

*Luis R. Carney, Ph.D., P.E.*

**State of Florida PE Lic.:** 0052588  
**Contact Phone:** (904) 233-3660  
**Email:** SE\_Metallurgy@Comcast.net  
**Web:** SoutheasternMetallurgy.com  
**Office:** Jacksonville, FL



**KNOWLEDGE & EXPERTISE**

Over twenty-eight years of experience as a materials engineer, failure analyst and accident investigator in the aviation, manufacturing and industrial maintenance fields.

**EMPLOYMENT HISTORY (1989 to Present)**

Materials Engineer & Technical Supervisor (Sr. rank since 2001/Team Lead since 2015)  
Naval Air Systems Command (NAVAIR) at Fleet Readiness Center Southeast (FRCSE)  
Materials Engineering Division; Polymers & Composites, Metals & Ceramics Branches.  
Naval Air Station Jacksonville, FL 32212-0016

**2014 - Present:**

Materials Engineer, Metallurgist & President  
Southeastern Metallurgy, LLC

**DUTIES (1989 to Present W/ Naval Air Systems Command-NAVAIR)**

- ❖ Technical Supervisor of 11+ engineers & technicians (since 2015).
- ❖ Metallurgical failure analysis (700+), accident investigation, engineering problem solving of aircraft engines, systems, structures, manufacturing issues and industrial infrastructure.
- ❖ Design & manufacturing of new parts, material selection, forming, forging, conventional machining, welding, heat treating, machine grinding, electric discharge machining, additive manufacturing, and shot peening.
- ❖ Polymers and composites design, selection, degradation, and investigations.
- ❖ Corrosion identification, prevention, and control.
- ❖ High temperature materials, turbine cases, blades, disks, and shafts.
- ❖ Heat, lightning strike, and fire damage evaluations & Investigations.
- ❖ Write single or multi-component repair instructions and processing specifications.
- ❖ Consultant to engines, systems, and structures engineering staff in failure prevention, repair, and part design.

**Instructor:**

- ❖ Train new Materials Engineers (30+) in failure analysis, materials and processes.
- ❖ Train Aerospace & Mechanical Engineering staff (350+) in materials and processes.
- ❖ Train Technicians (400+) in special skills and new manufacturing techniques.



## UNIVERSITY EDUCATION

Doctoral: Materials Science and Engineering, University of Florida, 2006.  
Focus: Metallurgical Failure & Mechanical Design.

Master's: Materials Science and Engineering, University of Florida, 1995.  
Focus: Metal & Polymer Composite Materials & Mechanical Design.

Bachelor's: Materials Science and Engineering, University of Florida, 1991.  
Focus: Metals, Polymers & Mechanical Design.

## TYPES OF LEGAL CASES TO DATE ( @ Southeastern Metallurgy)

Mechanical Failures • Automobile Front Suspension Failure • Truck Suspension Failure • Aircraft Corrosion & Poor Maintenance • Welding Failures (Steel & Aluminum) • Motor-Bike Front Fork • Welding Accident • Truck Drive Line Failure • Tractor Fire • Condominium Railing Corrosion • Horse Trailer Corrosion • Graphite/Epoxy Composite Structural Failure • Pipe Corrosion • See Web Site "Legal Experience" for Additional Info.

## PROFESSIONAL TRAINING ('91 to present)

- ❖ *F/A-18 Aircraft Drawing & Manufacturing Interpretation Course, FRCSE.*
- ❖ *Tescan Instruments; Field Emission Scanning Electron Microscopy.*
- ❖ *Oxford Instruments; EDS, WDS & EBSD X-Ray Microanalysis.*
- ❖ *Bearing and Gear Design Technology.*
- ❖ *Fundamentals of Arc Welding.*
- ❖ *Aircraft Accident Investigation, National Transportation Safety Board.*
- ❖ *Superalloys for Heavy Duty Aircraft Gas Turbines.*
- ❖ *Geometric Dimensioning & Tolerancing.*
- ❖ *Cold Expansion Systems Engineering, Fatigue Technologies.*
- ❖ *Scanning Electron Microscopy & X-Ray Microanalysis, Lehigh University.*
- ❖ *Jet Engine Mishap Investigation, U. S. Air Force.*
- ❖ *F-14 Aircraft Bulkhead Quality Hole Machining, NADEP Norfolk.*
- ❖ *Aircraft Composite Structure Producibility & Quality, Wichita State University.*
- ❖ *Aircraft Powerplants, FAA.*
- ❖ *Advanced Composites Training, Abaris.*

## PUBLISHING & PRESENTATIONS

- ❖ Journal Article: *L. Carney and J. Mecholsky, "Relationship between Fracture Toughness and Fracture Surface Fractal Dimension in AISI 4340 Steel," Materials Sciences and Applications, Vol. 4 No. 4, 2013, pp. 258-267.*
- ❖ Journal Article: *Mueller, E., Carney, L. & Mixson, K., "Use of Eddy Current Conductivity and Hardness Testing to Evaluate Heat Damage in Aluminum Alloys," J Fail. Anal. and Preven. (2017). <https://doi.org/10.1007/s11668-017-0380-6>.*
- ❖ Ph.D. Thesis: *Relationship Between Fracture Toughness And Fracture Surface Fractal Dimension In AISI 4340 Steel, University of Florida, 2006.*



## PUBLISHING & PRESENTATIONS-CONTINUED

- ❖ Presentation: L. Carney and N. Fulton, *Load Flow in Multi-Stack Joints*, NAVAIR Air Vehicle Engineering Conference, 2009.
- ❖ Presentation: L. Carney, *Elimination of Baking Operations Following Nitric Acid Based Temper Etching*, NAVAIR Air Vehicle Engineering Conference, 2007.
- ❖ Presentation: L. Carney, *Failure Analysis of Turbine Engine In-flight Failure*, AeroMat Conference, 2004.
- ❖ Presentation: L. Carney, *Failure Analysis of Turbine Engine Compressor Front Hub/Disk*, AeroMat Conference, 2004.
- ❖ Presentation: L. Carney, *Tailhook Failure & Aircraft Mishap*, University of Florida Graduate Students & Faculty, 2004.
- ❖ Other Journal Related: *Journal Article Reviewer & Advisor, Metallurgical and Materials Transactions A*, 2014-Present.

