

Professional Experience

Forty years of experience in Nuclear Criticality Safety, Nuclear Materials Safeguards, and Safety and Infrastructure Management for the Department of Energy, National Nuclear Security Administration, and DOE contractors.

Hold DOE "Q" Clearance; US Citizen.

Senior Criticality Safety Consultant (November 2017 – present) various firms including Sigma Science and Spectra Tech. I provide specialized consulting services to DOE and its contractors in the field of nuclear criticality safety, technical project planning, nuclear safety, integrated safety management and non-destructive assay. To date I've led independent external criticality safety review teams for Consolidated Nuclear Services (CNS) at Y12, Los Alamos National Laboratory, and Pacific Northwest National Laboratory. I've also continued to support the DOE Nuclear Criticality Safety Program focusing on helping with activities of the Criticality Safety Support Group. I supported the Los Alamos National Laboratory on a recent Nuclear and Particle Futures Review Team advising senior laboratory management on LDRD investments in various fields including neutrino physics, neutron diagnosed sub-critical experiments, micro-reactors, the MCNP code, and the National Criticality Experiments Research Center (NCERC). Most recently (2022-23) I served Los Alamos on the NCERC Futures project.

Special Advisor for National Laboratory Operations (November 2017 – August 2018) for the University of Texas System reporting to the Deputy Chancellor. My role with the University of Texas was to assist with preparation of the bid to manage and operate the Los Alamos National Laboratory for the National Nuclear Security Administration. Had the University of Texas won the bid, I would have assumed a senior management position at the Los Alamos National Laboratory for several years of the contract award.

Criticality Safety Engineer (Excepted Service Level DN-V) (November 2016 – November 2017) for the Defense Nuclear Facilities Safety Board (DNFSB). My primary role is to provide knowledge transfer, training, and mentoring to junior staff of four criticality safety engineers. In this capacity, I develop and provide nuclear criticality safety colloquia, arrange and facilitate technical training by national laboratories and contractors, and provide real-time on-the-job training and mentoring for projects the DNFSB Criticality Safety Staff is working on.

DOE Nuclear Criticality Safety Program (NCSP) Manager (Excepted Service Level 5) (2014-November 2016) for the Department of Energy (DOE) National Nuclear Security Administration (NNSA), Headquarters. As part of the Chief of Defense Nuclear Safety Staff, manage and direct the \$27M/year NCSP for the DOE to maintain the technical infrastructure for criticality safety. In addition to these duties, serve as the NNSA expert in criticality safety supporting site offices, reviewing and developing criticality safety orders and standards, and directing the activities of the DOE Criticality Safety Support Group. As a collateral duty, serve as the Government Program Manager (GPM) responsible for the direction of a Special Access Program (SAP).

Director, Office of Environment, Safety and Health (Excepted Service Level V) (2012-2014) for the Department of Energy (DOE), National Nuclear Security Administration (NNSA) Headquarters. Responsible for ensuring all operations are

conducted safely and efficiently across all safety disciplines, including nuclear safety, industrial safety, criticality safety, radiation safety, etc. at all NNSA sites. Represent NNSA safety issues and posture to all DOE, NNSA, and external stakeholders including the Defense Nuclear Facilities Safety Board. Completed Nuclear Executive Leadership Training (NELT) required to approve safety basis documents. Other collateral duties include responsibilities as the DOE Nuclear Criticality Safety Program (NCSP) Manager and Government Program Manager (GPM) responsible for the direction of a Special Access Program (SAP).

Director, Office of Facility Operations (Excepted Service Level V) for the Department of Energy National Nuclear Security Administration Headquarters (2008-2012) with responsibility for planning and preparing operating budgets for NNSA sites. The Readiness in Technical Base and Facilities (RTBF) Operations and Maintenance budget line in excess of \$1B annually provided the necessary funding to maintain NNSA facilities and infrastructure in a safe, secure, and operationally ready posture. Other collateral duties include responsibilities as the DOE Nuclear Criticality Safety Program (NCSP) Manager (~\$25M/annual budget) and Government Program Manager (GPM) responsible for the direction of a Special Access Program (SAP).

Nuclear Safety Engineer (Excepted Service Level V) for the Department of Energy National Nuclear Security Administration Headquarters (2005-2008) with responsibility for providing expert corporate technical support and assistance, policy and standards development, and program management in the area of nuclear criticality safety. Qualified in the Department's Technical Qualification Program as a Senior Technical Safety Manager and in the functional area of Criticality Safety. Holds the positions of the DOE Nuclear Criticality Safety Program (NCSP) Manager and Government Program Manager (GPM) within NA-17. Frequent interactions and briefings with NNSA Senior Management, NNSA Site Managers, DOE Senior Management, the Defense Nuclear Facilities Safety Board and Staff, and the Nuclear Regulatory Commission Staff.

