

Appendix G

Daniel B. Bullen, Ph.D., P.E.

Daniel B. Bullen, Ph.D., P.E.
Managing Engineer

Professional Profile

Dr. Daniel B. Bullen is a Managing Engineer in Exponent's Mechanical Engineering and Materials/Metallurgy practice. He has significant professional experience in the areas of mechanical engineering design, materials science, nuclear engineering, materials degradation in severe service environments, radiation effects on materials, materials properties for design and manufacturing, high-level (HLW) and low-level (LLW) radioactive waste management, performance assessment modeling of radioactive waste disposal facilities, engineered barrier system performance assessment modeling, radiolysis effects in spent fuel dry cask storage environments, and Atomic Vapor Laser Isotope Separation (AVLIS). He is a licensed mechanical, metallurgical, and nuclear engineer in the states of California, Iowa, and Nevada and a licensed professional engineer in the states of Georgia, Illinois, and North Carolina.

Prior to joining Exponent, Dr. Bullen was Associate Professor of Mechanical Engineering at Iowa State University where he taught undergraduate and graduate level courses in engineering design, product liability, engineering thermodynamics, materials aspects of design and manufacturing, legal and environmental considerations in design, nuclear engineering, and radioactive waste management. He served as the Nuclear Engineering Program Coordinator from 1993 to 1996 and Director of the UTR-10 Nuclear Reactor Laboratory from 1993 to 2002. As Reactor Director, he provided the interface between Iowa State University and the U.S. Nuclear Regulatory Commission (NRC) on all aspects of reactor operations, maintenance, and training. He directed the decommissioning effort for the UTR-10 facility and provided integration and oversight of the decommissioning contractor (Duke Engineering & Services, Inc.). During the period of reactor operation, he was directly responsible for the supervision of the reactor manager, senior reactor operators and licensed fuel handlers.

Previously, Dr. Bullen held academic appointments as Assistant Professor of Mechanical Engineering in the George W. Woodruff School of Mechanical Engineering at the Georgia Institute of Technology (1990-1992), and Assistant Professor of Nuclear Engineering in the Department of Nuclear Engineering at North Carolina State University (1989-1990). Prior to his academic appointments, Dr. Bullen was the President of DG Engineering, Inc. from 1988 to 1989, a Senior Engineer with Science and Engineering Associates, Inc. from 1986 to 1988, and an Engineer in the Chemistry and Materials Science Department of the Lawrence Livermore National Laboratory from 1984 to 1986.

On January 17, 1997, Dr. Bullen was appointed by President Clinton to serve as a member of the U.S. Nuclear Waste Technical Review Board (NWTRB). He was reappointed to a four-year term on May 16, 2000. The NWTRB reviews the efforts of the U.S. Department of Energy with respect to the storage, transport and disposal of spent nuclear fuel and high-level radioactive waste. The NWTRB reports to the Secretary of Energy and Congress at least two times per

year. Dr. Bullen serves as the chair of the NWTRB Panel on Repository System and Integration (addressing modeling long-term repository performance), a member of the NWTRB Panel on the Engineered System (addressing repository sub-surface and waste package design) and is a member of the NWTRB Panel on the Waste Management System (addressing surface facility design, storage and transportation issues).

Credentials and Professional Honors

Ph.D., Nuclear Engineering (Minor in Metallurgical Engineering), University of Wisconsin-Madison, 1984

M.S., Materials Science, University of Wisconsin-Madison, 1981

M.S., Nuclear Engineering, University of Wisconsin-Madison, 1979

B.S., Engineering Science, Iowa State University, 1978

Licensed Professional Mechanical Engineer, California #M 24232, Iowa #12483, Nevada #016655; Licensed Professional Metallurgical Engineer, California #MT 1824, Iowa #12483, Nevada #016655; Licensed Professional Nuclear Engineer, California #NU 2326, Iowa #12483, Nevada #016655; Licensed Professional Engineer, North Carolina #16444, Georgia #18956, Illinois #062-057385

Member: American Nuclear Society, Fuel Cycles & Waste Management Division (FCWMD), Education & Training Division (ETD), Professional Nuclear Engineering Examination Committee, Editorial Board Member for *Nuclear Technology*; ASM International; Minerals, Metals & Materials Society (TMS) of AIME; American Society of Mechanical Engineers; National Society of Professional Engineers.

