

CURRICULUM VITAE
of
ROGER E.A. ARNDT

EDUCATION:

BCE City College of New York
SM Massachusetts Institute of Technology
Ph.D. Massachusetts Institute of Technology

EXPERIENCE:

2009- present Professor Emeritus

1977- 2009 Professor
Department of Civil Engineering
University of Minnesota

Member of Graduate Faculty in:
Department of Civil Engineering
Department of Aerospace Engineering and Mechanics
Department of Mechanical Engineering
Water Resources Program

1995-1998 Director, Fluid Dynamics and Hydraulics Program, National
Science Foundation:

1977-1993 Director
St. Anthony Falls Hydraulic Laboratory
University of Minnesota

1981 -1994 Chairman of Fluid Mechanics Program
Graduate School, University of Minnesota

1971-1977 Associate Professor of Aerospace Engineering
The Pennsylvania State University

1967-1971 Assistant Professor of Aerospace Engineering
The Pennsylvania State University

1964-1967 NASA Fellow, Massachusetts Institute of Technology

1965 Mechanical Engineer
Littleton Research and Engineering Corporation, Littleton, MA

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1963-1964 Sr. Research Engineer
Lockheed California Company, Burbank, CA

1962-1963 Research Engineer
Allegheny Ballistics Laboratory, Cumberland, MD

1960-1962 Research Assistant
Hydrodynamics Laboratory, Massachusetts Institute of Technology

1960 Jr. Civil Engineer
Department of Public Works, New York City

1956-1957 Chemist
Consolidated Testing Laboratories, New Hyde Park, NY

OTHER RELEVANT EXPERIENCE

Private Pilot - Instrument Rating - 3000 hrs flying experience
Director, Twin City Cloud 7, Inc. (1983-1989).

RESEARCH SPECIALTIES:

Fluid mechanics with emphasis on turbulent shear flows and vortex flows; cavitation including inception physics, erosion mechanisms, noise and vibration and effects on turbomachinery performance; aeroacoustics including jet noise and turbomachinery noise; alternate energy with an emphasis on hydropower and wind turbine technology, turbomachinery; aeration technology with a view towards developing cost effective environmental remediation techniques.

HONORS AND AWARDS:

Charles W. Britzius Distinguished Engineer (2002)
Japan Society for the Promotion of Science Fellowship(2001)
ASME Fluids Engineering Award (1993)
Alexander von Humboldt Senior Scientist Award (1989, 1994)
Lorenz G. Straub Award (1968)
George Taylor Teaching Award (1978)
AIAA Outstanding Faculty Advisor Award (4 awards 1971-1974)
First Theodor Ranov Distinguished Lecturer (1978)
Fellow, American Physical Society
Life Fellow, American Society of Mechanical Engineers
Associate Fellow, American Institute of Aeronautics and Astronautics

LISTED IN:

Who's Who in America

Who's Who in Engineering
Who's Who in Technology Today
Who's Who in Aviation and Aerospace: US Edition

PROFESSIONAL SOCIETIES:

Acoustical Society of America
American Institute of Astronautics and Aeronautics (Associate Fellow)
American Physical Society, Division of Fluid Dynamics (Fellow)
American Society of Civil Engineers (Life Member)
American Society of Mechanical Engineers (Life Fellow)
International Association for Hydraulic Research
Sigma Xi

PROFESSIONAL ACTIVITIES:

American Society of Mechanical Engineers

Basic Engineering Technical Group Operating Board (Member, 1994-1997)
Associate Editor, Journal of Fluids Engineering, 1977-1978, 1993-1996
Chairman, Freeman Scholar Standing Committee, (1986-1992)
Chairman, Hydropower Committee, Power Division, (1988-1990)(1992-1993)
Co-Author of The Guide to Hydropower Mechanical Design, HCI Publications, 1996
Member, Multiphase Flow Committee (Chairman, 1978-1980)
Member, Fluid Mechanics Committee
Member, Flow Induced Vibration and Noise Committee

American Society of Civil Engineers

Member, Committee on Turbulence, Engineering Mechanics Division (1985-1994)
Member, Task Committee on Cavitation, Hydraulics Division
Member, Task Committee on Model-Prototype Correlation
Member, Task Committee to Update Manual 25: Hydraulic Models, Hydraulics Division,
Co-author, ASCE Manual 25, Hydraulic Modeling.

International Association for Hydraulic Research

Co-Editor, Monograph on Cavitation, (1983-Present) to be published in 2000
Member, Cavitation Committee, International Association for Hydraulic Research (1988-1992)
Member, Organization Committee, 1997 International Meeting

American Society for Testing Materials

Member, G-2 Committee on Cavitation Erosion, (1975-1995)

American Institute of Aeronautics and Astronautics

Member, Technical Committee on Aeroacoustics (1976-1981)

Acoustical Society of America

Member, Noise Committee (1970-1985)

Local Professional Activities

President, Sigma Xi, University of Minnesota Chapter (1992-1993)

Member, Governor's Blue Ribbon Commission on Cold Weather Research,
Minnesota, 1988

Council Member, Twin Cities Chapter American Institute of Aeronautics and
Astronautics (1985-1987)

President, American Water Resources Association, Minnesota Chapter (1982-1983)

Organizational Work

Judging Chairman, 2nd National Student Conference, American Institute of
Aeronautics and Astronautics, October 1971.

Chairman, Middle Atlantic Regional Student Conference, The Pennsylvania State
University, May 1971.

Organizer, 1st Annual Centre County Airplane Meet, State College, Pennsylvania,
February 1971 (This continues as an annual event.)

Chairman, 3rd National Student Conference, American Institute of Aeronautics and
Astronautics, January 1973.

Co-Chairman, Symposium on Polyphase Flow and Pollution, American Society of
Mechanical Engineers, June 1973.

Organizing Committee, Symposium on Design and Operation of Fluid Machinery,
American Society of Civil Engineers/International Association of Hydraulic
Research/American Society of Mechanical Engineers, Fort Collins,
Colorado, June 12-14, 1978.

Organizer, Forum on Practical Erosion Problems in Fluid Systems and Machinery,
American Society for Testing Materials, Niagara Falls, New York, June 21,
1979.

Hydropower Museum Committee - Responsible for obtaining funding for a
hydropower museum - responsible for review progress of team of consultants,
1980-1981.

Co-Chairman, American Society of Mechanical Engineers, Symposium on
Cavitation Erosion in Fluid Systems, Boulder, Colorado, June 22-24, 1981.

Co-Chairman, American Society of Mechanical Engineers, Symposium on
Cavitation Noise, Phoenix, AZ, 1982.

Session Organizer, Midwest Engineering Conference, Minneapolis, MN, October.
1984.

Organizer, Governors Conference on Alternate Energy, July 1984.

Co-Chairman, American Society of Mechanical Engineers, Symposium on

Cavitation in Hydraulic Machinery and Hydraulic Structures, Phoenix, Arizona, June 1985.

Program Chairman, Meeting on Advancement in Aerodynamics, Fluid Mechanics and Hydraulics, jointly sponsored by the Aerospace, Engineering Mechanics and Hydraulics Division of the American Society of Civil Engineers, June 1986.

Co-Chairman, ASME, Symposium on Cavitation and Multiphase Flow Noise, Anaheim, California, December 1986.

Chairman, Cavitation Committee, 22nd American Towing Tank Conference, St. Johns Newfoundland, August, 1989.

Co-Chairman, ASME, Third International Symposium on Cavitation Noise and Erosion in Fluid Systems, December, 1989.

Organizer, St. Anthony Falls Hydraulic Laboratory - 50th Year Anniversary - "The Role of the Hydraulic Laboratory in the 21st Century," September, 1988.

Member, Organizing Committee, Symposium on Large Turbines, Beijing, China, May, 1989.

Co-Organizer, Workshop on Groundwater Management and Quality and Quantity, St. Anthony Falls Hydraulic Laboratory, Minneapolis, Minnesota, May, 1989.

Co-Organizer, Hydroacoustic Facilities, Instrumentation and Experimental Techniques, Winter Annual Meeting, ASME, Atlanta, GA, December, 1991.

Co-Organizer, Fourth International Symposium on Bubble Noise and Cavitation Erosion in Fluid Systems, ASME Winter Annual Meeting, New Orleans, LA, Nov. 28-Dec. 3, 1993.

Member, Organizing Committee, Second International Symposium on Cavitation, Tokyo, Japan, April 1994.

Co-Organizer, International Symposium on Aeration Technology, ASME Spring Meeting, Lake Tahoe, NV, June, 1994.

Co-Organizer, ASME Symposium on Experimental Needs for CFD Code Development and Verification, Washington, DC, June 21 -25, 1998

Co-Organizer, Second International Symposium on Aeration Technology, Washington, DC, June 21 -25, 1998

Co-organizer Cavitation 2001, Pasadena, CA June 19 -22, 2001

REFEREEING, REVIEWING:

Associate Editor, Journal of Fluids Engineering, 1977-1978, 1993-1996

Paper Referee for Journal of Fluids Engineering, AIAA Journal, Journal of Hydraulic Engineering, Journal of Fluid Mechanics, Physics of Fluids, Journal of the American Institute of Chemical Engineers, International Video Journal of Engineering Research, Int. Journal of Multiphase Flow, European Journal of Fluid Mechanics, Experiments in Fluids, Journal of Flow, Turbulence and Combustion

Reviewer and Abstractor for Applied Mechanics Review, The Shock and Vibration Digest

Reviewer for National Science Foundation, Army Office of Research, Air Force Office of Scientific Research, US Geological Survey.

CONSULTING ACTIVITIES

3M Company; AI Signal Research (NASA-Huntsville); Army Air Mobility Research Laboratory, Ames Directorate; Atomix; Australian Maritime Engineering CRC Ltd; Babcock and Wilcox Company; Bell Aerospace Company; Boeing Corp.; Bolt, Beranek and Newman, Inc.; CH2M-Hill (Office of Naval Research); Dorsey and Whitney LLP; Graco, Henkel Corporation; Honeywell Corporation; Indeco, Inc.; Illinois Institute of Technology Research Institute; Maritime and Ocean Engineering Research Institute, Korea, Medtronics Inc.; Metals Selling Corporation; Netherlands Ship Model Basin; Northrup-Grumman, Office of Naval Research-London; Richards of Rockford; SciMed, Inc.; St. Jude Corp.; Thermal Systems, Inc.; United Nations; US Bureau of Reclamation; Warzyn Engineering; Wylie Laboratories; White & Williams LLP; Yarway Corporation

Topics include: Cavitation in Fluid Machinery, High Performance Marine Vehicles, and Hydraulic Structures, Diffusion Processes in an Artificial Lung, Coating Processes, Viscoelastic Flow Phenomena in the Manufacture of Woven Products, Performance Improvement of a Wide Range of Hydraulic Machinery in the Pollution Control, Paper Making and Hydropower Fields as well as in Rocket Engines, Hydroacoustic and Aeroacoustics Problems, Medical devices and Forensic Analysis.

COURSES TAUGHT:

Graduate

Perfect Fluid Theory A and B, Aerodynamically Induced Noise, Viscous Flow, Fluid Turbulence, Pumps and Turbines, Incompressible Potential Flow, Hydro and Thermal Power Development, Special Topics in Hydrodynamic Theory, Incompressible Boundary Layer Flow, Environmental Fluid Mechanics, Vortex Dynamics

Undergraduate and First Year Graduate

Introduction to Fluid Mechanics, Aerodynamics of Incompressible Inviscid Fluids, Viscous Fluids, Aerospace Structures, Special Projects, Experimental Methods, Theory of Flight, Noise Pollution of Aerodynamic Origin, Intermediate Fluid Mechanics, Open Channel Flow, Water Resources Engineering.

