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*Robert John Phillips, P.E., CFEI*

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Engineer: Mechanical & Machine Design

**Cranes**

**Failure Analysis**

**Fire and Explosion Analysis: Origin & Cause**

**Industrial Accident Reconstruction**

**Machine Design**

**Machine Safeguarding**

**Machinery and Equipment Damage Appraisals**

**Products Liability**

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## EDUCATION

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**1982**                      **Bachelor of Science, Mechanical Engineering**  
University of South Carolina, Columbia, South Carolina

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## EXPERIENCE

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**September 2010**    The Warren Group, Inc., Charleston, South Carolina. Senior Consulting  
**TO PRESENT**        Engineer performing specialized consulting related to property loss analysis  
and unintentional injuries involving mechanical engineering, machine design  
and safety.

**Property Loss Analysis**

Determine the cause of the loss, establish scope of damage, estimate cost to repair, evaluate replacement cost, establish actual cash value, estimate salvage value, estimate time required to complete repair.

**Safety Design Analysis (both personal injury and property damage)**

Industrial accident reconstruction, machine controls, machine safeguarding, warnings, OSHA compliance, standards and codes compliance, maintenance, fire and explosion analysis, products liability, product failures, failure analysis, consumer products.

**1995 TO 2010**        Engineering Design & Testing Corp, Mt. Pleasant, South Carolina.  
District Engineering Manager, Consulting Engineer, Mechanical  
investigations, engineering analysis of fires, scope of damage and repair cost  
determination.

**1994–1995**            Norfolk Naval Shipyard, Portsmouth, Virginia  
Supervisory Engineer, Engineering branch supervisor, provided written and  
on-site engineering guidance concerning operation and maintenance of fluid  
systems, lifting equipment, and related equipment, conducted engineering  
reviews of technical documents concerning the construction, modification, and  
repair of equipment and facilities used for nuclear maintenance.

**1990–1994**            Charleston Naval Shipyard, Charleston, South Carolina  
Nuclear (Mechanical) Engineer, Project engineer for the design maintenance,  
and upgrade of production facilities and cranes, project engineer for lift  
equipment, project engineer for fluid, ventilation, and waste processing  
systems, managed small boat operation and maintenance program, developed  
bolt tightening standards for cranes, developed material specifications,  
evaluated vendor supplied equipment.

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## EXPERIENCE (Continued)

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**1982–1990**

Charleston Naval Shipyard, Charleston, South Carolina  
Mechanical Engineer. Project engineer for overhaul, modification, and troubleshooting of weapons launching and handling equipment. Project engineer for installation and testing of shipboard cranes and hoists. Managed a test program ranging from component tests to full system operational tests. Shift test engineer for combat systems and submarine hull, propulsion, and auxiliary equipment. Prepared instructions and cost estimates for the repair, maintenance, and testing of shipboard equipment. Developed machinery preventive maintenance schedules and techniques.

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## SUMMARY OF MACHINE AND SYSTEM DESIGN EXPERIENCE

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### Charleston Naval Shipyard

Designed and certified shipboard and facility mechanical and test equipment. Designed and certified crane components and lifting equipment. Developed crane and critical equipment bolt tightening specifications. Designed waste processing systems and techniques. Specified air conditioning systems for nuclear and general work areas. Specified, tested, and certified electrical and electronic systems.

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## SUMMARY OF CRANE SPECIFIC EXPERIENCE

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Responsible for the installation, repair, load testing and certification of shipboard weapons handling equipment; cranes hoists, and rigging gear for conventional and nuclear weapons.

Project engineer for the Navy's East Coast Handling Equipment Maintenance Facility (HEMF). Oversaw the repair and refurbishment of ballistic missile lifting equipment by shipyard and contractor personnel. Conducted inspections, testing, and certification of ballistic missile lifting equipment used in various naval facilities throughout the Atlantic Region.

Designed and provided fabrication instructions for custom lifting equipment used in nuclear repair work for critical lifts.

Provided repair and maintenance instructions for dockside gantry cranes, bridge cranes, cargo elevators, and conveyors.

Conducted certification audits of material handling practices (rigging, lifting, and securement) by ship's crews.

Conducted investigations of shipyard and shipboard crane incidents individually and as part of investigation teams for larger incidents. Provided corrective actions for repair and the prevention of future accidents.

