

**Bernard Ross, Ph.D., P.E.**  
**Founder and Chairman Emeritus**

**Professional Profile**

Dr. Bernard Ross is the co-founder and Chairman Emeritus of Exponent Failure Analysis Associates. Dr. Ross specializes in heavy equipment failure analysis, crane, hoist and aerial devices accident investigation, mechanical and structural system assessment, machine design and guarding issues, product design review, and aviation accident reconstruction. His research expertise includes structural analysis, vibration and impact studies, fracture mechanics, explosion dynamics, and stability performance. Dr. Ross has drawn upon this background and experience to direct a variety of research projects and failure investigations dealing with agricultural, construction, industrial, and marine machinery problems; equipment control modeling; high-speed ground transportation studies; and ice-hydraulic structure interaction.

Prior to founding Failure Analysis Associates, Dr. Ross was employed as a mechanical-structural engineer in the aircraft industry by General Dynamics, Canadair, and McDonnell Douglas. He was also an engineering program manager at Stanford Research Institute from 1965–1970. Dr. Ross currently serves Stanford University as a Consulting Full Professor in the School of Engineering, where he teaches a successful graduate course titled, “Techniques of Failure Analysis.” He travels internationally, lecturing on the topic of failure analysis and accident investigation. Dr. Ross has published more than 50 technical papers in peer-reviewed international journals and conference proceedings. He has been invited to present more than 135 seminars, lectures, and talks before university audiences, trade groups, engineering society meetings, insurance and claims agents conferences, and attorney-state bar organizations.

**Academic Credentials and Professional Honors**

Ph.D., Aeronautical Engineering, Stanford University, 1965  
Certificate, Vibrations and Applied Dynamics, University of Edinburgh, Scotland  
Diploma, Control Systems, Ecole Nationale Supérieure de L'Aéronautique, France  
M.Sc., Aeronautical Engineering, Stanford University, 1959  
B.M.E., Mechanical Engineering, Cornell University, 1957

Certificate of Advanced Engineering Study (Mechanical Engineering) Cornell University; NSF Post Graduate Program (Advanced Engineering Mechanics), Brown University, 1968  
Research Fellow, Office National de Recherches Aéropatiales (ONERA), Paris; Visiting Professor, Graduate School of Civil Engineering, University of Santa Clara; Consulting Professor, School of Engineering, Stanford University; Advanced Fracture Mechanics Short Course, Etech, Pasadena, CA, 1995

## **Licenses and Certifications**

Licensed Professional Mechanical Engineer, California, #ME15637

Licensed Professional Engineer, New York, #PE75184

## **Selected Professional Honors**

Visiting Research Engineer, Concorde SST Program, ONERA (France)

Member, Outside Experts Group, ANSI A14 Ladder Safety Committee

Consultant, U.S. Consumer Product Safety Commission, Washington, D. C.

Certificate of Appreciation, ASME, Design Division

Member, International Advisory Board, Product Liability and Technical Insurance Conferences,  
University of Vienna, 1986–Present

Presidential Appointment, Stanford University, School of Engineering, Advisory Council,

Listed, Who's Who in Aviation & Aerospace, 1983

Listed, Who's Who in Engineering Fifth edition, 1982, Ninth edition 1994 (AAES)

Listed, Who's Who in Engineering and Science, Third edition, 1996 (Marquis)

Listed, Who's Who in America, 51st edition, 1996 (Marquis)

Listed, Who's Who in the World, 15<sup>th</sup> edition, 1998 (Marquis)

President, International Society For Technology and Law, Vienna, Austria, 1996–99

French Government, NATO Exchange Scholar, ENSA, France, 1960

Committee Member, ASME, Design Division, Failure Analysis Group, 1975–1995

Certificate of Appreciation, Crane Inspection and Certification Bureau (CICB), 1987 and 1988

Invited Member, Engineering Applied Science and Mathematical Panel, National Research  
Council and the National Academies (National Academy of Sciences and National Academy  
of Engineering), 2000–2003

Member, Advisory Committee, International Colloquium on Ageing and Life Assessment of  
Machinery and Structures, Cape Town, Republic of South Africa, 2001

## **Languages**

French, Spanish, German, Italian (reading)

## **Selected Publications**

“Gone with the Wind, Wind Effects and Crane Overturn,” 4<sup>th</sup> Annual Crane and Hoist  
Conference, Las Vegas, NV, October 2007.