Continuing Education and Special Courses

Fundamentals of Cavitating Flows, Penn State University, (1972) (Co-Chairman)
Advanced Aerodynamics of Helicopter and V/STOL Aircraft (Session on Aerodynamic Noise (1972 and 1974)), Penn State University
Introduction to Engineering for Exceptional Freshmen, University of Minnesota, (1977)

Cavitation and Erosion, Buffalo, New York, (1978) (Chairman)
Dynamic Flow Measurement Techniques, Buffalo, New York, (1978)
Fluid Mechanics Measurements, University of Minnesota, (1979 through 1987, 1989) (Co-Chairman in 1979-80)
Small Scale Hydropower Feasibility Studies, University of Minnesota, (1981, 1982) (Co-Chairman)
Small Scale Hydropower Development: Planning, Feasibility and Design, University of Minnesota, (1983, 1984, 1985, 1986) (Co-Chairman)
Cavitation and Erosion, ASCE Professional Series, Cour d'Alene, Idaho, (1984) (Co-Chairman)
Small Scale Hydropower, ASME Professional Series, New Orleans, Louisiana, (1984) (Co-Chairman)
Small Hydro '86, Toronto, Canada (1986)
Turbulence, Cavitation and Aeration of Hydraulic Phenomena, 12th Latin American Hydraulics Congress, IAHR Latin American Regional Committee (1986), Sao Paulo, Brazil
Special Topics on Design of Small/Low Head Hydropower, 12th Latin American Hydraulic Congress, IAHR Latin American Regional Committee (1986), Sao Paulo, Brazil
Hydropower Engineering and Development, Portland, Oregon, (1987) (Co-Chairman)
Small Hydro '88, Toronto, Canada (1988)
Hydro: New Knowledge for Power, Denver, Colorado, (August 1991) (Co-Chairman); Nashville, TN (August 1993)(Co-Chairman)
Cavitation in Machines and Hydraulic Equipment (In Spanish), Bilbao, Spain (September 1991)
Cavitation in Hydroturbines, Brasilia, Brazil, October 6 -10, 1998

Industry

Introduction to Fluid Mechanics for Rocket Engineers

UNIVERSITY COURSES DEVELOPED:

Graduate

Aerodynamically Induced Noise
Cavitation (as Special Topics)
Vortex Dynamics

Undergraduate

Noise Pollution of Aerodynamic Origin
Experimental Methods in Aerospace Engineering

THESIS SUPERVISION:

Aerospace Engineering

- V. R. Malghan, M.S. Thesis, 1969; Title: Jet Noise.
- R. B. Spinelli, M.S. Thesis, 1969; Title: A Parametric Study of Two Dimensional Hydrofoils using the Smith Pierce Method.
- A. W. Nilsen, M. S. Thesis, 1969; Title: Analysis of the Unsteady Pressures in a Turbulent Jet.
- E. D. von Frank, M. S. Thesis, 1970; Title: Turbulence Characteristics in the Mixing Region of a Perturbed and Unperturbed Jet.
- William T. Bechtel, M.S. Thesis, 1971; Title: The Influence of Surface Irregularities on Cavitation: Field Study and Limited Cavitation Near Wire Screen Roughness.
- Jeffrey C. Bohn, M.S. Thesis, 1972; Title: The Influence of Surface Irregularities on Cavitation: A Collection and Analysis of New and Existing Data with Application to Design Problems.
- Galen L. Barefoot, M.S. Thesis, 1972; Title: Fluctuating Pressure Characteristics of a Perturbed and an Unperturbed Round Free Jet.
- Robert T. Nagel, M.S. Thesis, 1972; Title: The Influence of Leading Edge Serrations on the Noise Radiation from a Statistically Thrusting Rotor.
- Nam C. Tran, M.S. Thesis, 1973; Title: Turbulence and Acoustic Characteristics of a Screen Perturbed Jet.
- James E. Bender, M.S. Thesis, 1973; Title: Aeroacoustics Research in Wind Tunnels.
- William Francis Shivitz, M.S. Thesis; Title: An Experimental Investigation of Artificially Induced Transition to Turbulence on a Body of Revolution.
- David R. Stinebring, M.S. Thesis, 1976; Title: Scaling of Cavitation Damage (Winner of the American Institute of Astronautics and Aeronautics National Student Paper Competition).
- Kingo Yamamoto, Ph.D. Thesis, 1978; Title: An Acoustic Field Generated by Subsonic Jets at Low Reynolds Number.
- Jin Kim Hyun, M.S. Thesis in Aerospace Engineering, 1983; Title: Sound Source Distribution in Excited and Unexcited Turbulent Jets.
- Brant H. Maines, Ph.D. thesis, 1995; Title: Tip Vortex Formation and Cavitation.
- Travis Jon Schauer, MS Thesis in Aerospace Engineering, 2003, Title: An Experimental Study of a Ventilated Supercavitating Vehicle
- Justin Joseph Syrstad, MS Thesis in Aerospace Engineering, 2006 Title: Experimental Investigation of Wedge Shaped Fin and Supercavity Interaction
- Hamid Mokhtarzadeh, MS Thesis in Aerospace Engineering, 2010 Title: Supercavitating Vehicle Modeling and Dynamics for Control

Civil Engineering

- Warren Frizell, M.S. Thesis, 1987; Title: Noise Generation by Air Bubbles in Water: An Experimental Study of Creation and Splitting.
- Michael Rogers, M.S. Thesis, 1988; Title: Tip Vortex Cavitation.

Dong Ma, M.S. Thesis, 1994; Title: Experimental Study of Water Quality Effects on Tip Vortex Cavitation.
Vanchiswaraiyer Ramanathan, Ph.D. Thesis, 1994; Title: Experimental Development of a Novel Aeration Device.
Saurav Paul, M.S. Thesis, 1994; Title: Towards Laboratory Prediction of Cavitation Damage Intensities in Prototype Applications.
Hong Wang, MS Thesis, 2004 Title: An Experimental Study of Bubbly Hydrofoil Wakes
Qiao Qin, Ph.D. Thesis, 2004 Title: Numerical Modeling of Natural and Ventilated Cavitating Flows

Engineering Acoustics

Bela Schmidt, M.S. Thesis, 1978; Title: The Comparative Influence of Air/Fuel Ratio and Relative Turbulence on the Combustion Noise of a Premixed Flame.

Fluid Mechanics

Loic Barral, M.S. Thesis in Fluid Mechanics, 1983; Title: A Critical Examination of the Influence of Dissolved Gas on the Cavitation Process in Turbulent Shear Flows.
Reza Taghavi, Ph.D. Thesis, 1985; Title: Cavitation Inception in Axisymmetric Turbulent Jets.
Dean Long, Ph.D. Thesis, 1985; Title: Noise Radiation and Coherent Structure in Turbulent Jets: Viscous and Compressibility Effects.
Arthur L. Miller, M.S. Thesis, Fluid Mechanics, 1990; Title: Disintegration of a Confined High Speed Jet.

Mechanical Engineering

Gotfred S Bernsten, Diploma Thesis, 2000; Title: CFD of Cavitation Dynamics in Basic Hydrofoils and Rotating Hydraulic Machinery
Damien T Kawakami, MS Thesis, 2004, Title: Water Quality Effects on Cavitation
James E Kopriva, MS Thesis, 2006, Title: Experimental Study of a High Performance Partial Cavitating Hydrofoil under Steady and Periodic Flows

Turbulence

Lucas Gomez Fontecha, MS Thesis, 2005 Title: PIV Measurements in the Wake of a Supercavitating Body

ACADEMIC COMMITTEES: University of Minnesota

University Wide

University Senate
University Representative on Science and Technology Committee Midwest
Universities Consortium for International Activities

Institute of Technology

Chairman, Honors Committee
Member, Consultative Committee
Member, Finance and Development Committee

Department of Civil Engineering

Member, Undergraduate Studies Committee
Member, Building Committee
Academic Ceremonies Representative
Member, Sommerfeld Scholarship Committee
Chairman, Undergraduate Assistant Program
Chairman, Straub Award Committee, St. Anthony Falls Hydraulic
Laboratory
Chairman, Promotion & Tenure Committee
Member, Graduate Studies Committee

Other Departments

Member, Advisory Committee for the Natural Resources Research
Institute
Member, Advisory Committee for Office of Water Research and
Graduate Education
Chairman, Internal Review Committee, Corrosion Research Center

Previous Significant University Activities

Advisor, The Pennsylvania State University Student Chapter, American Institute
of Astronautics and Aeronautics
Advisor, The Pennsylvania State University Model Airplane Club
Coach, The Pennsylvania State University Water Polo Team

PUBLICATIONS (Excluding Professional Society Publications, See Above)

Books Edited, Book Chapters

1. "Cavitation in Turbulent Boundary Layers" (with J. W. Daily), *Cavitation, State of Knowledge*, American Society of Mechanical Engineers, New York, June 1969.
2. *Fluid Mechanics Research in Water Resources Engineering*, St. Anthony Falls Hydraulic Laboratory, Minneapolis, Minnesota, 1979 (Edited with Mary Marsh).
3. "Cavitation in Fluid Machinery and Hydraulic Engineering," *Annual Review of Fluid Mechanics* (M. van Dyke and J. V. Wehausen, co-editors), Vol 13, January, 1981

4. "Recent Advances in Cavitation Research" (V. T. Chow, Ed.), *Advances in Hydrosience*, Vol. 12, Academic Press Inc., March 1981.
5. "Hydraulic Turbines" (with C. Farell and J. Wetzel), chapter in *Small Hydropower Systems Design*, McGraw-Hill, 1983.
6. "Cavitation Research: Synopsis and Perspective," Chapter in *Megatrends in Hydraulic Engineering, A Memorial Volume Honoring Hunter Rouse*, (Maurice L. Albertson and Constantine N. Papadakis, co-editors), Colorado State University, December 1986.
7. *Recent Advances in Turbulence* (edited with W. K. George) Hemisphere, 1988.
8. *Hydropower Engineering Handbook* (edited with J. Gulliver; also chapter contributions: "Introduction," "Hydraulic Turbines") McGraw-Hill, 1990.
9. "Vortex Cavitation," Chap. 16, in *Fluid Vortices*, S. Green, ed., Kluwer, 1995. pp. 731-782
10. "Hydraulic Turbines," Section 9.8 in *The Engineering Handbook*, R. Dorf, ed., CRC Press, 1995 pp. 741-753
11. "What Do We Measure and Why?" Chapter in *Fluid Mechanics Measurements*, R. Goldstein, ed. 2nd Edition, Taylor and Francis, 1996. pp. 1-64
12. "Cavitation", "Hydroturbines", "Wind Turbines" sections in *Handbook of Fluid Mechanics*, R. Johnson, ed. CRC Press, 1998
13. "Hydraulic Turbines" Chapt. 8.4, *Handbook of Mechanical Engineering*, F. Kreith, ed. CRC Press, 1998
14. "Hydroelectric Power" (with John Gulliver) *Encyclopedia of Physical Science and Technology*, Volume 7, 2002 Academic Press
15. "Cavitation in Vortical Flows" *Annual Review of Fluid Mechanics*, (JL Lumley, SH Davis and HL Reed, Eds.) Vol 34, 2002 pp 143-175
16. "Hydraulic Turbines" Chapt. 8.4, *Handbook of Mechanical Engineering*, F. Kreith, ed. CRC Press, 2004
17. "Hydraulic Turbines," Section 73 in *The Engineering Handbook*, R. Dorf, ed., CRC Press, 2004 pp. 73-1 - 73-18
18. Stefan, H.G., Foufoula, E. and Arndt R.E.A., "The Saint Anthony Falls Laboratory: A Rich History and a Bright Future" in *Water Resources and Environmental History*, G. Brown J. Garbrecht and J. Rogers (editors), EWRI/ASCE Reston VA, 2004, 11pp
19. Balas, G.J., Bokor, J., Vanek, B. and Arndt R.E.A., "Control of high-speed underwater vehicles," *Control of Uncertain Systems: Modeling, Approximation, and Design*, B. Francis, M. Smith and J. Willems Editors, Springer-Verlag, Berlin 2006
20. Arndt, R.E.A., Kawakami, D. and Wosnik, M. "Measurements In Cavitating Flows" *Handbook of Fluid Mechanics Measurements*, Springer-Verlag, Berlin, December 2007