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## SUMMARY OF CRANE SPECIFIC EXPERIENCE, Continued

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Determined the cause of land based and waterfront crane and rigging accidents. Determined the scope of damage and cost to repair cranes and equipment after accidents:

- Mobile crane tip over
- Dropped crane boom
- Crane boom collapse while pile driving
- Friction crane clutch failure
- Dropped ladle at a steel mill
- Locking pin failure on a lifting spreader
- Hoist gearbox failure
- Dropped load due to worn bridge crane hoist brakes

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## PROFESSIONAL ORGANIZATIONS

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ASM International (#460417)

ASTM International (Forensic Sciences, Forensic Engineering, Performance of Buildings, Ships and Marine Technology Committees) (#276291)

International Code Council (#5195054)

National Association of Fire Investigators (#6118-2168)

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## REGISTRATIONS

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Professional Engineer in South Carolina (#15288)

Professional Engineer in North Carolina (#21869)

Professional Engineer in Georgia (#22800)

Professional Engineer in Louisiana (#32575)

Professional Engineer in Ohio (#74460)

The National Council of Examiners for Engineering and Surveying (NCEES) (#22738)

U.S. Council for International Engineering (#22738)

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## CERTIFICATIONS

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Certified Fire and Explosion Investigator (#6118-2168)

Certified Fire and Explosion Instructor (#6118-2168I)

Building Inspector (#6327) International Code Council International

ASM International Applied General Metallurgy Certification, Extension Diploma

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## CONTINUING EDUCATION

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### **April 15 – 18, 2012**

Property Loss Research Bureau, 2012 Claims Conference, Orlando, Florida

- Wind Energy: Losses in the Sky
- Personal Watercraft Liability & Coverage Issues
- Fire Investigations: Current Challenges (Core Skills)
- Claim Investigation With Pending Litigation
- Construction Accident Litigation
- Pre-Engineered Metal Buildings: Design & Installation
- Subrogation on the Farm: Large Machinery Failures
- Subrogation Trends in Property Insurance: A Legislative Update
- Commercial Large Loss Arson/Fraud Case

### **March 5, 2012**

“OSHA’s Cranes and Derricks Standards Update: The Litigators’ Perspective,” a live audio conference/webinar presented by Lorman Education Services

### **July 24, 2011**

“Principles of Metallography,” an online course by American Society of Materials

### **March 31, 2011**

“Accident/Occurrence, Faulty Workmanship or “fuzzy”...has Crossman clarified anything?”  
Columbia Conference Center, Columbia, SC

- Construction Issues
- Site Work - Earthwork Case studies
- Site Work - Utility Piping Case Studies
- Concrete Case Studies
- Falls on Concrete Walking Surfaces
- Plumbing
- Wood Framing/Trusses
- Water Intrusion in the Building Envelopes
- Harleysville vs. Crossman Supreme Court Case Presentation
- Construction Defect Litigation Roundtable Discussion

### **December 28, 2010**

Metallurgy of Welding and Joining – American Society of Materials

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## CONTINUING EDUCATION, Continued

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**October 16, 2009**

“Postflashover Fires,” an online course by CFITrainer.net, in conjunction with The International Association of Arson Investigators, Inc.

**October 16, 2009**

“Arc Mapping Basics,” an online course by CFITrainer.net, in conjunction with The International Association of Arson Investigators, Inc.

**October 15, 2009**

“Introduction to Fire Dynamics and Modeling,” an online course by CFITrainer.net, in conjunction with The International Association of Arson Investigators, Inc.

**October 15, 2009**

“Managing Complex Fire Scene Investigations,” an online course by CFITrainer.net, in conjunction with The International Association of Arson Investigators, Inc.

**October 15, 2009**

“Updated 2009 – The Scientific Method for Fire and Explosion Investigation,” an online course by CFITrainer.net, in conjunction with The International Association of Arson Investigators, Inc.

**October 11, 2009**

“Investigating Motor Vehicle Fires,” an online course by CFITrainer.net, in conjunction with The International Association of Arson Investigators, Inc.

**October 11, 2009**

“Insurance and the Fire Investigation,” an online course by CFITrainer.net, in conjunction with The International Association of Arson Investigators, Inc.

**October 4, 2009**

“Fire Investigator Scene Safety,” an online course by CFITrainer.net, in conjunction with The International Association of Arson Investigators, Inc.

**October 4, 2009**

“Fire and Explosion Investigations: Utilizing NFPA 1033 and 921,” an online course by CFITrainer.net, in conjunction with The International Association of Arson Investigators, Inc.