“Big Blue Goes Down. The Miller Park Crane Accident,” Engineering Failure Analysis,  
Vol. 14, No. 6, September 2007.

“The Problem of Crane Overturn,” CAPE 2007, 9<sup>th</sup> International Colloquium on Asset  
Management of Aged Plant and Materials. Gordons Bay, Republic of South Africa, March  
2007.

“Soil Conditions, Outtrigger Ground Support and Crane Overturn,” Crane and Hoist Conference and Expo, Houston, TX, October 2005 (with A. Kelley).

“Big Blue Goes Down, the Miller Park Crane Disaster,” Failures 2004, International Symposium on Risk and Safety, Failure Minimization and Analysis, Cape Town, South Africa, March 2004.

“Mini Excavators and Narrow Scissors Lifts—Create New Safety Concerns,” 2<sup>nd</sup> International Conference for Implementation of Safety and Health on Construction Sites, Honolulu, HI, March 1999 (with B. McGoran and F. Watler).

“Product Liability Experience of Japanese Manufacturers in the United States,” Japan Society of Mechanical Engineers Proceedings, International Symposium on Product Liability and Failure Prevention, Fukuoka, Japan, 1996.

“Watch that Lean: Anatomy of an Accident,” Crane Works, Independence, MO, March/April 1996.

“A Crane and Rigging Accident Primer: Costs, Case Histories and Remedies,” Proceedings, International Conference on Safety and Health on Construction Sites, published by A.A. Balkema/Rotterdam, Lisbon, Portugal, 1996.

“Product Liability Experiences of Japanese Manufacturers in the United States, J.S.M.E.,” Proceedings, International Symposium on Product Liability and Failure Prevention, Fukuoka, Japan 1996.

“Use of Risk Analysis to Evaluate Design Defect Cases,” Symposium on Failure and Malfunction of Systems, SPM (Portuguese Society of Materials), Lisbon, 1995.

“Use of Flight Recorder Data in the Reconstruction of a Boeing 747 Taxi Accident,” 25th International Society of Air Safety Investigators Seminar, Paris France, 1994

“Catastrophic Collapse of a Tower Crane Due To Sequential Failure of Truss Members,” 3<sup>rd</sup> International Symposium on Structural Crashworthiness and Failure, Liverpool, UK, 1993 (with P. Johnston, J. Osteraas, R. Barrett).

“Helicopter and Aircraft, Wire and Tree Strike Accidents,” Proceedings, Fourth International Conference on Structural Failure and Technical Insurance, Vienna, Austria, 1992.

“Failure of a Portal Crane Foundation Support System Due to Caisson-Grade Beam Interaction,” Pile Talk International 90 Conference, Jakarta, Indonesia, 1990 (with P. Moncarz, P.R. Hooley, and D. Pickering).

“A Historical Survey of Transit Buses in the United States,” *SAE Special Publication SP-842*, published by SAE Historical Committee, Warrendale, PA, 1990.

“The Etiology of an ‘Impossible’ Tank Car Explosion,” Proceedings, Second International Conference on Structural Failure and Technical Insurance, Great Britain, 1986.

“What Is A Design Defect,” Proceedings, International Conference on Structural Failure, Product Liability and Technical Insurance, Amsterdam, The Netherlands, 1984.

“Using Risk Analysis Techniques to Evaluate Design Defect Cases,” Proceedings, 18th Annual Air Law Symposium, Southern Methodist University, Dallas, TX, 1984.

“Failure Analysis of Large Scale Structures,” 6th International Conference on Fracture, New Delhi, India, 1984.

“Rollover Protective Structures (ROPS),” *Professional Safety*, Vol. 27, No. 5, 1982.

