

# Curriculum Vitae

Ray Franco, PhD., PE

Electrical Engineer

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January 13, 2023

## 1. Current Positions:

- Forensic Electrical Engineer and Certified Fire & Explosion Investigator.

## 2. Past Positions:

- U.S. Fire Administration – National Fire Academy - Instructor for the course “Electrical Aspects of Fire Investigation” 2015-2019.
- Central Vice President, Mississippi Fire Investigators Association (aka Mississippi Chapter of International Fire and Arson Investigators), 2014-2015.
- Board of Directors, Mississippi Fire Investigators Association, 2006, 2007, 2016.
- University of Southern Mississippi Electronics and Computer Engineering Technology Industrial Advisory Committee Member, 2003-2008.
- Chairman of the Mississippi Section of the Institute of Electrical and Electronics Engineers (2002-2003).
- Mississippi State University – Adjunct Professor of Electrical Engineering. Also taught lecture courses at the Auburn University, Jackson State University, and the U.S. Army Corps of Engineers Graduate Institute (1990-2000)
- U.S. Army Engineering Research and Development Center, 1975-2003.

### 3. Education:

#### a. Universities and Degrees.

Aug 82 - Dec 86	Elec. Engr. (Computer Sci.)	PhD	Miss State Univ.
Aug 81 – Jun 82	Electrical Engr.		Auburn Univ.
Jun 80 – May 81	Electrical Engr.		Miss State Univ.
Aug 77 – Aug 79	Elec. Engr. (Math)	MS	Miss State Univ.
Jul 69 – Dec 72	Electrical Engr.	BS	Miss State Univ.
Sep 68 – Jul 69	Engineering		Hinds Jr. College

#### b. National Electrical Code (NFPA 70)

Dec 21	(7 hr)	2020 NEC Changes (Vector Solutions)
Aug 18	(1 hr)	2017 NEC Changes: Overcurrent, Grounding & Bonding
Aug 18	(1 hr)	2017 NEC Changes: Receptacles & Switches (RV)
Aug 18	(1 hr)	2017 NEC Changes: Conductors & Wiring Methods (RV)
Aug 18	(2 hrs)	NEC Wiring Methods (Red Vector)
Sep 14	(2 hrs)	NEC 2014 Changes Chapter 2 - Wiring (Red Vector)
Feb 11	(2 hrs)	NEC 2011 Changes Articles 200-280 (Red Vector)
Feb 11	(1 hrs)	NEC 2011 Changes Articles 90-110 (Red Vector)
Feb 11	(1 hr)	Ground Fault Circuit Interrupters (Red Vector)
Feb 09	(4 hrs)	NEC Grounding (Red Vector)
May 06	(21 hrs)	National Electrical Code (NFPA)
May 06	(7 hrs)	NEC Hazardous/Classified Locations (NFPA)

#### c. National Electrical Safety Code Training:

Jun 09	(32 hrs)	Staking Phase II – NESC Rules (Hi-Line)
Apr 06	(2 hrs)	NESC Rules for the Installation and Maintenance of Electric Supply Stations and Equipment
Dec 05	(2 hrs)	Overhead Lines (Sections 26 & 27)
Aug 05	(2 hrs)	NESC Grades of Construction
May 04	(4 hrs)	NESC Rules for the Installation and Maintenance of Underground Electric Supply and Communication Lines

#### d. Electrical Safety Regulations:

June 22	(2 hrs)	OSHA Electrical Safety (Vector Solutions)
Dec 21	(2 hrs)	Electrical Hazards (Vector Solutions)
Dec 21	(1 hr)	OSHA Personal Protective Equipment (VS)
Dec 19	(1 hrs)	Arc Fault Hazards NFPA 70E (Red Vector)
Dec 11	(5 hrs)	OSHA Electrical Regulations (Red Vector)
Nov 10	(17 hrs)	Electrical Safety in the Workplace (NFPA)
May 06	(7 hrs)	Electrical Safety in the Workplace (NFPA)

**e. Building Codes:**

Jan	19	(6 hrs)	Fire Alarm and Signaling Code - NFPA- 72 – Online
Sep	17	(8 hrs)	International Building Codes (IBC) (LA Engr. Society)
Jun	17	(6 hrs)	Inspector Skills – International Code Council
Dec	16	(2 hrs)	International Building Codes (IBC) & More (Red Vector)
Dec	16	(2 hrs)	IBC – Electrical & Communications (Red Vector)
Dec	16	(2 hrs)	IBC – Fire and Life Safety Code (Red Vector)
Dec	16	(2 hrs)	IBC – Fire & Smoke Resistance Assemblies (Red Vector)
Dec	05	(5 hrs)	Building Codes (MCIC)

**f. Hazmat:**

May	16	(40 hrs)	Hazwoper with Asbestos Awareness (G4S)
Jun	15	(16 hrs)	Asbestos for Operation and Maintenance (MSU)
Apr	16	(4 hrs)	MFIA – Fire Investigator Health & Safety Awareness

