineer in 33 states.

He has extensive industry experience in product design and testing and manufacturing. He has over 18 years of experience with off-road construction equipment, on-road trucks, and machine-shop equipment.

His experience and industry knowledge include roll-over protective structures, earth-moving equipment, horizontal directional drills, hydraulics, and drivetrains. He is also familiar with forklifts, manlifts, tractors and agricultural equipment, elevators, heating and air conditioning systems, fire protection systems, sheet metal forming, welding, machine tools including saws, lathes, mills, drills, presses, and grinders, and woodworking tools including saws, jointers, plainers, lathes, shapers, routers, sanders, drills, and mortisers. Mr. Hall is versed in lockout/tagout (LOTO) requirements for industrial machines and guarding of machinery. Mr. Hall is listed as the inventor on three U.S. patents.

Mr. Hall has testified in matters involving on-road vehicles, including vehicle collisions, vehicular damage, and seatbelts. He has testified about off-road mobile equipment, including road planers, manlifts, concrete pumpers, excavators, and forklifts. In addition, he has testified about fire suppression systems, plumbing systems, attic ladders, saws, presses, carwashes, and small engines.

Mr. Hall is also an accomplished gunsmith. As a hobbyist in this field, he has repaired, rebuilt, and fabricated firearms, both modern and antique. He fabricates and reloads modern and obsolete cartridges. To aid in this hobby, he is a skilled machinist and woodworker.

Professional Engagements

- **Machinery**
  - Employee Injury – Mississippi (2017), Evaluated interlocks guarding, shielding, and operator presence devices on fish skinning and fillet processing to determine machinery's contribution to injuries.
  - Hydraulic Contamination – Texas (2016), Evaluated Caterpillar-tracked loader to determine origin and cause of hydraulic contamination, which included disassembly of hydraulic components and analysis fluid contaminants, hydraulic, and electrical circuits.

- Employee Injury – Mississippi (2016), Evaluated interlocks guarding, shielding, and operator presence devices on toilet paper processing line to determine machinery's contribution to de-gloving injury.

- **Heavy Trucks**
  - On and Off Rail Truck – Tulsa, OK (2012-2014), Designed special-purpose truck chassis for rail car transport, including suspension, driveline, steering, brakes, engine, and transmission installation. Participated in the certification of Tier 4 engine installation. Troubleshot prototype electrical and mechanical systems.
  - Specialized Agricultural Hay Hauler – Tulsa, OK (2012-2014), Designed and tested new system.

- **Off-Road Equipment**
  - Vibratory Plows – Perry, OK (1997-2012), Designed and tested vibratory plows for 50- through 115-horsepower tractors, including vibratory plow attachment and the plow/trencher combination attachments.
  - Roll Over Protective Structures (ROPS) – Perry, OK (1997-2012), Redesigned and tested ROPS for 70- through 115-horsepower wheeled tractors.
  - Roll Over Protective Structure (ROPS) – Perry, OK (1997-2012), Designed ROPS for 115-horsepower tracked tractor.
  - Designed drive lines, hydraulic circuits, real carriers, pipe handling, and clamping systems.
  - Mud Mixing Systems – Perry, OK (1997-2012), Participated in engine certifications and design of mud mixing systems.
  - Horizontal Directional Drill Pipe – Perry, OK (1997-2012), Designed and tested horizontal directional drill pipe and oversaw all design and product changes for nine product lines and $30 million annual pipe production.