Special Publications

1. *Flow Studies in Air and Water Pollution*, American Society of Mechanical Engineers Special Publication, June 1973 (edited with Robert Hickling and Graham Wallace).
2. *Cavitation Erosion in Fluid Systems*, American Society of Mechanical Engineers Special Publication, June 1981 (edited with Walter Swift).
3. *Cavitation Noise*, American Society of Mechanical Engineers Special Publication, 1982 (edited with Michael Billet).
4. *Cavitation in Hydraulic Structures and Turbomachinery*, American Society of Mechanical Engineers Special Publication, June 1985 (edited with Don Webb).
5. *Advancements in Aerodynamics, Fluid Mechanics and Hydraulics*, American Society of Civil Engineers Special Publication, June 1986 (with H. G. Stefan, S. M. Peterson, and C. Farrell).
6. *International Symposium on Cavitation and Multiphase Flow Noise*, American Society of Mechanical Engineers Special Publication, December 1986 (with M. L. Billet and W. K. Blake).
7. *International Symposium on Cavitation Noise and Erosion in Fluid Systems*, ASME, FED, Vol. 88, December 1989 (with M. L. Billet and W. K. Blake).
8. *Bubble Noise and Cavitation Erosion in Fluid Systems*, ASME, FED, Vol. 176, November 1993 (with M. L. Billet and W. K. Blake)
9. *Aeration Technology*, ASME, FED, June 1994 (with A. Prosperetti).
10. *Hydraulic Modeling Concepts and Practice* ASCE Manuals and Reports on Engineering Practice No. 97, with (R. Ettema, Chair and Editor, P. Roberts and T. Wahl), 2000

Journal Articles

1. "Rough Surface Effects on Cavitation Inception" (with A. T. Ippen), *Journal of Basic Engineering*, June 1968, pp. 249-261.
2. "Turbulence Measurements in Liquids Using an Improved Total Pressure Probe" (with A. T. Ippen), *Journal of Hydraulic Research*, Vol. 8, No. 2, August 1970.
3. Discussion of "Cavitation Suppression and Stress Effects in High Speed Flows of Water with Dilute Macromolecule Additives," *Journal of Basic Engineering*, Transactions, ASME, Vol. 92, September 1970, p. 464.
4. "Noise Radiation from Helicopter Rotors Operating at High Tip Mach Number" (with D. Borgman), *Journal of the American Helicopter Society*, January 1971.
5. "Turbulence and Acoustic Characteristics of Screen Perturbed Jets," *AIAA Journal*, March 1974.
6. "Wind Power - An Ancient Answer to Modern Needs?," *AIAA Student Journal*, Summer 1975.
7. "Semiempirical Analysis of Cavitation in the Wake of a Sharp Edged Disk," *Journal of Fluids Engineering*, Transactions of the ASME, September 1976.

8. "Cavitation from Surface Irregularities in High Velocity Flow" (by James Ball), discussion by R. E. A. Arndt, *Journal of the Hydraulics Division*, ASCE, Vol. 103, No. 4, April 1977.
9. "Scaling of Cavitation Damage" (with D. Stinebring and J. W. Holl), *Journal of Hydronautics*, July 1977.
10. "A Laboratory Study of Jet Noise Suppressors" (with H. Fuchs and U. Michel), *Journal of the Acoustical Society of America*, April 1978.
11. "Peak Strouhal Frequency of Subsonic Jet Noise as a Function of Reynolds Number" (with K. Yamamoto), *AIAA Journal*, April 1979.
12. "Asymmetry of a Circular Jet Observed in Near and Far Fields" (with K. Yamamoto), *AIAA Journal*, April 1979.
13. "The Influence of Surface Irregularities on Cavitation Performance" (with J. W. Holl, J. C. Bohn, and W. T. Bechtel), *Journal of Ship Research*, September 1979.
14. "Two Aspects of Cavitation Damage in the Incubation Zone: Scaling by Energy Considerations and Leading Edge Damage" (with D. Stinebring and J. W. Holl), *Journal of Fluids Engineering*, December 1980.
15. "Fluid Mechanics Research in 1986" (with T. Y. Wu, J. F. Kennedy, G. Bugliarello, D. R. F. Harleman, W. W. Martin, R. G. Dean, H. Brenner, and T. K. Jung), *Journal of the Engineering Mechanics Division*, ASCE, Vol. 107, No. EM3, June 1981, pp. 445-454.
16. "Cavitation Damage and the Tarbela Tunnel Collapse of 1974" (by M. J. Kenn and A. D. Garrod), Discussion by R. E. A. Arndt, *Proceedings, Inst. Civ. Engineers*, Part 1, November 1981, pp. 795-797.
17. "Fundamentals of Hydraulic Turbine Design," *Renewable Energy Review Journal*, Vol. 3, No. 2, December 1981.
18. "Jet Noise at Low Reynolds Number" (with D. Long), *AIAA Journal*, February 1984
19. "Pressure Spectra in Turbulent Free Shear Flows" (with William K. George and Paul D. Beuther), *Journal of Fluid Mechanics*, 1984.
20. "The Role of a Large Institute in Water Resources Engineering Education," *Journal of Civil Engineering for Practicing and Design Engineers*, Vol. 3, No. 9, August 1984.
21. "Controlled Suppression or Amplification of Turbulent Jet Noise" (with D. F. Long and H. Kim), *AIAA Journal*, May 1985.
22. "A Model for Predicting Tip Vortex Cavitation Characteristics," (with V. Arakeri and H. Higuchi), *Journal of Fluids Engineering*, June 1988.
23. "Cavitation Erosion in Hydroturbines," (with R. L. Voigt, Jr., J. Sinclair, P. Rodrigue, A. Ferreira), *Journal of Hydraulic Engineering*, ASCE, October, 1989.
24. "Characteristics of Tip Vortex Cavitation Noise," (with H. Higuchi), *Journal of Fluids Engineering*, December, 1989.
25. "Hydropower Research and Development in Minnesota," (with J. S. Gulliver), *Journal of Minnesota Academy of Sciences*, Vol. 55, No. 1, 1989

26. "Hydromechanical Considerations in the Design of the New Cavitation Research Facility at the Hamburg Ship Model Basin," *Schiffstechnik*, August 1990.
27. "Some Observations of Tip Vortex Cavitation," (with V. H. Arakeri and H. Higuchi), *Journal of Fluid Mechanics*, Vol. 229, August 1991, pp. 269-289.
28. "Submergence Factors for Hydraulic Turbines", and "Discussion of Gordon, J. L.", (1989), *Journal of Energy Engineering*, Vol. 115, No. 2, December, 1991.
29. "Water Quality Effects on Cavitation Inception in a Trailing Vortex", (with A. Keller), *Journal of Fluids Engineering*, Sept. 1992.
30. "Hydrodynamic Design Considerations for Hydroacoustic Facilities. I. Flow Quality" (with J. Wetzel), *Jour. Fluids Engineering*, Vol. 116, No. 2, June 1994.
31. "Hydrodynamic Design Consideration for Hydroacoustic Facilities.II. Pump Design Factors," *Ibid.*
32. "Prediction of Metal Losses by Cavitation Erosion of Hydraulic Turbines,"(with L. Anton), *Rev. Roum. Sci. Tech. - Mec. Appl.*, Tome 39, No. 4, Bucharest, 1994 pp. 321-335,
33. "Preliminary Investigation of the Use of Air Injection to Mitigate Cavitation Erosion," (with C. Ellis and S. Paul), *Jour. Fluids Engineering*, Vol. 117, , Sept. 1995, pp. 498-592
34. "Fluid Mechanical Considerations in the Design of an Improved Aerator" (with V. Ramanathan) *Jour. Fluids Engineering* , Vol. 118, No. 4, Dec. 1996, pp. 001-007
35. "The Use of Piezoelectric Film in Cavitation Research," (with C. Ellis and S. Paul) *Jour. Hydraulic Engineering* , Vol. 123 No. 6, June, 1997 pp 539-548
36. "The Case of the Singing Vortex" (with B. Maines) *Jour. Fluids Engineering*, Vol 119, No. 2, June, 1997 pp 271-276
37. "The Proper Orthogonal Decomposition of Pressure Fluctuations Surrounding a Turbulent Jet" (with D.F. Long and M.N. Glauser) *Journal of Fluid Mechanics*, Volume 340, June 1997, pages 1-33.
38. "Tip Vortex Formation and Cavitation"(with B. Maines), *Journal of Fluids Engineering*, Vol 119, No. 2, June, 1997 pp 413-419
39. "Spectral Characteristics of Sheet/ Cloud Cavitation" (with Morten Kjeldsen, and Mark Effertz), *Journal of Fluids Engineering*, Vol 122, No. 3, Sept. 2000 pp 481-487
40. "Nucleation and Bubble Dynamics in Vortical Flows" (with Brant Maines), *Journal of Fluids Engineering*, Vol 122, No. 3, Sept. 2000 pp 488-493
41. "Control of Cavitating Flows: A Perspective" (with Gary Balas and Martin Wosnik) *Japan Soc. Mech. Eng. Series B*, **48**, No.2, 2005 pp 334-341
42. Amromin, E. Kopriva, J., Arndt, R.E.A., "Hydrofoil Drag Reduction by Partial Cavitation", *J. Fluids Engineering*, **128**, No. 5 .Sept. 2006 pp 931-936
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13. "A Case Study of International Cooperation: 30 Years of Collaboration in Cavitation Research" (with AP Keller) Keynote Paper, *Proceedings of 4th ASME_JSME Joint Fluids Engineering Conference*, Honolulu, Hawaii, July 6-1-, 2003
14. "Control of Cavitating Flows; A Perspective" (with G. Balas and M. Wosnik) *Fourth International Symposium on Advanced Fluid Information and Transdisciplinary Fluid Integration* Sendai, Japan November 11 -12 2004
15. "Experimental and Numerical Investigation of Large Scale Structures in Cavitating Wakes" (with M. Wosnik and Q. Qin) AIAA Fluid Dynamics Conference, San Francisco, CA, June 3, 2006 AIAA Paper 2006-3046
16. "From Wageningen to Minnesota and Back: Perspectives on Cavitation Research" Keynote Lecture, *Proceedings Sixth International Symposium on Cavitation, CAV2006*, Wageningen, The Netherlands, September 2006
17. "The Role of the University in Hydropower Development" 1000MW Turbine and Fluid Dynamics, Royal Academy Project "Exchange with China", Warwick University, UK, July 11-12, 2008
18. "Some Perspectives on Cavitation Research" Keynote Lecture, *Proceedings of the 24th IAHR Symposium on Hydraulic Machinery and Systems*, Foz do Iguassu, Brazil, October 27-31, 2008
19. "Some Remarks on Hydrofoil Cavitation" WIMRC 3rd International Cavitation Forum 2011, Warwick University, UK, 4th-6th July 2011

