



GLEN STEVICK, Ph.D., P.E.
Mechanical Engineer, Principal

Bio/Summary

Dr. Stevick has over 25 years of experience in failure analysis and design of structures, consumer products, industrial equipment and medical devices, specifically mechanical-electrical systems; aortic, hip and knee implants; medical cauterizing forceps; turbines and reciprocating engines; automotive and aircraft components; offshore platforms and drilling equipment including pressure vessels/piping/containers, blowout and breakaway devices, heat exchangers and combustion analysis. Engineering projects have involved testing and mathematical analysis of hydraulic systems, fire causation and spread, explosion causation and prevention, structural dynamics, electronic control systems, material behavior, heat transfer and structure/fluid interaction.

Select Industry Experience

- Oil & Gas Industry
- Ultra-Deepwater Well Control, Offshore Drilling
- Earthquake Engineering
- Automobile / Truck / Motorcycle
- Medical Implants
- Medical Devices
- Manufacturing
- Heavy Equipment
- Offshore Oil Platforms
- Maritime
- Blowout and Breakaway Devices
- Plastics / Metals /Ceramics
- Combustible Fluid Containers; Explosions; Fire Propagation & Suppression
- Aviation
- Roofs
- Elevators
- Construction
- Structural Dynamics
- Concussion/Whiplash
- Heat Exchangers
- Piping, Pipelines & Pressure Vessels
- Bridge Dampening Calculations
- Transportation
- Large Structures
- Ships / Sailboats

Education

Ph.D. in Mechanical Engineering from U.C. Berkeley
M.S. in Mechanical Engineering from U.C. Berkeley
B.S. in Mechanical Engineering from Michigan Technological University

Professional Affiliations

Registered Mechanical Engineer, State of California, Nevada, Utah, Louisiana
American Society of Mechanical Engineers
Society of Forensic Engineer and Scientists
Vibrations Institute



Member of ASTM Committee F15.1

Work Experience

Since 1986 Principal, Consultant

Berkeley Engineering And Research, Inc., Berkeley, CA

Provide consultation in the areas of failure analysis and design failures, including analysis of codes and standards, medical devices and industrial equipment. Failure analysis work has varied from assessing the failure of cranes, medical implants, bone fractures, ladders, chairs, industrial presses, aircraft turbine engines, and propane/natural gas equipment and electronics to the analysis of defective safety devices on compressor/heat exchanger systems and fire investigation. Design projects have included the redesign of an electro-hydraulic, variable position hospital bed for burn victims; medical implants (spine rod, heart valve, aorta insert, pacemaker, hip, knee and fatigue design); the design of a powered wheelchair that provides standing and sitting positions; the analysis and redesign of high temperature/high pressure piping and pressure vessels; the design of fire safe storage vaults for electronic media; dynamic damping devices for tall structures and bridges subject to wind and earthquake loading; the redesign of pistons and valves for high pressure hydrogen compressors; and, electronic sensors for structural health monitoring.

Fire investigation, electrical, and combustion analysis cases have included the evaluation of over 200 home fires; dozens of propane and natural gas fired equipment fires, including barbecues, heaters, furnaces and cooking appliances; refinery, chemical plant, power plant and coal processing plant fires and explosions; and the evaluation of fuel containers, including propane tanks, charcoal lighter fluid cans, and gasoline containers from 1 gallon consumer containers to tanks containing thousands of gallons. More than 200 gasoline fire and explosion tests have been conducted at BEAR as well as hundreds of magnetic field, electric field and spark tests. Design projects have included the design and evaluation of hydrocarbon handling equipment (towers, tanks, pumps, compressors, piping, valves, heat exchangers and furnaces), burner and flow modeling, leak detection methods for tanks, flame arrestors for storage, relief and vapor recovery systems, and burn/spark/fire resistant cauterizing forceps for surgery.

8/90 - 1/91, Mechanical Engineering Instructor, U.C. Berkeley

Instructor for the Department's senior design course: ME-102B, "Mechanical Engineering Design". Conducted lectures on the design of bolted joints, springs, gears, bearings, chain drives, wire ropes, and other mechanical components. Guided students through a major design project.



3/82 - 1/89, Engineering Mechanics Specialist, Chevron Corporation

Handled highly technical projects and provided technical consultation to field engineers in the areas of failure analysis and design. Projects included the redesign of compressor and turbine components, and the design of processing equipment for service temperatures above 1400 degrees Fahrenheit. Consultation varied from giving design advice on how to avoid structural vibration to calculating crack growth rates for offshore platforms in the North Sea.

9/81-3/82, Project Engineer, Chevron USA Production

Responsibilities included the design, and construction management of oil/water separation plants and gas recovery plants in the Bakersfield and Colinga oil fields.

Patents

"Thermo-electric Container for Heating and Cooling Liquids," G.R. Stevick and H. Sherback.

"Method and Apparatus for Dynamic Space-Time Imaging System," G.R. Stevick, J. Singer, and D. Rondinone.