**g. Fire and Arson Training:**

Oct	22	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Dec	20	(16 hrs)	AL-IAAI Fire & Arson Seminar (tested)
Oct	19	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Oct	18	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Apr	18	(8 hrs)	Residential Lightning & Fireplace Fires (LA-IAAI)
Nov	17	(8 hrs)	RV & Boat Fires (AL-IAAI - tested)
Nov	17	(4 hrs)	NFPA 921 2017 Update (AL-IAAI - tested)
Nov	17	(2 hrs)	ATF Bomb & Arson Tracking Sys. (AL-IAAI - tested)
Sep	17	(4 hrs)	Lithium-Ion Battery Fires (LA-IAAI - tested)
Sep	17	(4 hrs)	HVAC Fires (LA-IAAI – tested)
Jul	17	(40 hrs)	NFPA 1033 Arkansas State Fire Academy (taught)
Feb	17	(16 hrs)	Bomb Investigations – Public Agency Training Council
Oct	16	(8 hrs)	LA-IAAI Light Fixture Investigations (tested)
Jun	16	(8 hrs)	MFIA – Arson Immunity Act
Apr	16	(24 hrs)	MS-IAAI NFPA 1033 (tested)
Dec	15	(12 hrs)	LA-IAAI Fire & Arson Seminar
Nov	15	(23 hrs)	AL-IAAI Fire & Arson Seminar (tested)
Oct	15	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Jul	15	(8 hrs)	MFIA NFPA Std. 1033
Jul	15	(8 hrs)	LA-IAAI Fire Science & Thermodynamics
Apr	15	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Mar	15	(48 hrs)	Electrical Aspects of Fire Investigation (NFA)
Nov	14	(22 hrs)	AL-IAAI Fire & Arson Seminar (tested)
Oct	14	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Sep	14	(20 hrs)	LA-IAAI Fire & Arson Seminar (tested)
Jun	13	(24 hrs)	LA-IAAI Residential Electrical Fires (tested)
Nov	12	(8 hrs)	LA-IAAI Evaluation of Appliance Fires

July	11	(16 hrs)	Central Texas Fire Investigators
Apr	11	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Apr	10	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Mar	10	(8 hrs)	IAAI-LA: LP & Natural Gas Fire Investigations
Dec	09	(8 hrs)	Residential Fires (Texas Engr. Ext. Service)
Apr	08	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Mar	08	(8 hrs)	LA-IAAI Commercial Kitchen Fires
Aug	07	(20 hrs)	IAAI-TN Chapter Expert Witness Course (tested)
Apr	07	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Dec	06	(16 hrs)	Central Texas Fire Investigators
Oct	06	Taught	MFIA, Fire and Arson Seminar
Mar	06	(20 hrs)	IAAI, Vehicle Fires Seminar (tested)
Mar	05	(20 hrs)	MFIA, Fire and Arson Seminar
Nov	04	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Aug	04	(20 hrs)	NAFI, Fire, Arson and Explosions (tested)
Nov	03	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Jun	03	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
May	02	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Nov	01	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Apr	01	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Nov	00	Taught	MFIA, Fire and Arson Seminar (tested)
Apr	00	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Mar	99	(20 hrs)	IAAI, Electrical Appliance Fires (tested)
Oct	98	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Apr	98	(20 hrs)	MFIA Fire and Arson Seminar (tested)
Nov	96	(20 hrs)	MFIA, Fire and Arson Seminar (tested)
Oct	95	(20 hrs)	MFIA, Fire and Arson Seminar (tested)

MFIA – Mississippi Fire Investigators Association

IAAI – International Association of Arson Investigators

NAFI – National Association of Fire Investigators

#### **h. International Association of Arson Investigators: CFI-Trainer**

Jan	23	(1 hr)	Photovoltaic Cells and Systems
Jun	21	(1 hr)	Lithium Battery Fires
May	14	(4 hrs)	Arc Mapping Basics
May	14	(4 hrs)	Documenting the Event
May	14	(2 hrs)	Relationship Between NFPA 1033 & 921
April	13	(3 hrs)	Ethics and the Fire Investigator
April	13	(3 hrs)	Electrical Safety
April	13	(3 hrs)	The Scientific Method
July	06	(4 hrs)	Digital Photography