Tau Beta Pi; Phi Kappa Phi; Sigma Xi; Alpha Nu Sigma; Cardinal Key; Phi Eta Sigma; Outstanding Senior in Engineering Science and Mechanics (Iowa State University); *Professor of the Semester*, Engineer's Week - 2002, Iowa State University; *Professor of the Year*, Pi Tau Sigma M.E. Honor Society, Iowa State University, 1999; Outstanding Nuclear Engineering Professor, ISU Engineering Student Council, 1993-94; Outstanding Professor, Georgia Institute of Technology American Nuclear Society Student Chapter, 1991-92; Lilly Teaching Fellowship, Georgia Institute of Technology, 1991-92; Presented 33rd Annual Kurtz Lecture, University of Iowa, 2001; Member, U.S. Nuclear Waste Technical Review Board (1997-2004); Eagle Scout

Publications

"A New Political Paradigm for the Management of Radioactive Wastes," Proceedings of the 11th International High-Level Radioactive Waste Management Conference, Las Vegas, NV, May 2006, pp. 1206-1210 (with Barry Butterfield).

"Nuclear Reactors—Nuclear Fuel Reserves," in the *Kirk-Othmer Encyclopedia of Chemical Technology*, Fifth Edition, John Wiley & Sons, New York, 2005.

"Report to The U.S. Congress and The U.S. Secretary of Energy: January to December 2004," U.S. Nuclear Waste Technical Review Board, May 2005 (with M.L. Corradini, B.J. Garrick, M.D. Abkowitz, W.H. Arnold, D.H. Busch, T.E. Cerling, N.L. Christensen, Jr., P.P. Craig, D.J.

Daniel B. Bullen, Ph.D., P.E.

Duquette, G.M. Hornberger, A.C. Kadak, R.M. Latanision, A. Mosleh, P.P. Nelson, R.R. Parizek, and H.R. Petroski).

“Yucca Mountain Project: Repository, Surface Facility, and Waste Package Development,” Monitor Scientific Report MSCI-2307-1C, February 2004 (with M.J. Apted).

“Letter Report to The U.S. Congress and The U.S. Secretary of Energy,” U.S. Nuclear Waste Technical Review Board, 19 December 2003 (with M.L. Corradini, M.D. Abkowitz, T.E. Cerling, N.L. Christensen, Jr., P.P. Craig, D.J. Duquette, D.S. Knopman, R.M. Latanision, P.P. Nelson, and R.R. Parizek).

“Nuclear Waste Technical Review Board Report on Localized Corrosion,” U.S. Nuclear Waste Technical Review Board, 25 November 2003 (with M.L. Corradini, M.D. Abkowitz, T.E. Cerling, N.L. Christensen, Jr., P.P. Craig, D.J. Duquette, D.S. Knopman, R.M. Latanision, P.P. Nelson, and R.R. Parizek).

“Report to The U.S. Congress and The U.S. Secretary of Energy: January to December 2002,” U.S. Nuclear Waste Technical Review Board, April 2003 (with M.L. Corradini, M.D. Abkowitz, T.E. Cerling, N.L. Christensen, Jr., P.P. Craig, D.J. Duquette, D.S. Knopman, R.M. Latanision, P.P. Nelson, and R.R. Parizek).

Scientific Basis for Nuclear Waste Management XXVI, Materials Research Society Symposium Proceedings, Volume 757, 2003 (Editors, Robert J. Finch & Daniel B. Bullen)

“Analysis of Weld Fabrication Flaws in High-Level Radioactive Waste Disposal Containers: Non-Destructive Evaluation Techniques and Statistical Analyses of the Results,” Monitor Scientific Report MSCI-2213-1, November 2002 (with M.J. Apted).

“Report to The U.S. Congress and The U.S. Secretary of Energy: January to December 2001,” U.S. Nuclear Waste Technical Review Board, April 2002 (with J.L. Cohon, J.W. Arendt, N.L. Christensen, Jr., P.P. Craig, D.S. Knopman, P.P. Nelson, R.R. Parizek, A.A. Sagués, J.J. Wong).