Forensic Engagements

- **Select Engagements**
  - Saw Incident with Injury – Texas (2024), Reconstruct incident and determine cause of incident. Evaluate guarding, application, and use of equipment.
  - Unintended Firearm Discharge – North Carolina (2024), Evaluate reported account of an uncommanded discharge in relation to firearm and holster.
  - Jointer Incident with Injury – Colorado (2023), Reconstruct incident and determine cause of incident. Evaluate guarding, application, and use of equipment relative to industry standards.
  - Automotive Hail, Bad Faith – Oklahoma (2023), Evaluate damage to automobiles, determine cause of damage.
  - Backhoe Accident with Injury – Texas (2023), Evaluate hoe mechanical and hydraulic systems for factors that caused or contributed to the incident.
  - Accidental Shooting with Juvenile Fatality – Tennessee (2022), Evaluate firearm and incident account. Evaluate for mechanical defects, storage, handling, and industry practice.
  - Heavy Truck Accident with Injury – Oklahoma (2021), Evaluate brake system to determine cause of brake drum failure.
  - Manlift Accident with Fatality – Oklahoma (2020), Evaluate manlift mechanical and hydraulic systems, and incident scene for factors that caused or contributed to the incident.
  - Manlift Accident with Injury – Texas (2018), Operated manlift and evaluated mechanical and hydraulic components for origin and cause of unintended movement of lift.
  - Accidental Shooting – Nashville, TN (2018), Evaluated and disassembled firearm for mechanical defects contributing to accidental discharge and injury.

- Student Injury – Illinois (2018), Evaluated guarding, shielding, and condition of grinder to determine machinery's contribution to students' injuries.
- Fatality Mowing Accident – Missouri (2017), Evaluated mower and accident site to determine whether a mechanical defect or operator error contributed to incident.
- Amputation in Manufacturing Equipment – Missouri (2017), Evaluated guarding, warning, and shields on hydraulic press. Review relevant standards. Opine on client's contribution to incident.
- Operator Injury – Manlift, TX (2017), Examined and operated lift that retracted uncontrollably, injuring basket occupants. Disassembled and examined hydraulic components and reviewed maintenance records and manufacturer's literature to determine origin and cause of failure.
- Machinery Tip Over with Injury – Hot Springs, AR (2017), Evaluated and opined on correct operating and loading protocol for compost turning equipment and contribution of operator's actions to accident and injuries.

- **Heating, Ventilation, and Air Conditioning**
  - HVAC Failure – Kansas (2019), Evaluate rooftop units and opine on cause of malfunction subsequent to fire in building.
  - Residential Fire – Missouri (2017), Evaluated mechanical and electrical condition of furnace at area of origin for fire. Disassemble the unit, and review service records, operation, and installation instructions. Opined on service company's contribution to cause of fire.
  - HVAC Failure – Texas (2016, 2017), Evaluate residential split system air conditioning systems and determine cause of failure. Opine on cause of failure and repairability of system.
  - Gas Line Pressure Testing – Texas, Oklahoma, Missouri (2016, 2017, 2018, 2019), Pressure test gas piping for leaks following fire or explosion and opine on origin and cause of leak.

- **Natural Disasters**
  - Storm Damage – Wiley, TX (2016), Evaluated residential and commercial roofs for damage following April 2016 storm.

Professional Experience

- **Rimkus** **2017 – Present**
  - Principal Consultant
    Responsible for investigating and evaluating commercial and residential mechanical systems, such as heating, ventilating, and air conditioning systems, plumbing systems, water heaters, fire suppression systems, door closers, elevators, furnaces, and gas plumbing to determine the origin and cause of concerns. Responsible for evaluating mechanical failures in on-road vehicles, off-road equipment, consumer products, machinery, plumbing, and heating, ventilating, and air conditioning systems. Evaluation of roof systems for storm damage. Evaluation of firearms for malfunction. Evaluation of guarding and safety system on machinery.

- **Donan** **2016 – 2017**
  - Forensic Engineer
    Responsible for investigating and evaluating commercial and residential mechanical systems to determine the origin and cause of concerns, often including the evaluation of roof systems related to storm damage. Responsible for evaluating mechanical failures in on-road vehicles, off-road equipment, appliances, plumbing, and heating, ventilating, and air conditioning systems.

