

# William Jay (B.J.) Marshall, PhD

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## EDUCATION

*University of Tennessee-Knoxville*

**Doctor of Philosophy in Nuclear Engineering**, December 2017

Dissertation: “Determination of Critical Experiment Correlations Via the Monte Carlo Sampling Technique”

Cumulative Graduate GPA: 3.82/4.0

**Master of Science in Nuclear Engineering**, August 2001

Thesis: “Power Distribution Calculations in the High Flux Isotope Reactor for Various Control Blade Tantalum Loadings”

Graduate GPA: 3.72/4.0

*University of Missouri-Rolla (Now Missouri University of Science & Technology)*

**Bachelor of Science in Nuclear Engineering**, December 1999 (Cum Laude)

## WORK EXPERIENCE

*June 2010–Present*

**Distinguished R&D Staff (April 2023 – Present) / Senior R&D Staff (January 2017 – April 2023) / R&D Staff (June 2010 – December 2016)**

**Interim Group Leader, Nuclear Criticality Group (October 2020 – August 2022)**

Nuclear Criticality Group; Nuclear Energy and Fuel Cycle Division

- Perform research supporting burnup credit basis for PWR and BWR SNF
  - PI for \$2+ million, five year project to investigate technical basis for BWR BUC
  - Support for PWR and BWR methodology development in UNF-ST&DARDS
- Research and expand application of sensitivity/uncertainty methods to NCS applications
  - Generate published guidance on direct perturbation calculations supporting TSUNAMI-3D
  - Develop and deliver material for NCSP one-day introductory course on S/U methods
  - Organize session on past, present, and future of S/U methods in NCS applications
- Lead SCALE criticality safety validation efforts for cross sections and covariance data
  - Elected member of the NCSP Nuclear Data Advisory Group (NDAG) as of March 2019
  - Attended Cross Section Evaluation Working Group (CSEWG) meetings, particularly the Validation and Covariance Committees
- Develop, maintain, and deliver SCALE training:
  - SCALE Criticality Safety Calculations (KENO V.a and KENO-VI)
  - S/U Analysis for NCS Applications and Validation (TSUNAMI)
  - SCALE Computational Methods for Burnup Credit (STARBUCS, et al.)
  - Developed scope and customized material for multiple external customers
- Mentor graduate and summer students
  - Primary mentor for two Master of Science degrees (University of Tennessee-Knoxville)
  - Primary mentor for several summer students, including training rotations from USNA
- Instructor for NCSP Hands-on criticality safety practitioner course, February 2017 – present
- Support development and testing of SCALE criticality safety, S/U, and nuclear data developments, including as coordinator of external user support

## **WORK EXPERIENCE (continued)**

*February 2018–March 2020*

### **Lecturer**

University of Tennessee-Knoxville, Nuclear Engineering Department, Knoxville, TN

- Prepare and present material related to computer code use, Monte Carlo method, computer code testing, validation, and nuclear data use in nuclear criticality safety in graduate course
- Develop and administer homework assignment and test to assess student performance

*November 2008–May 2010*

### **Product Manager/Lead Engineer**

Westinghouse Electric Company

- Provided technical and business leadership to spent fuel pool criticality safety product line
- Participated in industry-wide NEI forum with NRC
- Supervised work on new analyses and licensing support for past analyses
- Developed and delivered SFP NCS training with other qualified personnel

*July 2006–October 2008*

### **Senior Core Design Engineer**

Westinghouse Electric Company

- Performed and verified PWR core reload analyses, assisted improvement of core modeling
- Executed spent fuel pool criticality safety analyses
- Mentored new employees in core design and criticality safety

*November 2001–July 2006*

### **Design Engineer**

Knolls Atomic Power Laboratory

- Assisted in new reactor designs
- Performed 2D and 3D Monte Carlo calculations
- Helped develop and provide RACER Monte Carlo code training

*January 2000–August 2001*

### **Graduate Research Assistant**

University of Tennessee

- Performed research on High Flux Isotope Reactor, using SCALE and DORT for core modeling
- Lectured on MCNP4C at Tennessee Industries Week

