

## PROFILE

Thomas B. Axley, Jr., PE is a Senior Project Mechanical Engineering Consultant with over 35 years of a wide variety of design and forensics engineering experience. Mr. Axley specializes in commercial and industrial machinery, HVAC and piping, as well as investigations and apparent causal analysis in the areas of industrial and nuclear HVAC with specific investigation and troubleshooting experience in various environments. At Envista, Mr. Axley specializes in failure analysis, apparent and root cause determination, damage assessments, cost analysis, due diligence assessments, litigation support, and design reviews.

- ▶ Carbon Monoxide Poisonings
- ▶ Plastic Piping Failures
- ▶ Sanitary Sewage
- ▶ Boilers
- ▶ Pumps
- ▶ Industrial Ventilation/Exhaust
- ▶ Fire Protection Pipe Breaks
- ▶ Pollution Control Equipment
- ▶ Automotive Engines/Systems
- ▶ Mold Assessment
- ▶ Installation Defects
- ▶ Heat Exchanges
- ▶ Condensate Drainage
- ▶ Asphyxiation Cases
- ▶ Potable Water
- ▶ Domestic Hot Water
- ▶ Chillers
- ▶ Moisture and Condensation Issues
- ▶ Design and Engineering Defects
- ▶ Swimming Pools
- ▶ Building Heat Steam Systems
- ▶ Coil Freeze-ups
- ▶ Industrial Machinery

- ▶ *Industries:* Educational facilities, institutional, hospitality, medical, power generation, food processing, recreational, residential, commercial, heavy industrial manufacturing
- ▶ *Computer Skills:* Windows, MS Office (Word, Excel, PowerPoint), Xactimate, RS Means Facilities, Design Review, E-Quest, 3-E plus insulation, NIST Cycle HX

## EDUCATION

### **Bachelor of Science, 1986**

*University of Tennessee – Knoxville, Tennessee*

## LICENSES

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### WEBSITE

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**Professional Engineer (PE):**

- ▶ Tennessee
- ▶ Virginia
- ▶ Idaho
- ▶ New Jersey
- ▶ Georgia
- ▶ Florida
- ▶ Louisiana
- ▶ Arkansas
- ▶ Kentucky
- ▶ Maryland
- ▶ North Carolina
- ▶ South Carolina
- ▶ Alabama
- ▶ Mississippi
- ▶ New Mexico
- ▶ California

**CONTINUING EDUCATION**

- ▶ Mr. Axley studies over 15 hours per year in technical areas as well as engineering ethics as required to comply with state mandated professional engineering licensing requirements.

**PROFESSIONAL AFFILIATIONS**

- ▶ American Society of Heating, Air Conditioning and Refrigeration Engineers
- ▶ American Society of Mechanical Engineers

**PROFESSIONAL BACKGROUND**

**January 2023 – Present: Envista Forensics – Nashville, TN**

*Senior Mechanical Project Consultant*

**March 2019 – January 2023: Rimkus Consulting Group – Knoxville TN**

*Senior Mechanical Consultant*

**2018 – 2019: DAV Energy Services – Knoxville, TN**

**2015 – 2017: Bechtel National – Oak Ridge, TN**

*Senior Mechanical Engineer*

**2015 – 2017: Professional Project Services – Oak Ridge, TN**

*Engineering Group Lead*

**1983-2013: Tennessee Valley Authority – Chattanooga, TN**

*Nuclear HVAC Program Manager*

**REPRESENTATIVE PROJECT EXPERIENCE**

**Sorority House University of Tennessee**

*Knoxville, Tennessee*

- ▶ Determined cause of flooding and HVAC equipment damage in mechanical spaces. Determined and recommended replace vs repair options based on parts and labor availability and equipment obsolescence

**Multiple fire protection grooved joint piping separation cause and origin**

*Nashville Tennessee area*

- ▶ Cause and origin of coupling separation

**PVC Fire protection Pipe Separation in Hotel**

*Athens, Tennessee*

- ▶ Cause of failure (not following installation procedures and inadequate cure times) and subrogation support by identifying responsible party

**Carbon Monoxide Poisoning at Hotel**

*LaGrange, Kentucky*

- ▶ Determined origin and transport path of CO. Coordinate boiler and tracer gas testing

