

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, education, 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	<b>Robson Forensic, Inc.</b> <i>President and CEO</i> <i>Midwest Operations Manager</i> <i>Ohio Area Manager</i>	2006-present 2004-2006 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	<b>Fournier, Robson &amp; Associates, LLC</b> <i>Associate</i>	
	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, Alabama, Colorado, Connecticut, Delaware, Florida, Georgia, Illinois, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas, West Virginia, Wisconsin  
Erosion and Sediment Control Certification, Maryland  
Licensed Contractor, 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:*

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 Carousel 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  
Liability and Regulatory Issues Related to the Use of Unmanned Aerial Systems, 2018  
Ethics for the Practicing Engineer, 2018

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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

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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.

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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.

## PATENT

In-situ process for the remediation of contaminated soil

## 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.

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Co-authored paper "Towing Vessel Safety: Risk Based Management 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