

Curriculum Vitae: Dale G. Karr

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a.1. Personal

a.1.1 Dale G. Karr

a.1.2 Education

B.S., Civil Engineering, 1974, Michigan State University

M.S., Engineering Science and Mechanics, 1977, University of Tennessee

Ph.D., Civil Engineering, 1983, Tulane University

“Stress State Ice Failure Criteria with Applications for Ice Forces on Offshore Structures”, Advisor: Dr. Shankar C. Das

a.1.3 Positions at UM

Associate Professor, Department of Naval Architecture and Marine Engineering
1990-present

a.1.4 Positions at other institutions or organizations (titles and dates)

2005	Visiting Scientist, Ford Motor Company, Scientific Research Laboratories, Research and Innovation Center, Dearborn, MI
1997-1998	Visiting Professor, Naval Sea Systems Command, Naval Surface Warfare Center, Carderock Division
1987 - 1989	Associate Professor, Department of Ocean Engineering, Massachusetts Institute of Technology
1984	Consultant, Naval Ship Research and Development Center; American Society of Engineering Education, Summer Faculty Research Program
1983 - 1987	Assistant Professor, Department of Ocean Engineering, Massachusetts Institute of Technology
1983 - 1983	Adjunct Professor, Department of Civil Engineering, Tulane University
1979 - 1983	Senior Engineer, Martin Marietta Aerospace
1978 - 1979	Engineer, Brown and Root, Inc.
1975 - 1977	Civil Engineer, Tennessee Valley Authority

a.2 Honors and Awards

National Aeronautics and Space Administration, Public Service Group Achievement Award, 1983.

National Science Foundation, Research Initiation Grant, 1984.

Henry L. Doherty Professorship, MIT Sea Grant College Program, 1986.

Tulane University Harold A. Levey Distinguished Alumni Medal, 1986.

Department Teaching Award, 1992.

Quarterdeck Honorary Society Outstanding Faculty Member, 1993.

Department Research Award, 1997.

College of Engineering Group Achievement Award, 2000.

Elmer L Hann Award, Society of Naval Architects and Marine Engineers, 2002.

Fellow, Society of Naval Architects and Marine Engineers, 2005.

b. Teaching

b.1 New courses introduced at U of M

- NA 410 Marine Structures II (Revision and expansion of Ship Strength II)
- Course description:

Structural modeling and analysis techniques applied to ship and marine structure components. Equilibrium and energy methods applied to elastic beam theory; static bending, torsion and buckling. Shear flow and warping of multi-cell cross sections. Stiffened and composite plates. Plastic analysis of beams. Thick walled pressure vessels. Course project using finite element analysis.

Objectives:

1. To teach students how marine structures and their components can be idealized and modeled to assess their strength, response to environmental loading, and potential failure modes.
2. To teach students methods of analyzing marine structures by application of the theory of elasticity and elastic beam theory.
3. To provide the students with an introduction to plate theory.
4. To teach students the methods of structural mechanics involving ideal plasticity.
5. To provide students with an understanding of the fundamentals of the finite element analysis at a level necessary for the design and analysis of simple marine structure components.
6. To teach students to use computer tools for solving structural engineering problems and in structural design.

b.2 Courses taught at U of M

Course #	Course title	Teaching Role ¹	Term
NA 510	Marine Structural Mechanics	Instructor	Winter 2014
NA 410	Marine Structures II	Instructor	Fall 2013
ENG 110	The Engineering Profession	Co-instructor	Fall 2012
NA 410	Marine Structures II	Instructor	Fall 2012
NA 510	Marine Structural Mechanics	Instructor	Winter 2012
ENG 110	The Engineering Profession	Co-instructor	Fall 2011
NA 410	Marine Structures II	Instructor	Fall 2012
NA 522	Experimental Marine Engineering	Co-instructor	Spring 2011
NA 510	Marine Structural Mechanics	Instructor	Winter 2011
ENG 110	The Engineering Profession	Co-instructor	Fall 2010
NA 410	Marine Structures II	Instructor	Fall 2010
NA 510	Marine Structural Mechanics	Instructor	Winter 2010
ENG 110	The Engineering Profession	Co-instructor	Fall 2009
NA 410	Marine Structures II	Instructor	Fall 2009
NA 522	Experimental Marine Engineering	Co-instructor	Spring 2009
AE/NA 416	Theory of Plates and Shells	Instructor	Winter 2009
ENG 110	The Engineering Profession	Co-instructor	Fall 2008
NA 410	Marine Structures II	Instructor	Fall 2008
NA 522	Experimental Marine Engineering	Co-instructor	Spring 2008
ENG 110	The Engineering Profession	Co-instructor	Winter 2008
NA 510	Marine Structural Mechanics	Instructor	Winter 2008
ENG 110	The Engineering Profession	Co-instructor	Fall 2007

¹ Instructor, Co-instructor, Recitation/discussion leader, etc.

NA 410	Marine Structures II	Instructor	Fall 2007
NA 522	Experimental Marine Engineering	Co-instructor	Spring 2007
AE/NA 416	Theory of Plates and Shells	Instructor	Winter 2007
NA 510	Marine Structural Mechanics	Instructor	Winter 2007
NA 410	Marine Structures II	Instructor	Fall 2006
NA 522	Experimental Marine Engineering	Co-instructor	Spring 2006
NA 410	Marine Structures II	Instructor	Winter 2006
AE/NA 416	Theory of Plates and Shells	Instructor	Winter 2005
NA 510	Marine Structural Mechanics	Instructor	Winter 2005
NA 410	Marine Structures II	Instructor	Fall 2004
NA 510	Marine Structural Mechanics	Instructor	Winter 2004
NA 410	Marine Structures II	Instructor	Fall 2003
NA 510	Marine Structural Mechanics	Instructor	Winter 2003
NA 410	Marine Structures II	Instructor	Fall 2002
ENG 100	Introduction to Engineering	Co-instructor	Winter 2002
NA 510	Marine Structural Mechanics	Instructor	Winter 2002
NA 410	Marine Structures II	Instructor	Fall 2001
ENG 100	Introduction to Engineering	Co-instructor	Winter 2001
NA 510	Marine Structural Mechanics	Instructor	Winter 2001
NA 410	Marine Structures II	Instructor	Fall 2000
ENG 100	Introduction to Engineering	Co-instructor	Winter 2000
NA 510	Marine Structural Mechanics	Instructor	Winter 2000
NA 410	Marine Structures II	Instructor	Fall 1999
NA 510	Marine Structural Mechanics	Instructor	Winter 1999
NA 410	Marine Structures II	Instructor	Fall 1998
NA 510	Marine Structural Mechanics	Instructor	Winter 1998
NA 510	Marine Structural Mechanics	Instructor	Winter 1997
NA 410	Marine Structures II	Instructor	Fall 1996
ME 211	Introduction to Solid Mechanics	Instructor	Fall 1996
NA 510	Marine Structural Mechanics	Instructor	Winter 1996
NA 410	Marine Structures II	Instructor	Fall 1995
NA 310	Marine Structures I	Instructor	Fall 1995
NA 510	Marine Structural Mechanics	Instructor	Winter 1995
NA 410	Marine Structures II	Instructor	Fall 1994
NA 310	Marine Structures I	Instructor	Fall 1994
NA 510	Marine Structural Mechanics	Instructor	Winter 1994
NA 410	Marine Structures II	Instructor	Fall 1993
NA 310	Marine Structures I	Instructor	Fall 1993
NA 510	Marine Structural Mechanics	Instructor	Winter 1993
NA 410	Marine Structures II	Instructor	Fall 1992
NA 310	Marine Structures I	Instructor	Fall 1992
NA 510	Marine Structural Mechanics	Instructor	Winter 1992
NA 410	Marine Structures II	Instructor	Fall 1991
NA 310	Marine Structures I	Instructor	Fall 1991
NA 510	Marine Structural Mechanics	Instructor	Winter 1991
NA 410	Marine Structures II	Instructor	Fall 1990
NA 410	Ship Strength II	Instructor	Winter 1990