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92. “Can Water Quality Affect the Lift Dynamics of Cavitating Hydrofoils?” (With **D. Kawakami** and Qiao Qin), Fifth International Symposium on Cavitation (CAV2003), Osaka, Japan, November 1-4, 2003
 93. “Experimental Study of a Ventilated Vehicle” (with M. Wosnik and T. Schauer), Fifth International Symposium on Cavitation (CAV2003), Osaka, Japan, November 1-4, 2003
 94. “A Numerical Study of a Unsteady Turbulent Wake Behind a Cavitating Hydrofoil” (with Qiao Qin and C.C.S. Song), Fifth International Symposium on Cavitation (CAV2003), Osaka, Japan, November 1-4, 2003
 95. “Incondensable Gas Effect on Turbulent Wake Behind a Cavitating Hydrofoil” (with Qiao Qin and C.C.S. Song), Fifth International Symposium on Cavitation (CAV2003), Osaka, Japan, November 1-4, 2003
 96. “A Virtual Single-Phase Natural Cavitation Model And its Application to Cav2003 Hydrofoil (with **Qiao Qin** and C.C.S. Song), Fifth International Symposium on Cavitation (CAV2003), Osaka, Japan, November 1-4, 2003
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114. Kjeldsen, M and Arndt, REA “On Similarities between flow systems operating at excessive gas load and at cavitation conditions: hydrofoil tests and CFD assessment”, ISROMAC12-2008-20115, The 12th International Symposium on Transport Phenomena and Dynamics of Rotating Machinery, Honolulu, Hawaii, February 17-22, 2008
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116. Arndt, REA, “Investigation of oscillatory cavitation on hydrofoils” Proceedings of the 24th IAHR Symposium on Hydraulic Machinery and Systems, Foz do Iguassu, Brazil, October 27-31, 2008
117. Kjeldsen, M and Arndt, REA, “Blade load dynamics in cavitating and two phase flow”, Proceedings of the 24th IAHR Symposium on Hydraulic Machinery and Systems, Foz do Iguassu, Brazil, October 27-31, 2008
118. Vanek, B, Balas, GJ and Arndt, REA “Linear Parameter Varying Control of a

Supercavitating Vehicle” The European Control Conference 2009, Budapest, Hungary, August 23-26, 2009

119. Williams, M, Kawakami, E, Amromin, E and Arndt, REA “Effects of surface characteristics on hydrofoil cavitation” Proceedings of the 7th International Symposium on Cavitation CAV2009 August 17-22, 2009, Ann Arbor, Michigan, USA
120. Kawakami, E, Williams, M, and Arndt, REA “Investigation of the behavior of ventilated supercavities” Proceedings of the 7th International Symposium on Cavitation CAV2009 August 17-22, 2009, Ann Arbor, Michigan, USA
121. Hjartarson, A, Mokhtarzadeh, H, Kawakami, E, Balas, G and Arndt, REA, “A dynamic test platform for evaluating control algorithms for a supercavitating vehicle” Proceedings of the 7th International Symposium on Cavitation CAV2009 August 17-22, 2009, Ann Arbor, Michigan, USA
122. Kjeldsen, M and Arndt, REA “Blade load dynamics in cavitating and two phase flows” Proceedings of the 7th International Symposium on Cavitation CAV2009 August 17-22, 2009, Ann Arbor, Michigan, USA
123. Wosnik, M and Arndt, REA “Control experiments with a semi-axisymmetric supercavity and a supercavity-piercing fin” Proceedings of the 7th International Symposium on Cavitation CAV2009 August 17-22, 2009, Ann Arbor, Michigan, USA
124. Wosnik, M and Arndt, REA “Further experimental investigation of a high Reynolds number bubbly wake” Proceedings of the 7th International Symposium on Cavitation CAV2009 August 17-22, 2009, Ann Arbor, Michigan, USA
125. Arndt, REA “Sheet/Cloud Cavitation Revisited” Proceedings The 13th International Symposium on Transport Phenomena and Dynamics of Rotating Machinery Honolulu, Hawaii, April 4-9, 2010
126. Kawakami, E and Arndt, REA “Investigation of the behavior of ventilated Supercavities” 8th Euromech Fluid Mechanics Conference, September 13-16, 2010, Bad Reichenhall, Germany Abstract Only
127. Chamorro, L, Arndt, REA and Sotiropoulis, F “On skin friction drag reduction in large wind turbines using sharp V-grooved riblets” Proceedings 49th AIAA Aerospace Sciences Meeting, Orlando, FL 1/04/2011 - 1/07/2011

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1. “Enclosed Rotating Disks with Superimposed Throughflow: A Survey of Basic Effects” (with J. Daily), Massachusetts Institute of Technology Hydrodynamics Laboratory Report No. 53, June 1962.
2. “Hydrodynamic Design of Cavity Running Underwater Missiles,” Allegheny Ballistics Laboratory, Report EPA/10, January 1963.
3. “Cavitation Near Rough Surfaces” (with A. T. Ippen), Massachusetts Institute of Technology Hydrodynamics Laboratory, Report No. 104, June 1967.
4. “Design of a Wide Angle Diffuser” (with A.W. Nilsen) Applied Research Laboratory, IM 672.2201-02 February, 1968

5. "Pressure Coefficient Correction for an 8-Inch diameter Body Tested in the Large Water Tunnel" (with R. Davis) Applied Research Laboratory TM 706.2491-21, June, 1968
6. "Cavitation Erosion on Surface Effects Ships: A Technical Review with Recommended Research Program" (with J. W. Morris), Bell Aerospace Company Report No. 9500-920188, June 1970.
7. "Cavitation Inception: The Influence of Roughness, Turbulence and Polymer Additives" Applied Research Laboratory TM 71-195 August, 1971
8. "New Observations of Tone Generation in Fans" Applied Research Laboratory IM 71-207 October, 1971
9. "A Preliminary Investigation of the Aeroacoustics of Jets Perturbed by Screens" Applied Research Laboratory IM 71-223 October, 1971
10. "Turbulence and Acoustic Characteristics of Screen Perturbed Jets" Applied Research Laboratory IM 72-166 August 1972
11. "Effect of Leading Edge Serrations on Noise Radiation From a Model Rotor" Applied Research Laboratory IM 72-167 August, 1972
12. "Investigation of Hub Vortex Cavitation" (with M.L. Billet, and J.W. Holl) Applied Research Laboratory IM 73-068 April, 1973
13. "Aeroacoustic Research in Wind Tunnels: A Status Report" (with J. E. Bender), NASA Contractor Report No. 114575, June 1973.
14. "State of the Art Review of Experimental Flow Noise Research: I Aeroacoustic Testing in Conventional Tunnels" Applied Research Laboratory IM 73-256 October, 1973
15. "Cavitation Scale Effects: A Review of the Problem with a Summary of Current Investigations at ARL and Recommendations for Future Research" (with J.W. Holl) Applied Research Laboratory TM 73286 December, 1973
16. "Hydrodynamic Design Considerations for Blunt Nosed Bodies" (with W.F. Shivitz) Applied Research Laboratory TM 74-014 January, 1974
17. "Investigation of the Large Scale Coherent Structure in a Jet and Its Relevance to Jet Noise" (with W.K. George) Applied Research Laboratory IM 74-121 May, 1974
18. "Preliminary Noise Measurements in the 48-Inch Wind Tunnel" (with G.C. Lauchle) Applied Research Laboratory IM 74-249 September, 1974
19. "Influence of Gas Content and Polyethylene Oxide Additive Upon Confined Jet Cavitation in Water" (with C.B. Baker and J.W. Holl) Applied Research Laboratory TM 75-274 November, 1975
20. "A Note on the Inhibition of Cavitation in Dilute Polymer Solutions" (with M.L. Billet, J.W. Holl and C.B. Baker) Applied Research Laboratory TM 75-285 November, 1975
21. "Turbulent Pressure Spectra" (with W.K. George and P.D. Beuther) Applied Research Laboratory TM 76-310 December, 1976

22. "On the Acoustic Field Generated by Subsonic Jets at Low Reynolds Numbers" (with K. Yamamoto), St. Anthony Falls Hydraulic Laboratory Project Report No. 170, University of Minnesota, 1978.
23. "Preliminary Analysis of Hydropower Production Feasibility at Twenty-One Existing Dam Sites in the State of Minnesota" (with J. Gulliver, R. J. Garver, and C. E. Bowers), St. Anthony Falls Hydraulic Laboratory Project Report No. 196, University of Minnesota, 1980.
24. "Cooperative Investigation of Jet Flows" (with D. F. Long), St. Anthony Falls Hydraulic Laboratory Project Report No. 228, University of Minnesota, 1984.
25. "Phase A-2, Large Cavitation Channel" (with J. M. Wetzel, D. W. Bintz, T. Morel, C. S. Song, S. Gavali, and J. M. Killen), St. Anthony Falls Hydraulic Laboratory, Project Report No. 229, University of Minnesota, 1983.
26. "Extended Phase A-2, Large Cavitation Channel, David Taylor Naval Ship Research and Development Center" (with Charles C. S. Song, E. Silberman, J. M. Killen, J. M. Wetzel, and M. Yuan), St. Anthony Falls Hydraulic Laboratory Project Report No. 230, University of Minnesota, August 1984.
27. "Assessment of Design Considerations and Field Repair Procedures to Mitigate Cavitation Pitting in Hydraulic Turbines" (with R. Voigt, Jr.), for Electric Power Research Institute, St. Anthony Falls Hydraulic Laboratory Project Report No. 234, University of Minnesota, December 1984.
28. "Analysis of a Hydroacoustic Gravity Flow Facility, David Taylor Naval Ship Research and Development Center" (with J. M. Wetzel, D. W. Bintz, and J. F. Ripken), St. Anthony Falls Hydraulic Laboratory Project Report No. 236, University of Minnesota, September 1984.
29. "The Role of 'Nuclei' in Tip Vortex Cavitation Inception" (with V.H. Arakeri), for David W. Taylor Naval Ship Research and Development Center, St. Anthony Falls Hydraulic Laboratory, Project Report No. 248, University of Minnesota, August 1986
30. "Romanian Workshop on Water Resources Engineering," Vols. I and II. For National Science Foundation, St. Anthony Falls Hydraulic Laboratory, Project Report No. 258, University of Minnesota, May 1987.
31. "Research Program in Hydroacoustics" (with H. Higuchi, M. Kaveh, R. Lambert and R. Plunkett), St. Anthony Falls Hydraulic Laboratory Project Report No. 254, University of Minnesota, April 1987.
32. "An Experimental Investigation of the Influence of Air Bubbles on the Acoustic Radiation Efficiency of Turbulent Shear Flow," St. Anthony Falls Hydraulic Laboratory Project Report No. 256, University of Minnesota, April 1987.
33. "Hydrodynamic Analysis of the HYKAT," (with C. C. S. Song, J. M. Wetzel, M. Yuan and J. Killen), for Hamburgische Schiffbau-Versuchsanstalt, Hamburg, West Germany, St. Anthony Falls Hydraulic Laboratory Project Report No. 261, University of Minnesota, June 1987.
34. "Noise Generation by Air Bubbles in Water: An Experimental Study of Creation

and Splitting" (with K.W. Frizell), for DTNSRDC, St. Anthony Falls Hydraulic Laboratory Project Report No. 269, University of Minnesota, December 1987.

