

VITA

September 2001

Name: James R. Sorem, Jr.

Rank: Associate Professor **Dept/Discipline:** Mechanical Engineering

Full Time: Yes **Date of First TU Faculty Appointment:** August 1985

Degrees Earned:

B.S., Mechanical Engineering, The University of Kansas, 1978

M.S., Mechanical Engineering, The University of Kansas, 1981

Ph.D., Mechanical Engineering, The University of Kansas, 1985

Area of Specialization:

Solid Mechanics, Machine Design, Computer Aided Engineering, Residual Stress Analysis and Fatigue Analysis

Professional Experience:

1994-present The University of Tulsa, Tulsa, Oklahoma

Senior Associate Dean, College of Engineering and Natural Sciences. Administration assignments include oversight of graduate and research activities in the college, space allocation and general dean's office activities as needed.

1991-present The University of Tulsa, Tulsa, Oklahoma.

Associate Professor of Mechanical Engineering. Teaching assignments include various aspects of solid mechanics and computer aided engineering.

1985-90 The University of Tulsa, Tulsa, Oklahoma.

Assistant Professor of Mechanical Engineering. Teaching assignments include various aspects of solid mechanics and computer aided engineering.

1985-present Consulting Engineer, Tulsa, Oklahoma

Projects range from finite element modeling to experimental strain measurement.

1984-85 GASO Pumps, Inc., Tulsa, Oklahoma

Hired as a Design Engineer. Developed computer analysis routines to reduce the redundant work being performed in analysis of plate type valves and crossbore stresses in thick wall pressure vessels. Became the MAPICS (Manufacturing Accounting, Production Information Control System) Implementation Manager. Member of the Management Team after take-over by Goulds Pumps in 1984.

1978-83 Various consulting projects

Projects were supervised by Professor Charles Reese and/or Professor George Foreman of the Mechanical Engineering Faculty at The University of Kansas. These projects varied from computer simulation of CNC machines to failure analysis of machine components.

1982-83 Graduate Research Assistant on a Veterans Administration grant

This project involved the determination of fracture healing of long bones through vibrational analysis using a Nicolet Spectrum Analyzer and Dynamic Finite Element Analysis. Ph.D. Dissertation.

1980-82 Teaching Assistant at The University of Kansas

Taught a Strength of Materials course for three semesters and a Mechanical Engineering Instrumentation lab for three semesters.

1981 Graduate Research Assistant

Extensive amount of Finite Element Analysis and Experimental Stress Analysis of an over-the-road grain trailer.

1978-80 Graduate Research Assistant on a NASA research grant

This project involved the failure testing and statistical analysis of 3500 graphite epoxy specimens. Master's Thesis.

Professional Memberships:

- American Society for Mechanical Engineers
- American Society for Testing and Materials
- Americans Society for Engineering Education
- American Pilots Association
- Tau Beta Pi
- Pi Tau Sigma
- Registered Professional Engineer - Oklahoma

Professional Registration:

Engineer in Training 1978

Registered Engineer, Oklahoma, 1988 to present #15560

Certificated Flight Instructor

Honors/Awards:

Tau Beta Pi

Pi Tau Sigma (K.U. president, 1978)

University of Kansas Guest House Fellowship 1980-83

Tau Beta Pi Professor of the Month, October 1989

Fylde Electronics Prize -- Best Paper in Journal "Strain" for the year 1990 (international Journal)

Invited Presentation – ASME Winter Annual Meeting, November 1992

Best Paper in Session – 5th Congresso Brasileiro de Petroleo e Conexpo, April 1994 (in Portuguese), Rio de Janeiro, Brazil

Keynote Speaker -- The Lebanese American University Conference on "Research Trends in Science and Technology" March 2000 in Beirut and Byblos, Lebanon

A. Refereed Publications and Patents (25)**Patents (4):**

U.S. Patent 4,771,156 issued September 13, 1988 and European Patent 87309208.4 for "Method and Apparatus for Heating and Drying Moist Articles," Strattan, R. D., O'Connor, M.E., and Sorem, J.R., Jr., assigned to Micro Dry, Inc.

U.S. Patent 4,795,871 issued January 3, 1989 for "Method and Apparatus for Heating and Drying Fabrics in a Drying Chamber Having Dryness Sensing Devices," Strattan, R. D., O'Connor, M.E., and Sorem, J.R., Jr., assigned to Micro Dry, Inc.

U.S. Patent 4,829,679 issued May 16, 1989 and European Patent 88311514.9 for "Microwave Drying and Sanitizing of Fabric," O'Connor, M.E., Cloutier, M. J., Strattan, R. D., Sorem, J.R., Jr., assigned to Micro Dry, Inc.

U.S. Patent 4,896,010 issued January 23, 1990 for "Microwave Drying and Sanitizing of Fabric," O'Connor, M.E., Cloutier, M. J., Strattan, R. D., Sorem, J.R., Jr., assigned to Micro Dry, Inc.

Refereed Publications (21):

Shadley, J.R., Sorem, J.R., Jr. and Rybicki, E.F., "A Fourier Series Back-Computation Method for the Parting-Out Step in Residual Stress Measurements in Pipes," *Journal of Pressure Vessel Technology*, Vol. III, pp. 225-233, August 1989.

Sorem, J.R., Jr., Shadley, J.R. and Rybicki, E.F., "Experimental Method for Determining Through-Thickness Residual Hoop Stresses in Thin-Walled Pipes and Tubes without Inside Access," *Journal of the British Society for Strain Measurement*, Vol. 26, No. 1, pp. 7-14, February 1990.

Sorem, J.R., Jr., Shadley, J.R. and Tipton, S.M., "Design Curves for Maximum Stresses in Blocks Containing Pressurized Bore Intersections," American Society of Mechanical Engineers *Journal of Mechanical Design*, Vol. 113, pp.427-431, December 1991.

Shadley, J.R. and Sorem, J.R., Jr., "Damped Absorber Optimization and Stability for Semi-Definite System Exhibiting Unstable Self-Excitation During Start-Up," American Society of Mechanical Engineers *Journal of Vibration and Acoustics*, Vol. 114, pp.47-53, January 1992.

Shoup, G.J., Tipton, S.M. and Sorem, J.R., Jr., "The Effect of Proof Loading on the Fatigue Behavior of Studded Chain," *International Journal of Fatigue*, Vol. 14, No. 1, pp. 35-40, January 1992.

Sorem, J.R., Jr. and Tipton, S.M., "An Analysis of a Thick Walled 60 Degree Lateral Pipe," *American Society of Mechanical Engineers, Codes, Standards and Applications for High Pressure Equipment*, PVP-Vol. 238, pp. 209-218, June 1992.

Tipton, S.M. and Sorem, J.R., Jr., "A Reverse Plasticity Criterion for Specifying Optimal Proof Load Levels," *Advances in Fatigue Lifetime Predictive Techniques; Second Vol.*, ASTM, STP 1211, M.R. Mitchel and R.W. Landgraf editors, pp. 186-202, 1993.