b.3 Ph.D. Committees chaired/co-chaired

1. Choi, Kyunsik, 1988, "A Damage Mechanics Approach to the Three Dimensional Constitutive Modeling of Ice Deformation". Chair. (Current position: Professor, Korean Maritime University)
2. Park, Chil, 1989, "Three-Dimensional Acoustic Wave Propagation from a Point Excited Spherically Layered Shell Submerged in an Infinite Fluid Medium". Chair.
3. Chae Whan Rim, 1992, "Redesign of Hull Stiffened Plates by Geometrically Nonlinear Large Admissible Perturbations". Co-chair with M. Bernitsas. (Current position: Professor, Korea Institute of Machinery & Materials)
4. Xin Sun, 1995, "Constitutive Bifurcation and Shear Band Initiation of Rate Independent Brittle Materials". Chair. (Current position: Staff Scientist, Pacific Northwest National Laboratory)
5. Stephanie A. Wimmer, 1998, "Compressive Failure of Microcracked and Brittle Damaged Materials and Structures". Chair. (Current position: Naval Research Laboratory)
6. Hyung Chung, 2006, "Tolerance Analysis of Compliant Metal Plate Assemblies Considering Welding Distortion". Co-Chair w/ T. Lamb. (Current position: Korea Advanced Institute of Science & Technology)
7. Yaning Li, 2006, "Ductile Fracture Due to Plastic Flow, Void Growth and Localization for 3-D Randomly Voided Materials". Chair. (Current position: Assistant Professor, University of New Hampshire).
8. Weiwei Yu, 2009, "Corrosion Effects on Ductile Fracture Initiation in Membranes, Plate and Shells". Chair. (Current position: Riser Engineer, Chevron Energy Technology Company)
9. Sara Jabbarizadeh, 2012, "Isogeometric Membrane Finite Element Analyses". Chair. (Current position: Engineer, American Bureau of Shipping)
10. Bingbin Yu, 2013 "Analysis of Offshore Wind Turbines Interacting with Floating Surface Ice in the Great Lakes". Chair. (Current position: Engineer, Marine Innovation & Technology).
11. Fuzuli Akcay, "Deformation and Failure of Elasto-Plastic Circular Membranes Cylindrical and Spherical Indenters". Chair. Admitted to candidacy September 2013.

b.4 M.S. students advised/co-advised

1. Christopher Wayne Carter, 1998, "Two Degree-of-Freedom Numerical Simulation of Faraday Waves". Chair.
2. Thomas C. Remmers, 1998, "Prediction of Nonlinear Contact Dynamics of an Ice-Structure Interaction Model using Fourier Analysis". Chair.
3. Matthew Edwards, 1999, "Analysis of Composite Patches for Ship Plating Fracture Repair". Chair.
4. Patrick J. Murphy, 1999, "Chaotic and Invariant Sets in the Mapping of Impact Oscillators". Chair.
5. Suzanne M. Brown, 2000, "A Fractal Fracture Mechanics Model for Predicting the Fatigue Life of Brittle Materials". Chair.

6. Derek T. Schade, 2000, "Thermoelastic Stability of a Layer Bonded to a Half Plane". Chair.
7. Michael T. Rorstad, 2000, "Thermal Expansion Coefficients of Laminated Composites Based on the Concentric Cylinder Model". Chair.
8. Scott Anderson, 2001, "Nonlinear Dynamics of an Impacting Object on an Oscillating Plate". Chair.
9. Jason Bone, 2002, "Composite Patch Repair of Ship Structural Plating". Chair.

b.5 Undergraduate major projects directed

Racheal Neal "Ice measurement data for the Great Lakes" Summer 2014

b.6 Short courses and workshops taught

- Invited Seminar: BBN Systems and Technologies Corporation to present the seminar "Buckling of Composite Cylinders," to their engineering and research staff at Cambridge, MA, December, 1989.
- Invited by General Electric Corporation to present my lecture series "Prevention of Buckling of Aircraft Structures" to their engineers and managers as follows:
 1. June 12, 13, and 14, 1989 at General Electric Aircraft Engines, Lynn, MA.
 2. August 28, 29, and 30, 1989 at General Electric, Evandale, OH.
 3. March 6, 7, and 8, 1990 at General Electric, Evandale, OH.
 4. May 23, 24, and 25, 1990 at General Electric Aircraft Engines, Lynn, MA
- Invited Seminar: BBN Systems and Technologies Corporation to present the seminar "Buckling of Composite Cylinders," to their engineering and research staff at Cambridge, MA, December, 1989.
- Invited by The University of Michigan/Sea Grant/Industry Consortium in Offshore Engineering and The Massachusetts Institute of Technology Sea Grant Program's Marine Industry Collegium to present the lecture "Ice-Structure Interaction" at the Offshore Station Keeping with Introduction to Nonlinear Dynamics Workshop; at The University of Michigan, May 18-19, 1993.
- Invited Paper: "Bifurcations and Singularities in Ice Breaking" presented at the Symposium on Non-linear Effects in Materials Science, The Materials Society Meeting and Materials Week, Indianapolis, IN, October, 1997.
- Invited Seminar: "Chaotic and Invariant Sets in the Mapping of Impact Oscillators", Center for Study of Complex Systems, University of Michigan, November, 2000.
- Invited Seminar: "Tensile Ductile Fracture: Some Effects of Bifurcation, Localization and Imperfections", Ford Motor Company, Scientific Research Laboratories, February, 2006.
- Invited Presentation: "Research Challenges: Ice Forces on Offshore Wind Turbines, Hybrid Composite Ship Structures, Fluid-Structure Interaction Systems", American Bureau of Shipping, ABS International Technology Forum, May 2012.

c. Research

c.1 Past grants and contracts

1. *BMT Designers & Planners, Inc./Carderock Division, Naval Surface Warfare Center*, "Strength and Fatigue Testing of Composite Patches for Ship Plating Fracture Repair" PI: Karr 2010-2012, \$79,628
2. *Office of Naval Research*, "Isogeometric Structural Analysis with Uncertainty" Principal Investigator. Office of Naval Research, 2008-2012, \$507,722, DGK portion.