“Is It Safe to Fly?” Keynote Lecture, Japan Society of Mechanical Engineers, 22nd Annual Structures Conference, Sendai, Japan, 1980.

“The Multidisciplined Engineering Study of a Tanker Explosion Problem,” Japan Society of Mechanical Engineers Symposium, Tokyo, Japan, November 1977.

“Failures Experienced in a Horizontal Shell Direct Fired Petroleum Heater,” ASME Design Engineering Conference, Washington, DC, 1975.

“Failure to Warn – A New Game for Lawyers, A New Challenge for Engineers,” Reliability and Maintainability Symposium Proceedings, Product Liability Seminar, Institute for Electrical and Electronics Engineers, Los Angeles, CA, 1974.

“Accident Reconstruction—Failure Analysis,” Course Handbook, Series No. 34, H4-2858, Practising Law Institute, New York, NY, 1970.

Principal author of seven major research project reports published by Stanford University and Stanford Research Institute for the U.S. Air Force Office of Scientific Research (AFOSR), Office of Naval Research (ONR), Naval Ordnance Laboratory (NOL), and Department of Housing and Urban Development (HUD).

Principal author of more than 500 reports issued by Failure Analysis Associates concerning failure analysis, structural collapse, accident reconstruction, and machine design reviews related to personal injury, wrongful death, product liability, and property damage incidents.

### **Selected Lecture and Seminar Presentations**

Featured Speaker, Fourth Annual Crane & Hoist Conference, Las Vegas, NV, 2007.

Featured Speaker, Third Annual Crane & Hoist Conference and Expo, Houston, TX, 2006.

Keynote Lecture, Second International Conference on Engineering Failure Analysis, Toronto, Ontario, 2006.

Invited Talk, Aerial Platform Safety Conference (APS), Aerial Work Platform Training, Inc., Dallas, TX, 2004.

Invited Talk, Crane & Hoist Conference, CraneWorks, The Association of Crane & Rigging Professionals, Chicago, IL, 2004.

Invited Talk, World Class Crane Management Seminar, Crane Partner International & International Organisation of Standardisation (ISO), Las Vegas, NV, 2004.

Invited Paper, Sixth International Symposium, Risk, Economy and Safety, Failure Minimisation and Analysis, Failures 04, Cape Town, South Africa, 2004

Invited Speaker, Crane Certification Association of America, Anaheim, CA, 2003.

Urban Search & Rescue Instructor, Heavy Equipment and Rigging Training, Governors Office of Emergency Services, State of California, Mountain View, CA, 2002.

Guest Panel Member, KRON Television, Channel 4, Take Issue Series, Amusement Park Ride Accidents and Safety, Michael Krasny, Moderator, San Francisco, CA, 2000.

Invited Assembly Lecture, Hitachi, Heavy Construction and Large Crane Machinery Company, Tsuchiura, Japan, 2000.

Guest Lecture, U.S. Army Corps of Engineers, Urban Search & Rescue, Heavy Equipment and Rigging Specialists Course, Sacramento and Mountain View, CA, 2000.

Invited Speaker, Annual Conference, International Pipeline and Offshore Contractors Association (IPLOCA), Dubai, United Arab Emirates, 2000.

Guest Lecture, FEMA, Federal Emergency Management Agency, Structures Specialist Training Course, Sacramento, CA, 1999.

CIB, Conseil International du Batiment, Implementation of Safety on Construction Sites, Instituto Superior Technico, Lisbon, Portugal, 1996; Honolulu, HI, 1999.

Invited Lecturer, U.S. Army Academy, West Point, NY, 1998.

“Technical Failures: Prevention or Litigation?” Technical University of Vienna, 6th International Conference Structural Failure and Product Liability, Vienna, Austria, 1998.

Keynote Address, Fifth International Conference, Inspection, Appraisal and Repair of Buildings and Structures, Singapore, 1997.

Industrial Insurance Symposium, Machinery Failures and Safety, Helsinki, Finland, 1997.