Sorem, J.R. Jr., and Tipton, S.M., "The Use of Finite Element Codes for Cyclic Stress-Strain Analysis," *Fatigue Design*, European Structural Integrity Society, Vol. 16, Mechanical Engineering Publications, London, pp. 187-200, 1993.

Yang, S., Badr, E.A., Sorem, J.R., Jr., and Tipton, S.M., "Advantages of Sequential Crossbore Autofrettage of Triplex Pump Fluid End Crossbores," American Society of Mechanical Engineers, *High Pressure - Codes, Analysis, and Application*, PVP-Vol. 263, A. Khare editor, pp. 81-89, 1993.

Sorem, J.R., Jr., Glaessgen, E.H. and Tipton, S.M., "Experimental Determination of the Effect of Hole Interaction on Stress Concentrations in Angle Ply Graphite/Epoxy Composite Panels" *11th Volume, Composite Materials: Testing and Design*, ASTM STP 1206 Eugene T. Camponeschi, Jr., Ed., ASTM, pp. 238-248, 1994.

Tipton, S.M., Hickey, K., Rawson, M.S., and Sorem, J.R., Jr., "Multiaxial Stress Concentration in an Externally Pressurized Cylinder with an External Groove," Transactions of the American Society of Mechanical Engineers, *Journal of Pressure Vessel Technology*, Vol. 117, No. 4, pp. 404-409, 1995.

Badr, E., Yang, S., Sorem, J.R., Jr. and Tipton, S.M., "Development of a Cyclic High Pressure Fatigue Test System," American Society of Mechanical Engineers, *High Pressure Technology*, PVP-Vol. 281, pp. 63-71, 1994.

Henshaw, J.M., Sorem, J.R., Jr. and Glaessgen, E.H., "Finite Element Analysis of Ply-by-Ply and Equivalent Stress Concentrations in Composite Plates with Multiple Holes under Tensile and Shear Loading," *Journal of Composite Structures*, Vol. 36, pp. 45-58, 1996.

Tipton, S.M., Sorem, J.R., Jr. and Rolovic, R.D., "Updated Stress Concentration Factors for Filleted Shafts in Tension and Bending," American Society of Mechanical Engineers, *Journal of Mechanical Design*, Vol. 118, No. 3, pp. 321-327, 1996.

Badr, E.A., Sorem, J.R., Jr., Tipton, S.M., and Yang S., "Residual Stress Estimation using FEM and Neuber's Rule at a Notch," American Society of Mechanical Engineers *International Journal of Pressure Vessels and Piping*, Vol 385, pp. 287-291, 2000.

Tipton, S.M. and Sorem, J.R., Jr., "Fatigue Durability Enhancement by Controlled Overloading," *Fatigue and Fracture Mechanics*, Twenty-Ninth Volume, ASTM STP 1332, T.L. Panontin and S.D. Sheppard, Eds., West Conshohocken, PA, pp. 584-589, 1999.

Badr, E.A., Sorem, J.R., Jr. and Tipton, S.M., "Residual Stress Estimation in Crossbores with Bauschinger Effect Inclusion using FEM and Strain Energy Density," American Society of Mechanical Engineers, *Journal of Pressure Vessel Technology*, Vol. 121, No. 4, pp. 358-363, November 1999.

Badr, E.A., Sorem, J.R., Jr., Tipton, S.M. and Yang, S., "An Analytical Procedure for Estimating Residual Stresses in Blocks Containing Crossbores," Elsevier Science, *International Journal of Pressure Vessels and Piping*, Vol. 77, No. 12, pp. 737-749, 2000.

Martinez, A., Miska, S., Kuru, E. and Sorem, J.R. Jr., "Experimental Evaluation of the Lateral Contact Force in Horizontal Wells," American Society of Mechanical Engineers, *Journal of Energy Resources Technology*, Vol. 122, pp. 123-128, September 2000.

Badr, E.A., Sorem, J.R., Jr., and Tipton, S.M., "Evaluation of the Autofrettage Effect on Fatigue Lives of Steel Blocks with Crossbores Using a Statistical and a Strain-Based Method," American Society of Mechanical Engineers, *Journal of Testing and Evaluation*, Vol. 28, Issue 3, pp. 181-189, 2000.

Rolovic, R.D., Tipton, S.M. and Sorem, J.R. Jr., "Multiaxial Stress Concentration in Filleted Shafts," *Journal of Mechanical Design*, American Society of Mechanical Engineers, Vol. 123, pp. 1-4, June 2001.

B. Professional Presentations, Shows, Performances

"Modal Analysis Characterization as a Tool for Assessment of Fracture Healing in Long Bones," Sorem, J.R., Jr. and Reese, C.D. poster presentation at the 29th Annual Meeting of the Orthopedic Research Society, Anaheim, California, March 1983.

"Introduction to the Finite Element Method," Sorem, J.R., Jr., presented at the second meeting of the Tulsa Chapter of the Society for Computer Aided Engineering, Tulsa, Oklahoma, October 1985.

"Examination of the Effects of Cut Location and Depth on the Vibration Characteristics of a Human Tibia -- A Finite Element Approach," Sorem, J.R., Jr., American Society of Mechanical Engineers/American Institute of Aeronautics and Astronautics Symposium VIII, Stillwater, Oklahoma, February 1986.

"Preliminary Finite Element Results for Crossbore Intersections and Valve Analyses," mid-contract presentation at GASO Pumps, Inc., Sorem, J.R., Jr., Tulsa, Oklahoma, October 1986.

"Development of a CAD Program to Facilitate the Design of a Winch Truck," Sorem, J.R., Jr., American Society of Mechanical Engineers/American Institute of Aeronautics and Astronautics Symposium IX, Tulsa, Oklahoma, February 1987.

"Real Time Data Acquisition System for a Pump Test Facility," Carlson, G. and Sorem, J.R., Jr., American Society of Mechanical Engineers/American Institute of Aeronautics and Astronautics Symposium IX, Tulsa, Oklahoma, February 1987.

"Development of a Simple Translation Routine to Bridge the GAP between CAD Files and Finite Element Input," Sorem, J.R., Jr., presented at the 1988 American Society of Mechanical Engineers International Computers in Engineering Conference, San Francisco, California, August 1988.

"Overview of the Modal Analysis Method and Its Application to Fracture Healing Detection," Sorem, J.R., Jr., invited presentation at the Scientific Advisory Board Meeting of Noninvasive Technology, Inc., Kansas City, Kansas, August 1987.

"Conclusions Concerning the use of a PC Based Finite Element Routine for Analysis of Key Positive Displacement Pump Components," Sorem, J.R., Jr., presentation of final results at GASO Pumps, Inc., Tulsa, Oklahoma, August 1987.

"Presentation of Research Plan for Investigation into the Web Slitting Process," Tipton, S.M. and Sorem, J.R., Jr., presented at the industry advisory board meeting of the Web Handling Research Center, Oklahoma State University, Stillwater, Oklahoma, October 1988.