35. "Physical and Mathematical Modeling of the HYKAT," (with C. C. S. Song, J. M. Wetzell, J. M. Killen), for Hamburgische Schiffbau-Versuchsanstalt, Hamburg, West Germany, St. Anthony Falls Hydraulic Laboratory Project Report No. 282, University of Minnesota, December 1988.
36. "The St. Anthony Falls Independent Turbine Test Facility", (with C. Olivier, R. Voigt, Jr., V. Ramanathan, and J. Gulliver), for US Department of Energy, Idaho Falls, St. Anthony Falls Hydraulic Laboratory Project Report No. 288, University of Minnesota, June 1989.
37. "Investigation of the Use of Air Injection to Mitigate Cavitation Erosion" (with S. Paul and C. Ellis), for Pacific Gas and Electric Company, St. Anthony Falls Hydraulic Laboratory Project Report No. 343, University of Minnesota, 1993.
38. "Experimental Development of a Novel Aeration Device," (with V. Ramanathan), for LCMR, State of Minnesota, St. Anthony Falls Hydraulic Laboratory Project Report No. 350, University of Minnesota, April 1994.
39. "Development of an Efficient Aeration System for Aquaculture" (with R. Farmer) prepared for the Minnesota Department of Agriculture, St. Anthony Falls Hydraulic Laboratory Project Report No. 373, University of Minnesota, June 1995

Lectures and Presentations

1. "Flow Induced by an Enclosed Rotating Disk," Hydrodynamics Laboratory Seminar, Massachusetts Institute of Technology, October 1961.
2. "Some Problems in Hydroballistics," Seminar, Allegheny Ballistics Laboratory, March 1963.
3. "Cavitation Near Surfaces of Distributed Roughness," Fluid Mechanics Seminar, The Pennsylvania State University, January 13, 1967.
4. "Cavitation Near Surfaces of Distributed Roughness," Hydrodynamics Laboratory Seminar, Massachusetts Institute of Technology, May 1967.
5. "Rough Surface Effects on Cavitation Inception," American Society of Mechanical Engineers, Philadelphia, Pennsylvania, May 1968.
6. "Cavitation in Turbulent Shear Flows with Particular Emphasis on the Boundary Layer," Lorenz G. Straub Award Lecture, Minneapolis, Minnesota, January 1969.
7. "Cavitation in Turbulent Boundary Layers," Symposium on Cavitation State of Knowledge, American Society of Mechanical Engineers, Evanston, Illinois, June 15, 1969.
8. "Some Aspects of Rotor Noise," Lecture to Joint NASA-ASEE Summer Faculty Program, Stanford, California, August 1969, also NASA-Ames, August 1969.
9. "Helicopter Rotor Noise," Engineering Acoustics Seminar, The Pennsylvania State

University, January 22, 1970.

10. "Noise Radiation from Helicopter Rotors Operating at High Tip Mach Number," Annual National Forum of the American Helicopter Society, Washington, DC, June 1970.
11. "On the Measurement of Fluctuating Pressure in the Mixing Zone of a Round Jet," ASME/ISA Symposium on Flow Measurement, Pittsburgh, Pennsylvania, May 1971.
12. "Cavitation Inception: The Influence of Roughness, Turbulence and Polymer Additives," State of the Art Lecture, 16th ATTC Conference, Sao Paulo, Brazil, August 1971.
13. "A Preliminary Investigation of the Aeroacoustics of Jets Perturbed by Screens," Annual Meeting Acoustical Society of America, Denver, Colorado, October 1971.
14. "Further Studies of the Aeroacoustics of Jets Perturbed by Screens," presented at the Acoustical Society of America meeting, Buffalo, New York, April 1972.
15. "Rotor Noise Attenuation with Leading Edge Devices," presented at the Acoustical Society of America meeting, Buffalo, New York, April 1972.
16. "Turbulence and Acoustic Characteristics of Screen Perturbed Jets," presented at the AIAA 5th Annual Fluid and Plasma Dynamics Conference, Boston, Massachusetts, June 1972.
17. "Effect of Leading Edge Serrations on Noise Radiation from a Model Rotor," presented at the AIAA 5th Fluid and Plasma Dynamics Conference, Boston, Massachusetts, June 1972.
18. "Limited Cavitation on Surface Irregularities," 6th IAHR Symposium, Rome, Italy, September 25-27, 1972.
19. "A State of the Art Report on Aeroacoustic Testing in Conventional Wind Tunnels," 84th Meeting, Acoustical Society of America, Miami, Florida, November 28 - December 1, 1972.
20. "Near Field Pressure in Perturbed and Unperturbed Turbulent Jets," 84th Meeting Acoustical Society of America, Miami, Florida, November 28 - December 1, 1972.
21. "Recent Cavitation Research at the Pennsylvania State University," NSMB Research Seminar (Netherlands Ship Model Basin), Wageningen, Holland, November 20, 1973.
22. "Trends in Aerodynamic Noise Research at the Pennsylvania State University," Research Seminar, Deutsche Forschungs and Versuchsanstalt Fur Luft-und Raumfahrt, Berlin, West Germany, November 23, 1973.
23. "Sound Radiation from Perturbed Flows," Research Seminar, Ecole Central de Lyon Laboratoire de Mechanique des Fluides, Lyon, France, December 3, 1973.
24. "Aerodynamic Noise Research: Past Accomplishments and Future Work," Environmental Engineering Seminar, Florida State University, March 8, 1974.
25. "A Review of Aerodynamic Noise Research with an Emphasis on Future Goals," Seminar, Central Pennsylvania Chapter, AIAA State College, Pennsylvania, May 2,

1974.

26. "Coherent Structure in Turbulence and Noise," Presentation to Noise Specialists Conference, NASA-Lewis Research Center, "Cleveland, Ohio, May 7, 1974.
27. Recent Progress in Aerodynamic Noise Research," Applied Research Laboratory, Technical Seminar, University Park, Pennsylvania, May 20, 1974.
28. "Investigation of Large Scale Coherent Structure and its Relevance to Jet Noise," Presentation to Second Interagency Symposium on University Research in Transportation Noise, Raleigh, North Carolina, June 1974.
29. "Cavitation Research at the Garfield Thomas Water Tunnel," Presentation given by Dr. J. William Holl at Cavitation Conference, Institute of Mechanical Engineers, Edinburgh, Scotland, September 1974 (co-authored by J. W. Holl, R. E. A. Arndt, M. L. Billet, and C. B. Baker).
30. "Pressure Fields and Cavitation," Presentation at International Association for Hydraulic Research Symposium, Vienna, Austria, September 30, 1974.
31. "Cavitation Inception and How It Scales: A Review of the Problem with a Summary of Recent Research," Presentation at Symposium on High Powered Propulsion of Large Ships, Wageningen, the Netherlands, December 13, 1974.
32. "The Mechanics of Cavitation Inception: A Review of the Problem with a Synopsis of Recent Research," Lecture to ENEL, Rome, Italy, February 28, 1975.
33. "Recent Advances in Cavitation Research," Lecture to Admiralty Experiment Works, Gosport, England, April 2, 1975.
34. "Some Remarks on Cavitation Inception", Lecture at the Technical University, Berlin, Germany, June 18, 1975.
35. "Exploratory Investigation of Cavitation Noise," Ninetieth Meeting Acoustical Society of America, San Francisco, November 4, 1975.
36. "Experimental Evaluation of Source Coherency in Perturbed Jets," Third Interagency Symposium on University Research in Transportation Noise, Salt Lake City, Utah, November 13, 1975.
37. "Free Gas Content Effects on Cavitation Noise," Third Interagency Symposium on University Research in Transportation Noise, Salt Lake City, Utah, November 13, 1975.
38. "Recent Advances in Cavitation Research," Invited Seminar, St. Anthony Falls Hydraulic Laboratory, January 30, 1976.
39. "Accomplishments and Future Goals in Aeroacoustics," Seminar, State University of New York - Buffalo, February 12, 1976.
40. "Special Problems in Flow Noise," Seminar, State University of New York - Buffalo, February 13, 1976.
41. "A Survey of Cavitation Research at the Pennsylvania State University," Hydromechanics Colloquium, David Taylor Naval Ship Research and Development Center, February 17, 1976.

42. "A Note on the Inhibition of Cavitation in Dilute Polymer Solutions," Presentation at 21st Annual Gas Turbine and Fluids Engineering Conference, ASME, New Orleans, Louisiana, March 1976 (paper co-authored by Roger E. A. Arndt, M. L. Billet, J. W. Holl, and C. B. Baker).
43. "The Influence of Gas Content and Polyethylene Oxide Additive upon Confined Jet Cavitation," Presentation at 21st Annual Gas Turbine and Fluids Engineering Conference, ASME, New Orleans, Louisiana, March 1976 (paper co-authored by Roger E. A. Arndt, C. B. Baker, and J. W. Holl).
44. "Cavitation on Model Propellers with Boundary Layer Trips," Presentation at 21st Annual Gas Turbine and Fluids Engineering Conference, ASME, New Orleans, Louisiana, March 1976.
45. "Free Gas Content Effects on Cavitation Inception and Noise in a Free Shear Flow," Symposium Grenoble - Two Phase Flow and Cavitation in Power Generation Systems, International Association for Hydraulic Research, Grenoble, France, March 30 - April 2, 1976.
46. "Cavitation and How It Scales," Invited Lecture to the Marine Systems Division, Boeing Company, Seattle, Washington, April 23, 1976.
47. "Large Eddy Structure and Jet Noise," NASA Lewis Research Center Noise Workshop, Cleveland, Ohio, May 18-19, 1976.
48. "Noise and the Aerospace Engineer: An Educational Challenge," Presentation at Session on Acoustics Instrumentation, American Society of Engineering Education 84th Annual Conference, University of Tennessee, Knoxville, Tennessee, June 14-17, 1976.
49. "Noise and the Aerospace Engineer: An Educational Challenge," Acoustics Seminar, The Pennsylvania State University, September 16, 1976.
50. "Excess Fan Noise at Moderate Reynolds Number," Invited Lecture at General Motors Technical Center, October 19, 1976.
51. "Cavitation and Erosion: An Overview," Corrosion/77, National Association Corrosion Engineering, San Francisco, March 16, 1977.
52. "A Preliminary Look at Low Reynolds Number Jet Noise," NASA Langley Workshop on Coherent Structure and Noise, Hampton, Virginia, March 29, 1977.
53. "Recent Research in Cavitation," Chemical Engineering Seminar, University of Minnesota, Minneapolis, Minnesota, April 5, 1977.
54. "Future Trends in Cavitation Research," Seminar, National Research Council, Ottawa, Canada, May 17, 1977.
55. "Fluid Mechanics Research in 1986: What Will the Problem Be?" Panel Discussion, Second Annual American Society of Civil Engineers, Engineering Mechanics Division Specialty Conference, Raleigh, North Carolina, May 24, 1977.
56. "Gas Transport Effects on Cavitation Noise in Turbulent Shear Flows," 93rd Meeting, Acoustical Society of America, State College, Pennsylvania, June 1977.