3. *University of Michigan Engineering Technology Development*, "Explosion Testing of Blast Resistant Fluid-Structure Interaction Systems" 2008, \$35,000.
4. *Office of Naval Research*, "Design Tools for the Sea-Based Connector Transformable Craft (T-Craft) Prototype Demonstrator". Task 2b, Fluid/Structural Analysis with NURBS Finite Elements, Principal Investigator. 2007-2008, \$150,000.
5. *Computer Sciences Corporation* (for the US Navy) "DDX Phase IV Hull Form Program" Task 5 "Hull Loads Model Testing", 2006-2008, \$19,095.
6. *Office of Naval Research*, "Design and Analysis for Survivability of Naval Structures", Office of Naval Research, 2003-2006 \$88,853 (1st year), \$70,000(2nd year), \$60,000 (3rd year).
7. *Center for Research on Learning and Teaching*, University of Michigan, "Teaching Second Order Tensors: What Linear Vector Operators Look Like" 2002-2003; \$6,000, Principal Investigator.
8. *Ship Structures Committee*, U.S. Department of Transportation "Testing of Composite Patches for Ship Plating Fracture Repairs"; 2001-2002, \$20,000, Principal Investigator.
9. *Naval Surface Warfare Center*, Carderock Division, "Multiple Scale Damage Effects in Composite Materials," 1997-1998, \$8,000.
10. *McDermott Shipbuilding Inc.*, (in support of ARPA Meritech Program) "Stern Factory Design 1995 - 1997; \$103,944, co-principal investigator with R. Moore and T. Lamb.
11. *Orincon Corporation*, (in support of ARPA Simulation Based Design Program) "Simulation and Modelling of Ship Building Infrastructure," 1994-1995, \$100,000, Project Director
12. *Office of Naval Research*, "Design of Freeform Solids for Structural Integrity, Topology, and Microstructure Fabrication," Office of Naval Research, 1994-1995, \$180,000, co-principal investigator with M. Bernitsas.
13. *University of Michigan/Sea Grant/Industry Consortium in Offshore Engineering*, "Numerical Modelling of Continuum Damage Evolution During Ice-Structure Interaction", 1991-1993, \$56,372; Principal Investigator.
14. *Ship Structure Committee*, "Nonlinear Dynamics of Ice-Structure Interaction" 1990-1991, \$10,375; Principal Investigator.
15. *Office of Naval Research*, "Hull Design for Structural Integrity and Acoustic Noise Control", Office of Naval Research, 1990-1993, \$609,349, co-principal investigator with Prof. M. Bernitsas.
16. *Office of Naval Research*, "Research in Engineering Methods for Submarine Structural Acoustics," Office of Naval Research, 1988-1989, \$60,000, co-principal investigator.

17. *Draper Laboratories*, "Structural Acoustics of Submerged Shells," 1988-1989, \$115,000; Principal Investigator.
18. *CASDE Corporation*, "Analysis and Design of Submarine Drydocking Systems," 1988-1989, \$54,187; Principal Investigator.
19. *MIT Project Athena*, "Advanced Structural Analysis Computer Programs," 1987-1988, \$11,000; Principal Investigator.
20. *U.S. Coast Guard*, "The Survivability of Advanced Marine Vehicles in Ice," 1986-1987, \$30,000 co-principal investigator.
21. *Doherty Foundation*, "Ice Acoustic Emission Theory," 1986-1989, \$75,000; Principal Investigator.
22. *Standard Oil of Ohio* (and multi-sponsored), "Ice Structure Engineering, 1985-1989, \$40,000/yr, co-principal investigator.
23. *Office of Naval Research*, "Mathematical Modelling of Ice Deformation Response," Office of Naval Research, 1985-1988, \$135,000; Principal Investigator.
24. *MIT Sea Grant/Industrial Liaison Program*, "Mathematical Modelling of Ice Deformation," 1985-1986, \$25,000; Principal Investigator.
25. *National Science Foundation*, "Three Dimensional Analysis of Ice Sheet Indentation," 1984-1986, \$65,000; Principal Investigator.
26. *MIT Project Athena*, "Fundamental Structural Analysis Computer Programs," 1984-1985, \$19,000; Principal Investigator.
27. *CASDE Corporation*, "Docking Under Seismic Loads," 1984-1985, \$35,108; Principal Investigator.

c.2 Current grants and contracts

U.S. Department of Energy, "Bottom Fixed Platform Dynamics Models Assessing Surface Ice Interactions for Transitional Depth Structures in the Great Lakes", \$399,996. 2011-2014. PI: Karr. Candidate's share: \$200,000. Support 1 GSRA.

American Bureau of Shipping. "Prediction and Analysis of Indentation and Fracture of Thin Steel Plating During Impact", \$147,302 September 1, 2013 to August 31, 2014. PI: Karr. With Co PI M. Perlin. Candidate's share: 50%. Support 1 GSRA.

U.S. Department of Energy, "Measurement and Analysis of Extreme Wave and Ice Actions in the Great Lakes for Offshore Wind Platform Design", \$600,000. Sept. 2012 – 2015. PI: England of AOSS, Co-PI: Karr. Candidate's share: \$130,000. Support 1 GSRA.

