

# J. Roger Craddock, P.E.

## Principal Engineer



Roger Craddock holds a B.S. in Civil Engineering from the Virginia Military Institute (VMI) and has practiced engineering for over 55 years. A registered Professional Engineer (P.E.) in multiple states, Mr. Craddock specializes in failure analysis and accident investigation in matters involving petrochemical, natural gas and propane facilities, petroleum refineries, oil field and pipeline operations, marine and offshore structures, and heavy construction.

Combined with a special interest in construction, oil field operations, pipeline, combustion and gas mechanics, controls, piping, and process equipment, he offers extensive experience in safety related matters. He has also developed testing for fires, explosions and combustion related matters, and was an early participant in the use of video and technical computer graphics for legal presentations.

Prior to joining ESI, Mr. Craddock was the President, and later, Vice Chairman of an engineering company which he founded in 1979 and subsequently sold in 1990. With over 40 years of experience in this industry, he has been involved in the investigation of over a thousand incidents that include a number of the largest fires and explosions within the United States during that time. He has also consulted on matters internationally and lectured before a wide range of professional organizations.

### Education

B.S. Civil Engineering, Virginia Military Institute, Lexington, Virginia 1963.

### Licenses & Certifications

- State of Texas P.E. License 46609
- State of Alabama P.E. License 9239
- State of Georgia P.E. License 9227
- State of Kentucky P.E. License 8487
- State of Louisiana P.E. License E-21581
- State of S. Carolina P.E. License 5526
- State of W. Virginia P.E. License 6507

### Languages

- English.

### Contact Information

roger@engsys.com

(832)-610-2342

### ESi Houston

18500 Trails End Road  
Conroe, TX 77385

### Areas of Specialization

- Oil Field & Pipeline
- Petrochemical & Marine Structures
- Refineries
- Heavy Equipment
- Fires & Explosions
- Construction
- Structures
- Mechanical Systems

---

## Positions Held

### **Engineering Systems Inc., Houston, TX**

Principal, 1998 – Present

### **EFI (CH&A Corporation), Kingwood, TX**

President/Principal Engineer - Vice Chairman /Principal Engineer, 1979-1998

### **Versitech Corporation, Atlanta, GA**

President/Principal/Consulting Engineer, 1976-1979

### **Systems Engineering Associates, Columbus, OH and Atlanta, GA**

Vice President/Principal/Senior Engineer, 1972-1976

### **Law Engineering Testing Company, Washington, DC**

Senior Materials Engineer, 1971-1972

### **Columbus Testing Laboratory, Columbus, OH**

Senior Materials Engineer, 1970-1971

### **Law Engineering Testing Company, Birmingham, AL**

Materials Engineer, 1967-1970

### **E.I. DuPont de Nemours & Co, Brevard, NC**

Construction Engineer, 1966-1967

### **United States Army, Europe**

Officer/Corps of Engineers, 1964-1966

### **E.I. DuPont de Nemours & Co, Circleville, OH**

Plant Engineer, 1963-1964

---

## Publications/Presentations

"A Practical Look at Soil Penetrability of Odorant Compounds," a paper presented at the American Gas Association Claims Committees meeting, Boston, October, 1977.

"Testing the Strength of BUR membranes," RSI, August 1975 (with D.A. Guenther).

---

## Professional Affiliations/Honors

**National Fire Protection Association (NFPA)**

Member

**American Society of Civil Engineers (ASCE)**

Member

**American Society of Nondestructive Testing (ASNT)**

Member

**American Society for Testing and Materials (ASTM)**

Member

**American Welding Society (AWS)**

Member

**National Association of Corrosion Engineers (NACE)**

Member

**National Society of Professional Engineers (NSPE)**

Member

**Texas Society of Professional Engineers (TSPE)**

Member

**American Concrete Institute (ACI)**

Member

---

## Summary of Research

Developed numerous fire tests involving a wide range of materials and equipment to include appliances, water heaters, furnaces, furniture, and various combustible materials.

Developed flammable vapor dispersion testing programs.

Developed numerous carbon monoxide testing programs for gas fired appliances.

Studied mixing characteristics of natural gas and air under flow conditions for purging of new pipeline.

Performed programs to determine reactions of odorants for propane and natural gas to "scrubbing" by various soils.

Designed and operated odorant test facility for testing of reactions of Tetrahydrothiophene (THT) in natural gas to "new" steel pipe under static and flow conditions.