i. **Short Courses and Other Training**

Dec 21	(2 hrs)	Electrical Distribution (Vector Solutions)
Jun 22	(1 hr)	Ethics – Managing Risks (Vector Solutions)
Jun 22	(1 hr)	Ethics – Organizational Issues (Vector Solutions)
Jun 22	(1 hr)	Fire Essentials & Fire Science (Vector Solutions)
Jun 22	(1 hr)	Electric Motors (Vector Solutions)
Jun 22	(1 hr)	Electric Power Substations (Vector Solutions)
Jun 22	(1 hr)	Pad Mounted Transformers (Vector Solutions)
Jun 22	(1 hr)	T&D Care and Testing of Tools (Vector Solutions)
Jun 22	(1 hr)	Transmission Line Installation (Vector Solutions)
June 22	(1 hr)	Electric Laws and Components (Vector Solutions)
Dec 21	(1 hr)	Engineers Standard of Care (Vector Solutions)
Dec 21	(2 hrs)	Surge Protection (Vector Solutions)
Feb 21	(10 hrs)	Cellular Records and Mapping (PACTtech)
Apr 21	(20 hrs)	Cell Phone Evidence (Legal Risk Management)
Feb 20	(5 hrs)	Circuit Analysis (Red Vector)
Feb 20	(4 hrs)	Transmission & Distribution (Red Vector)
Feb 20	(2 hrs)	Electric Motors (Red Vector)
Feb 20	(1 hrs)	Electric Fire Alarms (Red Vector)
Feb 20	(1 hrs)	Ethics for Professionals (Red Vector)
Dec 19	(2 hrs)	Engineering Ethics (Red Vector)
Feb 19	(5 hrs)	Transmission & Distribution (Red Vector)
Aug 18	(2 hrs)	Fire Alarm Essentials (Red Vector)
Aug 18	(1 hr)	Ethical Decision Making for Engineers #3 (Red Vector)
Aug 18	(1 hrs)	Digital Multimeters II – Applications (Red Vector)
Mar 18	(2 hrs)	Digital Multimeters I – Operations (Red Vector)
Dec 17	(1 hr)	Engineering Ethics #2 (Red Vector)
Feb 17	(4 hrs)	Safety – Electrical, Hazards & Grounding (Red Vector)
Dec 16	(4 hrs)	Mechanical Characteristics of Conductors (Red Vector)
Sep 16	(1 hrs)	Ethical Decision Making for Engineers (Red Vector)
Jan 15	(3 hrs)	Electric Motors (Red Vector)
May 14	(8 hrs)	Electric Machines & Flicker Contribution (IEEE)
Sep 14	(1 hr)	Engineering Ethics (Red Vector)
May 11	(6 hrs)	Engineering Professional Development (IEEE)
Aug 10	(6.5 hrs)	Engineering Professional Development (IEEE)
Jun 06	(2 hrs)	NEC top 100 Rules (Entergy)
Apr 06	(2 hrs)	NESC Electric Stations 1 (Entergy)
Mar 06	(2 hrs)	Grounding in the Primary Zone (Entergy)
Feb 06	(2.5 hrs)	Regulator Controls (Howard Ind. / Entergy)
Nov 05	(2 hrs)	Engineering Ethics (IEEE)
Nov 05	(2 hrs)	Low Voltage Controls for Power Systems (Entergy)
Sep 04	(1.5 hrs)	Electric Power Surge Protection (Entergy)
Aug 04	(2 hrs)	Electric Power Quality (Entergy)

Jun 04	(1 hr)	Power Management Control Systems (MES)
Jun 04	(1 hr)	Electric Motor Failures (MES)
Jun 04	(1 hr)	Everyday Engineering Ethics (MES)
Jun 04	(1 hr)	Security Technology Trends (MES)
Nov 03	(2 hrs)	Engineering Ethics (IEEE)
Aug 02	(2 hrs)	Engineering Ethics (IEEE)
Jun 01	(3 days)	Microsoft Access Database Programming (OPM)
Oct 99	(3 days)	Java Programming (OPM)
Aug 97	(5 days)	Leadership Education and Development (OPM)
Aug 94 - Dec 94		Real Time Systems Computing (MSU)
Dec 92	(3 days)	Microsoft Windows (OPM)
Nov 91	(5 days)	Intermediate C programming (OPM)
Oct 90	(3 days)	Data Acquisition Systems Design (ISA)
Oct 90	(2 days)	Measurement Uncertainty (ISA)
Aug 90	(5 days)	C Programming (OPM)
Jan 89 - May 89		Fiber Optics System (MSU)
Feb 88	(2 days)	Engineering Management (OPM)
Aug 87 - Dec 87		Advance Signal Processing (MSU)
Jan 87 - Jun 87		Digital Signal Processing (MSU)
Aug 87	(5 days)	Enable Software (OPM)
Feb 87	(4 days)	C programming (Masscomp)
Mar 86	(4 days)	Queuing Theory (Learning Tree)
Jun 81	(4 days)	Intel 8086 Microprocessor (Intel)
Jul 76	(5 days)	Microprocessors (LSU)
Jun 76	(5 days)	Digital Logic (LSU)
May 74	(10 days)	Economic Analysis (US Army)

#### 4. Certifications:

- Fire Alarm ITM Specialist (NFPA-72), Certification No.: CFAITMS-FM-18-047, by the National Fire Protection Association (NFPA).
- Certified Fire and Explosion Investigator (CFEI-10031-4612), by the National Association of Fire Investigators (NAFI)
- Certified Vehicle Fire Investigator (CVFI-V10031-4612) by the National Association of Fire Investigators (NAFI)

## **5. Professional Registration:**

- Mississippi Professional Engineering License No. 7155, 1978.
- Louisiana Professional Engineering License No. 31177, 2004.
- Arkansas Professional Engineering License No. 12673, 2006.
- Alabama Professional Engineering License No. 28163-E, 2006.
- Florida Professional Engineering License No. 65763, 2007.
- Georgia Professional Engineering License No. PE032993, 2008.
- Missouri Professional Engineering License No. 2007032424, 2007
- Certified Professional Engineer by The National Council of Examiners for Engineering and Surveying, Certificate No. 23905, 2003 – Also No. 17-898-45.