Office of Naval Research, "Hybrid Composite Hull Optimization and Structural Analysis", \$239,417, Sept. 2010 - December 2014. PI: Steve Zalek of NAME, Co-PI: Karr. Support 1 GSRA

c.3 Publications and scholarly presentations

c 3.1 Full articles in refereed publications

1. Sara Jabbarizadeh and Dale G. Karr "Analytical and Numerical Analyses of Partially Submerged Membranes" *Journal of Engineering Mechanics* 139.12 (2013): 1699-1707.
2. S. S. Na, and D.G. Karr "An Efficient Stiffness Method for the Optimum Design of Ship Structures Based on Common Structural Rules", *Ships and Offshore Structures*, 2013, Vol. 8, No. 1, pp. 29-44.
3. Weiwei Yu, Pedro Vargas, and Dale G. Karr "Corrosion Effects on Reliability of Flat Plates in Tension". *Journal of Offshore Mechanics and Arctic Engineering*, May 2012, Vol. 134, No. 2 pp. 21404-1-7.
4. Weiwei Yu, Pedro Vargas, and Dale G. Karr "Bending Capacity Analyses of Corroded Pipelines" *Journal of Offshore Mechanics and Arctic Engineering*, May 2012, Vol. 134, No. 2 pp. 21701-1-12.
5. Steven F. Zalek, Dale G. Karr, Sara Jabbarizadeh and Kevin J. Maki, "Modeling of air cushion vehicle's flexible seals under steady state conditions", *Ocean Systems Engineering*, 2011, Vol. 1, No. 1 , pp. 17-29.
6. H. Chung, J.S., Yum and D.G. Karr "Statistical B-Spline FEM for Predicting Effects of Geometric Uncertainty", *Journal of Ship and Offshore Structures*, 2009, Vol. 4 no. 1, pp. 31-42.
7. W. Yu and D. G. Karr "Analytic, Symmetrical Solutions for Edge-Loaded Annular Elastic Membranes ", *Journal of Applied Mechanics*, May, 2009, Vol. 76, no. 3, pp. 0301010-1,7.
8. Y. Li, and D.G. Karr, "Prediction of Ductile Fracture in Tension by Bifurcation, Localization, and Imperfection Analysis," *International Journal of Plasticity*, June, 2009, Vol. 25, no. 6, pp 1128-1153.
9. D.G. Karr, Ph. Rigo, S.S. Na, and R. Sarghiuta, "Comparison of Rational-based and Rule-based Optimum Design of Ship Structures," *Transactions of the Society of Naval Architects and Marine Engineers*, v 110, 2003, p 435-451.
10. S. S. Na, and D.G. Karr "Product-Oriented Optimum Structural Design of Double-Hull Tankers," *Journal of Ship Production*, V 18, No.4, pp237-248, Nov. 2002.
11. D.T. Schade and D.G. Karr, "Thermoelastic Stability of a Layer Bonded to a Half Plane," *Journal of Engineering Mechanics*. v 128, n 12, December, 2002, p 1285-1294.
12. Karr, D.G., K.P. Beier. S.S. Na, and Ph. Rigo, "A Framework for Simulation Based Design of Ship Structures," *Journal of Ship Production*, Vol.18, No. 1, February 2002, pp. 33-46.
13. Xin Sun and Dale G. Karr, "A Dynamical Systems Approach to Bifurcation and Instability of Nonlinear Constitutive Relations," *International Journal of Damage Mechanics*, Vol.10, pp. 279-299, October, 2001.

14. D.T. Schade, K. Oditt, and D.G. Karr, "Thermoelastic Stability of Two Bonded Half Planes", *Journal of Engineering Mechanics.*, Vol. 126, No. 9, 2000, pp. 981-985.
15. Matthew Edwards and Dale G. Karr, "Analysis of Composite Patches for Ship Plating Fracture Repair," *Ship Technology Research/Shiffstechnik*, Vol. 46, No. 4, pp. 231-237, 1999.
16. Xin Sun, Stephanie A. Wimmer, and Dale G. Karr, "Shear Band Initiation of Brittle Damage Materials," *International Journal of Damage Mechanics*, Vol. 4, No. 2, pp. 403-421, 1996.
17. Stephanie A. Wimmer, and Dale G. Karr, "Compressive Failure of Microcracked Porous Brittle Solids," *Mechanics of Materials*, 22, pp. 265-277, 1996.
18. D.G. Karr, A.W. Troesch, and R. Levi, "Some Effects of Threshold Singularities on a Dynamical System with Intermittent Contact and Breakage," *Journal of Sound and Vibration*, Vol. 185(4), 1995, pp. 609-625.
19. D. G. Karr and X. Sun, "Damage Evolution During Impact of an Ice Bar with Lateral Confinement," *International Journal of Offshore and Polar Engineering*, Vol. 5, No. 1, 1995, pp. 23-31; revised version of paper in *Proceedings of the Third International Offshore and Polar Engineering Conference*, Singapore, June 6-11, 1993.
20. J.G. Shin and D.G. Karr, "Propagation of Continuum Damage in a Viscoelastic Ice Bar," *Journal of Offshore Mechanics and Arctic Engineering*, Vol. 116, No. 2, 1994, pp. 109-113; revised version of paper in *Damage Mechanics in Engineering Materials*, AMD-Vol.109/MD-Vol.24, papers presented at the ASME Winter Annual Meeting, Dallas, TX, Nov. 25-30, 1990, pp.237-249.
21. Dale G. Karr, Armin W. Troesch, and Wayne C. Wingate, "Nonlinear Dynamics of a Simple Ice-Structure Interaction Model," *Journal of Offshore Mechanics and Arctic Engineering*, Vol. 115, No. 4, 1993, pp. 246-252; revised version of paper in *Proceedings of the 11th International Conference on Offshore Mechanics and Arctic Engineering*, Vol. IV, Calgary, Alberta, June 7-12, 1992, pp. 231-237.
22. Armin W. Troesch, Dale G. Karr, and Klaus-Peter Beier, "Global Contact Dynamics of an Ice-Structure Interaction Model," *International Journal of Bifurcation and Chaos*, Vol. 2, No. 3, 1992, pp. 607-620.
23. Jong Gye Shin and Dale G. Karr, "Contact Force and Damage Evolution in a Moving Uniaxial Ice Bar," *International Journal of Offshore and Polar Engineering*, Vol. 2, No. 2, 1992, pp. 129-134; revised version of paper in *Proceedings of the First European Offshore Mechanics Symposium*, Trondheim, Norway, August 19-22, 1990, pp. 527-532.
24. S.U. Bhat, S.K. Choi, T. Wierzbicki, and Dale G. Karr, "Failure Analysis of Impacting Ice Floes," *Journal of Offshore Mechanics and Arctic Engineering*, Vol 113, No. 2, 1991, pp. 171-178; revised version of paper in *Proceedings of the Sixth International Offshore Mechanics and Arctic Engineering Symposium*, ASME, Houston, TX, March 1-5, 1987.
25. Dale G. Karr and Kyungsik Choi, "A Three Dimensional Continuum Damage Model for Polycrystalline Ice," *Mechanics of Materials*, Vol. 8, 1989, pp. 55-66.
26. D. G. Karr and S. K. Choi, "Three-Dimensional Elasticity Solutions for Edge-Loaded Semi-Infinite Sheets," *Zeitschrift fur Angewandte Mathematik und Mechanik*, Vol. 69, No. 10, 1989, pp. 329-337.
27. Dale G. Karr, Frankie P. Law, Michelle HooFatt, and Gordon F.N. Cox, "Asymptotic and Quadratic Failure Criteria for Anisotropic Materials," *International Journal of Plasticity*, Vol. 5, 1989, pp. 303-336.