Guest Lecture, International Symposium, Risk Economy and Safety, Failure Minimisation and Analysis, Pilanesberg, South Africa, 1996.

Honorary Lecture, University of Tsukuba, TARA Foundation, Tsukuba, Japan, 1996.

Keynote Speaker, Japan Society of Mechanical Engineers, Symposium on Product Liability and Failure Prevention, Kyushu University, Fukuoka, Japan, 1996.

Featured Speaker, Specialized Carriers and Riggers Association, San Francisco, CA, 1995.

British Health and Safety Executive, Invited Speaker, Sheffield, United Kingdom, 1995.

SPM, Portuguese Society of Materials, International Conference, Risk and Economic Evaluation on Failure and Malfunction of Systems, Lisbon, Portugal, 1995.

Invited Speaker, Cornell University, Manufacturing Conference, Ithaca, 1994.

ISTLI, International Conference on Safety and Reliability in Marine Engineering and Construction, University of Hong Kong, Hong Kong, 1994.

Guest Lecture, Claremont University, School of Engineering, Design Division, Claremont, CA, 1993

Invited Speaker, American Helicopter Society, NASA Ames, Mountain View, 1993.

Invited Talk, SAE, AEROTECH '93, Costa Mesa, CA, 1993.

Invited Talk, Defense Bar Seminar Association, San Francisco, CA, 1991

Piletalk International '90 Conference, Jakarta, Indonesia, 1990.

Panel Member, North Carolina State University, Product Liability Forum, Raleigh, NC, 1990.

Invited Talk, Defense Bar Seminar Association, San Francisco, CA, 1991.

ASME, 8th Conference on Failure Prevention and Reliability, Montreal, 1989.

Panel Chairman, ASME, Design Technical Conference, Product Liability Symposium, Montreal, 1989.

Guest Lecturer, Power Crane Association of New Zealand, Annual Conference, Palmerston North, New Zealand, 1988.

Invited Lecture, CICB, Crane Inspection and Certification Bureau, Las Vegas, NV, 1988.

Panel Chairman, ASME, Design Conference, Product Liability Symposium, Boston, MA, 1987.

Invited Lecture, CICB, Crane Inspection and Certification Bureau, San Francisco, CA, 1987.

Invited Lecture, Construction Financial Management Association, Oakland, CA, 1986.

Invited Lecture, Kobe Steel Company Ltd. (Kobelco), Kobe, Japan, 1986

Invited Lecture, Tadano Crane Ltd., Takamatsu, Japan, 1986.

International Conference on the Protection of Pipes, Nice, France, 1985.

Invited Lecture, Southern Methodist University, Annual Air Law Symposium, Dallas, TX, 1984.

Plenary Lecture, Sixth International Conference on Fracture, New Delhi, India, 1984.

Invited Lecture, National Association of Railroad Trial Counsel, Miami, FL, 1983.

Invited Lecture, Phoenix Association of Defense Counsel, Phoenix, AZ, 1983.

Invited Lecture, Stanford University, Graduate School of Business, Stanford, CA, 1983.

Invited Lecture, CICB, Crane Inspection and Certification Bureau, Las Vegas, NV, 1983.

Keynote Speaker, Japan Society of Mechanical Engineers, Sendai, Japan, 1980.

Invited Lectures, Chiyoda Engineering & Construction Co., Tokyo, Kawasaki, and Yokohoma, Japan, 1980.

Invited Lecture, U.C.L.A., Continuing Professional Education, Failure Prevention, and Risk Assessment, Los Angeles, CA, 1980.

Invited Lecture, API, American Petroleum Institute, Phoenix, AZ, 1979.

Invited Lecture, Maritime Claims Agents Association, San Francisco, CA, 1978.

Invited Lectures, San Francisco Bar Association, San Francisco, CA, 1977, 1980.

HOPE International Hazards Conference, Tokyo, Japan, 1977.

ISSE, Industrial Society of Safety Engineers, Invited Lecture, Berkeley, CA, 1974

Panel Member, CTLA, California Trial Lawyers Association, San Diego, Ontario, Los Angeles, Sacramento, and Oakland, CA, 1973.