"Method and Apparatus for Magnetic Response Imaging," Jerome R. Singer, Glen Stevick, David Rondinone, John Zalabak.

Publications and Selected Reports

Stevick, Glen, Joseph Zicherman, David Rondinone, and Allan Sagle. "Failure Analysis and Prevention of Fires and Explosions with Plastic Gasoline Containers." *Journal of Failure Analysis and Prevention* 11.5 (2011): 455-65.

Stevick, G.R., D. Rondinone, A. Sagle, J. Zicherman. "Fire Incidents and Explosions Involving Portable Plastic Gasoline Containers And Their Prevention." *Journal of Failure Analysis and Prevention* (2011).

Stevick, G.R., D. Rondinone, A. Sagle, J. Zicherman. "Portable Gasoline Container Explosions and Their Prevention." *Society of Forensic Engineers and Scientists Winter Seminar*, 19-21 March 2010.

Rondinone, D., A. Sagle, G.R. Stevick. "API Aboveground Tank Leak Detection Liquid Level Measurement Technique Evaluation," for The American Petroleum Institute, 09 Nov. 2009.



Rondinone, D., G.R. Stevick. "Olympic Spirit Vapor Recovery System Fire Investigation and System Review," *for* Tesoro Corporation, *by* Berkeley Engineering And Research, Inc., 18 May 2009.

Stevick, G.R. "Marine Crude Oil Transfer Breakaway, Hawaii Single Point Mooring Terminal," *for* Tesoro Corporation, *by* Berkeley Engineering And Research, Inc., 19 May 2008.

Stevick, G., J. Hart, C. Lee, F. Dauby. "Fracture Analysis for Pipeline Girth Welds in High Strain Applications." *Pipeline and Gas Technology* Jan. 2006.

Stevick, G.R., et al. "Golden Gate Bridge, Phase II Seismic Retrofit, Calibration Testing of Pylons S1 and S2 - Fort Point Arch Longitudinal and Transverse Energy Dissipation Devices," *for* The Golden Gate Bridge District, *by* Berkeley Engineering And Research, Inc., 01 July 2005. (*Note: This project won the American Society of Civil Engineers 2007 Opal Award for the Most Outstanding Civil Engineering Achievement.*)

Berkeley Engineering And Research, Inc. "Rolling Mill Structure and Mandrel Finite Element Analysis," *for* USS-POSCO Industries, 20 Aug. 2002.

Berkeley Engineering And Research, Inc. "Effect of the Windshield on Roof Strength and Displacement," *for* James Collins and Associates, 6 Oct. 2000.

Warner, Paul, Glen Stevick, Thomas Eager. "Main Propulsion Unit, Aft Second Reduction Gear Bearing Failure Assessment," *for* Northrup Grumman and the US Navy, 9 April 1999.

Maple, J.A. and Associates, SSD Engineering Consultants, Glen Stevick and Berkeley Engineering And Research, Inc. "Study of Effects of Vibrations Due to Pressure Pulses on the Integrity of the Trans-Alaska Pipeline," *for* Alyeska Pipeline Service Company, 26 Jan. 1997.

Berkeley Engineering And Research, Inc. "Computation of the Stresses in a Shaft Due to Torsion," *for* EC Engine Components, Inc., 19 Aug. 1996.

Berkeley Engineering And Research, Inc. "Excel Spreadsheet-Based Fitness For Service Model Providing Inspection Interval and Remaining Life of Coke Drums," *for* Chevron Research & Technology Company, 12 Jan. 1996.



Berkeley Engineering And Research, Inc. "An Independent Review of Structural Methods Used to Evaluate the Integrity of the Trans-Alaska Pipeline," *for* Alyeska Pipeline Service Company, 1 July 1995.

Berkeley Engineering And Research, Inc. "Coke Drum Material Crack Growth Tests," *for* Chevron Research & Technology Company, 2 Aug. 1995.

Berkeley Engineering And Research, Inc., SSD Engineering Consultants, Inc. "Fracture Evaluation of Fillet Welded Pipe Sleeves," *for* Alyeska Pipeline Service Company, 01 July 1994.

Stevick, G.R. "Failure of Welds at Elevated Temperatures," *Welding Research Council Bulletin 390*, Welding Research Council, April 1994.

SSD Engineering Consultants, Inc., Berkeley Engineering And Research, Inc. "Structural Serviceability of the Salcha River Crossing," *for* Alyeska Pipeline Service Company, 17 Nov. 1993.

Stevick, G.R., B.R. Cuzzillo. "Batch-Reactor Heater-Coil Thermal & Fatigue Analysis," *for* Chevron Research and Technology Company, Inc., 25 Aug. 1993.

Finnie, I., G.R. Stevick, J.R. Ridgley. "Influence of Impingement Angle on the Erosion of Ductile Materials." *Wear* 152 (1992): 91-98.