28. D. G. Karr, J. C. Watson, and M. HooFatt, "Three Dimensional Analysis of Ice Sheet Indentation: Limit Analysis Solutions," *Journal of Offshore Mechanics and Arctic Engineering*, Vol. 111, No. 1, 1989, pp. 63-69; revised version of paper in *Proceedings of the Sixth International Offshore Mechanics and Arctic Engineering Symposium*, ASME, Houston, TX, March 1-5, 1987.
29. Richard D. Hepburn, James K. Luchs, Dale G. Karr, and R.L. Haith, "Potential Failure of Surface Ship and Submarine Drydock Blocking Systems Due to Seismic Loadings and Recommended Design Improvements," *Transactions of the Society of Naval Architects and Marine Engineers*, Vol. 96, 1988, pp. 193-220. Also, presented at the SNAME Annual Meeting, New York, NY, Nov. 9-12, 1988, Paper No. 6.
30. D. G. Karr, "Three Dimensional Analysis of Ice Sheet Indentation: Lower Bound Solutions," *Journal of Offshore Mechanics and Arctic Engineering*, Vol. 110, No. 1, 1988, pp. 81-86; revised version of paper in *Proceedings of the Fifth International Offshore Mechanics and Arctic Engineering Symposium*, ASME, Vol. IV, Tokyo, Japan, April, 13-18, 1986, pp. 472-478.
31. D. G. Karr, "A Damage Mechanics Model for Uniaxial Deformation of Ice," *Journal of Energy Resources Technology*, Vol. 107, No. 3, 1985, pp. 363-368; revised version of paper in *Proceedings of the Fourth International Offshore Mechanics and Arctic Engineering Symposium*, ASME, Vol. II, Dallas, TX, Feb. 17-21, 1985, pp. 227-233.
32. D. G. Karr and S. C. Das, "Limit Analysis of Ice Sheet Indentation," *Journal of Energy Resources Technology*, Vol. 105, No. 3, 1983, pp. 352-355; revised version of paper in *Proceedings of the Second International Offshore Mechanics and Arctic Engineering Symposium*, ASME, Houston, TX, Jan. 30 - Feb. 3, 1983, pp. 628-633.
33. Dale G. Karr and Sankar C. Das, "Ice Strength in Brittle and Ductile Failure Modes," *Journal of Structural Engineering*, Vol. 109, No. 12, 1983, pp. 2802-2811; Also, presented at the ASCE Structures Congress, New Orleans, LA, Oct. 25-29, 1982, Preprint SC-8.

c 3.2 Refereed conference or symposium proceedings papers

1. Maitane Narezo Docampo, Marc Plasseraud, Sara Jabbarizadeh, Steven F. Zalek and Dale G. Karr, "Testing and Isogeometric Structural Analysis of Membranes Subject to Large Deflections", to be presented at the 11th World Congress on Computational Mechanics (WCCM XI) July 20 - 25, 2014, Barcelona, Spain.
2. Bingbin Yu, Dale G. Karr, and Senu Srinivas "Ice Non-simultaneous Failure, Bending and Floe Impact Modeling For Simulating Wind Turbine Dynamics Using FAST", Presented at the Offshore Mechanics and Arctic Engineering Conference 2014, also to be submittal to the *Journal of Offshore Mechanics and Arctic Engineering*.
3. D.G. Karr, A. Douglas, C. Ferrari, T. Cao, K. T. Ong, K. Nielsen, N. Si, J. He, C. Baloglu, P. White and B. Rohrback, "Fatigue Testing of Composite Patches for Ship Plating Fracture Repair" presented, Ship Structure Committee, Ship Structures Symposium 2014; Maritime Institute of Technology & Graduate Studies, Linthicum Heights, Maryland, May 19-20, 2014.
4. Yu, Bingbin, and Dale Karr. "An Ice-Structure Interaction Model for Non-simultaneous Ice Failure." *OTC Arctic Technology Conference*. Offshore Technology Conference, Presented February 2014, Houston TX.
5. Bingbin Yu, Dale G. Karr, Huimin Song, and Senu Srinivas, "A Surface Ice Module for Wind Turbine Dynamic Response Simulation Using Fast", in

Proceedings of the 32nd Annual Conference, OMAE 2013, Nantes France, June 2013.

6. Bingbin Yu and Dale G. Karr “Reliability Analysis of Marine Structural Components Using Statistical Data of Steel Strength” MARSTRUCT 2011, Hamburg Germany, March, 2011.
7. Bingbin Yu and Dale G. Karr “Reliability Analysis of Marine Structural Components Using Statistical Data of Steel Strength” MARSTRUCT 2011, Hamburg Germany, March, 2011.
8. Karr, D., M. Perlin, S. Sun, O. Filho, and C. Kasey, 2011, “Design, Analysis and Testing of Blast Resistant Steel Sandwich Panels”, 17th International Symposium on Plasticity and its Current Applications, Puerto Vallarta, Mexico, January 2011.
9. Dale G. Karr, Marc Perlin, Benjamin Langhorst, and Henry Chu, “Blast Load Response of Steel Sandwich Panels with Liquid Encasement” Proceeding of the 80th Shock and Vibration Symposium, San Diego CA, October, 2009.
10. Weiwei Yu, Pedro Vargas, and Dale G. Karr “Bending Capacity Analyses of Corroded Pipelines” Proceedings of the 28th Annual Conference, OMAE 2009; Also in the Journal of Offshore Mechanics and Arctic Engineering.
11. S. E. Anderson, S Paksuttiapol, and D.G. Karr, “Nonlinear Dynamics of an Impacting Object on a Harmonically Oscillating Plate”, to be presented, International Symposium on Vibro-Impact Dynamics of Dynamical Systems, Troy, MI, October 2-3 2008.
12. H. Chung, and D.G. Karr, “Isogeometric Modeling for Finite Element Analysis: B-Spline Finite Element Development with Rotational Degrees of Freedom”, Presented at the, Grand Challenges in Modeling & Simulation '08 , Edinburgh Scotland, June 2008.
13. Y. Wu, G. Wang, H. Chung, and D. Karr “Analysis of Ductile Fracture Initiation in Corroded Plates”, Presented, at the 27th International Conference on Offshore Mechanics and Arctic Engineering”, Estoril, Portugal, June, 2008.
14. Y. Li, D.G. Karr, and G. Wang “Mesh Size Effects in Simulating Ductile Fracture of Metals” Proceedings of PRADS 2007, Houston TX October. Volume II, pp. 815-822.
15. H. Chung, and D.G. Karr, “Statistical B-Spline FEM for Predicting Effects of Geometric Covariance” Proceedings of PRADS 2007, Houston TX October. Volume I, pp. 242-249.
16. T. Richir, D.G.Karr, and P. Rigo, “Scantling Optimization of Double-Hull Structures to Minimize Their Production Cost”, The Ninth International Marine Design Conference, May 2006.
17. D.G. Karr, C.G. Kasey, S.H. Kim, M. Cilenti, S.K. Pisini, M. Perlin, “Fluid Encasement and Flow within Sub-Structured Blast Panels” ASME Pressure Vessels and Piping Conference, Denver Co, July 2005.
18. H. Chung, D. G. Karr “Use of B-Spline Surface Geometry for Predicting Forces and Stresses During Plate Assembly” presented at PRADS 2004, in 9th International Symposium on Practical Design of Ships and other Floating Structures, Schiffbautechnische Gesellschaft, e.V., Volume 2, 1005-1012.
19. D.G. Karr, Ph. Rigo, S.S. Na, and R. Sarghiuta, "Comparison of Rational-based and Rule-based Optimum Design of Ship Structures," presented at the Society of Naval Architects and Marine Engineers Annual Meeting and International Maritime Exposition, Boston, MA, September, 2002.

