



6735 NW 36th Street
Suite 325
Miami, FL 33166

KEVIN R. BYERS, P.E.
SR. STAFF CONSULTANT

kbyers@engsys.com

Kevin Byers is experienced in the field of naval architecture and mechanical engineering. A licensed professional engineer in seven states, his background includes ship design, acquisition and modernization, with a focus on marine systems and ship structure, outfitting, and stability. In the defense sector, past clients include Navy, Coast Guard, and Army ship acquisition programs, as well as shipyards and defense contractors across the country. As a Naval Architect, Mr. Byers led multi-discipline project teams for Navy combatants and auxiliaries as well as Coast Guard cutters. In the commercial design sector, past clients include cruise lines, classification societies, and international ship design firms, with experience conducting failure investigations related to boat and yacht sinkings.

Prior to joining ESi, Mr. Byers conducted marine and mechanical forensic investigations. Marine engineering investigations spanned several platform types, ranging from recreational boats and yachts to fishing vessels, workboats, and cruise ships. Mr. Byers is an ABYC Certified Marine Standards Advisor and has conducted investigations related to boat and yacht sinkings, diesel and gasoline engine failures, and personal injury onboard small craft.

Mr. Byers has conducted loss assessments and failure cause and origin investigations for mechanical building systems, including HVAC, refrigeration, fire sprinkler and domestic water systems. These investigations have ranged from analysis of building system design with respect to code adherence and system performance, to laboratory inspection and analysis of failed components.

Areas of Specialization

Naval Architecture

Marine Engineering – Mechanical

Mechanical System Design

Failure Analysis and Investigation

Engineering Design & Product Liability

Education

M.S., Systems Engineering, Virginia Polytechnic Institute & State University, 2014

Graduate Certificate, Naval Engineering, Virginia Polytechnic Institute & State University, 2014

B.S., Ocean Engineering, Virginia Polytechnic Institute & State University, 2010

Licensed Professional Engineer (P.E.)

State of Florida License No. PE91385

State of Alabama License No. 40154-E

State of California License No. M 40755

State of Georgia License No. PE047017

State of South Carolina License No. PE047017

State of Virginia License No. 0402056972

State of Washington License No. 21025403



Professional Affiliations/Honors

American Boat and Yacht Council – Certified Marine Standards Advisor
Fort Lauderdale Mariner's Club – member
International Association of Arson Investigators – member
Southeastern Admiralty Law Institute – associate
Society of Naval Architects & Marine Engineers – member

Positions Held

Engineering Systems Inc., Miami, Florida

Senior Staff Consultant, 2024 – Present

Envista Forensics, Miami, Florida

Project Engineer, 2021 – 2024

BMT Designers and Planners, Miami, Florida

Senior Naval Architect, 2020 – 2021

Royal Caribbean Group, Miami, Florida

Technical Manager, 2019 – 2020

Gibbs & Cox, Inc., Arlington, Virginia

Senior Naval Architect, 2017 – 2019
Naval Architect II, 2014 – 2017

Naval Surface Warfare Center Carderock Division, Bethesda, Maryland

Naval Architect, 2013 – 2014

Naval Acquisition Development Program Carderock Division, Bethesda, Maryland

Junior Naval Architect, 2010 – 2013

Continued Education

"ABYC Marine Standards Certification Course." Course Provider: American Boat and Yacht Council, 2024.

"Understanding Mitigating Marine Corrosion." Course Provider: American Boat and Yacht Council, 2024.

"What the HIN?" Mastering Hull Identification Numbers Webinar. Course Provider: American Boat and Yacht Council, 2024.

"Marine Fire Investigations." Course Provider: International Association of Arson Investigators, 2024.

“The Scientific Method for Fire and Explosion Investigation.” Course Provider: International Association of Arson Investigators, 2024.

“The Practical Application of the Relationship Between NFPA 1033 and NFPA 921.” Course Provider: International Association of Arson Investigators, 2024.

“Preparation for the Marine Fire Scene.” Course Provider: International Association of Arson Investigators, 2021.

“Forensic Engineering: Learning from Failures.” Course Provider: edX / Delft University of Technology, 2021.

“Basics on Forensic Engineering Part I-V.” Course Provider: PDHonline.com, 2021.

“Penetration Mechanics.” Course Provider: Southwest Research Institute, 2012.

“Weapons Effects & Ship/Submarine Survivability.” Course Provider: Massachusetts Institute of Technology Professional Summer Program, 2011.

Publications

K. Byers, “BOT-3000 Tribometer Application in Marine Vessel Slips, Trips and Falls,” *The Gavel*, 2022.

K. Byers, K. Hoedlmoser. “Cruising in the US: The Return to Service,” *The Marine Insurer*, 2022.

M. Newborn, **K. Byers**., M. Pelo, E. Schmid, S. Wright, “Design Report - Medium Surface Combatant,” Virginia Polytechnic Institute and State University, 2010.

K. Byers, M. Gilmour, G. Koch, T. O'Brien, “Concept Design of an Arctic Patrol Vessel,” Naval Surface Warfare Center Carderock Division, 2009.

Presentations

K. Byers, M. Venturella, “Hull, Machinery, and Cargo Claims: Investigating Commercial Brown Water Vessels,” Envista Forensics Webinar to Marine Insurance Professionals, June 24, 2022.

K. Byers, M. Venturella, “The Surge in Containership Fires: Risks, Technology, and Investigations” Envista Forensics Webinar to Marine Insurance Professionals, March 25, 2022.

K. Byers, A. Bennett, “3-D Forensic Imaging and Drone Use in Marine Claims,” Envista Forensics Webinar to Marine Insurance Professionals, November 5, 2021.