## **6. Professional and Technical Societies:**

- National Society for Professional Engineers (NSPE) – #104049555.
- Mississippi Engineering Society (MES)
- Institute for Electrical and Electronics Engineers (IEEE) - Senior Member -#06504724.
- National Fire Protection Association (NFPA) - #930898
- National Association of Fire Investigators (NAFI) - #10031-4612.
- International Association for Arson Investigators (IAAI) - #19510
- Mississippi Fire Investigators Association (NFIA) - # 61
- Alabama Association of Arson Investigators - #19MS0423
- Louisiana Chapter of the IAAI

## **7. Participation in committees, panels, meetings or conferences:**

- University of Southern Mississippi Electronics and Computer Engineering Technology Industrial Advisory Committee – March 2005
- IEEE Southeastcon 2003, Section Chairman.
- IEEE Section Congress 2002, Section Chairman.
- Chairman Earthquake Session Shock and Vibration Symposium 1998.
- Co-Chairman of Dynamic Measurement Session Shock and Vibration Symposium 1997.
- Co-Chairman and Recorder for Electric Power Session Fifteenth Interagency Research Coordination Conference, 1987.

## **8. Honorary, scientific, and engineering societies:**

- Tau Beta Pi Member Miss State Univ. Mar 78
- Eta Kappa Nu Member Miss State Univ. Nov 77

## **9. Special recognition and/or awards:**

- U.S. Army - Research Development and Acquisition Award 1991 \*
- U.S. Army Science Conference - Honorable Mention Paper 1990 \*
- U.S. Army Waterways Experiment Station - R&D Award 1989
- Outstanding Performance Awards 1991-1998.
- U.S. Army Picatinny Arsenal - Cash award for Exceptional Performance 1997
- U.S. Army Commendation Medal 1975.
- ❖ The U.S. Army Research Development and Acquisition Award is the highest award for technical merit awarded by the Department of the Army.
- ❖ The U.S. Army Science Conference Award was issued by the Under Secretary of the Army in charge of Research and Development.



## **10. Patents:**

- Shock Hardened Data Acquisition System, U.S. PATENT No. 5,317,914 (38 Claims) issued on 7 Jun 1994.

## **11. University Teaching Assignments:**

- MSU-EE8763 Finite and Infinite Machines : Jan-May 1997.
- MSU-EE6723 Microprocessors II : Aug-Dec 1991.
- MSU-EE2731 Digital Device.
- Undergraduate courses at Auburn and Jackson State University.

## **12.A Professional Publications:**

- Franco, R.A., Phillips, G.G. 1998 “Improved Shock Hardened Data Acquisition System” Proceedings of the 68th Shock and Vibration Symposium, Baltimore MD.
- Franco, R.A., 1996 “Hardened Data Acquisition System for Harsh Environments” NASA Tech Briefs, Vol. 20 No.7.
- Oswald Robert, Director of Research & Development Chief Corps of Engineers, presented in Nov 96 by Dr. Oswald; Location and conference: Classified; Subject: The Electric Chair and the Physiological Effects of Electricity to Humans – research and draft paper prepared by Franco R.A.
- Franco, R.A., Owens J.K., 1995 “A Miniature, Shock Hardened, Transient Data Recorder”, Proceedings of the 66th Shock and Vibration Symposium, Vol.2 pp 147-156, Biloxi, MS.
- Franco R.A. 1995. “PAM Acceleration Measurements” presented to the PAM Red Team, at Picatinny Arsenal (PAM is a classified project).
- Franco, R.A., 1994 “Multi-Channel HDAS Penetration Data”, Proceeding of the Penetration Technology Coordination Group, Vicksburg, MS.
- Ingram, J.K., Franco, R.A., 1994. “MIDAC, A Miniature Integral Data Acquisition Canister for Blast Pressure Measurements Using the WES-Developed HDAS Autonomous Digital Data Acquisition System”, WES Technical Report SL-94-5, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

- Franco, R.A., Ingram, J.K., 1993. “A Self-Contained, Multi-Channel, Shock-Hardened Data Acquisition System”, Defense Nuclear Agency Conference on Instrumentation for Nuclear Weapons Effects Testing (INWET'93), Menlo Park, CA.
- Franco, R.A., Ingram, J.K., 1991, “A Very High Shock Recorder”, Proceedings IEEE Southeastcon, Institute of Electrical and Electronic Engineers, New York, NY.
- Franco, R.A., Ingram, J.K., 1991. “New Advances and Experiences with HDAS”, Defense Nuclear Agency Conference on Instrumentation for Nuclear Weapons Effects Testing (INWET'91), Vicksburg, MS.
- Franco, R.A., Ingram, J.K., 1991 “Recent Experience with the CEWES-Developed Hardened Data Acquisition System (HDAS),” Proceedings of the 37th International Instrumentation Symposium, Instrument Society of America, pp 511-524, Albuquerque NM.
- Franco, R.A., Ingram, J.K., 1990. “A Very High Shock, Self-Contained Data Acquisition System”, Army Science Conference, Durham, NC.
- Franco, R.A., Ingram, J.K., 1990. “A Super-Hardened, Self-Contained Digital Acquisition System”, Proceedings of the 36th International Instrumentation Symposium, Instrument Society of America, pp 649-659, Research Triangle Park, NC.
- Franco, R.A., Ingram, J.K., 1989 “HDAS, A Miniature, Self-Contained, Super-Hardened, Digital Data Acquisition System (module)”, Paper No. 78, Defense Nuclear Agency Conference on Instrumentation for Nuclear Weapons Effects Testing (INWET'89), Monterey CA.
- Franco, R.A., 1988. “A Self-Contained Shock Hardened (100Kg) Data Acquisition System, Report 1, Design and Development”, WES Technical Report TR-0-88-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- Franco, R.A., 1987. “Networks of Markovian Queues”, WES Technical Report TR-0-87-2, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

