THE EXPERTS
Robson Forensic

BARTLEY J. ECKHARDT, P.E.
Marine and Mechanical Engineer

Experienced in the design, installation, testing, startup, safe operation, maintenance, modification, troubleshooting, upgrade and repair of marine and industrial machinery, equipment and systems.

Manufacturing Processes: General machining, metal forming, welding, brazing, grinding, soldering, oxyacetylene cutting, metal flame spraying, aligning, shrink fitting, slitting, composite laminating, blending, drying, liquid and dry filling, dedusting, dry solids handling, slurry handling, liquid handling, paint preparation, painting.

Piping and Pressure Vessels: Piping and Pressure Vessels (vacuum up to hydraulic pressures) – pipe welding and threading, flanges, butt-weld fitting, socket weld fittings, thread-o-let, sock-o-let, ASME B31.1 and B31.3, ASME Sections VIII and IX, National Board inspection Code (NBIC) requirements, ASME Code stamping – fired, unfired and repaired pressure vessels, piping supports, insulation, inspection, fouling, corrosion, failure analysis, methods for working pipelines live, use of saddles, blind flanges, spectacle flanges, bypass and blanking fittings such as pigs, stopples, plugs, methods for damage control and emergency repair methods, Non-destructive Examination (NDE) techniques.

Manufacturing Procedures, Standards and Specifications: Pressure vessels, power piping, pipe welding, structural welding, international steel specifications, sanitary manufacture, pharmaceutical manufacture, drawing standards, hazardous area requirements.

Testing methods and specifications: Hydrostatic testing, mil-spec shock and vibration testing, static and high speed dynamic balancing, acceptance sampling, material testing, thermal mapping, standpipe, sprinkler and inert gas fire system testing.

Management systems and standards: Quality systems and performance sampling.

Engineered Systems: Steam, condensate, feedwater, liquid fuel systems, aircraft refueling, natural gas, process water, potable water, deionized water, refrigeration, salt water service, ballast, tanker cargo, fire protection, waste water, hydraulic power, pneumatic power, pneumatic control, heating, ventilating and air conditioning, clean room, vacuum, exhaust, high pressure tree spraying, commercial laundry.

Machinery: Diesel engines, diesel electric drives, diesel-hydraulic drives, high-speed centrifuges, cable winches, pumps, drive gears, clutches, compressors, distillers, heat exchangers, chillers, cooling towers, air handlers, valves, boilers, turbines, jib cranes, monorail cranes and hoists, overhead bridge cranes, milling machines, boring mills, machining centers, bandsaws, power hack saws, bending machines, lathes, slitters, presses, check weighers, screw conveyors, belt conveyors, roller conveyors, spreader beams, lifting and rigging gear, v-blenders, pony mixers, hammermill grinders, glue dispensers and applicators, reciprocating die cutters and perforators, shears, cyclones, rotary airlocks.

Machinery Safeguarding: Safety interlocks, drive guards, operational guards, pinch point guards, failsafe modes, caution and warning signs, instruction manuals.

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Safety Procedures and Requirements: EMS, material safety data sheets, right-to-know, confined space entry, lockout/tagout, high-rise scaffold, training, policies, inspections, OSHA requirements.

Tools: Reciprocating pneumatic hammers, rotary pneumatic drills and impact wrenches, gas-powered chain saws, drill presses, table saws, circular saws, routers, planers - portable and electric hand, power nailers, hammers, chisels, portable drills - straight and right angle, biscuit jointers, slitters, screwdrivers, laser levels, die grinders, jig saws, reciprocating demolition saws, chain saws, center punches, bending machines, hole saws, plug cutters, gear pullers, chain falls, wrenches and drivers, torque wrenches and drivers.

Buildings: Facilities systems, hospital systems, prison systems, façade pinning, fire protection, code conformance, inspections, industrial and domestic hot water systems, water and chemical mixing, eduction, pressure spraying, tempering, and injection. Preserving fire protection during construction, renovation and demolition. Monitoring and supervision of inspection, repair, testing and certification of gas and water fire protection including standpipes, sprinklers and inert gas systems.

Products: Bicycles; motorboats and associated equipment; jet skis, wave runners, sailboats and associated equipment; canoes, rowboats, kayaks and associated equipment; grating, diamond plate and catwalks.

Regulatory Compliance: Pharmaceutical validation, air quality permitting, New York City permitting.