- **HE&M Saw** **2014 – 2016**
  - Director of Engineering
    Responsible for scheduling and directing engineering projects for new and custom products such as metal cutting band saws in horizontal, vertical, and traversing configurations. Responsible for implementing document control systems. Conducted design reviews and developed product specifications. Visited customer sites and reviewed customer specifications. Reviewed guarding, shielding, and interlocking requirements for products.

- **Crane Carrier Company** **2012 – 2014**
  - Project Manager
    Responsible for executing project schedule, product design, and component selection for special-purpose Class 8 (heavy) truck chassis. Directed activities of engineers, designers, and drafters. Worked with customers to define product specifications and recommended improvements. Directed work of domestic and international subcontractors.

- **The Charles Machine Works Inc. (Ditch Witch)** **1997 – 2012**
  - Project Design Engineer
    Responsible for design of mechanical systems, including directional drills, pipe loaders, drill pipe, pipe magazines, drill tool adaptors, and pipe make/break systems. Along with defining system specifications, designed welded components, hydraulic cylinders, and mechanical linkages and coordinated with test engineers, manufacturing engineers, and production buyers to bring the product to production, as well as overseeing initial production phases.

    Designed vibratory plows, trenchers, wheeled tractors, axle mounts, drive lines, frame tilt system, and rear steering system. Designed and tested roll-over protective structure (ROPS). Designed the vibratory plow attachment and the plow/trencher combination attachments. Designed linkages and bearing systems for fatigue loading and abrasive environments. Designed double reel carrier.

    Diagnosed underlying problems (raw material defects, manufacturing defects, abuse, etc.) associated with warranty claims and customer complaints. Updated technical manuals and marketing literature.

    Designed horizontal directional drill pipe. Led teams to evaluate new manufacturing processes and production practices. Oversaw all design and product changes for nine product lines and $30 million annual pipe production. Provided technical support and traveled to raw material buyers when evaluating domestic and foreign steel mills. Developed raw material specifications. Supervised all design and testing for horizontal drill pipe. Developed improved testing fixtures.

Education and Certifications

- **Mechanical Engineering, B.S.:** University of Tulsa (1995)
- **Mechanical Engineering, M.S.:** Purdue University (1997)
- **Registered Professional Engineer:** Alabama, Arizona, Arkansas, Colorado, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Mexico, New York, Nevada, North Carolina, Ohio, Oklahoma, Rhode Island, South Carolina, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming
- **Certified Fire and Explosion Investigator**
- **Certified Vehicle Fire Investigator**
- **Universal Refrigerant Handling Card:** Environmental Protection Agency

- **Mechanical Engineering Industrial Advisory Board:** University of Tulsa
- **CDR Tool Technician:** Bosch
- **Certified XL Tribometrist** (expired)
- **Range Safety Officer**
- **Instructor, Certified Handgun, Certified Rifle, Certified Shotgun, Certified Muzzle Loader**
- **OSHA:** Man Lift Training; Forklift Training

Continuing Education

- **National Association of Fire Investigators:** International Advanced Fire Investigation Training Program
- **Northwestern University:** Traffic Crash Reconstruction 2; Vehicle Accident Reconstruction 2; Vehicle Accident Reconstruction 1
- **Murry State University:** Basic Gunsmithing; LEAS Double Action Semi-Auto Pistols, LEAS AR-15 Customization and Build
- **Other:** NRA Basic Handgun; NRA Basic Rifle; NRA Basic Shotgun; NRA Basic Muzzle Loader; NRA Range Safety Officer; ANSI y 14.2 Geometric Dimensioning and Tolerancing; multiple training courses at Koyo Bearing School; multiple training courses at Timkin Bearing School

Patents

- **Dual pipe for increased fluid flow:** Patent US 8,534,388, 2013
- **Dual pipe for increased fluid flow:** Patent US 8,201,644, 2012
- **Pipe handling system with a movable magazine:** Patent US 7,600,584, 2009