## **12.B Publication Contributions:**

- Charles Joseph McClain, AIA, “When Bad Things Happen to Good Buildings - Red Flags in Property Condition Assessments: A Reference Guide to Problematic Building Materials and Conditions in the United States” – 2017 Edition, ISBN 978-1537094779.
- “Fire Investigator: Principles and Practice to NFPA 921 and 1033, Fourth Edition”, © 2016 Jones and Bartlett Learning, LLC and the National Fire Protection Association.

- Aziz, M.J., Johnson, A.C., Introduction to Energy Technology: Depletable and Renewable, © 2014 Wiley, ISBN 978,3-527-33241-0

### **13. Work History and Assignments:**

#### **A. Forensics Engineer & Fire Investigator**

- 1/98-Present: Forensic Engineering work for insurance companies and attorneys. I have testified in both Federal and State Court.

#### **B. U.S. Army Engineering Research and Development Center, 3909 Halls Ferry Road, Vicksburg, MS 39180.**

- 12/98 - 9/03: Responsible for technically leading the Instrumentation Systems Development Division and acts as the chiefs in his absence. Plans and directs, and executes research, conception, design, development, construction and procurement of instrumentation systems for the U.S. Army Corp of Engineers and other government agencies. In addition, I continued my Shock Hardened Data Acquisition System (HDAS) research. I did research on battery behavior when subject to shocks above 10,000 g's. As a result, the power supplies in the HDAS were redesigned to be able to withstand a loss of power for 50 milliseconds. Also, the load regulation was greatly improved. Other power management changes were made that extended the time that the HDAS could record data from 30 minutes to over 6 hours. I also designed circuits to simulate varying line voltages and load conditions, and measured the HDAS performance under these conditions. I developed Java programs to interrogate, display data, and convert HDAS data files to other formats. Recently, I worked in the area of computer network performance. I directed the measurements of parameters to establish a baseline for our wide area network, setup a test bed, and ran software to simulate the networks and yield performance parameters.
- 05/97-11/97: Acting Chief of the Instrumentation Systems Development Division responsible for 22 electronics engineers and 28 electronics technicians. My responsibilities included: planning, directing, executing research, conception, design, development, construction, procurement, operations, maintenance/repair, staffing, assigning duties to positions, assisting employees in preparing career plans, training, performance appraisals, leave schedules, disciplinary action, facilities, equipment, and a 4 million dollar budget.
- 04/91-05/97: I managed and directed two other electronic engineers and three electronic technicians in designing, building, using, and transferring HDAS technology. During this period three new HDAS systems were designed. The first of these was a miniaturized version for one-seventh scaled penetration weapon. The second was a multi-axis four channel HDAS. The third was a HDAS system that accepted commands and returned its

data over a fiber optic network. During this period over 200 HDAS units were produced in-house.

- 9/88-4/91: I designed semi-customer integrated circuits and redesigned the HDAS with surface mount components to reduce its size. I managed the production of HDAS units, developed field methodology and directed its use on explosive effects field test. I developed validation techniques for the HDAS. I managed the software design to interrogate the HDAS and produce engineering plot in the field.
- 02/87-09/88: Designed and validated the ERDC's first shock hardened data acquisition system (HDAS). The shock hardness of the HDAS, 100,000 g's, was validated by placing it inside a projectile that was fired from a 155 mm howitzer into a 1-ft thick reinforced concrete target. The recorder contained an analog section with a 100 KHz frequency response, an 11-bit analog-to-digital converter with a sampling rate of 1,000,000 samples per second, and a 131,072 x 16-bit memory.
- 2/79-2/87: I designed and implemented two microprocessor-based protocol converters. One served as the interface between a Lockheed data recorder and a satellite uplink, and the other interfaced a data recorder to a computer. I designed a microprocessor based voice synthesizer for interrogation of remote water stage recorders, and I designed a system to automatically interrogate other remote data acquisition systems over the phone. I worked on various research projects including: thermal camouflage, the detection of faults in railroad bed, and the measurement of silt in rivers. During this period, the following educational leave was taken: 6/80-5/81 Mississippi State University; 9/81-9/82 Auburn University; 9/82-5/84 Mississippi State University.
- 3/76-2/79: I designed analog circuits used to amplify and buffer signal from explosive effects transducers. I fielded and recorded measurements on various explosive tests including one underground nuclear test. During this period education leave for MS degree was taken from 8/77-5/78 and from 8/78-12/78.
- 1/75-3/76: I completed the designed and debugged the design of discrete logic data acquisition system used for hydrological surveys. The project had not been completed due to the design engineer leaving the organization for a promotion.