“Monitoring Plans and Results for the U.S. Department of Energy's Yucca Mountain Project in FY 2001: Record Keeping and Record Preservation,” Monitor Scientific Report MSCI-2105-2, January 2002 (with M.J. Apted).

“Technical Summary Report on Final Closure and Waste Package Encapsulation for the U.S. Department of Energy's Yucca Mountain Project: Laboratory Studies and Performance Assessment Modeling of Welding Effects on Waste Package Performance,” Monitor Scientific Report MSCI-2109-1, November 2001 (with M.J. Apted).

“Report to The U.S. Congress and The U.S. Secretary of Energy: January to December 2000,” U.S. Nuclear Waste Technical Review Board, April 2001 (with J.L. Cohon, J.W. Arendt, N.L. Christensen, Jr., P.P. Craig, D.S. Knopman, P.P. Nelson, R.R. Parizek, A.A. Sagués, J.J. Wong).

“Decommissioning UTR-10,” *Nuclear Engineering International*, Vol. 45, No. 557, pp. 23–25, December 2000 (with M. Granus, F. Gardner, and S. Wendt).

“Materials Performance Issues for High-Level Radioactive Waste Packages in an Unsaturated Repository Environment,” *Journal of Metals*, Vol. 52, No. 9, pp. 30–33, September 2000 (with A.A. Sagüés, P.P. Craig, C.A.W. Di Bella, and K.D. Severson).

“Report to The U.S. Congress and The U.S. Secretary of Energy: January to December 1999,” U.S. Nuclear Waste Technical Review Board, April 2000 (with J.L. Cohon, J.W. Arendt, N.L. Christensen, Jr., P.P. Craig, D.S. Knopman, P.P. Nelson, R.R. Parizek, A.A. Sagüés, J.J. Wong).

Lead Shielding for the Nuclear Industry, D.B. Bullen (ed.), Lead Industries Association Report, Lead Industries Association, Inc., Sparta, New Jersey, February 2000 (52 pages).

“Impact of Waste Form on Repository Development,” Invited presentation, extended abstract published in *Proceedings, 1999 DOE International Conference on Geologic Repositories*, Denver, Colorado, October 31–November 3, 1999.

“Use of Advanced Concrete Technology for the Preparation and Ultimate Disposal of Radioactive Waste,” Global 99, Jackson Hole, WY, August 30–September 2, 1999 (with B.L. Butterfield and J. Dugat).

“Moving Beyond the Yucca Mountain Viability Assessment: A Report to the U.S. Congress and the Secretary of Energy,” U.S. Nuclear Waste Technical Review Board, April 1999 (with J.L. Cohon, J.W. Arendt, N.L. Christensen, Jr., P.P. Craig, D.S. Knopman, P.P. Nelson, R.R. Parizek, A.A. Sagüés, J.J. Wong).

“Report to The U.S. Congress and The U.S. Secretary of Energy: January to December 1998,” U.S. Nuclear Waste Technical Review Board, April 1999 (with J.L. Cohon, J.W. Arendt, N.L. Christensen, Jr., P.P. Craig, D.S. Knopman, P.P. Nelson, R.R. Parizek, A.A. Sagüés, J.J. Wong).

“Disposing of the World’s Excess Plutonium,” *Policy Studies Journal*, Vol. 26, No. 4, pp. 1–24, 1998 (with J.M. McCormick).

“Report to The U.S. Congress and The U.S. Secretary of Energy,” U.S. Nuclear Waste Technical Review Board, November 1998 (with J.L. Cohon, J.W. Arendt, N.L. Christensen, Jr., P.P. Craig, D.S. Knopman, P.P. Nelson, R.R. Parizek, A.A. Sagüés, J.J. Wong).

“Nuclear Fuel Reserves and Production,” *The Encyclopedia of Environmental Analysis and Remediation*, John Wiley & Sons, Inc., New York, 1998, pp. 3082–3089 (invited contribution).

“1997 Findings and Recommendations,” U.S. Nuclear Waste Technical Review Board Report to The U.S. Congress and The Secretary of Energy, April 1998 (with J.L. Cohon, J.W. Arendt, D.B. Bullen, N.L. Christensen, Jr., P.P. Craig, D.S. Knopman, P.P. Nelson, R.R. Parizek, A.A. Sagüés, J.J. Wong).