57. "A Survey of Cavitation Research: Recent Advances and Future Challenges," Seminar, University of Illinois, December 5, 1977.
58. "An Overview of Cavitation Research," Aerospace Engineering Colloquium, University of Minnesota, December 9, 1977.
59. "Cavitation Research and Its Application in Marine Engineering," Society of Naval Architects and Marine Engineers, Philadelphia, Pennsylvania, December 1977.
60. "Pressure Fields and Cavitation in Turbulent Shear Flows," Twelfth Symposium on Naval Hydromechanics, Washington, DC, June 8, 1978.
61. "Investigation of the Effects of Dissolved Gas and Free Nuclei on Cavitation and Noise in the Wake of a Sharp Edged Disk," Joint Symposium on Design and Operation of Fluid Machinery, June 14, 1978.
62. "Man and His Acoustic Environment," First Theodor Ranov Lecture, Buffalo, New York, July 18, 1978.
63. "Special Aspects of Flow Noise," Second Theodor Ranov Lecture, Buffalo, New York, July 25, 1978.
64. "Jet Noise," Third Theodor Ranov Lecture, Buffalo, New York, August 1, 1978.
65. "Viscous Effects on Cavitation Inception," Concordia University, Montreal, Quebec, Canada, June 15, 1979.
66. "Cavitation Research in Hydraulic Engineering," Bureau of Reclamation - Hydraulics Division, Denver, Colorado, July 9, 1979.
67. "A Survey of Recent Hydromechanics Research in Europe," American Water Resources Association, University of Minnesota Chapter, Seminar, Minneapolis, Minnesota, February 23, 1979.
68. "Influence on Polymer Additives on Cavitation in Jets," Presentation to 1980 Cavitation and Polyphase Flow Forum, March 1980.
69. "Cavitation Erosion," (written version authored by V. Hackworth), presented at 19th ATTC, Ann Arbor, Michigan, July 9-11, 1980.
70. "Unsteady Cavitation," (with Frank Peterson) presented at 19th ATTC, Ann Arbor, Michigan, July 9-11, 1980.
71. "Small Turbine Technology: A Selective Review," INE/NRECA, Small/Mini Hydropower Workshop, Quito, Ecuador, August 19-21, 1980.
72. "What Do We Measure? And Why?" Fluid Mechanics Short Course, September 1980.
73. "Hydropower Potential in Minnesota - A Resource Assessment," Presentation to Legislative Committee on Minnesota Resources, September 1980.
74. "Pressure Spectra in Turbulent Shear Flow," Presented at AIAA Aeroacoustics Conference, Hartford, Connecticut, June 1980.
75. Series of invited lectures on cavitation to the Water Conservancy Hydroelectric

- Power Scientific Research Institute, Academia Sinica, Ministry of Water Conservancy and Electric Power, Beijing, China, September 29 - October 6, 1980.
76. "Viscous Effects on Cavitation Inception," China Scientific Ship Research Center, Wuxi, China, October 4, 1980.
 77. "Hydraulic Engineering Research at the St. Anthony Falls Hydraulic Laboratory," Ministry of Water Conservancy and Electric Power, Zhangzhou, China, October 8, 1980.
 78. "A Comparison of Hydropower Development in Undeveloped Nations and in the United States," Special Lecture, American Society of Mechanical Engineers Symposium on Small Hydropower, Chicago, Illinois, November 17, 1980.
 79. "Small Scale Hydropower Technology," Presentation to Mid-American Solar Energy Complex Workshop, January 1981.
 80. "Development of Small Scale Hydropower in Minnesota," Minnesota Energy Agency Workshop on Hydropower, January 1981.
 81. "Minihydropower Turbine Design," Presented at Small Hydropower for Asian Rural Development Conference, Bangkok, Thailand, June 1981.
 82. "A Brief Survey of Polymer Effects on Cavitation Noise" (with C. B. Baker and J. W. Hoyt), Presented at Cavitation and Polyphase Flow Forum, ASME/ASCE Mechanics Conference, Boulder, Colorado, June 22-24, 1981.
 83. "An Assessment of the State of the Art of Hydropower Technology," Presented at Engineering Foundation Conference on Small Hydroelectric Development, Henniker, New Hampshire, July 1981.
 84. "Hydropower Research at the St. Anthony Falls Hydraulic Laboratory," Presentation to Minnesota Municipal Utilities Association, Minneapolis, Minnesota, October 1981.
 85. "Jet Noise at Low Reynolds Numbers," Presentation at AIAA 7th Aeroacoustics Conference, Palo Alto, California, October 5-7, 1981.
 86. "Coherent Structure and Noise," Aerospace Engineering and Mechanics Colloquium, University of Minnesota, February 12, 1982.
 87. "The Role of a Large Research Institute in Water Resources Engineering Education," presented at the International Conference on Civil Engineering Education and Research for Practice in the 21st Century, The State University of New Jersey - Rutgers, May 19-20, 1982.
 88. "Hydropower Research at the University of Minnesota," American Society of Mechanical Engineers, Symposium on Small Hydropower Fluid Machinery, Phoenix, Arizona, November, 1982.
 89. "Experimental Investigation of the Influence of an Air Bubble Layer on Radiated Noise and Surface Pressure Fluctuations in a Turbulent Boundary Layer," ASME, International Symposium on Cavitation Noise, Phoenix, Arizona, November 1982 (written paper by John Killen).

90. "The Relevance of Aeroacoustic Research at a Hydraulic Laboratory," University of Minnesota, St. Anthony Falls Hydraulic Laboratory, Seminar Series, November 11, 1982.
91. "Cavitation in Turbulent Shear Flow," University of Minnesota, St. Anthony Falls Hydraulic Laboratory, Seminar Series, March 3, 1983.
92. "Aeroacoustics Research: Past and Present," Invited Lecture, Fluid Mechanics Division Annual Meeting, American Physical Society, November 1983.
93. "Recent Activities in Hydropower Research and Development at the St. Anthony Falls Hydraulic Laboratory," Presentation at Minnesota Utilities Association, Brainerd, Minnesota, June 1983.
94. "Noise Enhancement/Suppression from Acoustically Excited Jets," ASCE/EMD Specialty Conference, Purdue University, West Lafayette, Indiana, May 23-25, 1983.
95. "Cavitation in Turbulent Shear Flows: An Overview," American Society of Civil Engineers Hydraulics Division Specialty Conference, Massachusetts Institute of Technology, Cambridge, Massachusetts, August 9-12, 1983.
96. "Hydropower Potential in the State of Minnesota," Minnesota Department of Natural Resources Seminar in Water Resources Development, September 1983.
97. "Theoretical Investigation of Cavitation Noise Emitted from Turbulent Jets," American Society of Mechanical Engineers, Cavitation and Multiphase Flow Forum, New Orleans, Louisiana, February 1984.
98. "The Hydroacoustic Program at the St. Anthony Falls Hydraulic Laboratory," University of Minnesota, St. Anthony Falls Hydraulic Laboratory, Seminar Series, March 1, 1984.
99. "Hydroacoustic Research at the University of Minnesota," Invited Lecture, Acoustical Society of America, Minneapolis, Minnesota, April 17, 1984.
100. "Hydropower Development in Minnesota," Presentation to the Governor's Conference on Alternate Energy, Minneapolis, Minnesota, June 19, 1984.
101. "Cavitation Research at the St. Anthony Falls Hydraulic Laboratory," Presentation to the Hydraulic Engineering Research Institute (ICH), Bucharest, Romania, July 27, 1984.
102. "Cavitation Research and Its Relevance in the Practice of Hydraulic Engineering," Invited Lecture, 5th ASCE-EMD Specialty Conference, Laramie, Wyoming, August 1-3, 1984.
103. "Cavitation in Various Types of Shear Flow," ASCE, Hydraulics Division Specialty Conference, Coeur d'Alene, Idaho, August 14-17, 1984.
104. "Cavitating Jets and Related Topics," Invited Lecture, Hydrosystems Graduate Seminar Series, University of Illinois, Urbana, Illinois, October 17, 1984.
105. "Hydroturbine Research," Lecture to American Society of Mechanical Engineers, Symposium on Small Scale Hydropower Systems, New Orleans, Louisiana, December 1984.

106. "Cavitation in Vortical Motion," University of Minnesota, St. Anthony Falls Hydraulic Laboratory, Seminar Series, November 1, 1984.
107. Series of lectures on cavitation to Central Water and Power Research Station, Pune, India, January 7, 1985 - January 26, 1985.
108. "Experimental Research and Hydraulic Engineering," Central Water and Power Research Station, Pune, India, January 25, 1985.
109. "Hydroturbine Research," Central Water and Power Research Station, Pune, India, January 26, 1985.
110. "The Hydraulic Laboratory: An Effective Tool in Water Resources Engineering," ASCE Water Resources Engineering Technical Group, Orlando, Florida, March 1985.
111. "Hydromechanics of Variable-Speed Turbines" (with C. Farell and J. Gulliver), American Power Conference, Chicago, Illinois, April 1985.
112. "Cavitation Research at the St. Anthony Falls Hydraulic Laboratory," Henkel Corporation Seminar, Minneapolis, Minnesota, May 1985.
113. "Utility Survey of Cavitation Erosion in Hydraulic Turbines," ASME, International Symposium on Cavitation in Hydraulic Structures and Turbomachinery, Albuquerque, New Mexico, June 1985.
114. "Cavitation in Various Types of Shear Flow," ASME, International Symposium on Cavitation in Hydraulic Structures and Turbomachinery, Albuquerque, New Mexico, June 1985.
115. "Tip Vortex Cavitation," ASME, Cavitation and Multiphase Flow Forum, Albuquerque, New Mexico, June 1985.
116. "Cavitation Research: Synopsis and Perspective," Invited Lecture, Megatrends in Hydraulic Research for the Future, Fort Collins, Colorado, July 1985.
117. "Cavitation in Hydraulic Structures," 21st IAHR Congress, Hydraulic Structures Seminar, Melbourne, Australia, August 1985.
118. "A New Independent Turbine Test Facility" (with J. Wetzel), 48th Annual American Power Conference, Chicago, Illinois, April 1986.
119. "Tip Vortex Cavitation," International Symposium on Propeller and Cavitation, Wuxi, China, April 1986.
120. "Cavitation Research at the St. Anthony Falls Hydraulic Laboratory," Invited Lecture to Faculty and Students of the Institute of High Speed Mechanics, Sendai, Japan, April 1986.
121. "Special Comments on a Recent Symposium on Cavitation Held in China," American Society of Mechanical Engineers Cavitation and Multiphase Flows in Fluid Machinery, Atlanta, Georgia, May 1986.
122. "Cavitation Research in Hydraulic Engineering," NSF Romanian-US. Workshop in Hydraulic Engineering Research, Bucharest, Romania, July 1986.

123. "Cavitation," Lecture to 12th Latin American Hydraulics Congress of the IAHR Short Course, Sao Paulo, Brazil, August 1986.
124. "Small Hydropower Development in the United States: The University Perspective," Invited Lecture 12th Latin American Hydraulics Congress of the IAHR, Sao Paulo, Brazil, September 1986.
125. "Viscous Effects on Tip Vortex Roll-Up and Cavitation," American Physical Society, Columbus, Ohio, November 1986.
126. "The Role of a Hydraulic Laboratory in Consulting Engineering Practice," Special Meeting of Consulting Engineers, San Francisco, California, December 1986.
127. "Cavitation Research: A Hydraulic Engineer's Perspective," Invited Lecture, University of Iowa, May 11, 1987.
128. "R&D Aspects of Model Testing," Hydroelectric Turbine Testing Workshop/Seminar, Electric Power Research Institute, York, Pennsylvania, June 16-19, 1987.
129. "R&D Aspects of Model Testing," Hydroelectric Turbine Testing Workshop/Seminar, Electric Power Research Institute, Bonneville Power Administration, Portland, Oregon, June 23-26, 1987.
130. "Characteristics of Bubble Splitting Noise" (with W. K. Frizell and J. Cheng), 1987 Cavitation and Multiphase Flow Forum.
131. "Field Observations of Cavitation Erosion in Hydraulic Turbines" (with J. Sinclair), ASCE Waterpower '87, Portland, Oregon, August 19-21, 1987.
132. "Independent Turbine Testing and Research" (with R. Voigt, J. Gulliver, and J. Wetzel), ASCE Waterpower '87, Portland, Oregon, August 19-21, 1987.
133. "Cavitation Research: A Hydraulic Engineers Perspective or 'Bubble, Bubble, Toil and Trouble,'" Invited Lecture, St. Anthony Falls Hydraulic Laboratory Colloquium, November 5, 1987.
134. "Cavitation Research: A Hydraulic Engineers Perspective or 'Bubble, Bubble, Toil and Trouble,'" Invited Lecture, Concordia University, Montreal, Quebec, December 18, 1987.
135. "Role of Engineering in Developing Minnesota's Water Resources," Minnesota Water: 1988, St. Paul, Minnesota, February 15, 1988.
136. "Turbine Hydromechanics and Cavitation in Hydraulic Turbines," Lecture at Short Course, Small Hydro for Developing Countries, Small Hydro '88, Toronto, Ontario, Canada, July 5, 1988.
137. "50 Years of Research at the Saint Anthony Falls Hydraulic Laboratory," 50th Anniversary Lecture, September 1988.
138. Lectures on Experimental Methods, Turbine Testing and Cavitation, Central Water Power and Irrigation Research Station, Pune, India, October 1988.
139. Lecture on "Cavitation in Turbines," to Staff of Bharat Heavy Electricals, Ltd., Bhopal, India, October 1988.

