Bradley T. Rearden, Ph.D.

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Innovative Research and Development Management

A results-driven, hands-on leader who fosters innovation, communication, and quality as demonstrated through years of nuclear engineering research and development, implementing successful management practices and team building.

Education

Texas A&M University

Doctor of Philosophy in Nuclear Engineering, 1999
Master of Science in Nuclear Engineering, 1995
Bachelor of Science in Nuclear Engineering, 1993

Professional Experience

Oak Ridge National Laboratory (1999–Present)

Provides innovation and leadership and builds relationships in research and development through a progression of roles with increasing impact.

Leader, Modeling and Simulation Integration (2016–Present)
Coordinates and integrates modeling and simulation activities across the Reactor and Nuclear System Division (RNSD), including signature capabilities in nuclear data, neutronics, radiation transport and shielding, thermal hydraulics, structural mechanics, fuel performance, reactor safety, system dynamics, instrumentation and controls, nuclear security, and used nuclear fuel. Provides leadership in quality assurance, software development infrastructure, user interfaces, training, multiphysics coupling, verification, validation, and uncertainty quantification. Responsibilities of this role are as follows:

- Leads the RNSD Modeling and Simulation Leadership Team, a strategic team of select line managers and senior staff from the Consortium for the Advanced Simulations of Light Water Reactors (CASL), Nuclear Energy Advanced Modeling and Simulation (NEAMS), SCALE, and other programs who guide technical, programmatic, and managerial aspects of modeling and simulation activities.
- Performs strategic planning and takes actions to ensure that near- and long-term objectives and goals are realized.

Leader, Integration Product Line, NEAMS Program (2015–Present)
Provides technical guidance and vision for the NEAMS Program to develop, deploy and apply a state-of-the-art modeling and simulation toolkit on premier computing platforms for predictive evaluations of the performance and safety of advanced nuclear reactor and fuel designs. This work is performed under the auspices of the US Department of Energy (DOE) Office of Nuclear Energy. Responsibilities of this role include:

- Directs activities at five DOE national laboratories to integrate the capabilities of the reactor and fuels product lines into multiphysics and multiscale applications, integrates quality assurance and uncertainty quantification technologies, and integrates the user with the simulation and solution.
- Coordinates NEAMS-funded projects under the Nuclear Energy University Program (NEUP) and the Small Business Innovation Research (SBIR) Program.
- Serves as a member of the NEAMS Leadership Council, supporting the National Technical Director and coordinating activities across the program.
- Serves as the Office of Nuclear Energy's representative to the Interagency Nuclear Data Working Group.

Manager, SCALE Code System (2009–Present)
Manages all aspects of SCALE, an internationally recognized nuclear safety analysis software package deployed to over 8,000 users in 56 nations. Development, testing, deployment, and application of SCALE is a diverse activity integrating the expertise of staff members across RNSD, with continuing and evolving sponsorship from the US Nuclear Regulatory Commission (NRC), DOE, and the National Nuclear Security Administration (NNSA). Responsibilities and accomplishments include:

- Directs the SCALE Leadership Team of select line managers and senior staff from various areas of expertise who guide the technical, programmatic, and managerial aspects of SCALE.
- Develops, documents, and implements multi-year strategic visions for modernization and growth.
- Manages and coordinates activities of dozens of advanced-degreed engineers, computer scientists, and physicists across several organizational groups and eight technical teams.
- Manages multi-million dollar budgets, interfacing with sponsors, end users, and other stakeholders.
- Promotes innovation in the design of revolutionary architectures and new features with controlled risk management of cost and schedule to successfully advance a legacy product into the future.
- Developed and implemented ISO 9001 quality assurance, configuration management, and deployment strategies with associated infrastructure, resulting in a 98% decrease in feature defects.
- Successfully overcame barriers between internal development and management teams to cultivate a collaborative sense of purpose through improved communication and improved recognition of individual efforts, resulting in minimization of redundant or incongruous efforts.
- Mentored high-value team members in professional growth, recruited new team members with fresh perspectives, and evaluated the effectiveness of team members for continued participation, enabling new features to be developed in days instead of months.
- Improved communication to stakeholders through personal interactions, domestic and international conference presentations, newsletters, website, and social media, resulting in increased community awareness and interest as demonstrated by tripling product deployment for wider impact to cutting-edge projects around the world.
- Modularized and streamlined domestic and international training programs which provide over 10 weeks of hands-on instruction annually, increasing public enrollment while decreasing instructor preparation time by 50%.
- Serves as subject matter expert, advising government agencies and international corporations on the application of sensitivity and uncertainty methodologies in the licensing of billion-dollar operations, and chairing an international expert group within the Organisation for Economic Co-operation and Development's Nuclear Energy Agency in Paris, France.