Nuclear Criticality Safety Specialist (Excepted Service Level V) for the Department of Energy, Office of Environment, Safety and Health (1996-2005): Provided criticality safety assistance to DOE Field Offices at Rocky Flats, Y-12, Oak Ridge, Richland, and Lawrence Livermore National Laboratory. The assistance provided to DOE RL was instrumental in the successful resumption of plutonium stabilization operations at the Plutonium Finishing Plant. Principal in drafting the DOE Implementation Plan in response to Defense Nuclear Facilities Safety Board Recommendation 97-2, serves on the Department's Criticality Safety Support Group and chairs the Criticality Safety Coordinating Team. Led the preparation of four DOE Standards related to criticality safety. Proposed and organized the August, 1999 Criticality Safety Self-Improvement Workshop in Las Vegas where self-assessment guidance was provided for DOE field offices and contractors based on DOE P 450.5 and ANSI/ANS-8.19 respectively. Led the DOE team chartered by the Deputy Secretary to assess the status of DOE criticality safety programs in response to the Tokai-Mura criticality accident.

Criticality Safety Engineer with M.H. Chew & Associates (1994-1996): Developed criticality safety design criteria for the long-term plutonium storage facility and the plutonium stabilization system to be used throughout the DOE. One of two "mentor/practitioners" selected to lead the DOE Technical Leadership Development Program (TLDP). Provided technical support to the DOE Rocky Flats Field Office in the

areas of criticality safety and non-destructive assay (NDA).

Manager of Criticality Safety Department, EG&G Rocky Flats (1990-1994): Grew and led a department of over 20 criticality safety engineers to successfully institute a standards-based approach to criticality safety after decades of operating with an expert based approach. This was instrumental to the resumption of operations in two major plutonium processing facilities (Bldgs. 559 and 707). Implemented an interdisciplinary team approach for performing criticality safety evaluations comprised of criticality safety engineers, human factors engineers, operations personnel, and probabilistic risk assessment engineers.

Manager of Safeguards Measurements, Rockwell International/EG&G Rocky Flats (1989-1990): Developed and implemented the techniques used to perform NDA of plutonium contained in ventilation ductwork at Rocky Flats. The department of 15 nuclear engineers and physicists operated and maintained over 30 major NDA devices including segmented gamma scan drum and package counters, passive-active neutron drum and crate counters, calorimeters and low-level waste/TransUranic segregation counters for the purposes of safeguards accountability and waste compliance.

Senior Principal Safeguards Engineer, Rockwell International, Rocky Flats (1987-1989): Lead engineer for passive-active neutron drum and crate counter assay systems. Demonstrated capability to use the Monte Carlo code, MCNP, to accurately predict calibration curves for the passive-active drum counter. Participated in the preparation of the NDA sections of the TRUPACT-II SARP. Assisted in several WIPP WACC audits and NTS audits of the site. Gained expertise in gamma ray assay, neutron assay, MCNP, calorimetry and compliance with DOE Orders for nuclear materials safeguards.

Senior Criticality Safety Engineer, Rockwell International, Rocky Flats (1984-1987): Performed criticality safety evaluations for all major plutonium fabrication facilities at Rocky Flats. Performed comprehensive set of benchmark calculations for plutonium and uranium for the KENO monte-carlo code. Invented the Shielded Annular Tank for the storage of plutonium solutions.

Research Specialist, Rockwell International Rocky Flats (1983-1984): Designed, performed and analyzed critical mass experiments at the Rocky Flats Critical Mass Laboratory. Trained as a reactor operator per DOE Order 5480.6. Led efforts to initiate intermediate energy critical experiments subsequently pursued at the Los Alamos Critical Experiments Facility.

Petroleum Geophysicist Senior Grade, Amoco Production Company (1982-1983): Performed seismic analysis and seismic modeling for oil and gas exploration. Pioneered use of 3-D seismic modeling techniques.

Education

Ph.D. Experimental Nuclear Physics, The Ohio State University (1982)

B.S. Summa cum Laude, Physics, The University of Texas at Arlington (1976)

Positions and Awards

Defense Nuclear Facilities Safety Board Victor Stello, Jr. Award for Safety Leadership (2010)
NNSA Federal Safety Professional of the Year (2006)
NNSA "On-the-Spot Cash Award for Special Act or Service" (2006)
Adjunct Assistant Professor of Physics at Patrick Henry College (2004-2005)
American Nuclear Society Nuclear Criticality Safety Division Technical Excellence Award (2003)
Special Recognition Award from the Nuclear Criticality Safety Division of the ANS (2002)
Member American Nuclear Society Nuclear Criticality Safety Division (since 1983)
Elected to Executive Committee of the ANS Nuclear Criticality Safety Division (2000-2003)
Past Chair of the ANS Nuclear Criticality Safety Division Education Committee
Writing Team Member for ANSI/ANS Standard 8.26 on Criticality Engineer Training and Qualification
Best Paper Award from ANS Nuclear Criticality Safety Division (June, 1987)
Charter Member DOE Nuclear Criticality Safety Program Management Team
Charter Member DOE Criticality Safety Support Group
Chair of DOE Criticality Safety Coordinating Team

Professional Publications and Communications

"The U.S. DOE Criticality Safety Enterprise - Next Generation," International Conference on Nuclear Criticality Safety (ICNC-2015), Invited Plenary Speaker, Charlotte, North Carolina, September 13-17, 2015.