140. Lectures on St. Anthony Falls Hydraulic Laboratory Research Activities and Cavitation at the Dalian Institute of Technology, Dalian, China, November 1988.
141. "Research Activities at St. Anthony Falls Hydraulic Laboratory and a Summary of Recent Trends in Cavitation Research," Dalian Institute of Technology, Dalian, China, November 1988.
142. "Research Activities at St. Anthony Falls Hydraulic Laboratory and a Summary of Recent Trends in Cavitation Research," presentation to Systems Engineering Institute, Beijing, China, November 1988.
143. "Recent Research at the St. Anthony Falls Hydraulic Laboratory," presentation to the Institute of High Speed Mechanics, Sendai, Japan, November 1988.
144. "Cavitation Research in Hydraulic Engineering," presentation to the Institute of High Speed Mechanics, Sendai, Japan, November 1988.
145. "Recent Results of Cavitation Research," Lecture to Staff of Hydroturbine Division of Hitachi Corporation, Hitachi City, Japan, December 1988.
146. "A Hydraulic Engineer's Perspective of Cavitation Research," University of Tokyo, Tokyo, Japan, December 1988.
147. "The Structure of Tip Vortices Over a Range of Cavitation Number," 22nd American Towing Tank Conference, St. Johns, Newfoundland, August 1989.
148. "Characteristics of the Independent Turbine Testing Facility," ASCE Waterpower '89, Niagara Falls, NY, August 1989.
149. "Cavitation Research and Its Relevance to Practical Problems," Institute for Turbulence Research, Technical University of Berlin, Berlin, West Germany, January 1990.
150. "Vortex Cavitation Research and Its Applications," Institute fur Schiffbau, Hamburg, West Germany, January 1990.
151. "The Role of a Large University Research Laboratory in the Practice of Hydraulic Engineering," Seminar, University of Bristol, Bristol, UK, April, 1990.
152. "Recent Vortex Cavitation Research," Maritime Research Institute Netherlands, Wageningen, The Netherlands, April 1990.
153. "Recent Investigations of Tip Vortex Cavitation," Fraunhofer-Forschungsgruppe fur Hydroakustik, Ottobrunn, Germany, May 1990.
154. "Hydrodynamic Considerations in the Design of HYKAT," Symposium on Propellers and Cavitation, Schiffbaugesellschaft e.v., Hamburg, Federal Republic of Germany, June 1990.
155. "An Overview of Cavitation Research and its Application in Hydraulics and Hydraulic Machinery," Lehrstuhl fur Stromungsmechanik, Technische Universitat Munchen, Munich, Germany, June 1990.
156. "Recent Cavitation Research and its Application in Engineering Practice," Invited Lecture to the Faculty of Engineering, Timisoara, Romania, September

- 1990.
157. "Cavitation-Free Pumps for Very Large Hydroacoustic Test Facilities," IAHR Symposium on Modern Technology for Hydraulic Energy Production, Belgrade, Yugoslavia, September 1990.
 158. "Cavitation Research Bavarian Style," St. Anthony Falls Hydraulic Laboratory Colloquium, October 11, 1990.
 159. "The Role of University Research in Improved Hydropower Generation," International Joint Power Generation Conference, Boston, MA, October 23, 1990.
 160. "Hydraulic Research for Improved Hydropower Generation," Presentation to Minnesota-Wisconsin Power Suppliers, Minneapolis, Minnesota, November 15, 1990.
 161. "Tip Vortex Cavitation in Water of Variable Strength," 43rd Annual Meeting, Division of Fluid Dynamics, American Physical Society, Ithaca, NY, November 18, 1990.
 162. "Research at the St. Anthony Falls Hydraulic Laboratory," Seminar, Georgia Institute of Technology, Atlanta, Georgia, March 1991.
 163. "Recent Advances in Cavitation Research," Seminar, University of Utah, April 1991.
 164. "Water Quality Effects on Cavitation Inception in a Trailing Vortex," Cavitation '91, Portland, Oregon, June 1991.
 165. "Hydropower Research: The University Perspective," ASCE Waterpower '91, July 1991.
 166. "Hydraulic Turbines," and "Introduction to Hydropower," Lectures at Hydro: New Knowledge for Power, Denver, Colorado, August 1991.
 167. "Effect of Cavitation on Hydroturbine Performance and Erosion and its Economic Impact," Laboratory for Research and Industrial Testing, Bilboa, Spain, September 1991.
 168. "Hydraulic Vibration and Stability of a Powerplant," by Stanislov Pejovic, Presented at the International Joint Power Generation Conference, San Diego, CA, October 1991.
 169. "Cavitation in Vortex Flow," Dept. of Mechanical Engineering Seminar, University of Minnesota, October, 1991.
 170. "Hydropower Research and Development in Minnesota," Minnesota Chapter, America's Society of Professional Engineers, October, 1991.
 171. "Scale Effects of Buoyancy Driven Air-Water Flow Through Vertical Tubes," 44th Annual Meeting, Division of Fluid Dynamics, American Physical Society, Phoenix, AZ, November, 1991.
 172. "Hydrodynamic Design Considerations for Hydroacoustic Facilities," ASME Winter Annual Meeting, Atlanta, GA, December 1991.

173. "Recent Advances in Tip Vortex Cavitation Research", International Symposium on Propulsors and Cavitation, Hamburg, Germany, June 1992.
174. "Interfacial Transport in River-Reservoir Systems", Invited Lecture, ASME Winter Annual Meeting, Anaheim California, November 1992.
175. "Cavitation in a Trailing Vortex", 45th Annual Meeting, American Physical Society, November 1992.
176. "An Investigation of the Use of Air Injection to Mitigate Cavitation Erosion in Hydraulic Turbines," invited lecture, Nat'l. Hydropower Assoc. Meeting, Washington, DC, April 1993.
177. "Cavitation in Liquids, or: Bubble, Bubble, Toil and Trouble," President's Address, National Sigma Xi meeting, Minneapolis, MN, May 1992.
178. "Hydraulic Turbines" and "Introduction to Hydrogeneration", lectures at Hydro: New Knowledge for Power, Nashville, TN, August 1993.
179. "Cavitation in Vortical Flows," invited lecture at Commemoration of 50th Anniversary of the 50th Anniversary of the Institute of Fluid Science, Sendai, Japan, November 1993.
180. "Preliminary Investigation of the Use of Air Injection to Mitigate Cavitation Erosion," Symposium on Bubble Noise and Cavitation Erosion in Fluid Systems, ASME WAM, New Orleans, LA, November 1993.
181. "Modulation Noise of Cavitating Hydrofoils," *ibid.*
182. "Viscous Effects on Tip Vortex Cavitation," Symposium on Cavitation Inception, ASME WAM, 4th Int'l. Symp. on Cavitation Inception, ASME WAM, New Orleans, LA, November 1993.
183. "Further Studies of Tip Vortex Cavitation," Second Int'l. Symp. on Cavitation, Tokyo, April 1994.
184. "Viscous Effects in Tip Vortex Cavitation and Nucleation," Twentieth Symposium on Naval Hydrodynamics, Santa Barbara, CA, August 1994.
185. "Cavitation in Vortical Flows" National Science Foundation, Arlington, VA April, 1995
186. "The Case of the Singing Vortex" ASME Cavitation and Multiphase Flow Forum, Hilton Head, SC, August, 1995
187. "Vortex Cavitation" Mechanical Engineering Seminar, University of Maryland, March, 1996
188. "Some Observations of Vortex Cavitation" Mechanical Engineering Seminar, Johns Hopkins University, April, 1996
189. "Cavitating Vortices" Fluid Mechanics Seminar, Virginia Polytechnic Institute, Blacksburg, VA October, 1996
190. "Preliminary Thoughts and Observations on Sheet Cavitation" ONR Bubbly Flows Workshop, San Diego, February, 1997

191. "Cavitating Vortices" Seminar, Levich Institute, City College of New York, New York City, NY, March, 1997
192. "The Case of the Singing Vortex" 1000 Islands US-Canadian Fluid Mechanics Meeting, Gananoque, Ontario, April, 1997
193. "Reynolds Scaling of Cavitation" ONR Workshop on Needs for High Reynolds Number Facilities to Design the Next Generation of Sea and Air Vehicles, June 1998
194. "Fluid Mechanics Research: The NSF Perspective" Seminar, MIT, Cambridge, MA, Jan. 1998
195. "Recent Observations Of Sheet Cavitation " ONR Bubbly flows Workshop, Pasadena, CA, Feb., 1998
196. "Some Observations of Cavitation Phenomena" Saint Anthony Falls Hydraulic Laboratory Seminar, Feb., 1998
197. "Nucleation and Bubble Dynamics in Vortical Flows" Cavitation '98, Grenoble, France, April 1998
198. "Fluid Mechanics Research: The NSF Perspective" Seminar, Clarkson University, Potsdam, NY, April, 1998
199. "Some Observations of Cavitation Phenomena" Seminar, Clarkson University, Potsdam, NY, May, 1998
200. "Liquid Tension in Vortical Flows" Thousand Islands US-Canadian Fluid Mechanics Meeting, Gananoque, Ontario, May 1998
201. "Investigation Of Unsteady Cavitation Phenomena" US-Japan Seminar on Abnormal flow Phenomena in Turbomachines, Osaka, Japan, November, 1998
202. "The Impact of Turbulence Research on Hydraulic Engineering" 20th Anniversary Lecture, State University of New York at Buffalo, November 20, 1998
203. "Some Observations of Cavitation Phenomena" Seminar, University of Oregon, Eugene, Oregon, April 1999
204. "SAFL Cavitation Research" Seminar, NASA Marshall Space Flight Center, Huntsville, Alabama, April, 1999
205. "Impact of Fluid Mechanics Research on Hydraulic Engineering" Seminar, St. Anthony Falls Laboratory, University of Minnesota, May, 1999
206. "An Overview of Cavitation Research at the Saint Anthony Falls Laboratory", Seminar, Tohoku University, Sendai, Japan, August, 1999
207. "Recent Results From Sheet/Cloud Cavitation Research", Seminar, Osaka University, Osaka, Japan, Sept. 1, 1999
208. "Reflections on Cavitation in Vortical Flows", Invited Lecture, International Seminar on Cavitation, University of Tokyo, Tokyo, Japan, Sept. 3, 1999
209. "Tip Vortex Cavitation" Invited Lecture, Wuhan International Forum on Cavitation, Wuhan, China, October 12, 1999