Senior Research and Development Staff (2006–2009)

- Created, deployed, and promoted the world's first production-quality sensitivity and uncertainty analysis tools for nuclear criticality safety and reactor analysis, creating a new industry standard.
- Managed activities of 14 staff members and several graduate students as leader of the Criticality Safety Methods Team and as programmatic and technical lead of numerous projects.
- Served as technical lead for research and development of innovative methodologies to validate nuclear design and licensing simulations through experimental measurements coupled with sensitivity and uncertainty analysis calculations.
- Led development and introduction of new graphical user interfaces to simplify advanced methodologies and to provide users with in-depth understanding of underlying physical processes.
- Initiated multiyear projects to apply advanced sensitivity and uncertainty methods for nuclear facility licensing and nuclear criticality experiment design with industry and government partners.
- Coordinated development and release of unique sensitivity analysis tools and data to the global community through the Organisation for Economic Co-operation and Development's Nuclear Energy Agency in Paris.

Research and Development Staff (1999–2005)

- Developed and deployed new capabilities for sensitivity and uncertainty analysis for nuclear safety assessment and licensing; promoted this methodology to industry and regulators, garnering international acceptance of novel techniques.
- Produced numerous innovative software packages for the SCALE code system that continue to provide foundational support for advanced techniques.
- Developed innovative visualization tools to provide analysts with in-depth insights into physical processes.
- Collaborated with numerous industry and government partners in advanced analysis and licensing studies.
- Served as lead instructor of domestic and international training courses for end users, regulators, and developers in theory and application sensitivity and uncertainty analysis for nuclear criticality safety and reactor physics analysis and validation.

Postgraduate Research Associate (1998–1999)

- Developed the world's first three-dimensional sensitivity and uncertainty analysis package based on Monte Carlo neutron transport methods as a Ph.D. dissertation project. This package continues to provide the foundation of sensitivity and uncertainty analysis capabilities in SCALE.
- Performed sensitivity analyses for criticality safety applications using state-of-the-art evaluation tools developed for the SCALE code system.

Texas A&M University (1994–1997)
Graduate Research Assistant

- Performed nuclear nonproliferation engineering analyses as a Ph.D. candidate in conjunction with DOE's Amarillo National Resource Center for Plutonium. Projects included the design of first-of-its-kind mixed-oxide nuclear fuel irradiation experiment and analysis of mixed-oxide fuel assemblies.
- Performed multiphysics TRIGA reactor analysis licensing calculations for steady state and pulsed operations as a master's degree candidate, completed documentation to support a 50% power uprate with a highly-enriched uranium core, and analyzed conversion of the core from highly enriched to low-enriched uranium fuel for a nuclear nonproliferation program.

Savannah River Site - Scientific Computations Division - Radiation Shielding Group (1993)
Graduate Researcher

- Contributed to the development of a user-friendly input processor for a multi-dimensional neutron transport code.

Texas Utilities - Reactor Engineering - Reactor Physics (1991–1992)
Summer Internship (two consecutive summers)

- Projects included generation of core following reports and development of a one-dimensional neutron diffusion model to predict axial power profiles of the Commanche Peak Steam Electric Station.