K. Byers, M. Venturella, “Hull and Machinery Claims: Risks of Aging Fleets,” Envista Forensics Webinar to Marine Insurance Professionals, October 22, 2021.

K. Byers, “Diminishing Stability in an Ageing Fleet,” *The Marine Insurer Nordics Conference*, May 5, 2021.

Selected Project Experience

Commercial Marine

Investigated cause and origin of propulsion system failure aboard international fisheries vessel, which resulted in allision and significant damage to two fishing vessels. The scope of investigation included accident reconstruction based on interview of captain and chief engineer, and review of GPS data. Determined seawater coolant loss due to erosion accelerated corrosion resulted in high temperature alarm on electric generator and loss of all power to fisheries vessel during maneuvering in port. The investigation concluded with a damage survey of fishing vessels and estimate of cost to repair.

Investigated wooden yacht which sank in slip, resulting in total loss. The scope of work included modeling and damaged stability analysis using General Hydrostatics (GHS) software, followed by inspection and testing of seacocks, thru-hulls, and hull structure to validate the sequence of events as provided by the owner, and determine cause and origin of flooding.

Investigation of recreational boat seat failures. Multiple investigations related to the mechanical or material failure of hinged helm and passenger seats on recreational boats. The scope of investigations included joint inspections of seat functionality for product liability, as well as damage due to improper operation, maintenance, and corrosion.

Investigated sinking of 60 ft yacht at dock resulting in total loss of vessel. The scope of investigation, conducted on behalf of the insurer of a seawater pump manufacturer, included two joint inspections aboard the yacht followed by a laboratory inspection to determine the cause and origin of water ingress. The source of water in close proximity to the seawater pump, which had been determined by the salvor, was verified during an in-water inspection. Following removal of the pump and adjacent distributed systems, sectioning of the pump outlet and digital microscopy confirmed the water ingress was through a close nipple in threaded connection with the pump. Analysis using Scanning Electron Microscopy (SEM) with Energy Dispersive X-ray spectroscopy (EDS) revealed that corrosion of the close nipple was due to preferential corrosion of dissimilar metals. A review of invoices showed the manufacturer of the pump did not provide the close nipple with the sale of the pump to the AC manufacturer and was at no fault with regards to the sinking of the yacht.

Led team of engineers responsible for technical design of the Royal Caribbean cruise ship, *Liberty of the Seas*. Responsibilities included review of redline drawings, US Coast Guard and class approvals, as well as coordination of engineering firm with architecture team, vendors, and construction teams. Dry dock experience as a technical consultant on *Freedom of the Seas*.

U.S. Navy and Coast Guard

Led Naval Architecture team as hull systems engineer responsible for requirements definition, feasibility studies, and evaluation of Industry-led concepts for Military Sealift Command's Auxiliary Sealift Ship.

Conducted technical review of ship design and construction drawings for United States Coast Guard (USCG) Fast Response Cutter. Performed special studies at direction of Ship Design Manager including investigation of engine exhaust gas ingestion into Deckhouse, and finite element analysis of vessel to support procurement of a mobile boat lift.

Responsible for Intact and Damage Stability Analyses, Weights Engineering, and Outfitting Arrangements of Lockheed Martin's FFG(X) (fast frigate) Conceptual Design Proposal, and Bollinger Shipyard's USCG Offshore Patrol Cutter Preliminary and Contract Design drawings.

Investigation, testing and evaluation of implodable structures' response to and survivability from underwater explosions. Conducted test series for amphibious vehicle structural response to buried mine explosions.

Conducted verification and validation of computer simulations of both underwater and buried mine explosions.

Building Systems and Mechanics

Investigated failure of Y-strainer in domestic water system, which resulted in significant water loss in a luxury condominium building. The scope of work included joint site and laboratory inspections, followed by a report of findings. Analysis confirmed a manufacturing or installation defect from dissimilar metal contact, resulting in galvanic corrosion.

Investigated failure of a fire sprinkler that discharged in the absence of a known fire event. A fusible link was recovered at the loss site and underwent laboratory analysis revealing accelerated material creep within the active portion of the link (solder); this was ultimately determined to be the root cause of the failure. Conducted additional sprinkler head testing in accordance with NFPA 13 standards to ensure sprinklers conformed to specification.

Investigated damage to copper tubing within chiller unit in condominium building. Investigation included internal inspection that revealed debris and scaling within the chiller; this was followed by borescope inspection of all tubes to determine extent of damage and viability of repair. Investigation of installed system revealed that a required Y-strainer had not been installed upstream of the chilled water return, allowing debris to cause irreparable damage to the new chiller.

Investigation of multiple water losses stemming from plumbing fixtures, appliances and water supply line failures. Over the course of these investigations, activities have included non-destructive and destructive inspections of appliances and fixtures, as well as laboratory examinations to determine the cause of failures. Examples include destructive evaluation of a water heater which had resulted in water damage to residence. Testing confirmed recent repairs to drain valve were not attributable, rather significant corrosion to the heater as a result of total consumption of anode.

Investigated dry van trailer buckling, resulting in loss of load while on roadways. A pattern of structural failure within a fleet of dry van trailers for nationwide wholesale company led to multiple site inspections of damaged dry van trailers and laboratory analysis using FTIR to determine material characteristics of adhesives. Laboratory findings refuted the manufacturer's hypothesis of degradation of the flexible rooftop due to the ultraviolet radiation in South Florida. An analysis of construction methodology determined adhesive failed due to improper surface preparation.

Investigation of building mechanical system damage during catastrophe response. Investigation scopes included determination of the cause (flood, wind, pre-existing, etc.) and extent of damage to equipment (pool equipment, elevator machinery, fire pumps, vehicles, etc.) following Hurricane Ian. The determination of cause of damage aided clients in coverage disputes.