210. "Sheet/Cloud Cavitation" ONR Science and Technology Workshop, Sept. 27, 1999
211. "Recent Results of Sheet/cloud Cavitation Research" Aerospace Engineering and Mechanics Seminar, University of Minnesota, November 1, 1999
212. "Cavitation Induced Lift Fluctuations" 52nd Meeting Division of Fluid Dynamics, American Physical Society, November, 1999
213. "Acoustic Radiation From Cavitating Hydrofoils" 52nd Annual Meeting of the Division of Fluid Dynamics, American Physical Society, New Orleans, LA, Nov.1999
214. "A Decade of Tip Vortex Research" Invited lecture, MARINTEK, Trondheim, Norway, June 8, 2000
- 215." Tip Vortex Cavitation" 53rd Annual Meeting of the Division of Fluid Dynamics, American Physical Society, Washington, DC Nov. 19, 2000
216. "Cavitation in Vortical Flows" Invited Lecture, Osaka University, Osaka, Japan, July, 2001
217. "Cavitation in Vortical Flows" Invited Lecture, Tohoku University, Sendai, Japan July 30, 2001
218. "An Overview of Recent Research at the St. Anthony Falls Laboratory" Invited Lecture, Hokkaido University, Sapporo, Japan, August 1, 2001
219. "Experiences in Designing the LCC and HYKAT" Invited Lecture to Industrial Consortium, Ishikawajima-Harima Heavy Industries Company, Tokyo, Japan August 8, 2001
220. "Some Perspectives on Cavitation Research" Invited Lecture to Industrial Consortium, Ishikawajima-Harima Heavy Industries Company, Tokyo, Japan August 8, 2001
221. "An Overview of Recent Cavitation Research at the Saint Anthony Falls Laboratory" Invited Lecture, University of Tokyo, Tokyo, Japan, August 9, 2001
222. "An Overview of Recent Cavitation Research at the Saint Anthony Falls Laboratory", Invited Lecture, Kyushu University, Fukuoka, Japan, August 21, 2001
223. "Instability of Partial Cavitation: Current Research and Unresolved Issues" *The First International Symposium on Advanced Fluid Information*, Sendai, Japan, October 2001
224. "Instability of Partial Cavitation: Current Research and Unresolved Issues" *Special Cavitation Workshop* Marintech, Chalmers University Göteborg, Sweden June 2002
225. "Proper Orthogonal Decomposition: A Brief Historical Account" *Special Workshop on Proper Orthogonal Decomposition in Turbulence Research*, Chalmers University Göteborg, Sweden June 2002
226. "Dynamics of Closed Circuit Hydraulic Model Loops" *ASME Fluids Engineering Summer Meeting*, Montreal, Canada July 14-18 2002
227. "Mapping of Hydraulic Model Dynamics Using Transient Operating Conditions" (*ASME Fluids Engineering Summer Meeting*, Montreal, Canada July 14-18 2002

228. “Analysis of Cavitating Wake Flows” *Proceedings 21st IAHR Symposium on Hydraulic Machinery and Systems*, Lausanne, Switzerland, August 2002
229. “The Saint Anthony Falls Laboratory in History” Darcy Symposium, World Water and Environmental Resources Congress, ASCE. Philadelphia, June 24, 2003
230. “A Case Study of International Cooperation: 30 Years of Collaboration in Cavitation Research” Keynote Lecture 4th *ASME_JSME Joint Fluids Engineering Conference*, Honolulu, Hawaii, July 6-1-, 2003
231. “Investigation of a Low-drag, Partially Cavitating Hydrofoil”, Fifth International Symposium on Cavitation (CAV2003), Osaka, Japan, November 1-4, 2003
232. “Can Water Quality Affect the Lift Dynamics of Cavitating Hydrofoils?”, Fifth International Symposium on Cavitation (CAV2003), Osaka, Japan, November 1-4, 2003
233. “Experimental and numerical investigations of cavitation” 22nd IAHR Symposium on Hydraulic Machinery and Systems June 29 – July 2, 2004 Stockholm – Sweden
234. “Cavitating Hydrofoils: A Perspective” American Physical Society, DFD Meeting Seattle, WA November 21, 2004
235. “Cataclysmic Floods and Cavitation Erosion” (with Martin Wosnik) Video Presentation American Physical Society, DFD Meeting Seattle, WA November 21, 2004
236. “Experimental Study of Ventilated Supercavitation” (with Martin Wosnik and Travis Schauer) Poster Session, DFD Meeting Seattle, WA November 21, 2004
237. “An integrated experimental/numerical study of the bubbly wake behind a cavitating hydrofoil” *ASME Fluids Engineering Division Summer Meeting and Exhibition* June 19-23, 2005, Houston, TX, USA
238. Erik L. Axdah¹, Martin Wosnik, Roger E.A. Arndt “Image Processing for high-speed video and PIV in cavitating flows” Poster Session, American Physical Society, 58th Annual DFD Meeting Chicago, IL November 20 -22, 2005
239. Martin Wosnik, Damien Kawakami, Jim Kopriva, Roger E.A. Arndt “Water Quality Effects on the dynamics of Sheet/cloud Cavitation” Video, Gallery of Fluid Motion, American Physical Society, 58th Annual DFD Meeting Chicago, IL November 20 -22, 2005
240. Martin Wosnik, Roger E.A. Arndt “Cavitation Erosion in Megafloods” Video, Gallery of Fluid Motion, American Physical Society, 58th Annual DFD Meeting Chicago, IL November 20 - 22, 2005
241. “Cavitation: An Introduction” A series of lectures to commemorate the 25th anniversary of my first visit (10/80) to the China Ship Scientific Research Center (CSSRC), Wuxi, China October 10 – 17 2005, CD containing 420 slides was also prepared

¹ AEM undergraduate student

242. "Experimental and Numerical Investigation of Large Scale Structures in Cavitating Wakes" AIAA Fluid Dynamics Conference, San Francisco, CA, June 3, 2006
243. "From Wageningen to Minnesota and Back: Perspectives on Cavitation Research" Keynote Lecture, Sixth International Symposium on Cavitation, CAV2006, Wageningen, The Netherlands, September 2006
244. "Measurements in high void-fraction turbulent bubbly wakes created by axisymmetric ventilated supercavitation" Sixth International Symposium on Cavitation (CAV2006) September 11-15, 2006, Wageningen, The Netherlands
245. "Identification of Large Scale Structures in the Wake of Cavitating Hydrofoils Using LES and Time-Resolved PIV" Sixth International Symposium on Cavitation (CAV2006) September 11-15, 2006, Wageningen, The Netherlands
246. "Identification of Large Scale Structures in the Wake of Cavitating Hydrofoils Using LES and Time-Resolved PIV" 26th Symposium on Naval Hydrodynamics, September 18-22, Rome, Italy
247. "Dynamics and control of hydrofoil wakes" 59th Annual DFD Meeting Tampa, FL November 19 - 21, 2006
248. "Gas injection induced unsteadiness on a NACA 0015 hydrofoil" 59th Annual DFD Meeting Tampa, FL November 19 - 21, 2006
249. "Cavitation inception behind a jet-propelled body, FEDSM 2007-30726, Proceedings of FEDSM'07 5TH ASME_JSME Joint Fluids Engineering Conference San-Diego, USA, July 30–August 2, 2007
250. "Identification of Large Scale Structures in Cavitating Wakes" FEDSM2007-37688, Proceedings of FEDSM'07 5TH ASME_JSME Joint Fluids Engineering Conference San-Diego, USA, July 30–August 2, 2007
251. "Jet-Wake Interaction and its Effect on Cavitation" 60th Annual DFD Meeting Salt Lake City, UT, November 18 - 21, 2007
252. "A Study Of Wakes Trailing A Cavitating And Ventilated NACA 0015 Hydrofoil" 60th Annual DFD Meeting, Salt Lake City, UT, November 18 - 21, 2007
253. "Towards the control of cavitating flows" The 12th International Symposium on Transport Phenomena and Dynamics of Rotating Machinery, Honolulu, Hawaii, February 17-22, 2008
254. "The Saint Anthony Falls Laboratory: A Brief History" Keynote Lecture, St. Anthony Falls Laboratory 70th Anniversary Symposium, University of Minnesota, May 20, 2008
255. "Effects of Surface Characteristics on Hydrofoil Cavitation" Cavitation: Turbomachinery & Medical Applications, WIMRC FORUM 2008, Warwick University, UK, 7th-9th July 20
256. "Investigation of oscillatory cavitation on hydrofoils" 24th IAHR Symposium on Hydraulic Machinery and Systems, Foz do Iguassu, Brazil, October 27-31, 2008
257. "Blade load dynamics in cavitating and two phase flow", 24th IAHR Symposium on

- Hydraulic Machinery and Systems, Foz do Iguassu, Brazil, October 27-31, 2008
258. "Some Perspectives on Cavitation Research" Seminar, St. Anthony Falls Laboratory, University of Minnesota, November 5, 2008
 259. "Effect of Surface Characteristics on Hydrofoil Cavitation" 61th Annual DFD Meeting, San Antonio, TX, November 23 - 25, 2008
 260. "Effects of Surface Characteristics on Hydrofoil cavitation" 7th International Symposium on Cavitation CAV2009 August 17-22, 2009, Ann Arbor, Michigan, USA
 261. Kawakami, E "Ventilated supercavities" 62nd Annual Meeting of the Division of Fluid Dynamics, Minneapolis, MN 22-24 November 2009 (co-authored with REA Arndt)
 262. Kjeldsen, M "Characterizing cylinder and hydrofoil wake dynamics" 62nd Annual Meeting of the Division of Fluid Dynamics, Minneapolis, MN 22-24 November 2009 (co-authored with REA Arndt)
 263. "Sheet/Cloud Cavitation Revisited" The 13th International Symposium on Transport Phenomena and Dynamics of Rotating Machinery Honolulu, Hawaii, April 4-9, 2010
 264. "Investigation of the behavior of ventilated Supercavities" 8th Euromech Fluid Mechanics Conference, September 13-16, 2010, Bad Reichenhall, Germany
 265. "On the skin friction drag reduction in large wind turbines using sharp V-grooved riblets: application to a 2.5 MW Clipper wind turbine section" 63rd Annual Meeting of the Division of Fluid Dynamics, Long Beach, CA 21-23 November 2010 (co-authored with Leonardo Chamorro and Fotis Sotiropoulos)
 266. "Turbulence characteristics around a staggered wind farm; A wind tunnel study" 63rd Annual Meeting of the Division of Fluid Dynamics, Long Beach, CA 21-23 November 2010 (Presented Leonardo Chamorro and co-authored with Fotis Sotiropoulos)
 267. "Characterizing rotor-stator interaction using CFD and experimentally obtained wake flow fields" 63rd Annual Meeting of the Division of Fluid Dynamics, Long Beach, CA 21-23 November 2010 (Presented by Morten Kjeldsen and co-authored with Pal Finsted)
 268. "Aerodynamic research in support of more efficient wind turbines" E3 2010: The Midwest's Premier Energy, Economic and Environmental Conference, December 1, 2010, Saint Paul River Centre, St Paul, MN
 269. "On skin friction drag reduction in large wind turbines using sharp V-grooved riblets" 49th AIAA Aerospace Sciences Meeting, Orlando, FL January 5, 2011
 270. "Wind Turbine Research at the Saint Anthony Falls Laboratory" NSF Workshop on Wind Energy and Turbulence Universidad del Turabo, Caguas, Puerto Rico, February 24-26, 2011
 271. "Cavitating Flow Research" University of Minnesota Aerospace Engineering and Mechanics Seminar Friday, March 25th, 2011
 272. "Some Remarks on Hydrofoil Cavitation" Invited Lecture WIMRC 3rd International Cavitation Forum 2011, Warwick University, UK, 4th-6th July 2011

Television Presentations

- Segment of MATRIX series, Presentation of current work being done at the St. Anthony Falls Hydraulic Laboratory, KSTP, Spring 1980.
- Several presentations (1978-1981), Channels KMSP, WTCN, on Hydropower, River Flooding, Dredging Problems.
- Two segments on hydraulic engineering research on "Country Day," KSTP.
- Segment in series on DOD Research and Development in Minnesota, KSTP, May 9-12, 1983.
- Segment on Hydropower on KXLI, St. Cloud, Minnesota, May 1984.
- The NOVA documentary "Mystery of the Megaflood" September 20, 2005, developed an explanation for pothole formation and developed a series of experiments to demonstrate the phenomenon.