“Nuclear Reactors—Nuclear Fuel Reserves,” *Kirk-Othmer Encyclopedia of Chemical Technology*, Fourth Edition, Vol. 17, John Wiley & Sons, New York, 1996, pp. 376–391 (invited contribution).

“Performance Assessment Modeling of the Proposed Genting Island Repository Facility,” Proceedings, 7th International High-Level Radioactive Waste Management Conference, pp. 172–175, May 1996 (with Y.U. Imardjoko and S. Yatim).

“A Model for Container Performance in an Unsaturated Repository,” *Nuclear Technology*, Vol. 113, pp. 29–45, January 1996.

“Performance Modeling of Pyrometallurgical Process Wasteforms,” *Waste Management*, Vol. 15, No. 8, pp. 629–639, 1995 (W.M. Nutt and R.N. Hill).

“Performance Assessment Modeling of the Proposed High-Level Radioactive Waste Disposal Facility at Genting Island, Karimunjawa, Indonesia,” *J. Manusia Dan Lingkungan (Journal of Man and Environment-Indonesia)*, Vol. II, No. 7, pp. 13–37, December 1995 (with Y.U. Imardjoko and Sofyan Yatim).

“Performance Assessment Modelling of High Level Nuclear Waste Containers,” Proceedings, 6th International High-Level Radioactive Waste Management Conference, pp. 568–570, May 1995 (with W.M. Nutt).

“Performance Assessment Analyses of Wasteforms from the Pyroprocess Fuel Cycle,” Proceedings, 6th International High-Level Radioactive Waste Management Conference, pp. 612–614, May 1995 (with W.M. Nutt, and R.N. Hill).

“Calculation of Displacement, Gas, and Transmutation Production in Stainless Steel Irradiated with Spallation Neutrons,” *Journal of Nuclear Materials*, Vol. 212, pp. 1678–1681, 1994 (with M.S. Wechsler, R. Ramavarapu, E.L. Daugherty, R.C. Palmer, and W.F. Sommers).

“Nuclear Arms Reduction, Nuclear Proliferation and High-Level Radioactive Waste Management,” Proceedings, 5th International High-Level Radioactive Waste Management Conference, Vol. 1, pp. 30–39, May 1994 (with and J.M. McCormick).

“Performance Assessment Modeling of a Multi-Purpose Container,” Scientific Basis for Nuclear Waste Management XVII, Materials Research Society, Vol. 333, pp. 869–880, 1994.

“Containment Barrier System Performance Assessment Modeling,” Proceedings, 4th International High-Level Radioactive Waste Management Conference, Vol. 1, pp. 470–477, April 1993.

“Engineered Barrier System Failure Modeling: A Statistical Approach,” Proceeding, 3rd International High-Level Radioactive Waste Management Conference, Vol. 1, pp. 401–408, April 1992.

“Conceptual Design of a MRS Cask Employing Yucca Mountain Containers,” Proceedings, 3rd International High-Level Radioactive Waste Management Conference, Vol.2, pp. 2235–2240, April 1992 (with C.S. Erwin, D.R. Jackson, J.R. Oliver, and M.S. Aljohani).

“A Technique for the Selection of the Fuel Pin Diameter for a Uranium/Zirconium Alloy Fueled Pressurized Water Reactor,” *Nuclear Technology*, Vol. 97, pp. 16–26, 1992 (with D.B. Lancaster, R.L. Marsh, H. Pfeifer, C.S. Erwin, and A.E. Levin).

“Demonstration of a Decision Analysis Methodology for Assessing the Performance of the Yucca Mountain Site in Southern Nevada,” *Waste Management*, Vol. 11, pp. 287–306, 1991 (with F.W. Schwartz, R.K. McGuire, N. Cook, K.J. Coppersmith, J. Kemeny, F.J. Pearson Jr., M. Sheridan, and R.R. Youngs).

“Internal Dose Assessment Model for a Low Level Radioactive Waste Disposal Facility in the Southeast Compact,” *Health Physics*, Vol. 60, S2, S22, 1991 (with M.L. Vaughn).