"Presentation of the Research and Development Results Obtained from the Microwave Clothes Drying Research Effort," Sorem, J.R., Jr., O'Connor, M.E., and Strattan, R. D., presentations made to multiple companies including: Samsung, Hoover, Tadiran, and others, 1987-1989.

"Presentation of Web Slitting Research Results and an Overview of Fracture Mechanics," Sorem, J.R., Jr., and Tipton, S. M., presented at the industry advisory board meeting of the Web Handling Research Center, Oklahoma State University, Stillwater, Oklahoma, April 1989.

"Presentation of Web Slitting Research Results and an Analytical Approach to the Slitting Process," Tipton, S.M., Sorem, J.R., Jr. and Bax, A.J., presented at the industry advisory

board meeting of the Web Handling Research Center, Oklahoma State University, Stillwater, Oklahoma, October 1989.

"The Design, Fabrication and Testing of an Ergometer to Measure Energy Absorbed During Web Slitting," Bax, A. J., Tipton, S.M., and Sorem, J.R., Jr., American Society of Mechanical Engineers/American Institute of Aeronautics and Astronautics Symposium X, Oklahoma City, Oklahoma, February 1990.

"Discussion of Several Types of Finite Elements for Modeling of Composite Materials," Glaessgen, E.H. and Sorem, J.R., Jr., American Society of Mechanical Engineers/American Institute of Aeronautics and Astronautics Symposium X, Oklahoma City, Oklahoma, February 1990.

"Crossbores in Thick-Walled Pressure Vessels and Their Effect on Internal Stresses," Sorem, J.R., Jr., American Society of Mechanical Engineers/American Institute of Aeronautics and Astronautics Symposium X, Oklahoma City, Oklahoma, February 1990.

"Engineering as a Career," Sorem, J.R., Jr., Glaessgen, E.H., middle school presentation made twice in 1990.

"Presentation of Web Slitting Research Results and a Finite Element Analysis of Web Slitting," Sorem, J.R., Jr., Tipton, S. M., and Bax, A. J., presented at the industry advisory board meeting of the Web Handling Research Center, Oklahoma State University, Stillwater, Oklahoma, May 1990.

"Evaluation of the Autofrettage Process with Elastic-Plastic Finite Element Analysis," Sorem, J.R., Jr. and Tipton, S.M., Dowell Schlumberger Inc., Tulsa, Oklahoma, 1990.

"Analysis of Elastic Stress Concentration in Shoulder Filleted Shafts in Bending," Tipton, S.M., Sorem, J.R., Jr., Wei, B., and Sieck, C., presented at the Society of Automotive Engineers, Fatigue Design and Evaluation Committee, Peoria, Illinois October 1990,.

"Prototype Studies of a Microwave Clothes Dryer," Strattan, R. D., O'Connor, M.E., and Sorem, J.R., Jr., presented at the 26th Microwave Power Symposium, August 1991.

"Development of a Design Methodology for Orthotropic Plates with Stress Concentration Interaction," Glaessgen, E.H. and Sorem, J.R., Jr., AIAA/American Society of Mechanical Engineers Symposium XI, Oklahoma State University, Stillwater, Oklahoma, February 1991.

"First Progress Report for OCAST Applied Research Project - Autofrettage of Thick-Walled Pressure Vessel Crossbores," Sorem, J.R., Jr. and Tipton, S.M., Tulsa, Oklahoma, July 1991.

"Incorporating the Bauschinger Effect in Finite Element Analysis," Sorem, J.R., Jr., presented at the AIAA/American Society of Mechanical Engineers Symposium XIV, Tulsa, February 1992.

"Measurement of Residual Strains in Autofrettaged Cyclically Loaded Crossbores," Sorem, J.R., Jr., presented at the AIAA/American Society of Mechanical Engineers Symposium XIV, Tulsa, February 1992.

"The Use of Finite Element Codes for Cyclic Stress-Strain Analysis," presented at the International Symposium - Fatigue Design 1992, Tipton, S.M. and Sorem, J.R., Jr., Finland, May 1992.

"The Influence of Proof Loading on the Fatigue Strength of Anchor Chain," Shoup, G.J., Tipton, S.M., and Sorem, J.R., Jr., 1992 Offshore Technology Conference, Houston, Texas, May 1992.

"A Reverse Plasticity Criterion for Specifying Optimal Proof Load Levels," Sorem, J.R., Jr. and Tipton, S.M., ASTM, 2nd Symposium on Fatigue Lifetime Predictive Techniques, Pittsburgh, Pennsylvania, May 1992.

"Experimental Determination of the Effect of Hole Interaction on Stress Concentrations in Angle Ply Graphite/Epoxy Composite Plates," Sorem, J.R., Jr., Glaessgen, E.H. and Tipton, S.M., ASTM 11th Symposium on Composite Materials: Testing and Design," Pittsburgh, Pennsylvania, May 1992.

"An Analysis of a Thick Walled 60 Degree Lateral Pipe," Sorem, J.R., Jr. and Tipton, S.M., American Society of Mechanical Engineers, Pressure Vessel and Piping Conference, June 1992.

"Design Curves for Maximum Stresses in Blocks Containing Pressurized Bore Intersections," Sorem, J.R., Jr., Shadley, J.R. and Tipton, S.M., invited presentation, American Society of Mechanical Engineers Winter Annual Meeting, Anaheim, California, November 1992.

"Advantages of Sequential Crossbore Autofrettage of Triplex Pump Fluid End Crossbores," Sorem, J.R., Jr., Yang, S., Badr, E.A., and Tipton, S.M., American Society of Mechanical Engineers, Pressure Vessel and Piping Conference, July 1993.

"Analysis of Fatigue and Residual Stresses in Autofrettaged Crossbore Intersections," Yang, S., Sorem, J.R., Jr. and Tipton, S.M., Society of Automotive Engineers Fatigue Design and Evaluation Committee, H.O. Fuchs Travel Award Presentation, Toledo, Ohio, October 1993.

"Pocos Direcionais: Como Evitar a Flambagem Helicoidal (Directional Wells: How to avoid Buckling)," Salies, J., Azar, J.J. and Sorem, J.R., Jr., 5th Congresso Brasileiro de Petroleo e Conexpo, Rio De Janeiro, Brazil, 1994.

"Development of a Cyclic High Pressure Fatigue Test System," Badr, E., Yang, S., Sorem, J.R., Jr. and Tipton, S.M., American Society of Mechanical Engineers, Pressure Vessel and Piping High Pressure Technology, June 1994.

"The Effect of Proof Loading on the Fatigue Behavior of Open Link and Stud Link Chain," Shoup, G.J., Tipton, S.M. and Sorem, J.R., Jr., Society of Automotive Engineers Fatigue Design and Evaluation Committee, H.O. Fuchs Travel Award Presentation, Livonia, Michigan, October 1994.