Honor & Activities

Professional Development

- Management Boot Camp – ORNL, 2014
- Situational Leadership II – Manager Certification – Blanchard Certified, 2013–2014
- Managing Difficult Confrontations – ORNL, 2009
- University of Tennessee – College of Business Administration Center for Executive Education – Engineer/Scientist as a Manager Program, 2007
- Best Practices in Project Management – Project Management Associates, 2006
- Developing Strategic Funding Sources – Lore Institute, 2005

Invited Presentations

- Nuclear Science Week, Knoxville, Tennessee, October 2015
- Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Garching, Germany, June 2015
- Nuclear Data Needs and Capabilities for Applications, Berkeley, California, May 2015
- Joint International Conference on Supercomputing in Nuclear Applications plus Monte Carlo 2013 (SNA + MC 2013), Paris, France, October 2013
- American Nuclear Society Winter Meeting, San Diego, California, November 2012
- International Nuclear Codes Workshop/MCNEG, Risley, Cheshire UK, March 2008
- International Symposium NUCEF 2005, Tokai-mura, Ibaraki-ken, Japan, February 2005

Awards

- American Nuclear Society – Landis Young Member Engineering Achievement Award – 2007
- US Department of Energy – Undergraduate Research Programs – Outstanding Mentor Award, 2004 and 2007
- Oak Ridge Institute for Science and Education – Outstanding Mentor Award, 2007
- ORNL Nuclear Science and Technology Division – Scientific and Technical Awards for Release of SCALE 5 and Development of Sensitivity and Uncertainty Analysis Methods – 2004
- UT-Battelle Awards Night – Outstanding Accomplishment in Science and Technology – Early Career Award for Engineering Accomplishment – Finalist 2003
- Apple Computer – Worlds of Science K-12 Educational Software Contest – 1st Place Adult Individual Category – 1998
- Institute for Nuclear Power Operations – Graduate Fellowship Recipient – 1993–1994

Reviewer

- *Nuclear Science and Engineering*
- *Nuclear Technology*
- *Nuclear Engineering and Technology*
- *Nuclear Science and Techniques*
- *Annals of Nuclear Energy*
- *Journal of Heat Transfer*
- *Journal of Nuclear Engineering and Radiation Science*
- *Nuclear Instruments and Methods in Physics Research Section A*
- *Science and Technology of Nuclear Installations*
- Numerous conferences and topical meetings

American Nuclear Society

- Member since 1989
- *Nuclear Criticality Safety Division* (national division with over 800 members) – Chair 2010–2011, Vice Chair 2009–2010, Secretary 2007–2009, Program Committee Member 2001–present
- *Oak Ridge/Knoxville Local Section* – Chair 2006–2007, Vice Chair/Chair Elect 2005–2006, Arrangements Committee Chair 2004–2005
- *Young Members Group* (innovative national group) – Treasurer 2006–2008.
- *Texas A&M Student Branch* – Vice President 1991–1992

International Collaboration

- *Organization for Economic Cooperation and Development, Nuclear Energy Agency* – Participant in international expert panels: Working Party for Nuclear Criticality Safety, Working Party on Scientific Issues of Reactor Systems, and Working Party on International Nuclear Data Evaluation Co-operation
- *OECD/NEA/WPNCS Expert Group on Uncertainty Analysis for Criticality Safety Assessment* – Chair 2014–Present

Conference Leadership

- *International Conference on Mathematics & Computational Methods Applied to Nuclear Science and Engineering 2017* – Sensitivity and Uncertainty Analysis Track Leader
- *International Conference on Nuclear Criticality Safety 2015* – Uncertainty and Sensitivity Analysis Track Leader
- *PHYSOR 2012 – Advances in Reactor Physics* – Nuclear Criticality Safety Track Leader
- *Monte Carlo 2005 and 2007 Topical Meetings* – Technical Program Committee Member
- *Nuclear Criticality Safety Division Topical Meeting 2005* – Technical Program Committee Member
- *International Youth Nuclear Congress 2000* – Technical Program Committee Member
- *International Forum - Youth and the Plutonium Challenge* - Obninsk, Russia, Co-chair, July 1998
- *American Nuclear Society Central Regional Student Conference* – Co-chair, 1992

Honor Societies

- *Alpha Nu Sigma* – Member Since 1992
- Texas A&M Student Branch – President 1993–1994, Vice President 1992–1993
- *Tau Beta Pi* – Member Since 1993
- Texas A&M Student Branch – Treasurer 1993–1994

Personal Activities

- Knights of Columbus member
- National Society of the Sons of the American Revolution member
- Previous School Board member for St. Mary's Catholic School
- Wakeboarding, snowboarding, and boating

Publications

Ph.D. Dissertation

1. B. T. Rearden, *Development of SAMS: A Sensitivity Analysis Module for the SCALE Code System*, Texas A&M University (1999).