"Nuclear Engineering and Reactor Development Capabilities at the Department of Energy's National Nuclear Security Administration," Nuclear and Emerging Technologies for Space (NETS-2014), Invited Plenary Speaker, Infinity Science Center: Stennis Space Center, February 24-26, 2014

"The MIDAS Project: A US-French Collaboration for a New Criticality Experimental Platform at Valduc (France)", presented at the International Conference on Nuclear Criticality Safety, ICNC 2011, Endinburgh, Scotland, September 2011

"The DOE Nuclear Criticality Safety Program Website – An Important Communication Means for Criticality Safety," presented at the International Conference on Nuclear Criticality Safety, ICNC 2007, St. Petersburg, Russia, May 2007

"Revising DOE-STD-3007 for 2006 and Beyond," presented at the International Conference on Nuclear Criticality Safety, ICNC 2007, St. Petersburg, Russia, May 2007

"Nuclear Data Needs within the U.S. Nuclear Criticality Safety Program," presented at the International Conference on Nuclear Data for Science and Technology 2007, Nice, France, April 2007

"A Standard for Training and Qualification of Criticality Safety Engineers, ANSI/ANS-8.26," Presented at the American Nuclear Society Nuclear Criticality Safety Topical Meeting, Reno, Nevada, November 2001

"Evolution of Criticality Safety Requirements," Invited Plenary Presentation, Presented at the American Nuclear Society Nuclear Criticality Safety Topical Meeting, Reno, Nevada, November 2001

"Nuclear Criticality Safety at Key U.S. Department of Energy Facilities," Transactions of the American Nuclear Society 83, 81 (2000)

"Ideas for the Development and Retention of Criticality Safety Expertise," Presented to the DOE Nuclear Criticality Safety Technology Project Workshop, Gaithersburg, Maryland, 1997

"Incorporating Human Factors Into the Criticality Safety Operating Limits Evaluation Process," Proceedings of the EFCOG Safety Analysis Workshop, Albuquerque, New Mexico, 1994

Professional Publications and Communications (cont.)

"Utilizing Interdisciplinary Teams in the Development of Criticality Safety Operating Limits," Proceedings of the EFCOG Safety Analysis Workshop, Albuquerque, New Mexico, 1994

"Validation Experiments in Nuclear Criticality Safety," Proceedings of the American Nuclear Society's Topical Meeting on Physics and Methods in Criticality Safety, Nashville, Tennessee, 1993

"Validation of KENO-Based Criticality Calculations at Rocky Flats," Transactions of the American Nuclear Society, 65, 236 (1992)

"Process Holdup Measurements of Plutonium in Glovebox Exhausts," Proceedings of the American Nuclear Society's 4th International Conference on Facility Operations-Safeguards Interface, Albuquerque, New Mexico, September 1991

"Monte Carlo Simulation of Passive-Active Neutron Assay Systems with Applications to Nuclear Materials Safeguards," Bulletin of the American Physical Society 33, 1590 (1988)

"A Shielded Annular Tank for the Storage of Plutonium Solutions," Transactions of the American Nuclear Society 54, 206 (1987) *Received ANS NCSD Best Paper Award*

"Use of A Criticality Simulator in Nuclear Criticality Safety Training," Transactions of the American Nuclear Society 54, 10 (1987)

"Validation of Nuclear Criticality Safety Codes: A Status Report," Presented to the Spring Meeting of the Colorado Section of the American Nuclear Society, March, 1985

"Criticality Experiments in a Poison Tube Tank," Transactions of the American Nuclear Society 46, 453 (1984)

"The Energy Dependence of Magnetic Substate Populations in the $^{24}\text{Mg}(p, p' \gamma)$ Reaction," Bulletin of the American Physical Society 28, 1278 (1983)

"Study of the ^{40}Ca (p, gamma) Reaction Near $E_x=7.2$ MeV, " Bulletin of the American Physical Society 28, 913 (1983)

"Effects of Molecular Structure on Positron Annihilation Parameters," Bulletin of the American Physical Society 28, 911 (1983)

"Study of the $^9\text{Be}(^3\text{He}, n \text{ gamma}) ^{11}\text{C}$ Reaction," Bulletin of the American Physical Society 27, 561 (1982)

"Proton Partial Decay Widths from the Intermediate Structure in ^{41}Sc ," Physical Review C 26, 107 (1982)

"More About Positron and Positronium Lifetimes and Intensities in 3,3-Diethylpentane as a Function of Temperature," Proceedings of the Sixth International Conference on Positron annihilation, Ed. By P.C. Coleman, S.C. Sharma, and L.M. Diana (North-Holland, 1982)

"Comparisons of Positron Annihilation Parameters in n-Nonane and Some of its Isomers at Similar Densities," Proceedings of the Sixth International Conference on Positron Annihilation, Ed. By P.C. Coleman, S.C. Sharma, and L.M. Diana, (North-Holland, 1982)

"Orthopositronium Lifetimes in 3,3-Diethylpentane at Several Temperatures," Proceedings of the Fourth International Conference on Positron Annihilation, Ed. By G. Trumpy, (Lyngby, 1976)