"Drillpipe Fatigue Life Prediction Model Based on Critical Plane Approaches," Placido, J.C.P., Azar, J.J., Sorem, J.R., Kessler, F. and Tipton, S.M., 1994 Offshore Technology Conference, OTC 7569, Houston, Texas, May 1994.

“Experimental and Mathematical Modeling of Helical Buckling of Tubulars in Directional Wellbores”, Salies, J.B., Azar, J.J., Miska, S. and Sorem, J., SPE International Petroleum Conference and Exhibition of Mexico, Veracruz, Mexico, October 1994.

“Experimental and Mathematical Modeling of Helical Buckling of Pipes in Horizontal Wellbores,” Salies, J.B., Azar, J.J. and Sorem, J, American Society of Mechanical Engineers, Energy and Environmental Expo 1995, Houston, Texas, February 1995.

“Elongation and Diametral Growth,” Tipton, S.M. and Sorem, J.R., Coiled Tubing Mechanics Research Project Launch Meeting, Houston, Texas, January 1996.

“Improved Stress Concentration Solutions for Shaft Geometries,” Jallipalli, S., Rolovic, R.D., Tipton, S.M. and Sorem, J.R., Jr., American Society of Mechanical Engineers/American Institute of Aeronautics and Astronautics Symposium XVI, Tulsa, Oklahoma, February 1996.

"Improved Stress Concentration Solutions for Shaft Geometries," Jallipalli, S., Rolovic, R.D., Tipton, S.M. and Sorem, J.R., American Society of Mechanical Engineers/American Institute of Aeronautics and Astronautics Symposium XVI, Tulsa, Oklahoma, February 1996.

“Elongation and Diametral Growth,” Tipton, S.M. and Sorem, J.R., Jr., Coiled Tubing Mechanics Research Project, Final Year 1 Progress Report, Tulsa, Oklahoma, April 1997.

"Fatigue Durability Enhancement by Controlled Overloading," Tipton, S.M. and Sorem, J.R., Jr., American Society for Testing and Materials, 29th National Symposium on Fatigue and Fracture Mechanics, Stanford, California, June 1997.

“Surface Defects and Fatigue Resistance,” Tipton, S.M. and Sorem, J.R., Jr., Coiled Tubing Mechanics Research Project Launch Meeting, Tulsa, Oklahoma, June 1997.

“Modeling of Acceptable Hole Curvature for Running Casing Strings – Preliminary Study”, Lagreca, A.J., Miska, S.Z., Sorem, J.R., Jr., SPE Annual Technical Conference and Exhibition, San Antonio, Texas, October 1997.

“Surface Defects Tipton, S.M. and Sorem, J.R., Jr., “Elongation and Diametral Growth,” Tipton, S.M. and Sorem, J.R., Jr., Coiled Tubing Mechanics Research Project, Final Progress Report, Houston, Texas, April 1998.

“Surface Defects and Fatigue Resistance,” Tipton, S.M. and Sorem, J.R., Jr., Coiled Tubing Mechanics Research Project, Midterm Project Review, Houston, Texas, April 1998.

“Analyzing the Influence of Surface Defects on the Fatigue Resistance of Coiled Tubing,” Tipton, S.M. and Sorem, J.R., Jr., IBC Coiled Tubing Conference, Houston, Texas, June 1998.

“Surface Defects and Fatigue Resistance,” Tipton, S.M., Sorem, J.R., Jr. and Cliff, M., Coiled Tubing Mechanics Research Project, Final Year 1 Project Review, Tulsa, Oklahoma, August 1998.

"Design Parameters for Stress Relief Grooves in Notched Shafts," Tipton, S.M. and Sorem, J.R., *Society of Automotive Engineers Fatigue Design and Evaluation Committee*, Auburn Hills Michigan, April 1999.

"Deformation Imposed on Coiled Tubing Samples in fatigue Test Machines," Sorem, J.R., Jr., Tipton, S.M., Rhodes, D.S., Draeger, B., and Bulatowicz, M., *SPE/ICoTA Coiled Tubing Roundtable*, Houston, Texas, May 1999.

"Experimental Evaluation of the Lateral Contact Force in Horizontal Wells," Martinez, A., Miska, S., Kuru, E. and Sorem, J.R. Jr., *Proceedings of ETCE/OMAE2000 Joint Conference Energy for the New Millennium*, New Orleans, LA, February 2000.

"What is Academic Research? and What Constitutes Success?" Keynote speech at the International Conference on Research Trends in Science and Technology," Sorem, J.R., Jr., Beirut and Byblos, Lebanon, March 2000.

"Surface Defects and Fatigue Resistance," Tipton, S.M., Sorem, J.R., Jr., Coiled Tubing Mechanics Research Project, Final Year 2 Project Review, Tulsa, Oklahoma, June 2000.

"Coiled Tubing Mechanics Research Consortium," Tipton, S.M., Sorem, J.R., Jr., Launch Meeting, Tulsa, Oklahoma, June 2000.

Participated in Testimony to the House Defense Appropriations Subcommittee for CASI (Center for Aircraft & Systems/Support Infrastructure), Knobbe, E., Sorem, J.R., Jr., and Landers, T., Washington DC, March 2000.

Multiple Presentations Concerning CASI (Center for Aircraft & Systems/Support Infrastructure), to Oklahoma Regents administration, Tinker AFB Contractors, FAA, Oklahoma Congressional Delegation, Congressional Committee Staffers, Knobbe, E., Sorem, J.R., Jr., and Landers, T., 1999-present.

C. Books (Dissertation and Thesis)

"Statistical Distribution of Mechanical Properties for Three Graphite - Epoxy Material Systems," Thesis 1981, The University of Kansas.

"Detection of Fracture Healing -- The Impulse Method," Dissertation 1985, The University of Kansas.

D. Technical Reports

"Statistical Distribution of Mechanical Properties for Three Graphite - Epoxy Material Systems," published as NASA Contractor Report No. 165736, Reese, C.D., and Sorem, J.R., Jr., 1981.

"Investigation into the use of a PC Based Finite Element Routine for Analysis of Key Positive Displacement Pump Components," final report for research grant, Sorem, J.R., Jr., 1987.

"Research and Development Final Report: Microwave Fabric Dryer Phase I," University of Tulsa Research Report, O'Connor, M.E., Strattan, R.D., Sorem, J.R., Jr., November 1986.

"Phase II Prototype Microwave Clothes Dryer Research and Development Final Report," University of Tulsa Research Report, O'Connor, M.E., Strattan, R.D., Sorem, J.R., Jr., July 1987.

"Sanitization in Conjunction with Microwave Fabric Drying," University of Tulsa Re-search Report, O'Connor, M.E., Cloutier, M.J., Strattan, R.D., Sorem, J.R., Jr., January 1988.

"Microwave Fabric Dryer: Research and Development Summary," University of Tulsa Research Report, O'Connor, M.E., Strattan, R.D., Sorem, J.R., Jr., January 1988.

Five Semi-Annual Progress Reports for the NSF Web Slitting Project, Tipton, S.M., Sorem, J.R., Jr., and Bax, A.J., 1988-1990.