M. S. Thesis

2. B. T. Rearden, *Engineering Analysis of a Power Upgrade for the Texas A&M Nuclear Science Center Reactor*, Texas A&M University (1995).

Refereed Journal Articles

3. C. M. Perfetti, B. T. Rearden, and W. J. Marshall, "Diagnosing Undersampling in Monte Carlo Eigenvalue and Flux Tally Estimates," *Nucl. Sci. Eng.*, **185**, 1 (2017).
4. C. M. Perfetti, B. T. Rearden, and W. R. Martin, "SCALE Continuous-Energy Eigenvalue Sensitivity Coefficient Calculations," *Nucl. Sci. Eng.* **182(3)**, 332–353 (2016).
5. C. M. Perfetti and B. T. Rearden, "Development of a Generalized Perturbation Theory Method for Uncertainty and Sensitivity Analysis Using Continuous-Energy Monte Carlo Methods," *Nucl. Sci. Eng.* **182**(3), 354–368 (2016).

6. M. L. Williams, D. Wiarda, W. J. Marshall, and B. T. Rearden, "Covariance Applications in Criticality Safety, Light Water Reactor Analysis, and Spent Fuel Characterization," *Nuclear Data Sheets*, **123**, 92–96 (2015).
7. B. T. Rearden, L. M. Petrie, D. E. Peplow, K. B. Bekar, D. Wiarda, C. Celik, C. M. Perfetti, A. M. Ibrahim, S. W. D. Hart, M. E. Dunn, and W. J. Marshall, "Monte Carlo Capabilities of the SCALE Code System," *Annals of Nuclear Energy*, **82**, 130–141 (2015).
8. M. Salvatores, G. Palmiotti, G. Aliberti, P. Archier, C. De Saint Jean, E. Dupont, M. Herman, M. Ishikawa, T. Ivanova, E. Ivanov, S. J. Kim, I. Kodeli, G. Manturov, R. McKnight, S. Pelloni, C. Perfetti, A. J. M. Plompen, B. T. Rearden, D. Rochman, K. Sugino, A. Trkov, *et al.*, "Methods and Issues for the Combined Use of Integral Experiments and Covariance Data: Results of a NEA International Collaborative Study," *Nuclear Data Sheets*, **118**, 38–71 (2014).
9. M. L. Williams, G. Ilas, W.J. Marshall, B.T. Rearden, "Applications of Nuclear Data Covariances to Criticality Safety and Spent Fuel Characterization," *Nuclear Data Sheets*, **118**, 341–345 (2014).
10. M. L. Williams, G. Ilas, M. A. Jessee, B. T. Rearden, D. Wiarda, W. Zwermann, L. Gallner, M. Klein, B. Krzykacz-Hausmann, and A. Pautz, "A Statistical Sampling Method for Uncertainty Analysis with SCALE and XSUSA," *Nucl. Tech.* **183**, 515–526 (2013).
11. J. A. Roberts, B. T. Rearden, and P. H. Wilson, "Determination and Application of Partial Biases in Criticality Safety Validation," *Nucl. Sci. Eng.* **173**, 43–57 (2013).
12. J. Utke, B. T. Rearden, and R. A. Lefebvre, "Sensitivity Analysis for Mixed-Language Numerical Methods," *Procedia Computer Science* **18**, 1794–1803 (2013).
13. B. T. Rearden, M. L. Williams, M. A. Jessee, D. E. Mueller, and D. A. Wiarda, "Sensitivity and Uncertainty Analysis Capabilities and Data in SCALE," *Nucl. Technol*. **174(2)**, 236–288 (2011).
14. S. Goluoglu, L. M. Petrie, Jr., M. E. Dunn, D. F. Hollenbach, and B. T. Rearden, "Monte Carlo Criticality Methods and Analysis Capabilities in SCALE," *Nucl. Technol*. **174(2)**, 214–235 (2011).
15. B. T. Rearden and D. E. Mueller, "Recent Use of Covariance Data for Criticality Safety Assessment," *Nuclear Data Sheets*, **109(12)**, 2739–2744 (2008).
16. M. L. Williams and B.T. Rearden, "SCALE-6 Sensitivity/Uncertainty Methods and Covariance Data," *Nuclear Data Sheets*, **109(12)**, 2796–2800 (2008).
17. B. T. Rearden, W. J. Anderson, and G. A. Harms, "Use of Sensitivity and Uncertainty Analysis in the Design of Reactor Physics and Criticality Benchmark Experiments for Advanced Nuclear Fuel," *Nucl. Technol.*, **151**, 133–158 (2005).
18. B. L. Broadhead, B. T. Rearden, C. M. Hopper, J. J. Wagschal, and C. V. Parks, "Sensitivity- and Uncertainty-Based Criticality Safety Validation Techniques," *Nucl. Sci. Eng.* **146**, 340–366 (2004).
19. B. T. Rearden, "Perturbation Theory Eigenvalue Sensitivity Analysis with Monte Carlo Techniques," *Nucl. Sci. Eng.* **146**, 367–382 (2004).
20. K. R. Elam and B. T. Rearden, "Use of Sensitivity and Uncertainty Analysis to Select Benchmark Experiments for the Validation of Computer Codes and Data," *Nucl. Sci. Eng.* **145**, 196–212 (2003).