PROFESSIONAL EXPERIENCE

2001 to present **Robson Forensic, Inc.**
CEO and Board President 2023-present
President and CEO 2006-2023
Midwest Operations Manager 2004-2006
Ohio Area Manager 2001-2004
Provide technical investigations, analysis, reports, and testimony toward the resolution of litigation involving marine, manufacturing and other mechanical engineering issues.

2001 to present **Fournier, Robson & Associates, LLC**
Associate
Provide specialized mechanical engineering for buildings, machinery, products and systems.

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1995 to 2001 **Technology Development, Inc.** Specialty Engineering
President and Owner
Engineering and troubleshooting of highly specialized machinery, products and systems. Developed several portable process plants with shore power and/or onboard diesel-electric generators; developed slitters and modified 200 ton pod presses for the manufacture of structural composites; executed validation of pharmaceutical products and processes to FDA requirements; developed proprietary products and processes for structural composites and laminates; developed proprietary distillation processes for vitamin and flavor intermediates; engineered liquid, gas and mechanical systems for a huge commercial laundry; designed HVAC systems for archive preservation; refined testing and sampling criteria for façade pinning; modified tub grinders for life extension of the hammers. Reversed engineered and manufactured large buffer carriage assemblies for the Staten Island Ferry. Taught power plant operations and safety courses; executed evaluations of design, maintenance, operational and/or construction defects in power plants for New York Department of Corrections.

Mid-rise and high-rise “arm’s length” façade and roof inspections. Design and site monitoring of mid-rise and high-rise demolition and renovation projects in New York City, including maintaining life safety provisions such as fire protection and security during demolition, construction, roofing and hot work. Instructed power plant and facilities engineers in the risks of hot work, proper explosive gas venting, maintenance of fire protection systems and proper use of fire watches.

1983 to 1995 **Centrico, Inc.** Turnkey Systems Manufacturer
Director of Engineering
Managed the design, test and quality of custom turnkey process systems, usually incorporating high speed centrifuges, pumps and heat exchangers; Developed the high pressure (1000 psig) fuel injection system for the world’s largest gas turbine; developed the first steam sterilizable system for cell separation for injectables; developed systems for sophisticated military centrifuges to international requirements; evaluated equivalency of numerous European steels with U.S. standards; developed engineering procedures for ISO 9000 compliance; developed weld procedures to ASME IX and AWS D 1.1; engineered systems for pharmaceutical, marine, power, food, biotechnology, and petrochemical applications in accordance with appropriate industry standards; developed rigging beams, hoists, and rigging schemes for installation of large systems; developed a test stand and related procedures for hydrostatic testing of elaborate systems; developed thermal mapping method to ensure “kill” temperatures in elaborate biotech systems; evaluated methods for static and dynamic balancing, internally and externally excited vibration; provided seismic analyses as required.

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1979 to 1983 **U.S. Merchant Marine** Ship Design and Operations
Engineering Officer
Various assignments as engineer aboard ocean-going tugboats having diesel propulsion, diesel-electric generators, and diesel-hydraulic drives, a diesel-electric oil exploration drillship, and the Training Ship Empire State; taught basic marine engineering, ran thermo and fluid labs, taught machine shop (turning, milling, welding, grinding), ran strength of materials labs; worked as a senior marine engineering consultant with M. Rosenblatt & Son, Inc. in the basic ship design and mechanical groups. Surveyed and designed vessels with diesel-electric propulsion and diesel-driven pumps. Executed designs of inert gas and wet fire protection systems. Supervised hot work and fire watches and put plans in place for emergency fire protection during maintenance and repair activities.

PROFESSIONAL CREDENTIALS

Professional Engineer, NCEES, California, Delaware, Florida, Georgia, Indiana, Kentucky, Maryland, Michigan, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Texas, West Virginia, Wisconsin
Erosion and Sediment Control Certification, Maryland
Licensed Contractor #143887, Maryland
Chief Engineer (Limited-Near Coastal), Motor/Gas Turbine Vessels, Unlimited Horsepower (2005-2010)
Second Assistant Engineer, Motor/Gas Turbine Vessels, Unlimited Horsepower (1982-2010)
Third Assistant Engineer, Steam Vessels, Unlimited Horsepower (1979-2010)
Designated Duty Engineer of Steam, Motor/Gas Turbine Vessels, Unlimited Horsepower (2005-2010)
OS (Ordinary Seaman) (1979-2010)
SD (FH) (Steward Department [Food Handler]) (2005-2010)
Any Unlicensed Rating in Engine Department (1979-2010)
LBMAN (Lifeboatman) (1979-2010)
STCW-95 (Standards for Training, Certification, and Watchkeeping for Seafarers) (2005-2010)
Honorable Discharge, Lieutenant, U.S. Naval Reserve (1989)