"Stress and Fatigue Analysis of 60 Degree Laterals," Report for Dowell Schlumberger Inc., Tulsa, Oklahoma, Sorem, J.R., Jr., and Tipton, S.M., December 1990.

"Autofrettage Analysis of the Wheatley/GASO 5-3/4 inch MWA Fluid End," Report for Wheatley/GASO, Inc., Tulsa, Oklahoma, Sorem, J.R., Jr., April 1991.

"Finite Element Analysis of an Inline Fluid End," Report for Dowell Schlumberger Inc., Tulsa, Oklahoma, Sorem, J.R., Jr., October - December 1991.

"Heat Transfer in a Round Pin in a Convective and Radiation Environment - A FEM Solution," Report for Kentube, Tulsa, Oklahoma, Sorem, J.R., Jr., 1991.

"Metal Forming for Internally Finned Tubing - A FEM Solution," Report for Fintube, Tulsa, Oklahoma, Sorem, J.R., Jr., 1993.

E. Non-Refereed Publications

Sorem, J.R., Jr., Reese, C.D. and Jacobs, R.R., "Modal Analysis Characterization as a Tool for Assessment of Fracture Healing in Long Bones," Transactions of the 29th Annual Meeting of the Orthopedic Research Society, Vol. 8, Anaheim, California, March 1983.

Sorem, J.R., Jr., "Examination of the Effects of Cut Location and Depth on the Vibration Characteristics of a Human Tibia -- A Finite Element Approach," abstract published in proceedings of the American Society of Mechanical Engineers/American Institute of Aeronautics and Astronautics Symposium VIII, Oklahoma State University, Oklahoma, 1986.

Sorem, J. R., Jr., "Development of a CAD Program to Facilitate the Design of a Winch Truck," abstract published in proceedings of the American Society of Mechanical Engineers/American Institute of Aeronautics and Astronautics Symposium IX, Tulsa, Oklahoma, 1987.

Carlson, G. and Sorem, J.R., Jr., "Real Time Data Acquisition System for a Pump Test Facility," abstract published in proceedings of the American Society of Mechanical Engineers/American Institute of Aeronautics and Astronautics Symposium IX, Tulsa, Oklahoma, 1987.

Grayson, T., Badr, E., and Sorem, J.R., Jr., "Development of a Simple Translation Routine to Bridge the GAP between CAD Files and Finite Element Input," Proceedings of the 1988

American Society of Mechanical Engineers International Computers in Engineering Conference, San Francisco, California, 1988.

Strattan, R.D., Singhal, A., O'Connor, M.E., Sorem, J.R. Ng, K. S., Cooper, B., "Dynamic System Modeling of a Microwave Fabric Drying Process Using Tutsim," Proceedings of the Nineteenth Annual Pittsburgh Conference on Modeling and Simulation, Pittsburgh, Pennsylvania, Vol. 19, part 2, pp. 961-965, 1988.

Bax, A. J., Tipton, S. M., and Sorem, J.R., Jr., "The Design, Fabrication and Testing of an Ergometer to Measure Energy Absorbed During Web Slitting," abstract published in proceedings of the American Society of Mechanical Engineers/American Institute of Aeronautics and Astronautics Symposium X, Oklahoma City, Oklahoma, February 1990.

Glaessgen, E.H. and Sorem, J.R., Jr., "Discussion of Several Types of Finite Elements for Modeling of Composite Materials," abstract published in proceedings of the American Society of Mechanical Engineers/American Institute of Aeronautics and Astronautics Symposium X, Oklahoma City, Oklahoma, February 1990.

Sorem, J. R., Jr., "Crossbores in Thick-Walled Pressure Vessels and Their Effect on Internal Stresses," abstract published in proceedings of the American Society of Mechanical Engineers/American Institute of Aeronautics and Astronautics Symposium X, Oklahoma City, Oklahoma, February 1990.

Shoup, G.J., Tipton, S.M. and Sorem, J.R., Jr. "The Influence of Proof Loading on the Fatigue Life of Anchor Chain," published in the Proceedings of The Offshore Technology Conference, May 1992.

Sorem, J.R., Jr. and Tipton, S.M., "The Use of Finite Element Codes for Cyclic Stress-Strain Analysis," Proceedings of the International Symposium - Fatigue Design 1992, Finland, May, 1992(refereed proceedings).

Placido, J.C.P., Azar, J.J., Sorem, J.R., Kessler, F. and Tipton, S.M., "Drillpipe Fatigue Life Prediction Model Based on Critical Plane Approaches," 1994 Offshore Technology Conference, OTC 7569, Houston, Texas, May 1994.

Salies, J.B., Azar, J.J., Miska, S., Sorem, J., "Experimental and Mathematical Modeling of Helical Buckling of Tubulars in Directional Wellbores," SPE 28713, SPE International Petroleum Conference and Exhibition of Mexico, Veracruz, Mexico, October 1994.

Salies, J.B., Azar, J.J., Miska, S., Sorem, J., "Experimental and Analytical Study of Sinusoidal Buckling in Vertical Wells," SPE 29164, SPE Conference, Richmond Virginia, 1994.

Salies, J.B., Azar, J.J. and Sorem, J.R, Jr., "Pocos Direcionais: Como Evitar a Flambagem Helicoidal (Directional Wells: How to Avoid Helical Buckling)," 5th Brazilian Petroleum Congress, 1994.

Salies, J.B., Azar, J.J. and Sorem, J., "Experimental and Mathematical Modeling of Helical Buckling of Pipes in Horizontal Wellbores," PD-Vol 65, Drilling Technology, American Society of Mechanical Engineers, Energy and Environmental Expo 1995, Houston, Texas, February 1995.

Lagreca, A.J., Miska, S.Z., Sorem, J.R., Jr., "Modeling of Acceptable Hole Curvature for Running Casing Strings – Preliminary Study", SPE 38614, SPE Annual Technical Conference and Exhibition, San Antonio, Texas, October 1997.

Tipton, S.M. and Sorem, J.R., Jr., "Analyzing the Influence of Surface Defects on the Fatigue Resistance of Coiled Tubing," IBC Coiled Tubing Conference, Houston, Texas, June 1998.

Sorem, J.R., Jr., Tipton, S.M., Rhodes, D.S., Draeger, B., and Bulatowicz, M., "Deformation Imposed on Coiled Tubing Samples in Fatigue Test Machines," SPE 54479," *SPE/ICoTA Coiled Tubing Roundtable*, Houston, Texas, May 1999.

Martinez, A., Miska, S., Kuru, E. and Sorem, J.R. Jr., "Experimental Evaluation of the Lateral Contact Force in Horizontal Wells," *ETCE/OMAE2000 Joint Conference Energy for the New Millennium*, New Orleans, LA, February 2000.

F. Other Publications

Sorem, J.R., Jr., Shadley, J.R. and Rybicki, E.F., "Experimental Method for Determining Through-Thickness Residual Hoop Stresses in Thin-Walled Pipes and Tubes without Inside Access," selected for summary publication, *Diagnostic Engineering*, No. 52, pp. 1135, May/June 1990.