Book Chapter

21. G. Radulescu, M. Yavuz, H. Akkurt, N. M. Abdurrahman, B. T. Rearden, G. F. Cuevas-Vivas, J. A. Cowan, T. A. Parish, "Neutronics Benchmarks for the Utilization of Mixed Oxide Fuel in Water Reactors." Nuclear Materials Safety Management. Ed. K. L. Peddicord, L. N. Lazarev. Volume 20 of the series NATO ASI Series, 1997. 271–279. ISBN: 978-94-010-6129-2 (Print) 978-94-011-5070-5 (Online).

Technical Reports

22. B. T. Rearden and M. A. Jessee, Eds., *SCALE Code System*, ORNL/TM-2005/39, Version 6.2.2, UT-Battelle, LLC, Oak Ridge National Laboratory, 2017.
23. B. T. Rearden and M. A. Jessee, Eds., *SCALE Code System*, ORNL/TM-2005/39, Version 6.2.1, UT-Battelle, LLC, Oak Ridge National Laboratory, 2016.
24. B. T. Rearden and M. A. Jessee, Eds., *SCALE Code System*, ORNL/TM-2005/39, Version 6.2, UT-Battelle, LLC, Oak Ridge National Laboratory, 2016.
25. A. Hoefer, T. Ivanova, B. Rearden, D. Mennerdahl, O. Buss, *Proposal for Benchmark Phase IV Role of Integral Experiment Covariance Data for Criticality Safety Validation*, Working Party on Nuclear Criticality Safety, Expert Group on Uncertainty Analysis for Criticality Safety Assessment, OECD/NEA (2014).
26. T. Ivanova, R. McKnight, D. Mennerdahl, J. C. Neuber, B. Rearden, A. Santamarina, and A. Vasiliev, *Overview of Approaches Used to Determine Calculational Bias in Criticality Safety Assessment*, NEA/NCS/WPNCS/DOC(2013)7, OECD/NEA (2013).
27. W. J. Marshall and B. T. Rearden, *Criticality Safety Validation of Scale 6.1*, ORNL/TM-2011/450, UT-Battelle, LLC, Oak Ridge National Laboratory, November 2011.
28. *SCALE: A Comprehensive Modeling and Simulation Suite for Nuclear Safety Analysis and Design*, ORNL/TM-2005/39, Version 6.1, UT-Battelle, LLC, Oak Ridge National Laboratory, 2011.
29. B. T. Rearden and R. A. Lefebvre, *Getting Started with VIBE as a DICE Plug-in Module*, ORNL/TM-2010/60, UT-Battelle, LLC, Oak Ridge National Laboratory, August 2010.
30. D. E. Mueller, B. T. Rearden, and D. F. Hollenbach, *Application of the SCALE TSUNAMI Tools for the Validation of Criticality Safety Calculations Involving ^{233}U*, ORNL/TM-2008/196, UT-Battelle, LLC, Oak Ridge National Laboratory, January 2009.
31. B. T. Rearden, D. E. Mueller, S. M. Bowman, R. D. Busch, and S. J. Emerson, *TSUNAMI Primer: A Primer for Sensitivity/Uncertainty Calculations with SCALE*, ORNL/TM-2009/027, UT-Battelle, LLC, Oak Ridge National Laboratory, January 2009.