20. Karr, D.G., K.P. Beier, S.S. Na, and Ph. Rigo, "A Framework for Simulation Based Design of Ship Structures" The Society of Naval Architects and Marine Engineers, 2001 Ship Production Symposium, June 13-15 2001, Ypsilanti, MI.
21. Dale G. Karr, Patrick J. Murphy, and D. Fuchs "The Fractal Character of Chaotic Motion of a Structure with Nonlinear Mooring," Proceedings of the Ninth International Offshore and Polar Engineering Conference, Brest, France, May 30 - June 4, 1999.
22. X. Sun and Dale G. Karr, "Analytical Limit Solutions for Tenth Order Theory of Edge-Loaded Semi-Infinite Elastic Sheets", with X. Sun, Applied Mechanics in the Americas Volume 7, Pampolona, et al. (eds.), pp. 911-914, 1999.
23. Dale G. Karr and Stephanie A. Wimmer, "Microcrack Induced Bifurcation of Stress-Strain Relations for Sintered Materials", in Advanced Methods in Materials Processing Defects, pp. 225-234, M. Predeleanu, and P. Gilormini (Eds.), Elsevier Science, 1997. Proceedings of the Third International Conference on Materials Processing Defects, Cachan, France, 1997.
24. Stephanie A. Wimmer and Dale G. Karr, "Brittle Compressive Failure of Microcracked Ice," Proceedings of the 15th International Conference on Offshore Mechanics and Arctic Engineering, Vol. IV, Florence, Italy, June, 1996, pp. 23-28.
25. Xin Sun, Dale G. Karr and Chunhui Han, "A Combined Analytical and Numerical Approach for the Solution of an Edge Loaded Semi-Infinite Elastic Sheet", Proceedings of the 1996 ASME Design Engineering Technical Conferences and Computers in Engineering Conference, August 18-22, 1996, Irvine, CA.
26. Ricardo G. Fierro and D.G. Karr, "A Energy Approach to Determine the Dynamic Buckling Load for a System with Two Degrees of Freedom," Applied Mechanics in the Americas, Proceedings of the Fourth Pan-American Congress of Applied Mechanics, PACAM IV, January 3-7, 1995, Vol. 1, pp. 418-423.
27. Michael M. Bernitsas, Danet Suryatama, Byungsik Kang, and Dale G. Karr, "Shape and Topology Structural Redesign by large Admissible Perturbations," Proceedings of the Solid Freeform Fabrication Symposium, Austin, TX, September, 1994, pp. 285-292.
28. D. G. Karr and X. Sun, "Damage Evolution During Impact of an Ice Bar with Lateral Confinement," Proceedings of the Third International Offshore and Polar Engineering Conference, Singapore, June, 1993. (Also a Journal Article.)
29. Dale G. Karr, Armin W. Troesch, and Wayne C. Wingate, "Nonlinear Dynamics of a Simple Ice-Structure Interaction Model," Proceedings of the 11th International Conference on Offshore Mechanics and Arctic Engineering, Vol. IV, Calgary, Alberta, June 7-12, 1992, pp. 231-237. (Also a Journal Article).
30. J. G. Shin, J. D. Kim, and D. G. Karr "Continuum Damage and Stress Propagation in a Wedge-Shape Ice Bar," Proceedings of the Second International Offshore and Polar Engineering Conference, San Francisco, CA, 1992.
31. D. G. Karr and K. P. A'Hearn, "A Design Study of a Discrete Column Involving Hill-Top Bifurcation," Proceedings of the First International Offshore and Polar Engineering Conference, Ellinas, C. P. et. al (Eds.), Edinburgh, U.K. August 11-16, 1991, pp. 14-21.
32. Jong Gye Shin and Dale G. Karr, "Contact Force and Damage Evolution in a Moving Uniaxial Ice Bar," Proceedings of the First European Offshore Mechanics Symposium, Trondheim, Norway, August 19-22, 1990, pp. 527-532. (Also a Journal Article).