## **14. Court Testimony:**

### **A. Federal Court Appearances:**

- Fire Loss Residential Testified for Plaintiff on March 24, 2010 (F05-21)  
United States District Court, Southern District of MS, Hattiesburg Division  
Civil Action No. 2:09CV16-KS-MTP  
Metropolitan Property and Casualty Insurance Company d/b/a Economy Premier Assurance Company vs. Clayco Construction Company  
Testified for Plaintiff (Metropolitan Insurance)  
Deposition: September 22, 2009  
Plaintiff's Attorney: Chris Deaton with Deaton and Deaton, P.A.  
Defense's Attorney: David M. Ott with Bryan Nelson, P.A.
- Fire Residential Loss – Testified for Plaintiff on February 11, 2001  
United States District Court, Southern District of MS, Jackson Division  
Civil Action No. 300CV171LN - Nationwide Insurance vs. Ronald Hughes  
Arson Fire - Testified for Plaintiff (Nationwide Insurance)  
Deposition: January 18, 2001  
Court Testimony: February 15, 2001  
Plaintiff's Attorney: Patrick Tatum / Firm: Upshaw, Williams, Biggers, Beckham & Riddick  
Defense's Attorney: Crymes M. Pittman / Firm: Pittman, Germany, Roberts & Welsh

### **B. State Court Appearances:**

- Capital Murder Arson (Retained by AFT) – Testified for Prosecution (F09-035)  
Circuit Court of Franklin County, AL  
State of Alabama vs. Christie Michelle Scott - Case No.: CC08-344  
Court Testimony: July 18-19, 2009  
District Attorney: Joey Rushing / Franklin County  
Defense Attorney: Robert B Tuten / Law Office of Robert Tuten
- Electrical Shock Accident - Testified for Plaintiff  
Circuit Court of Alcorn County, MS  
Civil Action No. 97-466R-A - Nathan Craig vs. SSSS&P (dba Executive Inn)  
Court Testimony: November 20, 2001  
Plaintiff's Attorney: Dean Andrews / Firm:/ H. Dean Andrews (Sole Practitioner)  
Defense's Attorney: Kent Smith / Firm: Webb, Sanders, Balducci & Smith

### **C. Federal Court Depositions:**

- Burn Injury Heated Seat - Deposition for the Defense on September 28, 2018 (F16-067)  
U.S. District Court, Eastern District of Texas, Marshall Division  
John Stephenson, vs, Caterpillar & Sears MFG Co. - No.: 2-16-CV-00071-JRG-RSP  
Defense Attorney: Preston W. McGee, Flowers Davis, PLLC  
Plaintiff's: Nelson J. Roach – Nix Patterson & Roach, LLP
- Fire of Sonoco Plant – Deposition for the Defense on December 6, 2013 (F10-074)  
U.S. District Court, Western District of LA, Lafayette Division  
Century Surety Co., vs, Toshiba International Corp. - No.: 6-11-CV-1870  
Sonoco Products, et al. vs Toshiba International Corp. - No.:6-11-CV-1933  
Defense Attorney: Sheilagh DePeter, Wilson Elser Moskowitz Edelman & Dicker  
Defense Attorney: David Frohn, Frohn & Thibodeaux LLC  
Plaintiff's Attorney: James D. Dendinger – Cozen O'Connor  
Plaintiff's Attorney: Jack P. Skaggs – Cozen O'Connor
- Fire of Piggly Wiggly Store – Deposition for Plaintiff on July 24, 2013 (F09-039)  
U.S. District Court, Southern District of MS, Hattiesburg Division  
Charter Oak Fire Insurance Co., as subrogee of R&P Land Co.  
vs. Beverage-Air Corp. & Tecumseh Products Co.  
Cause No.: 2:12-cv-91-KS-MTP  
Plaintiff's Attorney: Tom Miller / Fire: Maricle & Associates  
Defense Attorney: Meade Hartfield with Baker, Donelson, Bearman P.C  
Defense Attorney: Roy Smith with Daniel Coker Horton and Bell P.A.
- Fire Death of Matthew Taylor – Deposition for the Plaintiff on Jan 28, 2013 (F07-18)  
U.S. Southern District of Texas  
Mary Taylor vs. Lasko Products  
Cause No.: 4:012-cv-00680  
Deposition for Plaintiff on 28 January 2013  
Plaintiff's Attorney: Jeff Embry / Hossley and Embry LLP  
Defense Attorneys: John Freedenberg / Firm: Goldberg Segalla LLC
- Fire of Supper Dollar Store – Deposition for Defense on February 8, 2012  
U.S. District Court for Western District of Louisiana  
Civil Action No.: 6:08-CV-0551  
Samco vs. Brother International Corporation  
Commercial Fire – Supper Dollar Store  
Plaintiff's Attorney: Carin Brock / Butler Pappas  
Defense Attorney: Andrew Meyers / Breaud & Meyers APLC

- Fire Death of Racehorses – Deposition for Plaintiff on July 7, 2009 (F08-045)  
U.S. Eastern District of Texas  
Jason Richards vs. Lasko Products and JEH Stallion Station  
Cause No.: 6:07cv533  
Plaintiff's Attorney: Jeff Embry / Hossley and Embry LLP  
Defense Attorneys: John Freedenberg / Firm: Goldberg Segalla LLP  
Tom Stollenwerch / Firm: Touchstone Bernays, LLP