32. J. R. Parry, J. D. Bess, B. T. Rearden, and G. A. Harms, *Assessment of Zero Power Critical Experiments and Needs for a Fission Surface Power System*, INL/EXT-08-14678, Idaho National Laboratory, September 2008.
33. L. C. Leal, D. Wiarda, B. T. Rearden, and H. Derrien, *^{233}U Cross-Section and Covariance Data Update for SCALE 5.1 Libraries*, ORNL/TM-2007/115, UT-Battelle, LLC, Oak Ridge National Laboratory, February 2008.
34. B. T. Rearden and M.L. Williams, *TSUNAMI Sensitivity and Uncertainty Analysis of ZED-2 Experiments*, Letter Report to Julian Lebenhaft, Manager Reactor Physics & Systems, Office of the Chief Engineer, Atomic Energy of Canada, Ltd, September 2006.
35. S. Goluoglu, K. R. Elam, B. T. Rearden, B. L. Broadhead, and C. M. Hopper, *Sensitivity Analysis Applied to the Validation of the 10B Capture Reaction in Nuclear Fuel Casks*, NUREG/CR-6845 (ORNL/TM-2004/48), U.S. Nuclear Regulatory Commission, Oak Ridge National Laboratory, August 2004.
36. B. T. Rearden and K. R. Elam, *Investigations and Recommendations on the Use of Existing Experiments in Criticality Safety Analysis of Nuclear Fuel Cycle Facilities for Weapons-Grade Plutonium*, ORNL/TM-2001/262, UT-Battelle, LLC, Oak Ridge National Laboratory, June 2002.
37. C. V. Parks, B. T. Rearden, M. D. DeHart, B. L. Broadhead, and L. M. Petrie, Jr., *Final EMSP Report U.S. Department of Energy – Development of Nuclear Analysis Capabilities for DOE Waste Management Activities*, April 2001.

38. C. V. Parks, B. T. Rearden, M. D. DeHart, B. L. Broadhead, C. M. Hopper, and L. M. Petrie, *Annual Environmental Management Science Program (EMSP) Project Summary. Project Title: Development of Nuclear Analysis Capabilities for DOE Waste Management Activities*, ORNL/TM-2000/65, Lockheed Martin Energy Research Corp., Oak Ridge National Laboratory, February 2000.
39. C. V. Parks, B. T. Rearden, M. D. DeHart, B. L. Broadhead, C. M. Hopper, and L. M. Petrie, *Annual Environmental Management Science Program (EMSP) Summary Progress Report. Project Title Development of Nuclear Analysis Capabilities for DOE Waste Management Activities*, ORNL/TM-1999/101, Lockheed Martin Energy Research Corp., Oak Ridge National Laboratory, June 1999.
40. B. L. Broadhead and B. T. Rearden, "Exploratory Studies for Three-Dimensional Sensitivity Methods," ORNL/M-6583, Lockheed Martin Energy Research Corp., Oak Ridge National Laboratory, August 1998.
41. B. T. Rearden, S. O'Kelly, and T. A. Parish, *Potential Capability of the Texas A&M University Nuclear Science Center Reactor for Mixed-Oxide Fuel Rodlet Irradiations*, ANRCP-NG-ITWD-96-06, October 1996.