EDUCATION

B.E. Marine Engineering, SUNY Maritime College at Fort Schuyler, 1979

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Continuing Coursework and Seminars:

Engineering Ethics: Combustible Dust Explosion at Georgia Imperial Sugar Plant, 2024
Learning from Engineering Disasters: The Sinking of USS Thresher, 2024
Engineering Ethics: The Piper Alpha Disaster, 2023
Professional Ethics for Engineers, 2023
Selection and Sizing of Pressure Relief Valves, 2022
Fasteners, 2022
Aluminum Vessel Structures, 2021
Titanic – A Materials, Design, and Safety Failure, 2021
America's Largest Maritime Disaster, 2021
Ethical Issues from the Tacoma Narrows Bridge Collapse, 2020
SNAME Maritime Convention, 2020
- Use of Simulation and Animation in Forensic Investigations of Vessel Accidents
- Simplified Container Stack Nonlinear Analysis Procedure
- Determining Collision Risks for Fixed Offshore Structures
- Laser Scan to CAD Analysis
- Subchapter M: Two Years in from the TPO Standpoint
- Progress Through Failure – The Case of Ship and Offshore Structures
- Industrial Fire Safety, Fire Prevention and Control
- Hull Form Performance of a Coastal Patrol Boat in the Gulf of Guinea
- Riding the Chine: A Case Study in Commercial Fishing Vessel Stability
- Cradle to Grave Issues with Vessel Lithium-Ion Batteries

Fluid Mechanics, 2020
Determining Negligence in Engineering Failures, 2019
Learning From Engineering Disasters, 2019
Selected Topics in Mechanics of Materials, 2019
Code of Ethics for Licensed Professionals, 2019
Post-disaster Building Safety Assessment Training, Pennsylvania Society of Professional Engineers, 2018
International Tug, Salvage, & OSV Convention and Exhibition, 2018
- Tug Design Through ITS Eyes
- Automation – What will be the Impact on the Insurance Sector?
- World Port Tug Market – The Current View from Marseille
- Quantum Physics Says There's Life After Marseille
- Ship's Deck Fittings Utilized for Towage
- The Digital Transformation of Tugs
- The Carrousel Rave Tug: Meeting Global Shipping Challenges by Eliminating Specific Tug Stability Risks
- Considerations of Hybrid Technology & Associated Machinery
- A Holistic Approach to the Optimized Design of Marine Hybrid Power Solutions for Workboat Applications
- Smart Thinking, Smartlinking
- Improving Safety and Reliability with Holistic Towline System Design

How Things Break: Fatigue, 2018
Breakthroughs in 3D Printing, 2018
The Value of Drones, 2018
Flying High with Unmanned Aerial Systems, 2018
Use of Drones for the Creation of Engineering Maps, 2018

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Liability and Regulatory Issues Related to the Use of Unmanned Aerial Systems, 2018
Ethics for the Practicing Engineer, 2018
Review of Engineering Dynamics, Part 1 – Kinematics of Particles and Rigid Bodies, 2018
A Practical Design Guide for Welded Connections, Part 2 - Analysis and Design of Welded Connections, 2018
A Practical Design Guide for Welded Connections, Part 1 - Basic Concepts and Weld Symbols, 2018
Kayak and Canoe Launch Design, (Non-Motorized Boat Launches), 2018
Sterile Filtration of Pharmaceutical Products - Validation and Regulatory Requirements, 2017
Engineering Ethics: Accepting Gifts and Amenities, 2017
Finding the Root Cause, 2016
Agitators and Mixers, 2016
Engineering Ethics: The Great Boston Molasses Flood, 2016
The Mason & Dixon Historical Track 2015:
- The Great English Chancery Suit - Penn v. Calvert
- Mason & Dixon's Survey, and the True "Stargazer's" Point
- Searching for Philadelphia's Southernmost Point
- Jeremiah Dixon, Surveyor of Durham, England
- Restoring Mason & Dixon's 1760 Transit and Equal-Altitude