Lagreca, A.J., Miska, S.Z., Sorem, J.R., Jr., "Modeling of Acceptable Hole Curvature for Running Casing Strings – Preliminary Study", Society of Petroleum Engineering, *Journal of Petroleum Technology*, Vol. 50, No. 6, pp. 62-63, May 1998. (Also published as SPE 38614)

G. Research Proposals

1. Technical Proposals Funded

Principal Investigator, GASO Pumps, Inc., "Investigation into the use of a PC Based Finite Element Routine for Analysis of Key Positive Displacement Pump Components," Funded June 1, 1986 - July 1, 1987, Total funding: \$22,116.

Co-Principal Investigator, (M.E. O'Connor, P.I.), Micro Dry, Inc., "Phase I & II -- Microwave Dryer Research and Development," 1986, Phase I funded May 1986 - August 1986, Phase II funded September 1986 - May 1987, Total Funding: \$269,830.

Faculty Research Grant, The University of Tulsa, "Investigation into the Use of CADL or an IGES Translator to Transfer the 3-D Database Information from CADKEY to ANSYS," Funded 1986-87 academic year, Total funding: \$470.

Co-Principal Investigator, (M.E. O'Connor, P.I.) Micro Dry, Inc., "Sterilization Efficiency of Microwave Radiation: Research in Conjunction with the Development of a Microwave Fabric Dryer," Funded Summer of 1987, Total funding: N/A.

Co-Principal Investigator, (M.E. O'Connor, P.I.) Micro Dry, Inc., "Continuation of Microwave Clothes Dryer Project," Funded Spring and Summer of 1988, Total funding: \$20,000.

Co-Principal Investigator, (S.M. Tipton, P.I.), "Fracture Mechanics Characterization of Slit Edges in Thin Sheets and Membranes," NSF, \$50,000, funded.

Joint proposal for "The Center for Integrated Design and Manufacturing," submitted to Oklahoma Centers for Advanced Science and Technology, \$1,000,000, accepted with numerous other P.I.'s, September 1989, funded.

Principal Investigator, (S.M. Tipton, Co-P.I.), "Autofrettage of Thick-Walled Pressure Vessel Crossbores," revised and submitted to OCAST Applied Research, March 1990, three years, \$413,697 total, \$160,408 OCAST and remainder Industrial Sponsors and TU, funded, 1990-1993.

Co-Principal Investigator, (S.M. Tipton, P.I.), "Fracture Mechanics Characterization of Slit Edges in Thin Sheets and Membranes," OCIDM year two, \$19,706, 1990-91, funded.

Principal Investigator, (S.M. Tipton, Co-P.I.), "Stress Risers due to Incomplete Welding of Finned Tubing During the Manufacturing Process," OCIDM year two, \$30,295, 1989-90, funded.

Co-Principal Investigator, (S.M. Tipton, P.I.), "Fracture Mechanics Characterization of Slit Edges in Thin Sheets and Membranes," OCIDM, \$13,753, funded.

Principal Investigator, (S.M. Tipton, Co-P.I.), "Manufacturing and Materials Processing Projects -- Composites Structural Integrity Research," OCIDM year two, \$16,950, 1990-91, funded.

Principal Investigator, (S.M. Tipton, John Henshaw, and Tomar Marajah, Co-P.I.), Oklahoma Centers for Advanced Science and Technology, Center for Integrated Design and Manufacturing, \$30,000, "Composites Structural Integrity Research Project," 1991-1992.

Co-Principal Investigator, (S.M. Tipton, P.I., and John Henshaw, Co-P.I.), Oklahoma Centers for Advanced Science and Technology, Center for Integrated Design and Manufacturing, \$30,000, "Composites Structural Integrity Research Project," 1992-1993.

Co-Principal Investigator, (S.M. Tipton, P.I., John Henshaw, Co-P.I.), Oklahoma Centers for Advanced Science and Technology, Center for Integrated Design and Manufacturing, \$30,000, "Composites Structural Integrity Research Project," 1993-1994.

Co-Principal Investigator, (R. Arnold, M. Kelkar, S. Miska, D. Teeters and T. Urban, Co-P.I., K. Luks, P.I.), BDM - Oklahoma, Inc., National Oil and Related Programs, \$7084, "Assistance on Risk Management and Drilling Strategies" (DO-0006) (Prime: Department of Energy), 4/29/94, funded.

Co-Principal Investigator, (S.M. Tipton, P.I.), Ford Motor Company, \$16,724, "Stress Concentration Factors for Various Shaft Geometries", 2/13/96, funded.

Co-Principal Investigator, (S.M. Tipton, P.I.), Various Companies, \$60,000, "Joint Industry Project on Coiled Tubing Mechanics Research Project: Elongation and Diametral Growth", Year 1 and 2, funded 1996.

Co-Principal Investigator, (S.M. Tipton, P.I.), Various Companies, \$150,000, "Joint Industry Project on Coiled Tubing Surface Defects and Fatigue Resistance", Year 1 of 2, 1998, funded.

Co-Principal Investigator, (S.M. Tipton, P.I.), Various Companies, \$135,000, "Joint Industry Project on Coiled Tubing Surface Defects and Fatigue Resistance", Year 2 of 2, 1999, funded.

Co-Director with Ed Knobbe (OSU) and Ed O'Rear(OU) "Center For Aging Systems & Infrastructure (CASI), approximately \$6,000,000 requested over 5 years. Funded initially at \$250,000/yr from State Regents, 1998.

Co-Director with Ed Knobbe (OSU) and Tom Landers(OU) "Center For Aircraft Systems/Support Infrastructure," Congressional request of \$5,000,000. Funded at \$1,600,000 in 2000.

Co-Principal Investigator, (S.M. Tipton, P.I.), Various Companies, \$90,000/yr, "Tulsa University Coiled Tubing Mechanics Research Consortium," funded 2000.

2. Proposals Not Funded

Principal Investigator, "Application of Advanced Microcomputers in Mechanical Engineering, submitted to NSF Instrumentation and Laboratory Improvement Program, November 1987, \$122,410 (includes 50% matching), not funded.

Co-Principal Investigator, "Development of Adaptive Force Controllers for Robot-Automated Composite Tape-Laying," submitted to NSF Research Initiation Awards, January 1988, \$70,600 (includes \$19,079 cost sharing), not funded.

Co-Principal Investigator, "A Workshop on Microcomputer Applications in Engineering," submitted to NSF Undergraduate Faculty Enhancement Program, March 1988, \$147,355, not funded.

Principal Investigator, "Request for Purchasing a Cincinnati Milacron CNC Machining Center," submitted to ONR, May 1988, \$104,500, not funded.

Principal Investigator, "Real-Time Integrated Quality Assurance for Machining Centers," submitted to the Department of the Navy, May 1988, \$127,181, not funded.