Full-Length Topical Papers

42. F. Bostelmann, N. R. Brown, A. Pautz, B. T. Rearden, K. Velkov, and W. Zwermann, "SCALE Multi-Group Libraries for Sodium-cooled Fast Reactor Systems," *M&C 2017 – International Conference on Mathematics & Computational Methods Applied to Nuclear Science and Engineering*, Jeju, Korea, April 16–20, 2017.
43. B. T. Rearden, B. R. Betzler, M. A. Jessee, W. J. Marshall, U. Mertyurek, M. L. Williams, "Accuracy and Runtime Improvements with SCALE 6.2," *M&C 2017 – International Conference on Mathematics & Computational Methods Applied to Nuclear Science and Engineering*, Jeju, Korea, April 16–20, 2017.
44. B. T. Rearden, R.A. Lefebvre, A. B. Thompson, B. R. Langley, and N. E. Stauff, "Introduction to the Nuclear Energy Advanced Modeling and Simulation Workbench," *M&C 2017 – International Conference on Mathematics & Computational Methods Applied to Nuclear Science and Engineering*, Jeju, Korea, April 16–20, 2017.
45. C. M. Perfetti, S. Hogle, S. R. Johnson, B. T. Rearden, and T. E. Evans, "Optimizing HFIR Isotope Production through the Development of a Sensitivity-Informed Target Design Process," *M&C 2017 – International Conference on Mathematics & Computational Methods Applied to Nuclear Science and Engineering*, Jeju, Korea, April 16–20, 2017.
46. C. M. Perfetti and B. T. Rearden, "Continued Investigation of Metrics for Predicting Undersampling Biases in Monte Carlo Simulations," *M&C 2017 – International Conference on Mathematics & Computational Methods Applied to Nuclear Science and Engineering*, Jeju, Korea, April 16–20, 2017.
47. B. R. Betzler, J. J. Powers, N, R. Brown, and B. T. Rearden, "Implementation of Molten Salt Reactor Neutronics Tools in SCALE," *M&C 2017 – International Conference on Mathematics & Computational Methods Applied to Nuclear Science and Engineering*, Jeju, Korea, April 16–20, 2017.
48. B. T. Rearden, *SCALE Newsletter*, **Vol. 48**, Spring 2016, May 2016.
49. C. M. Perfetti and B. T. Rearden, "SCALE 6.2 Continuous-Energy TSUNAMI-3D Capabilities," *ICNC 2015 – International Conference on Nuclear Criticality Safety*, Charlotte, NC, September 13–17, 2015.
50. C. M. Perfetti and B. T. Rearden, "Diagnosing Undersampling in Monte Carlo Eigenvalue and Flux Tally Estimates," *ICNC 2015 – International Conference on Nuclear Criticality Safety*, Charlotte, NC, September 13–17, 2015.