*June 1999–August 1999*

### **Summer Intern**

Oak Ridge National Laboratory

- Prepared experimental reports from TSF for inclusion in SINBAD database
- Developed MCNP4B model of shielding benchmark including the Yayoi reactor beam line
- Upgraded output from NRC code HABIT

*September 1998–December 1999*

### **Student Health Physics Technician**

University of Missouri-Rolla (Now Missouri University of Science & Technology)

- Performed radiation and contamination surveys
- Performed meter and dosimeter calibrations
- Trained new technicians

## PATENT

E.F. Eidelpes, J.J. Jarrell, R.A. Hall, W.J. Marshall, H.A. Adkins, and B.M. Hom, “Devices and Systems for Material Transportation,” US Patent 11,699,534, filed September 15, 2021, and issued July 11, 2023.

## PROFESSIONAL ACTIVITIES

- Involved with American Nuclear Society (ANS)
  - Elected to ANS Nuclear Criticality Safety Division Executive Board, June 2019 – June 2022
  - Session organizer for multiple sessions at ANS meetings
  - Invited panelist for Ethics in Nuclear Engineering and Design, November 2018
- Elected a US voting member for OECD/NEA Working Party on Nuclear Criticality Safety in 2021
- Vice Chairperson of International Criticality Safety Benchmark Evaluation Project Technical Review Group, June 2022 - Present
- Co-chair of Nuclear Criticality Safety track at PHYSOR 2022
- Reviewer for numerous conferences and several journals
- Session chair for multiple conference sessions

## AWARDS

ORNL Significant Event Award in 2013  
Best paper in session at 2016 ANS Annual Meeting

## PUBLICATIONS

W.J. Marshall, “Lost and Found Opportunities Around the Chlorine Worth Study,” *Proceedings of the 12<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC 2023)*, Sendai, Japan (2023).

W.J. Marshall, A.M. Shaw, T.M. Greene, K.K.C. Florida, B.J. Purcell, and S.R. Blair, “The Case for and Against a Gadolinium Bias in SCALE: Round 2,” *Proceedings of the 12<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC 2023)*, Sendai, Japan (2023).

K. Worrell, G. Lentchner, J. Mihalcz, W.J. Marshall, and V. Sobes, “Preliminary Model Development in Support of a New Criticality Safety Benchmark for HEU Metal Annuli and Cylinders with Reflectors of Three- to Nineteen-Inch Thickness,” *Proceedings of the 12<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC 2023)*, Sendai, Japan (2023).

T.M. Greene and W.J. Marshall, “Investigating Similarity Differences for Light-Water-Moderated and Polyethylene-Moderated Systems,” *Proceedings of the 12<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC 2023)*, Sendai, Japan (2023).

T.M. Greene, K. Bekar, and W.J. Marshall, “Deterministic-Monte Carlo Hybrid Methods for Eigenvalue Sensitivity Coefficient Calculations,” *Proceedings of the 12<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC 2023)*, Sendai, Japan (2023).

T.M. Greene, A. Lang, and W.J. Marshall, “Validating Mixtures of <sup>233</sup>U, <sup>235</sup>U, and <sup>239</sup>Pu for the Sum-of-Fractions Method,” *Proceedings of the 12<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC 2023)*, Sendai, Japan (2023).

## PUBLICATIONS (continued)

M.N. Dupont, C. Celik, A. Lang, K.L. Reed, A.M. Shaw, V. Karriem, W.A. Metwally, and W.J. Marshall, "Assessment of Validation for Burnup Credit Calculations for LEU+ and High Burnup Fuel," *Proceedings of the 12<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC 2023)*, Sendai, Japan (2023).

W.A. Metwally, M.N. Dupont, W.J. Marshall, C. Celik, V. Karriem, A. Lang, K.L. Reed, and A.M. Shaw, "Impact of Recent ENDF Nuclear Data on Burnup Credit Criticality Safety Analyses," *Proceedings of the 12<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC 2023)*, Sendai, Japan (2023).