Elements of Machine Design, 2015
An Engineer's Approach to Designing a New Building, 2015
Use of Engineering Seals and Stamps in NY Avoiding Professional Misconduct, 2015
An Anthology of Security Technology in the Age of Terrorism & Natural Disaster, 2015
Introduction to Combined Cycle Power Plants, 2015
The Basics and Interpretation of Mechanical Failure, 2015
Ethical Decision Making for Engineers IV, 2015
Designing DC Systems for Troublefree Operation, 2015
Inland Waters Rescue and Survival, 2014
Centrifugal Pumps – Components, Operation and Energy Conversion, 2014
Reliability Engineering Fundamentals, 2014
Hydraulic Accumulators – An Introduction, 2014
Air Compressors, 2014
Ethical Decision Making for Engineers II & III, 2014
ASME/USCG Workshop on Marine Technology and Standards Panel: Human Element and Risk Management, 2013
SNAME Technical Session in Institutionalizing Modular Adaptable Ship Technologies, 2012
ASME International Engineering Congress & Expedition, Technical Sessions in Product Design, Equipment, Machine and Manufacturing, 2012
Ethical Decision Making for Engineers I, 2012
Steam Turbines, 2011
Thermodynamics I: An Introduction, 2011
Heavy Construction Equipment Basics – Lifting, 2011
Introduction to Rain Gardens, 2011
Steam System Basics & Performance Improvements, 2011
Preventing and Investigating Accidents, 2010
OSHA Demolition, 2010
Safety: Fire Part 2 – Fire Protection Equipment & Techniques, 2010

Safety: Fire Part 1 – Workplace Fire Hazards & Preventing Fires, 2010
Site Safety Risk and Liability, 2010
The Need for Additional Human Factors Considerations in Ship Operations, 2010
Technology and Applications for Subsurface Imaging in Construction, 2009
Ex Situ Remediation Technologies for Contaminated Soils, 2009
Renewable Energy Generation, 2009
OSHA Safety: Drilling, 2009
Plumbing: Lead Work, Silver Brazing & Soft Soldering, 2009
Petroleum Engineering: Liquid Process Piping – Introduction and Design Strategy, 2009
Fuel Cell Power Systems, 2009
Petroleum Engineering: Liquid Process Piping – General Piping Design, 2008
Swimming Pools: Mechanical and Hydraulic System Design, 2008
Coastal Engineering: Storm Surge, 2008
Coastal Engineering: Sea Level Rise, 2008
Coastal Engineering: Hurricanes – The Basics, 2008
In Situ Remediation Technologies for Contaminated Soils, 2008
Pipe Support Systems, 2008
Maritime Accident Investigation Analysis and Reconstruction – 40 Hours – World Maritime University
Engineering Ethics I, P.E.C.E. lecture, 2007
Marine Fuels: Specifications, Testing, Purchase and Use, ASTM training, 2007
Major Testing Techniques for Plastics, ASTM training, 2007
EMD Diesel School Certificate
New York State lockout/tagout and confined space training
Offshore helicopter refueling training
ISO 9000 auditor training
Naval Officer training in ship's shoreside maintenance, NBC defense
Kayak self-rescue course, Shank's Mare, Pennsylvania, 2006

PROFESSIONAL MEMBERSHIPS and AFFILIATIONS

Towing Safety Advisory Committee Subcommittee TASK #14-01: Review of and recommendations based on the Report of Investigation into the Grounding of the Mobile Offshore Drilling Unit (MODU) KULLUK. Subgroup Leader.

Subgroup B: Tow Gear-Identification, selection, testing, utilization, monitoring, and logging.

Examine and prescribe technical standard and best practices for ocean tows of MODU's or vessels of a similar nature to include towing equipment, identification and logging of the use of this equipment, inspection regimes to include trip-in-tow and warranty surveys and non-destructive testing of towing equipment prior to tows. Development of technical standards should include review of existing primary source standards such as the U.S. Navy Towing Manual.

Examine and prescribe a process for the issuing of tracking certificates that accompany towing hardware. The process of issuing and tracking certificates that accompany towing hardware to include identifying a particular component by a standardized tracking method currently in review in TSAC Task Statement 13-06 - Towing Gear and that product to be formally incorporated and referenced into the KULLUK TSAC 14-01.
Evaluate usage and application of strain monitoring devices equipped on towing vessels to determine the recommended procedures to reduce the likelihood of towing equipment failures. Examine the correlation between catenary and the information provided by strain monitoring devices to effectively provide safety in towing operations.