51. E. L. Jones, G. I. Maldonado, W. J. Marshall, C. M. Perfetti, and B. T. Rearden, "Investigation of the Continuous-Energy Sensitivity Methods in SCALE 6.2 Using TSUNAMI-3D," *ICNC 2015 – International Conference on Nuclear Criticality Safety*, Charlotte, NC, September 13–17, 2015.
52. B. T. Rearden, et al, "Criticality Safety Enhancements for SCALE 6.2 and Beyond," *ICNC 2015 – International Conference on Nuclear Criticality Safety*, Charlotte, NC, September 13–17, 2015.
53. W. J. Marshall, M. L. Williams, D. Wiarda, B. T. Rearden, M. E. Dunn, D. E. Mueller, J. B. Clarity, and E. L. Jones, "Development and Testing of Neutron Cross Section Covariance Data for SCALE 6.2," *ICNC 2015 – International Conference on Nuclear Criticality Safety*, Charlotte, NC, September 13–17, 2015.
54. W. J. Marshall, B. T. Rearden, and E. L. Jones, "Validation of SCALE 6.2 Criticality Calculations Using KENO V.a and KENO-VI," *ICNC 2015 – International Conference on Nuclear Criticality Safety*, Charlotte, NC, September 13–17, 2015.
55. W. J. Marshall and B. T. Rearden, "Determination of Critical Experiment Correlations Using the Sampler Sequence within SCALE 6.2," *ICNC 2015 – International Conference on Nuclear Criticality Safety*, Charlotte, NC, September 13–17, 2015.
56. V. Sobes, B. T. Rearden, D. E. Mueller, W. J. Marshall, J. M. Scaglione, and M. E. Dunn, "Upper Subcritical Calculations Based on Correlated Data," *ICNC 2015 – International Conference on Nuclear Criticality Safety*, Charlotte, NC, September 13–17, 2015.
57. B. T. Rearden, *SCALE Newsletter*, **Vol. 47**, Spring 2015, May 2015.
58. B. T. Rearden, K. B. Bekar, C. Celik, C. M. Perfetti, and S. W. D. Hart, "Advancements in Monte Carlo Capabilities for SCALE 6.2," *ANS MC2015 - Joint International Conference on Mathematics and Computation (M&C), Supercomputing in Nuclear Applications (SNA) and the Monte Carlo (MC) Method*, Nashville, TN, April 19–23, 2015.
59. B. T. Rearden, R. A. Lefebvre, J. P. Lefebvre, K. T. Clarno, M. L. Williams, L. M. Petrie, Jr., U. Mertyurek, B. R. Langley, and A. B. Thompson, "Modernization Strategies for SCALE 6.2," *ANS MC2015 - Joint International Conference on Mathematics and Computation (M&C), Supercomputing in Nuclear Applications (SNA) and the Monte Carlo (MC) Method*, Nashville, TN, April 19–23, 2015.
60. C. M. Perfetti and B. T. Rearden, "Metrics for Diagnosing Undersampling in Monte Carlo Tally Estimates," *ANS MC2015 - Joint International Conference on Mathematics and Computation (M&C), Supercomputing in Nuclear Applications (SNA) and the Monte Carlo (MC) Method*, Nashville, TN, April 19–23, 2015.
61. F. Bostelmann, F. P. Weiß, A. Aures, K. Velkov, W. Zwermann, B. T. Rearden, M. A. Jessee, M. L. Williams, D. Wiarda, W. A. Wieselquist, "Uncertainty and Sensitivity Analysis in Criticality Calculations with Perturbation Theory and Sampling," *ANS MC2015 - Joint International Conference on Mathematics and Computation (M&C), Supercomputing in Nuclear Applications (SNA) and the Monte Carlo (MC) Method*, Nashville, TN, April 19–23, 2015.
62. B. T. Rearden, et al, "Enhancements in Continuous-Energy Monte Carlo Capabilities for SCALE 6.2," *Proc. of PHYSOR 2014 – The Role of Reactor Physics Towards a Sustainable Future*, Kyoto, Japan, September 28–October 3, 2014.
63. B. T. Rearden, R. A. Lefebvre, J. P. Lefebvre, K. T. Clarno, M. A. Williams, L. M. Petrie, and U. Mertyurek, "Modernization Enhancements in SCALE 6.2," *Proc. of PHYSOR 2014 – The Role of Reactor Physics Towards a Sustainable Future*, Kyoto, Japan, September 28–October 3, 2014.
64. C. M. Perfetti and B. T. Rearden, "Continuous-Energy Monte Carlo Methods for Calculating Generalized Response Sensitivities using TSUNAMI-3D," *Proc. of PHYSOR 2014 – The Role of Reactor Physics Towards a Sustainable Future*, Kyoto, Japan, September 28–October 3, 2014.

65. C. M. Perfetti and B. T. Rearden, "Quantifying the Effect of Undersampling in Monte Carlo Simulations using SCALE," *Proc. of PHYSOR 2014 – The Role of Reactor Physics Towards a Sustainable Future*, Kyoto, Japan, September 28 – October 3, 2014.
66. B. T. Rearden, *SCALE Newsletter*, **Vol. 46**, Spring 2014, May 2014.
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