C.W. Chapman, D. Wiarda, and W.J. Marshall, "Impact of Light Water Covariance on Integral Benchmarks," *Proceedings of the 12<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC 2023)*, Sendai, Japan (2023).

K.B. Bekar and W.J. Marshall, "Adapting CLUTCH Methodology to Multigroup TSUNAMI-3D for Eigenvalue Sensitivity Calculations," *Proceedings of the 12<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC 2023)*, Sendai, Japan (2023).

T.J. Zipperer, A.W. Prichard, T.M. Greene, W.J. Marshall, and A. Lang, "Evaluation of the Sum-of-Fractions Methodology for Water and Polyethylene Moderated Systems," *Proceedings of the 12<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC 2023)*, Sendai, Japan (2023).

C. Percher, J.D. Bess, W.J. Marshall, J.-F. Martin, I. Hill, and T. Ivanova, "Status of the International Criticality Safety Benchmark Evaluation Project," *Proceedings of the 12<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC 2023)*, Sendai, Japan (2023).

A. Hoefler, M. Stuke, H.S. Abdel-Khalik, O. Cabellos, M. Chernykh, T. Eisenstecken, F. Fernex, N. Lecaire, F. Havluj, M. Hursin, H. Lee, W.J. Marshall, D. Mennerdahl, I. Nasim, T. Nicol, M.E. Rising, B. Ruprecht, D. Schulze Grachtrup, M. Sikl, A. Shama, P. Smith, F. Sommer, S. Tittelbach, A. Vasiliev, and R. Vocka, "Bias and Correlated Data, Comparison and Methods," *Proceedings of the 12<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC 2023)*, Sendai, Japan (2023).

M.N. Dupont, W.J. Marshall, and J.B. Clarity, "Preliminary Design of Critical Experiments Involving Commercially Available B<sub>4</sub>C Neutron Absorber Plates with Low-Enriched UO<sub>2</sub> Fuel," *Trans. Am. Nucl. Soc.* **128**, 473-476 (2023).

T.M. Greene, W.J. Marshall, A. Lang, and T. Zipperer, "Impact of Thermal Scattering Law on Similarity Assessment in Light-water or Polyethylene-Moderated Systems," *Trans. Am. Nucl. Soc.* **128**, 482-485 (2023).

G. Lentchner, K. Worrell, N. Satvat, W.J. Marshall, and V. Sobes, "Similarity of Fast and Thermal Spectrum Graphite Moderated Systems Through the Unique Physics of n + <sup>12</sup>C," *Trans. Am. Nucl. Soc.* **128**, 463-465 (2023).

W.J. Marshall, E.M. Saylor, R.A. Hall, and A. Lang, "Assessment of Existing Transportation Packages for Use with LEU+ and HALEU Material," *Proceedings of PATRAM2022*, Juan-les-Pins, France (2023).

W.J. Marshall, M.N. Dupont, T.M. Greene, A. Lang, A.M. Shaw, J.B. Clarity, and E.M. Saylor, "Expansion of the ORNL VALID Library," *Proceedings of NCSD 2022*, Anaheim, CA (2022).

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W.J. Marshall and T.M. Greene, "Applicability of the ORCEF UF<sub>4</sub>/CF<sub>2</sub> Experiments to Validation of 30" UF<sub>6</sub> Cylinders," *Proceedings of NCSD 2022*, Anaheim, CA (2022).

W.J. Marshall and T.M. Greene, "Performance of the Initial Implementation of the Shift Monte Carlo Code in SCALE 6.3," *Proceedings of NCSD 2022*, Anaheim, CA (2022).

A.M. Shaw and W.J. Marshall, "Analysis of SCALE Criticality and Sensitivity Calculations for Reflected HEU Cylinders," *Proceedings of NCSD 2022*, Anaheim, CA (2022).

T.M. Greene, W.J. Marshall, and J.B. Clarity, "Impact of Increased Latent Generations on Sensitivity Calculations with SCALE," *Proceedings of NCSD 2022*, Anaheim, CA (2022).