**Carbon Monoxide Poisoning at Hotel**

*Fort Walton Beach, Florida*

- ▶ Identified boilers and corroded flue gas paths which was source of CO. Identified parties believed to be responsible for improper maintenance on boilers

**Wilson County Board of Education**

*Mount Juliet, Tennessee*

- ▶ Determined extent of HVAC and plumbing system damage and developed input for a comparative cost study for a replace the building vs repair the building decision in two tornado damaged schools

**Covid wing in public hospital**

*Nashville, Tennessee*

- ▶ Determined cause and responsible parties for cooling coil failures inside a 100% outdoor make up air unit in a recently completed COVID ward

**Multiple fatalities in food processing plant**

*Gainesville, Georgia*

- ▶ Determined ventilation system deficiencies, and generated recommended solutions for a nitrogen “spiral freezer” in a chicken processing plant which resulted in 6 fatalities and multiple injuries

**High Rise Condominium HVAC and Piping Assessment**

*Memphis Tennessee*

- ▶ Assessed multiple corrosion related HVAC, domestic water heating and plumbing in a 61-year-old high rise condominium through visual inspection of system and visual inspection of cross section from corroded piping. Determined remaining useful service life of piping and verified replacement costs, Generated report of findings supporting a special assessment by HOA to facilitate a staged piping replacement program

**Historic Condominiums HVAC Failure**

*Little Rock, Arkansas*

- ▶ Determine the cause and extent of freeze damage in a historic hotel/condominiums complex. Determine which water source heat pumps were damaged by freezing or associated water loss vs damaged by other causes. Developed matrix to determine (based on damage and cause) which equipment insurance company should replace or repair

**1500 Demonbreun**

*Nashville, Tennessee*

- ▶ Determine cause of PVC sanitary drain piping failures in a 6-floor apartment complex. Determined responsible parties for loss

**Austin Peay University**

*Clarksville, Tennessee*

- ▶ Determine cause of evaporator freeze and rupture which resulted in water damage and corrosion to a large Trane CentraVac Chiller in a central chiller plant

**PEX Plumbing failures in hotel**

*Nashville, Tennessee*

- ▶ Determine cause PEX piping failures in a 10-floor hotel. Determined responsible parties for subrogation

**Multiple locations and clients**

*Nashville and Knoxville Tennessee Area*

- ▶ Determine cause and responsible parties for lavatory and toilet connection separation from valve or components

#### **Multiple locations Tennessee Valley Authority**

*Tennessee, Alabama, and Kentucky*

- ▶ Determine cause and responsible parties for lavatory and toilet connection separation from valve or components. Investigated smoke migration in two coal-fired plant fires resulting in intrusion of combustion products into the control room. - Investigated fume hood spillage and mold/mildew accumulations in eight water chemistry laboratories (repetitive faulty auxiliary air fume hood and supply distribution, designs). Investigated coal dust collector fire due to spontaneous combustion of powder river basin sub-bitumen coal accumulation Investigated and determined smoke transport paths through a large powerhouse after turbine and electrical board fires to determine potential points for furan and dioxin contamination locations. Investigated generator bus duct cooling fan and damper mechanical failures

#### **Multiple locations**

*Tennessee, Alabama, Georgia, and Kentucky*

- ▶ Determine cause and responsible party's automotive engine failures such as "thrown connecting rods. And transmission failures. Analyses included review of service records, retrieval of pertinent trouble codes, metallurgical analysis (if needed) and chemical analysis of vehicle fluids

#### **Printing press gear tooth failure**

*Lewisburg, Tennessee*

- ▶ Investigated and determined the cause of gear tooth breakage in a large commercial printing press. Determined root cause of failure was inadequate housekeeping in the area surrounding the gear box coupled with an open gear box cover

#### **Tire manufacturing facility**

*McMinnville, Tennessee*

- ▶ Determined cause of tire mold lifting attachment failure resulting in a fatality. Determined gaps between OSHA requirements and actual installation

#### **Residence**

*Somerset, Kentucky*

- ▶ Determined extent of installation defects of HVAC system. Separated those defects from pre-existing conditions and limited liability of HVAC Contractor.

#### **Residence**

*McCracken County, Kentucky*

- ▶ Determined cause of duct sweating and subsequent ceiling failure

**Furniture Factory**

*Mountain City, Tennessee*

- ▶ Determined cause of building negative pressure resulting in CO poisoning (inadequate make up air vs exhaust air from finishing booths)