#### **D. State Court Depositions:**

- Fire Condominium – Depositions for Defense on Dec 7, 2021 & Jan 7, 2022 (F20-044)  
Circuit Court of Jefferson County, AL  
Civil Action No. CV-2019-904347  
Middlesex Insurance Company as subrogee of its Insured, Montreat Condominium Homeowners Association vs.  
Ramaco LLC, CMS Blinds & Flooring, Cam Stinson, et al.,  
Plaintiff's Attorney: Robert J. Lentz / Firm: Nielsen, Zehe & Antas, P,C,  
Defense's Attorney: Kori L. Clement / Firm: Klasing, Williamson Burke & Bright, PC
- Electrical Accident Claim – Deposition for Defense on March 16, 2017 (F16-061)  
Mississippi Workers' Compensation Commission  
MWCC NO.: 1504207-M-9022  
Caryl Ulrich versus Pascagoula Municipal Separate School District  
Plaintiff's Attorney: James W. Wetzel / Wetzel Law Firm  
Defense's Attorneys: Jason Sumrall/ Firm: Copeland, Cook, Taylor & Bush
- Fire Mobile Home – Deposition for Plaintiff on January 24, 2017 - (F14-012)  
Circuit Court of Prentiss County Mississippi  
Civil Action No. CV-2014-000157JP  
Ronald Stennett versus The Home Gallery, LCC, Current HVAC Supply Inc.,  
And Fictitious Defendants A-M.  
Deposition for Plaintiff on 24 January 2017  
Plaintiff's Attorney: George Martin Via/ Firm: Via Law Firm  
Defense's Attorneys: A. Rhett Wise / Firm: Priest & Wise  
Timothy M. Peoples/ Daniel, Coker, Horton & Bell, PA

- Fire Residential – Deposition for the Plaintiff on May 27, 2015 – (F13-040B)  
 Circuit Court of Butler Alabama  
 Civil Action No. 10-CV-2014-900016  
 Johnny and Teresa Alexander and Country Mutual Insurance versus  
 Polaris Industries, Thomasville Saw Company, Sevcon, and Greenville Equipment Center  
 Residential Fire Loss of Polaris Electric ATV and Home  
 Plaintiff’s Attorney: David Allred / Firm: Allred & Allred  
 Defense’s Attorneys: Roshan Rajkumar / Firm: Bowman & Brooke LLP  
 John Gleissner / Firm: Rogers & Associates  
 Morris Richardson / Firm: Richardson Clement P.C.  
 Andrew Donaldson / Firm: Ryals, Donaldson & Agricola
- Fire Residential – Deposition for the Defense on September 11, 2014 (F11-07)  
 15<sup>th</sup> Judicial District Court, Parish of Lafayette, State of Louisiana  
 Civil Action No. 2011-7068  
 Audubon Insurance Company as Subrogee of Chanda Rubin versus  
 Omega Fex, Inc and Gaspard A/C Plumbing Inc, and Keith Trahan Electric Inc.  
 Deposition for Defense (Gaspard Plumbing) on September 11, 2014.  
 Plaintiff’s Attorney: Carin Brock / Butler Pappas  
 Defense’s Attorneys: Michael Parker/ Firm: Allen & Gooch
- Fire Burn Injuries – Testified for Plaintiff on July 21, 2014 – (F12-052)  
 Circuit Court of Hinds County, MS  
 Civil Action No. 251-13-126  
 Ralpheal Walls vs. Metro Fire Systems, Williams-Pryo, and Ambling  
 Plaintiff’s Attorney: Rocky Wilkins / Firm: Rocky Wilkins Law Firm, PLLC.  
 Defense’s Attorneys: Edwin Gault/ Firm: Forman, Perry Watkins, Krutz & Tardy  
 Smith Boykin/Firm: Page Kruger & Holland, P.A.
- Electrocutation Death – Deposition for the Defense on April 22, 2014 – (F13-057)  
 Circuit Court of Jefferson County, AL  
 Civil Action No. 2011-2121  
 Diane Prest, As Dependent Widow of David Prest, Deceased vs.  
 Mark Atkins Electric Inc., ERS, Inc., IDC Integration, Inc., Et Al.,  
 Electrocutation Death  
 Deposition for Defense of IDC Integration on: April 22, 2014.  
 Plaintiff’s Attorney: Roger L. Lucas / Firm: Marsh, Richard & Bryan, P.A.  
 Defense’s Attorneys: Bryan Scott Tyra/ Firm: Law Office of Cincinnati Insurance