“Radioactive Waste Management,” *Journal of Environmental Quality*, Vol. 20, No. 1, p. 316, 1991 (Book Review).

“A Proposed Uniform Manifest for Shipment of Low-Level Radioactive Waste,” Proceedings, 12th DOE Low-Level Waste Management Conference, Chicago, IL, pp. 27–45, August 28–29, 1990 (with K.A. Webber).

“The Effects of Hydrogen on the Metal Barrier Candidate Materials for the Nuclear Waste Management Program,” Proceeding, Electrochemical Society, 1988 (with G.E. Gdowski, R.D. McCright and W.G. Halsey).

“Phase Stability Effects on the Corrosion Behavior of the Metal Barrier Candidate Materials for the Nuclear Waste Management Program,” Proceedings, Electrochemical Society Fall Meeting. Volume 88–2. The Electrochemical Society, Pennington, NJ, 1988. Electrochemical Society Fall Meeting, Chicago, IL, October 9–14, 1988 (with G.E. Gdowski, R.D. McCright and W.G. Halsey).

“Localized Corrosion and Stress Corrosion Cracking of Austenitic Candidate Materials for High-Level Radioactive Waste Disposal Containers: Analysis of Data,” Proceeding, Electrochemical Society Fall Meeting. Volume 88–2. The Electrochemical Society, Pennington, NJ (1988). Electrochemical Society Fall Meeting, Chicago, IL, October 9–14, 1988 (with W.G. Halsey, J.C. Farmer, R.D. McCright, and R.A. Van Konynenburg).

“Impact of Phase Stability on the Corrosion Behavior of the Austenitic Candidate Materials for NNWSI,” Scientific Basis for Nuclear Waste Management XI, Materials Research Society, Vol. 112, pp. 793–803, 1987 (with G.E. Gdowski and R.D. McCright).

“Effect of Hydrogen on Void Production in Nickel,” *Journal of Nuclear Materials*, Vol. 133 pp. 455–458, 1985 (with G.L. Kulcinski and R.A. Dodd).

“Swelling Suppression by Injected Self-Interstitials,” *Nuclear Instruments and Methods in Physics Research B*, Vol. 10, pp. 561–564, 1985 (with G.L. Kulcinski and R.A. Dodd).

“The Effects of Implanted Hydrogen and Helium on Cavity Formation in Self-Ion Irradiated Nickel,” Ph.D. Dissertation, Department of Nuclear Engineering, University of Wisconsin, Madison, Wisconsin, 1984.

“The Effect of Pre-injected Gas Atoms on Depth Dependent Damage in Self-Ion Irradiated Nickel,” *IEEE Transactions on Nuclear Science*, Vol. NS-30, No. 2, pp. 1743–1745, April 1983 (with J.H. Billen and G.L. Kulcinski).

“The Effect of Interstitial Gas Atoms on Microstructural Evolution in Self-Ion Irradiated Nickel,” *Journal of Nuclear Materials*, Vol. 122, pp. 584–589, 1984 (with G L. Kulcinski and R.A. Dodd).

Presentations

“Critical Issues for Long-Term Nuclear Waste Canister Safety: How “Good” is “Good Enough?” Presented at the Swedish Nuclear Power Inspectorate (SKI) Workshop on the Mechanical Integrity of KBS-3 Canisters, Ulfunda Slott, Sweden, January 25-27, 2006.

“Critical Issues for the Yucca Mountain License Application,” Presented to the Blackhawk Chapter of the National Society of Professional Engineers (NSPE), Bettendorf, IA, 25 May 2005.

“The Nuclear Option: the Role of Nuclear Energy in a Carbon-Constrained World,” presented at Duke University, Love Auditorium, Levine Science Research Center, Tuesday, 19 April 2005.

“Critical Issues for the Mined Geological Repository (MGR) at Yucca Mountain,” presented to the Department of Nuclear Engineering & Radiological Sciences, University of Michigan, Ann Arbor, MI, 25 March 2005.

“Yucca Mountain Update: Critical Issues for License Application,” presented to the Department of Chemical and Nuclear Engineering, University of New Mexico, Albuquerque, NM, 19 October 2004.