Principal Investigator, "The Microwave Clothes Dryer -- A Thermodynamic Analysis," submitted to Micro Dry Inc., September 1988, \$49,000, not funded.

Principal Investigator, Joint proposal with other state institutions in Oklahoma, submitted to the National Bureau of Standards Manufacturing Technology Centers Program, September 1988, \$117,346, not funded.

Principal Investigator, (D. Schoenefeld and G. Kane, Co-P.I.), "Incorporation of High Resolution Engineering Workstations in the Undergraduate Engineering Curriculum," National Science Foundation, 1988, not funded.

Principal Investigator, (S.M. Tipton, Co-P.I.), "Autofrettage of Thick-Walled Pressure Vessel Crossbores," submitted to OCAST Applied Research, July 1989, \$95,238, not funded.

Co-Principal Investigator, (S.M. Tipton, P.I.), Consortium of Petroleum Related Companies, "Corrosion Fatigue Research Project, Phase II," \$720,000 for three years, submitted August 1991, not funded.

Co-Principal Investigator, (S.M. Tipton, P.I.), "Development of a Multi-State Corrosion-Fatigue Testing System," \$254,199 requested over three years, NSF Academic Research Infrastructure Program., submitted March, 1992, not funded.

Co-Principal Investigator, (S.M. Tipton, Co-P.I. with OSU), API Tubular Joint Proposal, \$240,000 year 1, \$100,000 year 2, submitted March, 1992, not funded.

Co-Principal Investigator, (John Henshaw, Co-P.I., S.M. Tipton, P.I.), U.S. Army Research Office - DEPSCoR, \$206,375, "Experimental Multiaxial Cyclic Plasticity and Fatigue Research", 1992, not funded.

Principal Investigator, (Bryan Tapp and Steve Bellovich, Co-P.I.'s), "Expansion and Upgrade of Multidisciplinary Workstation Laboratory," Hewlett Packard Company, 7/91, \$228,120, not funded.

3. Equipment and College Proposals Funded

Measurements Group Model 500 Polariscope from Dowell Schlumberger Inc. valued at \$18,000, 1988.

Assembled and submitted in conjunction with the Provost's office and the Research Office, "The TU/DOE Drilling and Production Research Program," 1994, \$1,000,000, funded.

Assembled and submitted in conjunction with Dean Bellovich and the Development office, "Second Floor Renovation to Keplinger Hall," 1995, \$100,000, funded at \$20,000.

Assembled and submitted in conjunction with Dean Bellovich and the Development office, "Leadership Support Request for the College of Engineering and Applied Sciences at the University of Tulsa," November 1995, \$1,074,675, eventually funded at \$300,000 as the Phillips Scholars Program.

H. Masters and Doctoral Committees at The University of Tulsa

Completed (42)

Badr, Elie, "Two-Dimensional Automatic Finite Element Mesh Generation," 1988, M.S. Thesis Chairman.

O'Fallon, Gene, "Finite Element and Experimental Design Evaluation and Comparison of Two Threaded Female Adhesive Anchors," 1988, M.S. Thesis Chairman.

Smith, Troy, "Fatigue Life and Strain Analysis of Notched Mechanical Components," 1989, M.S. Thesis Committee.

Dykstra, Mark, "Development and Field Verification of a Predictive Model for Tension Torque and State of Stress in Drill and Casing Strings," 1989, M.S. Thesis Committee.

Vecseri, Gabor, "Nonlinear Notch Stress and Strain in Discriminating Fatigue Specimens," 1990, M.S. Thesis Committee.

Newburn, Dale, "Post Yield Cyclic Strain Response of Pressurized Tubes," 1990, M.S. Thesis Committee.

Naifeh, Chakib, "Trajectories of Solid Particles Entrained in Impacting Drops and Slugs of Liquid With Application to Solid Particle Erosion," 1990, M.S. Thesis Committee.

Martin, Chanda, "A Study of Debonding and Stress Failure of a Sleeve Coupling for Fiber Reinforced Plastic Pipe," 1990, M.S. Thesis Committee.

Wesley Bussman, "A Theoretical and Experimental Investigation of Near-wall Turbulence in Drag Reducing Flows," 1990, Ph.D. Dissertation Committee.

Glaessgen, E. H., "A Design Methodology for Orthotropic Plates with Stress Concentration Interaction," 1991, M.S. Thesis Chairman.

Branscum, K. D., "The Critical Compilation of Fatigue Crack Propagation Data," 1991, M.S. Thesis Committee.

Bax, A. J., "Characterization of Razor Slitting in Thin Sheets and Membranes," 1991, M.S. Thesis Committee.

Larson, P.A., "Three-Dimensional Quasi-Static Drill Ahead BHA Model for Wellbore Trajectory Prediction and Control," 1991, M.S. Thesis Committee.

Owens, A., "Disposing Thermoplastic Automotive Composites a Techno-economic Assessment," 1993, M.S. Thesis Committee.

Kolb, W.B., "The Coating of Monolithic Structures Analysis of Flow Phenomena," 1993 Ph.D. Thesis Committee.

Martens, R.I., "Fatigue Strength Assessment of a Single Pass Submerged Arc Weld," 1994, M.S. Thesis Committee.

Salies, J.B., "Experimental Study and Mathematical Modeling of Helical Buckling of Tubulars in Inclined Wellbores," 1994, Ph.D. Thesis Co-Chair.

Eslinger, D.M., "A Fracture Mechanics Based Method for Predicting the Fatigue Life of Pump Liquid End Crossbores," 1994, M.S. Thesis Chairman.

Badr, E.A., "Estimation of Residual Stresses Induced by Autofrettage with an Experimental Evaluation of the Autofrettage Process in Crossbores of Positive Displacement Pumps," 1994, Ph.D. Thesis Chairman.

Martens, R.I., "Fatigue Strength Assessment of a Single Pass Submerged Arc Weld," 1994, M.S. Thesis Committee.

Yang, S., "Experimental and Analytical Investigation of the Effect of Autofrettage on Fatigue Damage Development in Blocks Containing Crossbores Under Cyclic Internal Pressure," 1995, Ph.D. Thesis Committee.

Shoup, G.J., "The Effect of Proof Loading on the Fatigue Behavior of Open Link and Stud Link Chain," 1994, M.S. Thesis Committee.

Greving, D.J., "Residual Stresses and Thermal Spray Coating Performance," 1995, Ph.D. Thesis Committee.

Placido, J.C.R., "Development of a Predictive Drillpipe Fatigue Model and Experimental Verification," 1994, Ph.D. Thesis Committee.

Hariharan, P.R., 1993, M.S. Thesis Committee.

LaManque, R., M.S. Thesis Committee.

Narrin, J., M.S. Thesis Committee.

Doudican, J.C., "The Effects of Stress on the Environmental Resistance of Glass-Reinforced Polyurethane in Various Automotive Fluids," 1995, M.S. Thesis Committee.

Kirk, A., "Asymptotically Exact Finite Element Method Error Estimators for Planar Linear Elasticity Problems," 1995, M.S. Thesis Committee.