Provide any other recommendations to the Coast Guard that the Committee feels is appropriate for this subject matter.

Tow gear includes, but is not necessarily limited to, towing winches, strain monitoring devices, riding leads and surfaces, wire rope, fiber rope, thimbles, sockets, shackles, pear links, chain, pendants, bridles, SMIT brackets, and flounder plates.

Towing Safety Advisory Committee Subcommittee TASK #13-06: Recommendations for Maintenance, Repair, and Utilization of Towing Equipment, Lines and Coupling. Member (Public)

Provide Recommendations to the Coast Guard on specific criteria to be used in determining the proper utilization of towing equipment for specific towing evolutions to include:

a. Standards for towing system capability.
b. Towing systems compatibility with the tow in regards to:
    I. Operational environment; and
    II. Expected forces exerted on the towing equipment
    III. Sufficiency of fail-safes for redundancy and tow retrieval

Provide recommendations to the Coast Guard on specific criteria for the care and maintenance of towing equipment to include repairs, frequency of maintenance and criteria for removal from service.

Provide recommendations to the Coast Guard concerning the specific knowledge, skills and training of persons responsible for the maintenance, repair and determination of towing gear for establishing a tow.

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Member, SUNY Maritime College Engineering Advisory Board
ASME (American Society of Mechanical Engineers)
ABYC (American Boat and Yacht Council)
SNAME (Society of Naval Architects and Marine Engineers)
IAMI (International Association of Marine Investigators)
ASTM (American Society for Testing and Materials)
American Bar Association (ABA), Tort Trial & Insurance Practice Section- Admiralty and Maritime Law Committee
*Towing Safety Advisory Committee (TSAC): (*Excerpted from Bylaws*)

> The Towing Safety Advisory Committee (hereafter Committee) was established in 1980 by statute, the Act to establish a Towing Safety Advisory Committee in the Department of Transportation, Public Law 96-380.....
>
> The purpose of this Committee is to act solely in an advisory capacity to the Secretary of the Department of Homeland Security (DHS), hereinafter referred to as "Secretary", on matters relating to shallow-draft inland and coastal waterway navigation and towing safety. The Committee is to advise, consult with, and make recommendations reflecting the Committee's independent judgment to the Secretary on these matters and actions. Finally, the Committee is to accept specific assignments and to conduct studies, inquires, workshops and fact finding **in consultation with individuals** (emphasis added) and groups **in the private sector** (emphasis added) and/or with State and local government jurisdictions in compliance with FACA to develop solutions.

PATENTS

Lifeguard Observation Station, U.S. Patent 11585108B2, February 2023
Lifeguard Observation Station, U.S. Patent 11585109B2, February 2023
Apparatus and Process for Removing Contaminants from Soil, Patent 5172709, December 1992

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PUBLICATIONS and PRESENTATIONS

Co-authored paper "Technical Analysis of Ocean Towing Evolutions." Presented at the SNAME Maritime Convention, 2021.

Eckhardt, B. J. & Johansson, E., Best Practice Recommendations for Ocean Towing of MODUs. Presented at the *International Tug, Salvage & OSV Convention and Exhibition*. Marseille, France, 2018.

Engineering Risk. Instructed at the Pennsylvania Society of Professional Engineers PDH Boot Camp, King of Prussia, PA, 2017.

Co-authored paper "Towing Vessel Safety: Risk Based Maintenance and Inspection of Towing Vessel Machinery Systems" for the ASME/USCG Workshop on Marine Technology and Standards, 2013.

Engineering Lessons Learned – Mechanical and Industrial. Instructed at the Pennsylvania Society of Professional Engineers PDH Boot Camp, Eastern and Western PA, 2013 and 2015.

Eckhardt, B. J., Vigilante, W. J., Jr., & Coste, P. F., Visibility Factors in Small Boat Collisions. Presented at the *2012 International Marine Forensics Symposium.* National Harbor, MD: The Society of Naval Architects and Marine Engineers & American Society of Naval Engineers, 2012.

OTHER

Instructor in power plant operations and safety, New York State Department of Corrections and Office of Mental Health
Instructor in power plant operations and safety for offshore towboat operators
Recreational Boater, 1960-present
EMT (Emergency Medical Technician), 1975-2002, Various Agencies
Co-author, U.S. Navy Towing Manual, 1983, (Under NAVSEA Contract)
Eagle Scout, 1971
Avid canoeist and sea kayaker