“Yucca Mountain Update: Critical Issues from Nevada Rail Branch Line Design to License Application,” invited corporate presentation made to HDR Engineering, Inc., Chicago, IL, 3 August 2004.

“Yucca Mountain Update: Critical Issues from Site Recommendation to License Application,” presented to the North Central Chapter of the Health Physics Society (NCCHPS) Spring Meeting, University of Iowa, Iowa City, IA, 30 April 2004.

“Yucca Mountain Project: Repository, Surface Facility, and Waste Package Development,” presented to the Radioactive Waste Management Funding and Research Center of Japan (RWMC), Tokyo, Japan, 23 February 2004.

“Technical Issues Related to the Manufacturing, Testing, and Quality Assurance of the Engineered Barrier System,” Presented at the Swedish Nuclear Power Inspectorate (SKI) Workshop on Engineered Barrier System Performance, Stockholm, Sweden, November 12-14, 2003.

“Yucca Mountain: Critical Issues for High-Level Radioactive Waste Disposal,” Presented to the Department of Mechanical Engineering, University of South Carolina, Columbia, SC, January 23, 2003.

“Canister Fabrication and Emplacement Issues Related to Isolation,” Presented at the Swedish Nuclear Power Inspectorate (SKI) Workshop on High-Level Radioactive Waste Canister Fabrication, Balsta, Sweden, November 7, 2002.

“Yucca Mountain Update,” Presented at the Fuel Cycle and Waste Management Division Luncheon, American Nuclear Society Winter Meeting, Washington, DC, November 20, 2002.

“Waste Package Final Closure Weld Fabrication and Testing,” Presented to the Swedish Nuclear Power Inspectorate (SKI), Stockholm, Sweden, March 25, 2002.

“NWTRB Update on U.S. Site Recommendation and Evaluation of Scientific and Technical Work at Yucca Mountain,” Presented at the 4th KASAM Seminar on Spent Fuel Disposal Issues sponsored by the Swedish National Council for Nuclear Waste (KASAM), Sigtuna, Sweden, March 18, 2002.

“Waste Package Closure and Stress Relief in Yucca Mountain Containers,” Presented to Ishikawajima-Harima Heavy Industries (IHI) and Kobe Steel, Tokyo, Japan, February 19, 2002.

“Yucca Mountain Approach to Performance Confirmation and Monitoring,” Presented at the Monitoring Workshop sponsored by the Radioactive Waste Management Funding and Research Center of Japan (RWMC), Tokyo, Japan, February 18, 2002.

“Yucca Mountain Site Recommendation: Critical Issues for the U.S. High-Level Radioactive Waste Disposal,” Presented at the 33rd Annual Kurtz Lecture, University of Iowa College of Engineering, Iowa City, IA, September 20, 2001.

“Yucca Mountain Site Recommendation: Critical Issues for the U.S. High-Level Radioactive Waste Management Program,” Presented to the Nuclear Waste Management Organization of Japan (NUMO), Tokyo, Japan, June 15, 2001.

“Technical Update on the Yucca Mountain Project,” Presented to the Japan Nuclear Cycle Development Institute (JNC), Tokai-Mura, Japan, June 14, 2001.

“Critical Technical Issues for the U.S. High-Level Radioactive Waste Management Program,” Presented to the Radioactive Waste Management Funding and Research Center of Japan (RWMC), Tokyo, Japan, June 13, 2001.

“Yucca Mountain Site Recommendation: Critical Issues for High-Level Radioactive Waste Disposal and Nuclear Power,” Presented to the Governor's Energy Policy Task Force, Des Moines, IA, June 7, 2001.

“The Role of Uncertainties in the Development of a Safe Repository,” Invited Plenary Session Presentation, 9th International High-Level Radioactive Waste Management Conference, Las Vegas, NV, May 2, 2001.

“NWTRB Update on Status of Yucca Mountain Studies,” Presented at the Institute of Nuclear Materials Management Annual Meeting, Washington, DC, January 10, 2001.

“Comments on the U.S. Spent Fuel Disposal Program,” Presented to the Board on Radioactive Waste Management, National Academy of Sciences, Washington, DC, December 14, 2000.