Performed programs for testing of Dimethyl Sulfide (DMS), Tert-Butyl Mercaptan (TBM) and Ethyl Mercaptan odorants for reactions with "new" steel pipe under static and flow conditions.

Studied and developed trace techniques for determination of gas odorant residuals.

Developed piezometer usage techniques to study hydrocarbon dispersion in soils.

Developed a number of testing techniques for the evaluation of insitu roof membranes to known standards.

Mr. Craddock has worked on numerous national fires and explosions involving structures, gas and oil production facilities, refineries and petrochemical plants. These incidents include the following:

Phillips Polyethylene Unit Explosion of October 1989 near Pasadena, TX that killed 23 people and caused approximately \$1 billion in damage. Headed investigative expert team representing Phillips.

Pepcon Ammonium Perchlorate Plant Explosion in Henderson, NV in May 1988. Explosion resulted in total destruction of plant and over \$150 million in property loss. Headed investigative team representing Southwest Gas to determine cause and origin.

MGM Grand Hotel Fire that resulted in 85 deaths and over \$100 million in property damage. Worked as lead engineer/investigator concerning fire and smoke spread for a primary defendant.

Marathon Oil East Cameron EC321 Oil/Gas Production Platform Fire. \$100 million loss in Gulf of Mexico. Worked as lead engineer on investigation for Texas Eastern Corporation.

Arco Oil & Gas South Pass Baker Platform Fire in the Gulf of Mexico. \$300 million fire destroyed platform and caused multiple deaths. Worked as lead engineer in fire cause and origin for Arco.

Arco Chemical Tank Explosion in July 1990. Large multi-**million-dollar** loss with multiple deaths in Channelview, TX. Worked as a primary lead investigator/engineer on cause of loss.

IMC Nitro Paraffins Plant Explosion in Sterlington, LA in May 1991. Multiple deaths with \$100 million property loss. Headed initial investigative team on behalf of IMC.

Texas City Refining Alky Feed Unit Explosion in 1979. Multiple deaths and large property loss. Worked as engineering expert in the cause of this incident.

Delta Storage Salt Dome Blowout in Dragon, MS in 1986. Blowout of salt dome storage cavern released large quantity (50,000 bbls +) of partially refined hydrocarbon feed stock. Large fire resulted in destruction of gas and liquid storage/loading facilities. Represented Enterprise Products and headed expert team to determine cause.

Inverness Hotel Fire in Hamilton, Bermuda. Large property loss involving gas fired equipment.

Represented Bermuda Gas & Utility as an expert engineer for the investigation and testimony.

Warren Petroleum Hydrocarbon Storage & Transportation Explosion & Fire in Mt. Belvieu, TX. Large fire and explosion resulting in multiple deaths and large property loss. Served as expert engineer for investigation of cause.

Archem Corporation Batch Reactor Explosion & Fire in Pasadena, TX. Large explosion from run-away exothermic reaction caused large property loss and operator death. Served as expert engineer for investigation of cause.

Rohm Haas Batch Reactor Flash Fire in Pasadena, TX. Multiple injuries and fire damage to process reactor. Investigated cause of loss as expert engineer.

Dow Chemical Polyethylene Reactor Explosion in Freeport, TX. Caused multiple deaths and large property loss. Served as expert engineer to determine cause of incident.

Rhodia Chemical Plant Batch Reactor Explosion in Freeport, TX. Caused multiple deaths and large property loss. Served as expert engineer to determine cause of incident.

Amoco Oil Refinery Oil Tank Explosion & Fire in Texas City, TX. Multiple deaths and large property loss. Worked as expert engineer to determine cause.

Amoco Oil Refinery Coker Unit Fire in Texas City, TX. Resulted in multiple injuries and large property loss. Worked as expert engineer to determine cause.

Conoco Refinery Fire in Lake Charles, LA. Multiple deaths and injuries and significant property loss. Worked as expert engineer to determine cause.

Oasis Pipeline Natural Gas Transmission Line Compressor Station Fire, in Ozona, TX. Fire destroyed compressor station causing large property loss. Worked as expert engineer to determine cause.

Shell Chemical Plant Explosion, in Belpre, OH. Batch reactor explosion destroyed large section of plant, causing several deaths and large property loss. Large fire caused environmental problems from run-off into Ohio River and airborne emissions from styrene smoke.

BP Texas City Refinery Explosion and Fire, in Texas City, TX in 2005 that killed 15 people and multiple injuries as well as extensive property damage. Headed investigative expert team representing BP.