**December 30, 2008**

IAQ: Humid Climate Issues, RedVector.com

**December 30, 2007**

Brittle Fracture of Materials, PDHonline.org

**December 30, 2007**

Identifying Risk Factors in Machinery, PDHonline.org

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## CONTINUING EDUCATION, Continued

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**December 30, 2007**

Psychrometric Chart Fundamentals and its application to HVAC Troubleshooting, PDHonline.org

**December 30, 2006**

Basic Concepts of Photogrammetry, RedVector.com

**December 30, 2006**

Heavy Construction Equipment Basics – Lifting, RedVector.com

**December 29, 2005**

Elements of Metallurgy, American Society of Materials

**March 22, 2004**

Confined Space Safety Entry Supervisor Program, New Environment, Inc.

**August 10, 2003**

Certified Fire Investigation Instructor Course, National Association of Fire Investigators

**February 10, 2003**

Corrosion, American Society of Materials

**August 13, 2003**

Certified Fire and Explosion Investigator Course, National Association of Fire Investigators

**December 27, 2001**

Principles of Failure Analysis, American Society of Materials

**November 7, 2000**

Investigation of Vehicle Fires

**June 4, 1999**

Mobile Crane & Rigging Considerations, Crane Inspection and Certification Bureau

**September 28, 1998**

Fracture Mechanics Approach to Life Prediction, American Society of Mechanical Engineers

**October 21, 1997**

ABYC Accident Investigation Seminar, American Boat and Yacht Council

**October 21, 1996**

Identifying Structural Problems of Historic Houses, Cummings & McCrady, Inc.

**January 31, 1996**

Advanced Cause and Origin Expert Witness, International Training Association

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## CONTINUING EDUCATION, Continued

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### Engineering Design & Testing Corp., In-House Training

- Fire Alarm Code Overview
- CSST – Corrugated Stainless Steel Tubing
- The Engineer’s Role in Loss Valuation
- Product Liability – Terms and Techniques
- Alternate Means and Methods as Provided by the ICC
- Basic Fatigue Design Analysis
- Start to Finish: The Role of an Engineer in a Case
- Analysis of Plastic Fractures
- Damage Assessment: Electronic Theodolite Applications
- Laboratory Analysis of Fire Debris
- The Appraisal Process
- Root Cause versus ‘ROOT CAUSE’
- Refractory Basics
- Why Surge Suppressors Catch Fire
- Hydraulic Hose Failure Analysis
- Windows: Performance and Testing
- An Introduction to Infrared Thermography
- Crawlspace Moisture
- Turbomachinery Fires
- Valuation of Losses
- EIFS Panel Discussion
- Review of NFPA 921
- Photography Applications
- Package Boilers
- Chemistry of Accelerants and Hazardous Materials
- Spoilation of Evidence
- Fire Damage Structural Evaluation
- Valuation of Losses
- Car Fires
- Analysis of Stress Corrosion Cracking
- Structural Fires – Evaluating Damage as a Result of a Fire
- Post-Fire Examination of Steering Columns
- Engineering Design & Testing Corp. Training Program

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## CONTINUING EDUCATION, Continued

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### Charleston Naval Shipyard Training Courses

- ISO 9000
- Reactor Plant Fundamentals
- Radiation Worker
- Powered Lift Truck Operation
- Valve Maintenance
- Weapons Ballistic Missile Launch systems
- Handling System Optical Alignment
- Torpedo and Missile Launch Systems
- Submarine System Orientation
- Submarine System Shift Test Engineer and Chief Test Engineer Qualification

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## COURSES, SEMINARS AND LECTURES PRESENTED

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### **March 15, 2011**

“Construction and Building Issues for the Claims Industry,” presented at the AI Restoration sponsored seminar, Wrightsville Beach, NC

### **February 8, 2008**

“Spontaneous Ignition and Pyrolysis – Can the Theories be Proven?,” presented with G. Wayne Maltry, M.S., P.E., of the Columbia District Office, Engineering Design & Testing Corp.

### **May 17, 2006**

“Fires: Hot Topics,” Engineering Design & Testing Corp Spring Ed Seminar, Charlotte, NC

### **February 7, 2003**

“Moisture in Residential Crawlspace,” presented with Glenn Stewart, M.E., and P.E. of the Columbia District Office, Engineering Design & Testing Corp.

### **February 7, 2003**

“Crane Loss Site Examination,” Engineering Design & Testing Corp.

### **February 10, 2001**

“Reporting on Common Structural Issues,” Engineering Design & Testing Corp.

### **February, 1998**

“Boat Fires Traceable to Electrical Systems,” Engineering Design & Testing Corp.

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## PUBLICATIONS

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“In Pursuit of the Perfect Pipe,” Journal of Failure Analysis and Prevention, February 2004

“Can Combustion Be Spontaneous?” Journal of Failure Analysis and Prevention, March 2008