“Yucca Mountain Site Recommendation: Critical Issues for High-Level Radioactive Waste Disposal, Nuclear Power, and Non-Proliferation,” Presented at the Engineering Physics Department, University of Wisconsin, Madison, WI, October 26, 2000.

“Training and Research Reactor D&D at Iowa State University,” Presented at Spectrum 2000, Chattanooga, TN, September 24–28, 2000 (with M. Granus, F. Gardner, and S. Wendt).

“Disposal of DOE Spent Nuclear Fuel and Surplus Fissile Material,” Invited Plenary Session Presentation, American Nuclear Society Embedded Topical Meeting on DOE Spent Fuel and Fissile Material Management, San Diego, CA, June 5, 2000.

“Overview of DOE’s Proposed Waste Package, Pallet, and Drip Shield Design for the Proposed Yucca Mountain Repository,” Presented at the Precision Components Corporation Spent Fuel Storage Workshop 2000, York, PA, April 4–5, 2000.

“Alternative Low-Level Radioactive Waste Disposal Technologies and Performance Assessment,” Presented to the Scientific Panel of the California Low-Level Radioactive Waste Disposal Project, Bradley International Hall, University of California-Los Angeles, February 29, 2000.

“Impact of Waste Form on Repository Development,” Presented at the International Conference on Geologic Repositories, Denver, CO, October 31–November 3, 1999.

“Current Developments in the U.S. High Level Radioactive Waste Management Program,” Presented at The 2nd Biannual International Workshop on High-Level Radioactive Waste Management, Yogyakarta, Indonesia, August 10-12, 1999.

“Yucca Mountain Viability Assessment,” Presentation and panel discussion at the American Nuclear Society 1999 Annual Meeting, Boston, MA, June 8, 1999.

“Perspectives on the U.S. Spent Nuclear Fuel Disposal Program,” Presentation to the French Commissariat A L’Energie Atomique (CEA), Paris, France, April 29, 1999.

“Viability Assessment of Yucca Mountain,” Presented to the Nebraska Section of the American Nuclear Society, Bellevue, NE, November 12, 1998.

“NWTRB Review of the Yucca Mountain Viability Assessment,” Chemical Technology Division Seminar, Argonne National Laboratory-West, Idaho Falls, ID, July 14, 1998.

“Perspectives on the U.S. High-Level Radioactive Waste Disposal Program,” 1998 International High-Level Radioactive Waste Management Conference Keynote Luncheon Address, Las Vegas, NV, May 13, 1998.

“The Viability Assessment of Yucca Mountain,” Iowa State University Environmental Engineering Program Seminar, Ames, IA, April 7, 1998.

“Developing Plutonium Policy: Political and Technical Options,” 1998 Annual Meeting of the International Studies Association, Minneapolis, MN, March 18, 1998 (with J.M. McCormick).

“Disposing of the World’s Excess Plutonium,” Iowa State University Science, Technology and Society Fall Colloquium, November 3, 1997.

“Design, Fabrication and Transportation Issues for High-Level Radioactive Waste Containers for the Yucca Mountain Project,” Iowa State University, Industrial & Manufacturing Systems Engineering, Department Seminar, October 14, 1997.

“Container Performance Assessment for the Proposed Yucca Mountain Repository,” Presented at the EPRI Methodology Development Team Meeting, Palo Alto, CA, September 25, 1997.

“An Overview of High Level Radioactive Waste Management in the United States: The Yucca Mountain Project,” Invited Keynote Address at the International Workshop of High Level Radioactive Waste Management, Yogyakarta, Indonesia, February 20, 1997.

“Introduction to High-Level Radioactive Waste Management in the United States,” Nuclear Engineering Department Seminar, Gadjah Mada University, Yogyakarta, Indonesia, February 19, 1997.

“Metal Barrier Materials Selection for High-Level Radioactive Waste Containment,” Central Iowa Chapter of ASM International, Ames, IA, September 10, 1996.

“Radiolysis Effects on Corrosion Allowance Materials for Spent Fuel Dry Cask Storage and Deep Geologic Disposal,” The Metallurgical Society (TMS) Fall Meeting, Symposium on “Issues in the Disposition of Radioactive Materials,” Cleveland, OH, November 1, 1995.