J. Alwin, R. Little, R. Macquigg, M. Rising, N. Leclaire, F. Fernex, L. Leal, E. Saylor, J. Clarity, B.J. Marshall, and K. Spencer, "Sensitivity/Uncertainty Comparison Study Involving IRSN, LANL, and ORNL Tools to Support Validation," *Proceedings of NCSD 2022*, Anaheim, CA (2022).

J.B. Clarity, K. Banerjee, L.P. Miller, A.M. Shaw, and W.J. Marshall, "Validation of UNF-ST&DARDS As-Loaded Criticality Calculations," *Proceedings of NCSD 2022*, Anaheim, CA (2022).

T.M. Greene and W.J. Marshall, "Revision to SCALE Procedure for Verified, Archived Library of Inputs and Data (VALID)," *Proceedings of NCSD 2022*, Anaheim, CA (2022).

A. Lang and W.J. Marshall, "Multigroup Examination for Nickel-Reflected HEU System," *Proceedings of NCSD 2022*, Anaheim, CA (2022).

W.J. Marshall, O.M. Belcher, N.H. Byrne, L.E. de Leon, M.N. Solis, T.M. Greene, and S.R. Blair, "Expanded Validation of Uranium Systems with the KENO Monte Carlo Codes and SCALE 6.2.4," *Proceedings of PHYSOR 2022*, 2664-2673, Pittsburgh, PA, (2022).

W.J. Marshall and T.M. Greene, "Cumulative  $\chi^2$  Metric for ENDF/B-VII.1 and ENDF/B-VIII.0 in SCALE 6.3b9," *Trans. Am. Nucl. Soc.* **125**, 696-699 (2021).

A.M. Shaw and W.J. Marshall, "Validation of KENO Delayed Neutron Fraction Capabilities," *Trans. Am. Nucl. Soc.* **125**, 686-688 (2021).

H.S. Abdel-Khalik, D. Huang, U. Mertyurek, W.J. Marshall, and W.A. Wieselquist, "Overview of the Tolerance Limit Calculations with Application to TSURFER," *Energies* **14**(21): 7092 (2021).

W.J. Marshall and A. Lang, "Sensitivity Calculations for Systems with Polyethylene Reflector Materials Using CLUTCH," *Trans. Am. Nucl. Soc.* **124**, 376-378 (2021).

A. Lang, A.M. Shaw, C.W. Chapman, and W.J. Marshall, "Discovery of AMPX Thermal Scattering Law Processing Issue for Solid Moderators," *Trans. Am. Nucl. Soc.* **124**, 368-371 (2021).

T.M. Greene, W.J. Marshall, and J.B. Clarity, "Reducing Direct Perturbation Uncertainty for High-Sensitivity Coefficients," *Trans. Am. Nucl. Soc.* **124**, 372-375 (2021).

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R.A. Lefebvre, S.R. Johnson, W.J. Marshall, and C. Celik, “3D Model Visual Verification and Mesh-Based Data Analysis in Fulcrum,” *Trans. Am. Nucl. Soc.* **124**, 643-646 (2021).

V. Sobes, A.M. Holcomb, W.J. Marshall, T.M. Greene, D. Wiarda, and W.A. Wieselquist, “Augmented ENDF/B-VIII.0 Covariance Library for SCALE 6.3,” *Annals of Nucl. Energy*, **160** (2021).

R.A. Hall, W.J. Marshall, E. Eidelpes, and B.M. Hom, “Assessment of Critical Experiment Benchmark Applicability to a Large-Capacity HALEU Transportation Package Concept,” *Nucl. Sci. & Eng.* **195(3)**, 310-319 (2021).

K.B. Bekar, J.B. Clarity, M.N. Dupont, R.A. Lefebvre, W.J. Marshall, and E.M. Saylor, “KENO-VI Primer: Performing Calculations Using SCALE’s Criticality Safety Analysis Sequence (CSAS6) with Fulcrum,” ORNL/TM-2020/1601 (2020).