33. Jong Gye Shin and Dale G. Karr, "Propagation of Continuum Damage in a Nonlinear Viscoelastic Bar by Finite Difference Method," *Damage Mechanics in Engineering Materials*, AMD-Vol.109/MD-Vol. 24, papers presented at the ASME Winter Annual Meeting, Dallas, TX, Nov. 25-30, 1990, pp. 237-249. (Also a Journal Article).
34. Dale G. Karr and Kyungsik Choi "A Comparative Study of Plastic and Damage Mechanics Models for Polycrystalline Ice," *Proceedings of the Second International Symposium on Plasticity and Its Current Applications*, Tsu, Japan, 1989.
35. Kyungsik Choi and Dale G. Karr, "A Damage Mechanics Model for Uniaxial Creep and Cyclic Loading of Polycrystalline Ice," *Proceedings of the 8th International Conference on Offshore Mechanics and Arctic Engineering*, The Hague, Netherlands, 1989.
36. Dale G. Karr and Kyungsik Choi, "Modeling Anelastic Strain of Solids at High Homologous Temperatures," *Proceedings of the ASME Pressure Vessels and Piping Conference*, Pittsburgh, PA, 1988.
37. G. S. Newbury and J. B. De Aquiar and D. G. Karr, "Elasticity Solutions for Semi-Infinite Ice Sheets Subjected to In-Plane and Lateral Edge Loads," *International Conference on Technology for Polar Areas*, Norwegian Institute of Technology, Trondheim, Norway, 1988.
38. Tomasz Wierzbicki and Dale G. Karr, "Structural Imperfections and Interactive Failure of Edge-Loaded Ice Sheets," *Proceedings of Ninth International Conference on Port and Ocean Engineering Under Arctic Conditions*, Vol. III, Sackinger and Jefferies (Eds.), Fairbanks, Alaska, August 17-21, 1987, pp. 369-380.
39. S.U. Bhat, S.K. Choi, T. Wierzbicki, and Dale G. Karr, "Failure Analysis of Impacting Ice Floes," *Proceedings of the Sixth International Offshore Mechanics and Arctic Engineering Symposium*, ASME, Houston, TX, March 1-5, 1987. (Also a Journal Article).
40. D. G. Karr, J. C. Watson, and M. HooFatt, "Three Dimensional Analysis of Ice Sheet Indentation: Limit Analysis Solutions," *Proceedings of the Sixth International Offshore Mechanics and Arctic Engineering Symposium*, ASME, Houston, TX, March 1-5, 1987. (Also a Journal Article).
41. D. G. Karr, "Three Dimensional Analysis of Ice Sheet Indentation: Lower Bound Solutions," *Proceedings of the Fifth International Offshore Mechanics and Arctic Engineering Symposium*, ASME, Vol. IV, Tokyo, Japan, April, 13-18, 1986, pp. 472-478. (Also a Journal Article).
42. Dale G. Karr, "Constitutive Equations for Ice as a Damaging Material," *ARCTIC '85: Civil Engineering in the Arctic Offshore*, ASCE Specialty Conference, San Francisco, (1985).
43. D. G. Karr, "A Damage Mechanics Model for Uniaxial Deformation of Ice," *Proceedings of the Fourth International Offshore Mechanics and Arctic Engineering Symposium*, ASME, Vol. II, Dallas, TX, Feb. 17-21, 1985, pp. 227-233. (Also a Journal Article).
44. William Torres and Dale G. Karr, "Stability Analysis - Space Shuttle Liquid Hydrogen Tank," *Second Annual AIAA Aerospace Technology Symposium*, New Orleans, LA., 1984.
45. Dale G. Karr, "Application of Continuous Damage Models in Ice Mechanics," *Proceedings of the Fourth International Conference on Applied Numerical Modeling*, Hai Min Hsia, et al. (Ed.), Tainan, Taiwan, Dec. 27-29, 1984, pp. 73-77.

46. D. G. Karr and S. C. Das, "Limit Analysis of Ice Sheet Indentation," Proceedings of the Second International Offshore Mechanics and Arctic Engineering Symposium, ASME, Houston, TX, Jan. 30 - Feb. 3, 1983, pp. 628-633. (Also a Journal Article).
47. Dale G. Karr and Sankar C. Das, "Ice Strength in Brittle and Ductile Failure Modes," ASCE Structures Congress, Preprint SC-8, New Orleans, (1982). (Also a Journal Article).
48. D. G. Karr and S C. Das, "Ice Forces on Offshore Structures," Proceedings of the First Offshore Mechanics/Arctic Engineering/Deepsea Systems Symposium, Vol. II, ASME, New Orleans, LA, March 7-10, 1982, pp. 249-257.

c 3.4 Refereed conference summaries or abstracts

1. D.G. Karr and Yaning Li, "A Relation for Mesh Size Effect in Ductile Fracture", Third M.I.T. Conference on Computational Fluid and Solid Mechanics, June 2005.

c 3.5 Government, university, or industrial reports (non-refereed)

1. Report of Committee IV.2 "Design Methods", Proceedings of the 17th International Ship and Offshore Structures Congress, Seoul, South Korea, August, 2009.
2. Report of Committee IV.2 "Design Methods" Proceedings of the 16th International Ship and Offshore Structures Congress, Volume 1, P.A. Frieze and R.A. Shenoi eds., University of South Hampton, 2006.
3. Naval Architecture and Marine Engineering Program Self-Study Report for the Accreditation Board for Engineering and Technology , June, 1999.
4. Committee on Marine Structures, Marine Board, National Research Council, "Marine Structures Research Recommendations for FY 1998," National Academy Press, 1997.
5. Committee on Marine Structures, Marine Board, National Research Council, "Marine Structures Research Recommendations for FY 1996," National Academy Press, 1995.
6. Dale G. Karr, "Nonlinear Dynamics of Ice-Structure Interaction" Final Report to Ship Structure Committee, December, 1991.
7. Dale G. Karr, "Buckling Analysis and Modal Impedance of Multi-layered Stiffened Orthotropic Shells with Simple Supports," BBN Systems and Technologies Corporation, Technical Memorandum No. 1049, December, 1989.
8. Jong Gye Shin and Dale G. Karr, "Stress Wave and Continuum Damage Propagation in a Moving Viscoelastic Bar During Impact and Its Application to Ice-Structure Interaction, " Center for Scientific Excellence in Offshore Engineering, Departments of Civil and Ocean Engineering, MIT, CSEOE Research Report No. 5, October, 1989.
9. Dale G. Karr, "Analysis of Ice Sheet Breakthrough," David Taylor Naval Ship Research and Development Center, Report SD-9, September, 1984.
10. D. G. Karr, D. Bushnell, and J. Skogh, "STAGS Analysis of the Space Shuttle External LH₂ Tank (LWT)," Martin Marietta Aerospace/Lockheed Missiles and Space Co. Report, August, 1983.

c 3.6 Invited presentations

1. Invited Seminar: "Material Failure as Constitutive Instability" Massachusetts Institute of Technology, October, 2003.
2. AWEA Offshore Windpower 2012 Virginia Beach, VA. "Offshore Wind Turbine Interacting with Surface Ice", October 2012.
3. Michigan Technological University: "Ice/Structure Interaction: Offshore Structural Design", March 2013.
4. Michigan Alternative and Renewable Energy Center: Offshore Wind Turbines Vs. Winter on the Great Lakes, October 2013.
5. University of Toledo: "Ice/Structure Interaction Modelling for Offshore Wind Turbines in the Great Lakes", January, 2014.
6. American Bureau of Shipping: "An Ice Loading Module for NERL's Offshore Wind Turbine Simulation Package FAST", February 2014.
7. University of California Berkeley: "Ice/Structure Interaction Modeling for Offshore Structures". February, 2014.
8. Pacific Northwest National Laboratory. "A fractal fracture mechanics model for predicting fatigue life", March, 2014.
9. US department of Energy Workshop on Offshore Wind Energy Standards and Guidelines. "Freshwater Ice Loading and Other Issues in the Great Lakes" June 2014.

c.4 Technology Transfer and Entrepreneurship

c 4.1

1. "Blast Reducing Structures," United States Patent, No. 7,575,797; granted, Aug. 2009.
2. "Fractal Interfacial Enhancement of Composite Delamination Resistance," United States Patent No. 6,333,092; granted December, 2001.
3. "Fabrication of a fractally attributively delamination resistive composite structure," United States Patent No. 6,663,803; granted December, 2003.

c 4.2 Industry interactions (consulting arrangements, board memberships, etc.)

