

CURRICULUM VITAE

LESTER M. PETRIE OAK RIDGE NATIONAL LABORATORY

Education

Georgia Institute of Technology, Atlanta, GA B.
Massachusetts Institute of Technology, Cambridge, MA
Massachusetts Institute of Technology, Cambridge, MA

ChE ---1959, Chemical Engineering
M.S -----1962, Nuclear Engineering
Sc. D. -----1965, Nuclear Engineering

Professional Activities and Affiliations

Member, American Nuclear Society
Member, Association for Computing Machinery
Affiliate Member, Institute of Electrical and Electronics Engineers

Highlights

Dr. Lester Petrie has specialized in neutral particle transport and the physics of criticality safety for over 30 years. He has been in charge of the development of the KENO series of Monte Carlo codes for determining criticality over this time period. He has helped guide and implement the SCALE computer code system developed for NRC to aid in license evaluations. He has extensive experience in the verification and validation of computer software and data.

He served on the DOE Language Working Group from 1978 to 1984. This group developed extensions for DOE to the Fortran 77 language standard, most of which were later adopted as part of the Fortran 90 standard. He was in charge of the shielding analysis for the CRBR shipping cask until the project was cancelled. He was a member of the OECD Criticality Calculations Working Group from 1986 to 1990. Studies while on this group demonstrated limitations in the SCALE system at that time, and eventually lead to the development of CENTRM. He is currently a member of the American Nuclear Society (ANS) 8.12 working group for the American National Standard on out-of-reactor criticality safety and control of plutonium-uranium fuel mixtures.

Selected Publications

D. F. Hollenbach and L. M. Petrie, "Assurances Associated with Monte Carlo Code Results," pp. 71–73 in *Proceedings of the Nuclear Criticality Technology Safety Workshop*, LA-13439-C, San Diego, CA, May 16–17, 1995 (April 1998).

D. F. Hollenbach, L. M. Petrie, "Comparison of the CENTRM Resonance Processor to the NITAWL Resonance Processor in SCALE," *Trans. Am. Nucl. Soc.*, **78**, 158 (June 1998).

M. E. Dunn, C. L. Bentley, S. Goluoglu, R. E. Pevey, H. L. Dodds, L. M. Petrie, "Continuous-Energy Methods Development for the Monte Carlo Code KENO V.a," *Trans. Am. Nucl. Soc.* **76**, 234–35 (June 1997).

L. Petrie, D. Kent Parsons, G. D. Spriggs, "KENO Lifetimes," *Trans. Am. Nucl. Soc.* **76**, 234–35 (June 1997).

C. V. Parks, W. C. Jordan, L. M. Petrie, R. Q. Wright, "Use of Metal/Uranium Mixtures to Explore Data Uncertainties," *Trans. Am. Nucl. Soc.* **73**, 217–18 (1995).

W. C. Jordan, L. M. Petrie, R. Q. Wright, and C. V. Parks, "Calculation of k_{∞} for Homogeneous ^{235}U Metal Mixtures: Will the Real k_{∞} Please Stand Up?," p. 29, *Proc. Nuclear Criticality Technology Safety Project*, LA-13277-C, Williamsburg, Va., May 10–11, 1994.

D. F. Hollenbach, N. F. Landers, and L. M. Petrie, "KENO Developments," p. 103, *Proc. of the Nuclear Criticality Technology Safety Project*, Williamsburg, VA, May 10–11, 1994.

D. F. Hollenbach, L. M. Petrie, H. L. Dodds, "Vectorization Methods Development for a New Version of the KENO-V.a Criticality Safety Code," *Nucl. Sci. Eng.* **116(3)**, 147–64 (1994).

D. F. Hollenbach, L. M. Petrie, and N. F. Landers, "KENO VI: A Monte Carlo Criticality Program with Generalized Quadratic Geometry," (1993); pp. 58–63, *Proc. Top. Meet. on Physics and Methods in Criticality Safety*, Nashville, TN, Sept. 19–23, 1993.

D. F. Hollenbach, H. L. Dodds, and L. M. Petrie, "Improvements in the Vectorization of the KENO V.a Criticality Safety Code," *Trans. Am. Nucl. Soc.* **65**, 241–42 (1992).

L. M. Petrie, N. F. Landers, N. M. Greene, and C. V. Parks, "New SCALE-4 Features Related to Cross-Section Processing," Presented at Seminar on SCALE-4 and Related Modular Systems for the Evaluation of Nuclear Fuel Facilities and Package Design Featuring Criticality, Shielding, and Heat Transfer Capabilities, September 17–19, 1991, OECD NEA Data Bank, Saclay, France.

D. F. Hollenbach, W. Newmyer, B. Basoglu, H. L. Dodds, N. F. Landers, and L. M. Petrie, "Vectorization of the KENO V.a Criticality Safety Code," *Trans. Am. Nucl. Soc.* **64**, 348–49 (1991).

N. F. Landers and L. M. Petrie, "Uncertainties Associated with the Use of the KENO Monte Carlo Criticality Codes," pp. 289–96, *Proc. Int. Top. Meet. on Safety Margins in Criticality Safety*, San Francisco, Nov. 26–30, 1989.

W. C. Jordan, C. V. Parks, L. M. Petrie, "An Improved Dancoff Correction Factor for the SCALE Code System," *Trans. Am. Nucl. Soc.* **56**, 324–325, June 1988.

R. M. Westfall, H. R. Dyer, and L. M. Petrie, *Assessment of Criticality Computational Software for the U.S. Department of Energy Office of Civilian Radioactive Waste Management Applications*, ORNL/CSD/TM-247, 1988.

D. Ugolini, L. M. Petrie, and H. L. Dodds, "Evaluation of a Simplified Version of KENO V.a on a Parallel Processor Computer," *Trans. Am. Nucl. Soc.* **55**, 326–27 (1987).

W. C. Jordan, N. F. Landers and L. M. Petrie, *Validation of KENO V.a Comparison with Critical Experiments*, ORNL/CSD/TM-238, 1986.

C. V. Parks, L. M. Petrie, N. F. Landers, and J. A. Bucholz, *Computational Methods for Criticality Safety Analysis within the SCALE System*, "Workshop on the SCALE-3 Modular System," Saclay, France, 24–27 June 1986, **Newsletter of the NEA Data Bank No. 33**, pp. 31-44, October 1986.

L. M. Petrie, J. C. Turner, and G. B. Stewart, *Review of PGDP Assessment of Criticality Safety*

Problems in Increasing Product Assay to 5 wt % U-235, ORNL/CSD/TM-225, 1985.

L. M. Petrie, J. T. Thomas, Assessment of Computational Performance in Nuclear Criticality, ORNL/CSD/TM-224, January 1985.

J. T. West, L.M. Petrie, S. K. Fraley, KENO-IV/CG, The Combinatorial Geometry Version of the KENO: Monte Carlo Criticality Safety Program, NUREG/CR-0709 (ORNL/UREG/CSD-7), September 1979.

L. M. Petrie, N. F. Cross, KENO IV - An Improved Monte Carlo Criticality Program, ORNL-4938, November 1975