“Effect of Pyroprocess Fuel Cycle Waste Forms on Performance Assessment Modeling of a Deep Geologic Disposal Site,” The Metallurgical Society (TMS) Fall Meeting, Symposium on “Issues in the Disposition of Radioactive Materials,” Cleveland, OH, October 31, 1995.

“Effects of Moist Air Radiolysis on Multi-Purpose Container Materials Degradation in a Deep Geologic Disposal Environment,” Department of Nuclear Engineering, University of Michigan, Ann Arbor, MI, May 24, 1995.

“Impact of Multi-Purpose Container Designs on the Predicted Performance of the Engineered Barrier System in a Deep Geologic Disposal Facility,” Nuclear Engineering Department Colloquium, University of Wisconsin, Madison, WI, April 5, 1994.

“Impact of Multi-Purpose Container Designs on the Predicted Performance of the Engineered Barrier System in a Deep Geologic Disposal Facility,” Department of Nuclear Engineering, University of Michigan, Ann Arbor, MI, January 11, 1994.

“High-Level Radioactive Waste Storage: Should We Have One in Iowa?” Environmental Engineering Program Seminar, Iowa State University, Ames, IA, March 31, 1993.

“Containment Barrier System Failure Modeling for the Yucca Mountain Site,” Department of Physics and Astronomy, Iowa State University, Ames, IA, February 8, 1993

“Engineered Barrier System Failure Modeling for the Yucca Mountain Site,” Nuclear Engineering Program Seminar, Iowa State University, Ames, IA, September 29, 1992.

“Fundamental Concepts of Nuclear Power,” Environmental Sciences Department Seminar, Creighton University, Omaha, NE, September 8, 1992.

“Engineered Barrier System Failure,” Electric Power Research Institute Methodology Development Team, Briefing to Sandia National Laboratory Scientists, Albuquerque, NM, June 24, 1992.

“Engineered Barrier System Failure,” Electric Power Research Institute Methodology Development Team, Briefing to Yucca Mountain Project Scientists, Berkeley, CA, May 27, 1992.

“The Outlook for Lead-Lined Nuclear Storage Casks,” Lead Industries Association, Inc. 1992 Annual Meeting, Washington, D.C., April 9, 1992.

“A Statistical Approach to Engineered Barrier System Failure at the Yucca Mountain Site,” Nuclear Engineering Program, Iowa State University, Ames, IA, March 24, 1992.

“A Risk-Based Assessment of the Yucca Mountain Site,” Safety Analysis and Risk Management Division, Westinghouse Savannah River Laboratory, Aiken, SC, March 12, 1992.

“A Statistical Approach to Engineered Barrier System Failure Modeling,” Distinguished Visitor Seminar, Department of Nuclear Engineering Sciences, University of Florida, Gainesville, FL, February 27, 1992.

“A Statistical Approach to Engineered Barrier System Failure Modeling,” Nuclear Engineering Department, Pennsylvania State University, University Park, PA, February 17, 1992.

“Engineered Barrier System Failure Modeling: A Statistical Approach,” Nuclear Engineering Program Seminar, Georgia Institute of Technology, Atlanta, GA, January 31, 1992.

“Performance Assessment for a LLRW Disposal Facility in the Southeast Compact,” Western New York Chapter of the Health Physics Society, Rochester, NY, November 8, 1991.

Academic Appointments

- Director, Iowa State University Nuclear Reactor Laboratory (1993–2002)
- Program Coordinator, Nuclear Engineering, Iowa State University (1993–1996)
- Associate Professor, Iowa State University (1992–2004)
- Assistant Professor, Georgia Institute of Technology (1990–1992)
- Assistant Professor, North Carolina State University (1989–1990)

Editorships and Editorial Review Boards

- Editorial Board Member & Technical Reviewer, *Nuclear Technology*
- Technical Reviewer, Nuclear Materials, *Journal of the American Ceramic Society*.
- Technical Reviewer, *American Nuclear Society Transactions*
- Technical Reviewer, Encyclopedia of Chemical Technology, John Wiley & Sons
- Technical Reviewer, American Society of Mechanical Engineers