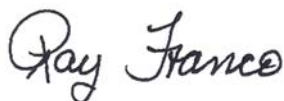


- Electrical Shock Accident – Deposition for the Plaintiff on January 30, 2014 - (F13-028)  
 Circuit Court of Monroe County, MS  
 Civil Action No. 2011-325-RM  
 Heath Mills vs. Madison House LLC, Town Realty LLC,  
 Innovated Sports Designs, LLC DBA Fortune 1  
 Plaintiff's Attorney: Ray Hill / Firm: Clayton O'Donnell PLLC  
 Defense's Attorneys: Timothy Crawley/ Firm: Anderson Crawley & Burke, PLLC  
 L. Bradley Dillard / Firm: Mitchell, McNutt & Sams, PA
- Fire Vehicle Ford Truck 2008 F250 – Deposition for the Plaintiff on April 27, 2013 –  
 F12-013)  
 Circuit Court of Mobile County, AL  
 Civil Action No. 02-CV-2011-902121.00 (F12-013)  
 Nicole Gollotte et Al v Ford Motor Company  
 Plaintiff's Attorneys: Lori Blangger / Firm: Williams & Associates  
 Mark Spears / Spears, Spears & Hamby  
 Defense's Attorney: C. Jeff Ash/ Firm: Huie, Fernambucq & Stewart, LLP.
- National Gas Fire and Explosion – Deposition for the Defense July 7 and Aug 26, 2011 -  
 (F09-30)  
 Circuit Court of DeKalb County, AL  
 Civil Action No. CV-09-900085  
 Betty Holbrooks v The DeKalb-Cherokee Counties Gas District et al.  
 Plaintiff's Attorney: Kirk Davenport / Firm: Davenport, Lavette & Cleckler, P.C.  
 Defense's Attorney: Ed Howard / Firm: Ford, Howard & Cornet P.C.
- Electrical Shock Accident – Deposition for the Defense (Phillips) on April 11, 2008 -  
 (F07-053)  
 19<sup>th</sup> JDC/EBR Parish, LA; Suite No. 512779, Sec 23  
 James Harrison vs. Entergy and Phillips Electric  
 Electrical Shock Accident  
 Plaintiff's Attorney: J Kenton Parson / Firm: Roedel, Parsons, Kock, Blache,  
 Balhoff and Mccollister  
 Defense's Attorney: Brian Butler / Firm: Maricle and Associates
- Electrical Burns from a Lift Chair – Deposition for the Defense (Graceland) on  
 October 5, 2007 (F07-009)  
 Circuit Court of Lafayette County, MS  
 Case No. LOS-493  
 Stella Bell vs. Graceland Care Center, Med-Lift Mobility & Hubbell Products.  
 Plaintiff's Attorney: Carter Hitt / Firm: Hughes & Hitt PA  
 Defense's Attorney: Andy Lowery / Firm: Copeland, Cook, Taylor & Bush PA.

- Electrocutation Death – Deposition for the Plaintiff on January 25, 2007 (F04-027)  
Circuit Court of Amite County, MS - Civil Action No. 04-CV-139J  
Linda Murray on Behalf of Bobby Murray vs. Magnolia Electric Power Assoc.  
Plaintiff's Attorney: Kelley M. Berry/ Firm: Shannon Law Firm/ Merry & Munn P.A.  
Defense's Attorney: Bradley F. Hathaway / Firm: Campbell Delong
- Fire Death - 1 Adult / 2 Minors – Deposition for the Defense on Nov 15, 2005 (F04-030)  
Circuit Court of Quitman County, MS  
Civil Action No. 2003-0136  
Tracy Denica Smith vs. TPI Corporation  
Plaintiff's Attorney: Michael D. Greer / Firm: Greer, Pipkin & Russell  
Defense's Attorney: Martin R. Jelliffe & Jack Price / Firm: Wise, Carter, Child & Caraway
- Electrical Shock Accident – Deposition for the Plaintiff on September 25, 2001  
Circuit Court of Jackson County, MS  
Civil Action No. C1-2000-00, 286(1)  
Angela Cunningham Minor, et al vs. Singing River, EPA  
Plaintiff's Attorney: Herbert Lee / Firm: Lee & Associates  
Defense's Attorney: James N. Compton / Firm: Compton, Crowell & Hewitt
- Fire Death of three minors – Deposition of the Defense(Baker) on August 25, 1999  
Circuit Court of Coahoma County, MS  
Civil Action No. 14-C1-97-0080  
Vanessa Hayes vs. Entergy Mississippi and Baker Engineer  
Plaintiff's Attorney: Charles M. Merkel Jr. / Firm: Merkel & Cocke  
Defense's Attorney: Forrest Stringfellow / Firm: Daniel, Coker, Horton & Bell

## 15. Fee Schedule:

- Exploratory to determine if a lawsuit should be filed: \$225 / hour.
- Legal: Lawsuits & Rule 26 Reports: \$295 / hour.
- Travel Time: Under 6 hrs. - \$225/hr.; 6 to 12 hrs. - \$150/hr.; Over 12 hrs. - \$100/hr.;
- Millage: IRS Rate.
- Minimum Joint Inspection: 4 hrs. 2
- Deposition Preparation Time: \$295/hr.
- Minimum Deposition and Court: 8 hours per day at \$350 / hour = \$2,800 – paid in advance - plus Travel Time and Expenses.
- Cancellations: If notified over 3 workings days, no charge. If canceled under 3 working day, 8 hours at the hourly rate.
- Rush Expert Reports and Court Responses: \$350 /hr. on Weekdays; \$400/hr. on Saturdays; \$500/hr. on Sundays; \$500/hr. on Holidays which includes the Friday after Thanksgiving, Christmas Eve, and New Year's Eve.
- Other Expenses: at Cost.



Ray Franco, Ph.D., PE  
Electrical Engineer