## INDUSTRIAL SPECIFICATIONS, PRINCIPAL AUTHOR

- ❖ Local Process Specification, **Manual and Portable Machine Drilling of Aircraft Structures**, Fleet Readiness Center Southeast, Naval Air Systems Command—Jacksonville.
- ❖ Local Process Specification, **Inspection Criteria for Drilled Holes in Aircraft Structures**, Fleet Readiness Center Southeast, Naval Air Systems Command—Jacksonville.
- ❖ Local Process Specification, **Manual Blending of Aviation Alloys and Platings**, Fleet Readiness Center Southeast, Naval Air Systems Command—Jacksonville.
- ❖ Local Process Specification, **Electric Discharge Machining**, Fleet Readiness Center Southeast, Naval Air Systems Command—Jacksonville.
- ❖ Local Process Specification, **Low Stress Machine Grinding**, Fleet Readiness Center Southeast, Naval Air Systems Command—Jacksonville.
- ❖ Local Process Specification, **Post Grind Inspection of Chrome Plated Surfaces**, Fleet Readiness Center Southeast, Naval Air Systems Command—Jacksonville.
- ❖ Local Process Specification, **Machine or Booth Shot Peening**, Fleet Readiness Center Southeast, Naval Air Systems Command—Jacksonville.
- ❖ Local Process Specification, **Portable Rotary-Flap Peening**, Fleet Readiness Center Southeast, Naval Air Systems Command—Jacksonville.
- ❖ Local Process Specification, **Temper Etch Inspection**, Fleet Readiness Center Southeast, Naval Air Systems Command—Jacksonville.
- ❖ Local Process Specification, **Hydrogen Embrittlement Relief**, Fleet Readiness Center Southeast, Naval Air Systems Command—Jacksonville.
- ❖ Local Process Specification, **Manufacturing of Special F/A-18 Wing Skin Attachment Fastener**, Fleet Readiness Center Southeast, Naval Air Systems Command—Jacksonville.



## INDUSTRIAL SPECIFICATIONS, CO-AUTHOR OR REVIEWER

- ❖ Local Process Specification, **Heat Treating of Steel**, Fleet Readiness Center Southeast, Naval Air Systems Command—Jacksonville.
- ❖ Local Process Specification, **Heat Treating of Aluminum**, Fleet Readiness Center Southeast, Naval Air Systems Command—Jacksonville.
- ❖ Local Process Specification, **Welding**, Fleet Readiness Center Southeast, Naval Air Systems Command—Jacksonville.

## SELECTED CAREER AWARDS

- 2016 ▶ From Materials Engineering Division Jacksonville for significantly reducing engineering investigation turn-around time, training four new engineers.
- 2015 ▶ From Materials Engineering Division Jacksonville for completing multiple high profile engineering investigations (several engine & airframe losses).
- 2012 ▶ From Commander, Naval Air Warfare Center, for support of the T-45 Aircraft Hook Shank Production Restart Team.
- 2011 ▶ From Materials Engineering Division Jacksonville for skillful and professional completion of jet trainer mishap investigation involving airframe loss.
- 2010 ▶ From Materials Engineering Division Jacksonville for the performance of high-visibility failure analysis of a main landing gear trunnion and suggestions for improvement.
- 2009 ▶ From Materials Engineering Division Jacksonville for completion of numerous analyses and investigations of Navy/USAF turbofan engine turbine failures.
- 2009 ▶ From Materials Engineering Division Jacksonville for support of turboprop engine compressor blade failures.
- 2008 ▶ From Materials Engineering Division Jacksonville for failure analysis of three separate instances of air-to-air refueling hose failure.
- 2006 ▶ From Materials Engineering Division Jacksonville for completion of high visibility failure analysis a jet aircraft wing spar.
- 2006 ▶ From Program Executive Officer, Tactical Aircraft Programs for professionalism and technical expertise in the investigation of the effects of contamination on jet engine bearing damage.
- 2005 ▶ From Commanding Officer, Marine Aircraft Group 31 for outstanding response and support in rapidly inspecting several heat-damaged jet aircraft.
  
- 2000 to Present ▶ Multiple awards throughout the years from Materials Engineering Division Jacksonville and Production Supervisors for support of FRCSE plant manufacturing shop operations including machining, grinding, and shot peening.
- 2000 to Present ▶ Multiple awards throughout the years from Materials Engineering Division Jacksonville and FRCSE Production Supervisors for providing training to engineers and artisans, especially classes required to recertify in special skill areas.



### OTHER RELEVANT EXPERIENCE & TRAINING (1978-1985)

- ❖ Auto, Truck, Gas & Diesel Engine Mechanic: Various employers.
- ❖ Training: OJT & Westside Skills Center, Jacksonville, Fl.
- ❖ Awards: Placed or won Regional and State Vocational Industrial Clubs of America (VICA) Diesel Truck Mechanics competitions.

NOT RETAINED --- NOT RETAINED