K.B. Bekar, J.B. Clarity, M.N. Dupont, R.A. Lefebvre, W.J. Marshall, and E.M. Saylor, “KENO V.a Primer: Performing Calculations Using SCALE’s Criticality Safety Analysis Sequence (CSAS5) with Fulcrum,” ORNL/TM-2020/1664 (2020).

W.J. Marshall, J.B. Clarity, and B.T. Rearden, “A Review of TSUNAMI Applications,” *Trans. Am. Nucl. Soc.* **123**, 795-798 (2020).

W.J. Marshall and B.D. Brickner, “Improved Runtime Performance in KENO-VI Models Using Arrays and Holes,” *Trans. Am. Nucl. Soc.* **123**, 937-940 (2020).

K.B. Bekar, J.B. Clarity, M.N. Dupont, R.A. Lefebvre, W.J. Marshall, and E.M. Saylor, “Updated Primers Generated for SCALE 6.2 for KENO V.a and KENO-VI,” *Trans. Am. Nucl. Soc.* **123**, 934-936 (2020).

B.T. Rearden, W.J. Marshall, and W.A. Wieselquist, “Development of SCALE Tools for Sensitivity and Uncertainty Analysis Methodology Implementation (TSUNAMI) from SCALE 5 through SCALE 6.2,” *Trans. Am. Nucl. Soc.* **123**, 799-803 (2020).

J.B. Clarity, W.J. Marshall, B.T. Rearden, and I. Duhamel, “Selected Uses of TSUNAMI in Critical Experiment Design and Analysis,” *Trans. Am. Nucl. Soc.* **123**, 804-807 (2020).

J.B. Clarity, S.W.D. Hart, W.A. Wieselquist, and W.J. Marshall, “VADER: A Tool for Criticality Safety Validation,” *Trans. Am. Nucl. Soc.* **123**, 931-933 (2020).

J. Alwin, F. Brown, J. Clarity, I. Duhamel, F. Fernex, L. Leal, R. Little, B.J. Marshall, M. Rising, E. Saylor, and K. Spencer, “S/U Comparison Study with a Focus on USLs,” *Trans. Am. Nucl. Soc.* **123**, 780-783 (2020).

W. Wieselquist, J. Bess, D. Bowen, I. Duhamel, I. Hill, N. Leclaire, W. Marshall, C. Percher, E. Saylor, and S. Tsuda, “Initial Efforts Organizing WPNCs SG-8: Preservation of Expert Knowledge and Judgement Applied to Criticality Benchmarks,” *Trans. Am. Nucl. Soc.* **123**, 895-897 (2020).

U. Mertzyurek, H.S. Abdel-Khalik, and W.J. Marshall, “MAPPER – A Novel Capability to Support Nuclear Model Validation and Mapping of Biases and Uncertainties,” Proceedings of PHYSOR 2020 (2020).

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B.D. Hiscox, B.R. Betzler, V. Sobes, and W.J. Marshall, "Neutronic Benchmarking of Small Gas-Cooled Systems," Proceedings of PHYSOR 2020 (2020).

W.J. Marshall, T.M. Greene, B.D. Brickner, and R.A. Hall, "Description and Use of SCALE Sampler Parametric Capability for Engineering Analysis and Optimization," *Trans. Am. Nucl. Soc.* **122**, 471-474 (2020).

W.J. Marshall, J.B. Clarity, and K. Banerjee, "Performing  $k_{\text{eff}}$  Validation of As-Loaded Criticality Safety Calculations using UNF-ST&DARDS: Sensitivity Calculations," *Trans. Am. Nucl. Soc.* **122**, 479-482 (2020).

W.J. Marshall, J.B. Clarity, and K. Banerjee, "Performing  $k_{\text{eff}}$  Validation of As-Loaded Criticality Safety Calculations using UNF-ST&DARDS: Applicable Experiment Selection," *Trans. Am. Nucl. Soc.* **122**, 475-478 (2020).