Stevick, G.R. "Stress Analysis of Hospital Bed Frame Components," *for* American Life Support Technology, 01 July 1991.

Stevick, G.R., I. Finnie. "Stress Concentrations Resulting from Longitudinal Butt-Welds in Piping at Elevated Temperatures." *Creep in Structures*. (Ed. M. Zyczkowski), Berlin: Springer-Verlag, 1991. 629-636.

Stevick, G.R., I. Finnie. "Failure Assessment of Weldments at Elevated Temperatures." *Mechanical Behavior of Materials-VI, Vol 2*. Ed. M. Jono, T. Inoue. Oxford: Pergamon, 1991. 149-154.

Stevick, G.R. "Redesign of an 8000 psi Test Vessel Using Bolted Construction" (2 reports), *for* SAIC Rock Mechanics Laboratory, 5 Sept. 1990, 12 Dec. 1990.



Marsili, D., G.R. Stevick. "Ductile Fracture Protection of the Canyon Reef Carrier Natural Gas Pipeline," *Proceedings of the 65th annual Society of Petroleum Engineering Conference, New Orleans, Louisiana, Sept. 1990.*

Stevick, G.R. "Structural Analysis of Fluidized Catalytic Cracking Unit Regenerator Internals," *for Chevron USA El Segundo Refinery, 22 June 1990.*

Stevick, G.R. "High Pressure Toxic Filter/Pressure Vessel Design," *for Filterdyne Systems, Inc., 17 Jan. 1990.*

Stevick, G.R. "Whitney Canyon/Carter Creek, WY - Gathering System H2S Risk Assessment," *for Chevron Engineering Technology Department, Nov. 1988.*

Stevick, G.R. "Crane Turret Bolt Failure Analysis," *for Dave's Mobile Crane Service, Los Altos, CA, June 1988.*

Stevick, G.R. "El Segundo, CA - Buckling Integrity of Column C-6 for Wind and Earthquake Loads," *for Chevron Engineering Technology Department, June 1988.*

Stevick, G.R., B.G. Burke. "An Experimental Assessment of The Damping Provided By Chain Dampers on a Tall, Slender Stack," *Proceedings of the International Chimney Conference, London, England. April 1988.*

Stevick, G.R., W.A. Ebert. "Recommended Practice, RP-33, Vibration Guidelines," *for Chevron Engineering Technology Department, Dec. 1987.*

Stevick, G.R. "Diffusion of Gasoline Vapors Within the Annulus of Double-Wall Underground Storage Tanks," *for Chevron Engineering Department, Nov. 1987.*

Stevick, G.R. "Gaviota, CA - Onshore Pipelines Weld Flaw Acceptance Criteria," *for, Chevron Engineering Technology Department, June 1987.*

Stevick, G.R. "DNL Construction Crane Failure," *for George Ashford & Associates, Honolulu, Hawaii, May 1987.*

Stevick, G.R. "Fiberglass Underground Storage Tank Design Methodology for External Loads," *for Chevron Engineering Department, Nov. 1986.*



- Stevick, G.R., W.A. Ebert. "El Paso, TX - Failure Analysis and Design of a New FCCU Flue Gas Cooler," *for* Chevron Engineering Department, May 1986.
- Stevick, G.R. "Richmond, CA - Isomax Plant Compressor Valve Failure and Redesign, K-950, K-960," *for* Chevron Engineering Department, April 1986.
- Stevick, G.R., S. Soemantri, I. Finnie. "An Analysis of the Loaded Abrasive Column type Wear Tester." *Wear* 101 (1985): 77- 80.
- Stevick, G.R. "Heber – Geothermal Pump Seals," *for* Chevron Engineering Department, Jan. 1985.
- Stevick, G.R. "Gaviota, CA - Fatigue Analysis and Redesign of the 40.5 inch Diameter Gas Compressor Pistons," *for* Chevron Engineering Department, Jan. 1985.
- Stevick, G.R. "Vapor Recovery Piping – Taft Sec. 36B," *for* Chevron Engineering Department, Aug. 1984.
- Stevick, G.R., B.G. Burke. "Tension Leg Platform Production Riser Crack Growth Analysis," *for* Chevron Engineering Department, May 1984.
- Stevick, G.R. "Platform Grace Gas Pipeline – Ductile Fracture," *for* Chevron Engineering Department, 2 April 1984.
- Stevick, G.R. "20 inch Casing Connector Fatigue Life Evaluation for the Manteo Block," *for* Chevron Engineering Department, April 1984.
- Stevick, G.R. "Platform Hidalgo Gas Pipeline – Ductile Fracture," *for* Chevron Engineering Department, March 1984.
- Cheng, W., I. Finnie, G.R. Stevick. "Prediction of Stress Intensity Factor for an Internal Circumferential Crack at a Butt-Weld Between Cylinders Using the Plane Strain Solution." *Journal of Engineering Materials and Technology* 106 (1984): 21-24.