Panel Member, Practicing Law Institute, New York, Dallas, and Las Vegas, 1970, 1971.

Seminar Speaker, Israel Institute of Technology, Haifa, Israel, 1969.

Panel Member, Continuing Education of the Bar, Los Angeles and San Francisco, CA, 1969.

Seminar Speaker, Polish Academy of Sciences, Warsaw, Poland, 1966.

### **Relevant Experience**

- Structural Test Engineer, Canadair Division, General Dynamics
- Control System Design Engineer, Marquardt Aviation
- Mechanical Design Engineer, Douglas Aircraft
- Vibration Engineer, Supersonic Concorde Project, ONERA, Paris, France
- Research Associate, Department of Aerospace Engineering, Stanford University
- Senior Research Engineer and Program Manager, Stanford Research Institute (SRI)

### **Professional Work Experience**

Advisor and Consultant, Tando Crane Ltd., Takematsu, Japan, 1996–2000

Faun GmbH (All Terrain Crane Carriers), Lauf-Pegnitz, Germany, 1998

Hitachi America Corp., (Hydraulic Crawler Cranes), Houston, TX, 1999–2001

### **Media Credits**

Dr. Ross has been interviewed to render professional opinions on major disasters and catastrophic events by newspapers, national and regional television networks and radio broadcast stations. His comments have been quoted in 27 newspapers (e.g., Wall Street Journal, UPI, San Francisco Chronicle, Associated Press, New York Times, Los Angeles Times, Kansas City Times, Chicago Herald Tribune). Dr. Ross has appeared on live network television (Charles Kuralt, Morning Show, CBS, 20-20 News, ABC, Ted Koppel News Nightline, ABC, Walter Cronkite CBS, Night Watch, CBS, BCB (Canada), and CNN and numerous times on radio and local television interviews KCBS, WCBS (New York), KYA (Los Angeles), WJR (Detroit), CFRB (Toronto), WDAF (Kansas City), and KRON, KTVU, KPIX, KGO, KWHY (Los Angeles), KING (Seattle), and WDAF (Kansas City). Dr. Ross has also been promoted as the co-founder of Failure Analysis Associates and as a prominent engineering expert in 23 magazine articles, including Newsweek, People, Time, National Geographic, and four Sunday supplement magazines. Dr. Ross and the late Dr. Alan Tetelman were featured in a documentary film titled “What Went Wrong” made by the United States Information Service and distributed worldwide.

## **Executive Positions**

CoFounder, Member, Board of Directors 1967–1990, Chairman of the Board 1978–1988, President 1978–1982, Chairman Emeritus 1988–Present, Failure Analysis Associates and Exponent, Inc. (\$84 Million Revenues), Menlo Park, California

Member, Board of Directors: Dunegan Research Corporation, Livermore, California, 1969–1971; Fame Corp., Palo Alto, California, 1983; SST Systems, Inc. (\$1 Million Revenues), San Jose, California, 1985–Present; Quasar Engineering (\$20 Million Revenues), Belmont, California, 1992–1996

## **Prior Experience**

Senior Research Engineer and Program Manager, Stanford Research Institute (SRI), 1965–1970  
Vibration and Dynamics Engineer, Supersonic Concorde Project, ONERA, France, 1960  
Stress Analyst, Douglas Aircraft Company, 1959  
Structural Test Engineer, Canadair Division, General Dynamics Corp., 1956

## **Professional Affiliations**

American Society of Mechanical Engineers (member); Society of Automotive Engineers (member); American Society of Safety Engineers (member); National Society of Professional Engineers (member); American Institute of Aeronautics and Astronautics (member); American Society of Mechanical Engineers Design Engineering Division, Stress Analysis and Failure Prevention Committee (member)

## **Litigation Experience**

Dr. Ross has presented testimony in more than 350 depositions and 120 trials. He has been qualified as an Expert in Mechanical and/or Aeronautical Engineering in both Superior and Federal Courts in 21 states and Washington, DC.