Rolovic, R., 1997, "Plasticity Modeling of Multiaxial Cyclic Ratcheting in Coiled Tubing," Ph.D. Thesis Committee.

Lagreca, A.J., "Mathematical Modeling of Insertion Forces for Running-in Casing Strings in 2-D Wellbores with Hole Curvatures (dogleg severity) and High Deviation Angles," 1997, M.S. Thesis Chairman.

Samuel, R., "Mathematical modeling and design analysis of the power section of a positive displacement motor (PDM)," 1997, Ph.D. Thesis Committee.

Garcia-Gavito, D., "Cutting Mechanics Modeling for Polycrystalline Diamond Compacts and Extension to the Drill Bit," 1998, Ph.D Thesis Committee.

McGinty-Davis, S.R., "Fractive Geometry in a Forced Fold : an FEM Case Study of Zeisman Dome, Wyoming," 1998, M.S. Thesis Committee.

Jallipalli, S., "Stress Concentration Factors for Tapered Shafts," 1997, M.S. Thesis Committee.

Lendi, A.O., "Fatigue Strength of Bolted Connections," 1997, M.S. Thesis Committee.

Grelecki, S.L., "Development of a Specialized Coiled Tubing Test Facility," 1998, M.S. Thesis Committee.

Cliff, M.J., "Three Dimensional Nonlinear Structural Finite Element Analysis of Coiled Tubing Surface Defects," 1999, M.S. Thesis Committee.

Martinez, A., "Experimental Study of Axial Force Transfer Through Continuous Pipes : The Lateral Contact Force Effect," 1999, M.S. Thesis Committee.

Pereira, J.J., "Comprehensive Optimization of Drilling Parameters for Horizontal Wells," 2000, Ph.D. Thesis Committee.

Hackworth, M., "Puncture and fracture resistance in Ultra-thin aluminum pressure vessels," 2000, Ph.D. Thesis Committee.

Luckey, S.G., Jr., "The Creep Characterization of Structural Automotive Polymer Matrix Composites Using a Novel In-situ Fixture," 2000, M.S. Thesis Committee.

I. Continuing Education/Short Course Activities

Professional Engineering Exam Review -- Mechanical Engineering, October 1992-October 2001.

J. Technical Consulting

1985 - present, Consultant to GASO Pumps for MAPICS implementation, experimental stress analysis, design evaluation, and testing methods.

Spring 1988 Consultant to Jack Zarrow and TK Valves to examine the feasibility and usefulness of modeling their ball valves using finite element methods.

Summer 1988 Consultant to the City of San Francisco Fire Department to design physical testing apparatus.

Determination of Minimum Allowable Weld Material at the Fin Tube Interface in Finned Tubing Using Finite Element Analysis, ESCOA 1989-90.

Vibration Monitoring of Positive Displacement Pumps, Wheatley/GASO Inc., 1990. Crankshaft Analysis for Wheatley/GASO Inc., 1990.

Floor friction analysis for Sanders and Carpenter, 1990.

Autofrettage Pressure Requirements for Liquid Ends, 1990.

Stress Analysis of a 15,000 psi, 60 degree, 3 inch Lateral, Dowell Schlumberger, 1991.

"Elastic-Plastic Stress and Fatigue Analysis of 60 Degree Integral Laterals," Dowell Schlumberger Inc., Tulsa, Oklahoma, December 1990.

"Effect of Proof Loading on Fatigue of Open and Studded Lifting Chain," Amoco Production Company, December 1990.

"Finite Element Analysis of an Inline Fluid End," Dowell Schlumberger Inc., Tulsa, Oklahoma, October - December 1991.

"Heat Transfer in a Round Pin in a Convective and Radiation Environment - A FEM Solution," Kentube, Tulsa, Oklahoma 1991.

"Autofrettage Analysis of the Wheatley/GASO 5-3/4" MWA Fluid End," Wheatley/ GASO, Inc., Tulsa, Oklahoma, April 1991.

"Finite Element Analysis of a New Inline Fluid End for Dowell Schlumberger, Tulsa, Oklahoma, 1991-92.

“Finite Element Analysis of Multiple Sized of Flapper Valves,” Baker Oil Tools, Tulsa, Oklahoma, 1994-1998.

“Finite Element Analysis of Various Geometries and Aspects of a Large Deformation Rolling Operation,” Fintube, Tulsa, Oklahoma, 1996-1998.

K. Civic Activities

Member of Trinity Episcopal Church

Building Council board member Grimes Elementary School 1988-1989

Judge most years since 1989 for Tulsa District Science Fair (Engineering Division)

Volunteer Presenter for Grade School Children - What is an Engineer - 1992

President of Braeswood Home Owners Association, 1991-92 and 1992-1993

L. The University of Tulsa Service Activities

Freshman Class Advisor, 85-86.

Member “Center for Microcomputer Applications”

Sophomore Class Advisor, 86-87

Committee for Planning of the Graduate Council for 86-87

Sub-Committee on Faculty (NCA self-study)

Junior Class Advisor, 87-88

Ad-Hoc Manufacturing Engineering Committee -- Departmental

Co-advisor for American Society of Mechanical Engineers student section 86-88

Senior Class Advisor 88-89

Participant instructor/advisor in the Young Scholar Program Summer 88-90

Member of the Committee on Computer Planning and Utilization in Engineering and Science

Sophomore Class Advisor, 89-90

Member of Ad-Hoc Computer Committee in the Engineering College

Member of the University Senate 88-89

Member of the University Senate Research & Development Council 88-89

Member of the University Senate 89-90

Chairman of the University Senate Research & Development Council 89-90

Member of the University Senate Executive Council 89-90

Junior Class Advisor, 90-91

Faculty Participant in the 1990 Freshmen Orientation
Taught the Tau Beta Pi Statics and Strength of Materials EIT review session Fall 1990
Faculty Participant in the 1991 New Student Orientation
Senior Class Advisor, 91-92
Multiple computational demonstrations during 1990-1991 to potential students and college donors
Presentation to Engineers' Club (High School), 1991, Computer Aided Design
Freshman Class Advisor, 92-93
Member of the Graduate Council, 92-93, 93-94
Sophomore Class Advisor, 93-94
Member of the Faculty Senate 1993-96
Member of the Engineering and Science Promotion and Tenure Committee 1993-94
Acting Chair of Mechanical Engineering Fall 1993
Review Committee for Dean of Arts and Sciences 1996
Member NCA Self Study Committee 1996-97
Member University Y2K committee 1999
Attended The University of Tulsa Quality of Service with a Plus Program January 1998
Judge Graduate Colloquium 1999 and 2001
Representative of College to Graduate Council, 1994-present
Member of Associate Deans Council 1999-present
One of Three State Directors of CASI 1999-present
Member the Science and Engineering Career Panel of Education and Training, Tinker AFB, 2001
Member of Center of Excellence in Information Technology and Telecommunications Advisory Committee, 2000-present
Participant in the Education and Training Partnership with Tinker Air Force Base, April 2001