United States Navy, 1984
 Marecon Co., Inc., 1985
 Hoch, McHugh, and Murphy, 1986-1987
 Bolt, Beranek, and Newman, 1988-1989
 General Electric Corp. 1989- 1990
 Thompson, Rhodes, and Cowie, 1991-1992
 Vorus and Associates, Inc., 1993
 Thompson, Rhodes, and Cowie, 1996
 Davison Sand and Gravel, 1996
 Battelle; 2000-2001
 American Bureau of Shipping, 2006-2008, 2011-2013

d. Service

d.1 Major committee assignments in the Department, College, and/or University

i) Department

Department of Naval Architecture and Marine Engineering,
Undergraduate Program Chair, 2012-present
Department of Naval Architecture and Marine Engineering
Chairperson Search Committee, 2010-2011, member.
Academic Affairs Committee, Chair, 2006-2007
Academic Affairs Committee, 1998-2004

Department of Naval Architecture and Marine Engineering Chairperson
Search Committee, 1990-1991, member.
Master of Engineering Degree Committee, 1994, Chair.
Strategic Planning Committees: Marine Structures (chair), Students, and
Undergraduate Program.
Department of Naval Architecture and Marine Engineering
Chairperson Search Committee, 2003, member.

ii) College

College of Engineering Ombuds, 2009-2011.
College of Engineering Commission on Undergraduate Education, 2009-2010.
College of Engineering Curriculum Committee, 2006-2007.
College of Engineering First Year Courses Review Committee, 2001-2002.
College of Engineering Awards Committee, 2001-2002, member.
College of Engineering Nominating Committee, 2000-2001, member.
College of Engineering ABET Working Group 1997-2000.
College of Engineering Faculty Committee on Discipline 1998, member
College of Engineering Manufacturing Council, 1992-1999, 2003, member.
College of Engineering Nominating Committee, 1993-1994, member.
College of Engineering Nominating Committee, 1994-1995, chair.
Faculty Associate, Minority Engineering Programs Office, 1995-1999.

iii) University

Rackham Fellowship Selection Committee, 2011-2012, member
Senate Assembly, 1998-2003.
Faculty Police Grievance Nominating Committee 2001.
Rackham Fellowship Selection Committee, 1991, member.
Search Committee for Head of Marine Systems at University of Michigan Transportation
Research Institute, 1993-1994, member.
Search Committee for Associate Director of Office of New Students Programs and
Director of Orientation, 1996-1997, member.

d.2 Administrative duties at U of M

Undergraduate Program Advisor, Naval Arch. and Marine Eng., 1998-2003
Graduate Student Advisor in Structures, 1990-present.
Quarterdeck Honorary Society Faculty Advisor, 1990-2003.
Doctoral Part I Qualifying Examinations Committee for Structures, 1993-2003.
Doctoral Part I Qualifying Examinations Committee for Dynamics, 1995-1999.
Department Presentations to Engineering Freshmen, 1993-2000.
Department Computer Committee, 1993, member.

College of Engineering Freshman Counselor, 1993, 1998.
Ocean Engineering Degree Committee, 1990-1991, member.

d.3 Service to government or professional organizations, and service on review board/study panels

National Research Council, Board on International Scientific Organizations, U.S. National Committee on Theoretical and Applied Mechanics, 2002-2009, member.

National Research Council, Marine Board, Committee on Marine Structures, 1994-1998, member
Associate Editor, *Journal of Ship Research*, 2012-present.

Editorial Board, *Ship and Offshore Structures Journal*, 2006-present.

Co-editor, *Ship Technology Research*, *Schieffstechnik*, 1999-present.

Editorial Committee, *Journal of Ship Research*, 2006-2011.

International Ship and Offshore Structures Congress, (ISSC), Committee on Ocean Renewable Energy, 2012-2015.

International Ship and Offshore Structures Congress, (ISSC), Committee on Design Principals and Criteria 2009-2012.

International Ship and Offshore Structures Congress, Chair, Committee on Design methodology 2006-2009.

International Ship and Offshore Structures Congress, (ISSC) Member, Committee member on design methodology 2003-2006.

Second International Conference on Marine Structures, MARSTRUCT 2009, Lisbon, conference advisory board.

PRADS 2007 Program Committee

Member, Great Lakes Maritime Research Institute, Advisor Board 2005-2006

Budget Director, Ship Production Symposium, June 2001.

American Society of Civil Engineers, Member, 1984-1992, 1998-present
Journal of Waterway, Port, Coastal and Ocean Engineering, Reviewer 2001.

American Society of Mechanical Engineers, Member, 1984-1998.
Ice Mechanics Committee, Member, 1984-1992.
Offshore Mechanics and Arctic Engineering Symposium, Session Co-Chair, 1987, 1988, and 1992.
Journal of Offshore Mechanics and Arctic Engineering, Reviewer, 1985- present.
Journal of Energy Resources Technology, Reviewer, 1985-1985.

National Society of Professional Engineers, Member, 1980-1983.

Society of Naval Architects and Marine Engineers (SNAME) Member, 1984-Present.
Secretary-Treasurer, SNAME Great Lakes/Great Rivers Section, 1997-2001
Vice Chair, Great Lakes/Great Rivers Section, 2001-2003
Chair, Great Lakes/Great Rivers Section, 2003-2005
Journal of Ship Production, Reviewer, 1996, 1997.
Journal of Ship Research, Reviewer, 1999-present.
SNAME HS-3 Panel, Member, 1984-1985.

National Science Foundation, Reviewer, 1984-1987.

Department of Transportation, Reviewer, 1986-1986.

International Journal of Plasticity, Reviewer, 1988-1990.

International Journal of Offshore and Polar Engineering, Reviewer, 1992-1993.

Cold Region Science and Technology, Reviewer, 1994.

International Journal of Damage Mechanics, Reviewer, 1995-present.

Structural Engineering and Mechanics, Reviewer, 2002.

Marine Structures, Reviewer, 2013.

Ocean Engineering, Reviewer, 2012

d.4 Contribution to diversity and climate

Faculty Associate, Minority Engineering Programs Office, 1995-1999.

Faculty Representative, Detroit Area Pre-College Engineering Program, 1997-99.