W.J. Marshall, "Bias Between ENDF/B-VIII.0 and ENDF/B-VII.1 for LEU Pin Array Systems," *Trans. Am. Nucl. Soc.* **121**, 952-955 (2019).

E.M. Saylor and W.J. Marshall, "Sensitivity/Uncertainty Comparison Study: Oak Ridge National Laboratory Results," *Trans. Am. Nucl. Soc.* **121**, 948-951 (2019).

V. Sobes, W.J. Marshall, D. Wiarda, F. Bostelmann, A.M. Holcomb, and B.T. Rearden, "ENDF/B-VIII.0 Augmented Covariance Data: The First Iteration," *Trans. Am. Nucl. Soc.* **121**, 1365-1368 (2019).

F. Bostelmann, A.M. Holcomb, W.J. Marshall, V. Sobes, and B.T. Rearden, "Impact of the ENDF/B-VIII.0 Library on Advanced Reactor Simulations," *Trans. Am. Nucl. Soc.* **121**, 1369-1372 (2019).

I. Duhamel, J.L. Alwin, F.B. Brown, M.E. Rising, K.Y. Spencer, D. Heinrichs, S. Kim, W.J. Marshall, and E.M. Saylor, "International Criticality Benchmark Comparison for Nuclear Data Validation," *Trans. Am. Nucl. Soc.* **121**, 873-876 (2019).

W.J. Marshall, B.J. Ade, I.C. Gauld, G. Ilas, U. Mertyurek, J.B. Clarity, G. Radulescu, B.R. Betzler, S.M. Bowman, and J.S. Martinez-Gonzalez, "Overview of the Recent BWR Burnup Credit Project at Oak Ridge National Laboratory," *Proceedings of the 11<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC2019)*, Paris, France (2019).

W.J. Marshall, J.B. Clarity, J. Yang, U. Mertyurek, M.A. Jessee, and B.T. Rearden, "Initial Application of TSUNAMI for Validation of Advanced Fuel Systems," *Proceedings of the 11<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC2019)*, Paris, France (2019).

W.J. Marshall, E.M. Saylor, A.M. Holcomb, D. Wiarda, and T.M. Greene, "Validation of KENO V.a and KENO-VI in SCALE 6.3 Beta 3 Using ENDF/B-VII.1 and ENDF/B-VIII Libraries," *Proceedings of the 11<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC2019)*, Paris, France (2019).

F. Sommer, W.J. Marshall, and M. Stuke, "Correlation of HST-001 due to Uncertain Technical Parameters – Comparison of Results from SUnCISTT, Sampler, and DICE," *Proceedings of the 11<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC2019)*, Paris, France (2019).

## PUBLICATIONS (continued)

J.B. Clarity and W.J. Marshall, “The Influence of Changes in Nuclear Covariance Data on the Calculation of  $c_k$  for Highly Enriched Uranium Solution Systems,” *Proceedings of the 11<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC2019)*, Paris, France (2019).

M. Stuke, A. Hofer, O. Buss, M. Chernykh, G. Dobson, J. Dyrda, T. Ivanova, N. Leclaire, W.J. Marshall, D. Mennerdahl, B.T. Rearden, P. Smith, F. Sommer, and S. Tittelbach, “UACSA Phase IV: Role of Integral Experiment Covariance Data for Criticality Safety Validation – Summary of Selected Results,” *Proceedings of the 11<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC2019)*, Paris, France (2019).

J. B. Clarity and W.J. Marshall, “Assessment of Normality for Criticality Safety Bias and Bias Uncertainty Calculation,” *Proceedings of the 11<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC2019)*, Paris, France (2019).

J.B. Clarity, T.M. Miller, W.J. Marshall, and D.E. Mueller, “Detailed Design of an Epithermal/Intermediate Critical Experiment using the Sandia National Laboratories Critical Facility,” *Proceedings of the 11<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC2019)*, Paris, France (2019).

I. Duhamel, J.L. Alwin, F.B. Brown, M.E. Rising, K.Y. Spencer, D. Heinrichs, S. Kim, W.J. Marshall, and E.M. Saylor, “International Benchmarks Intercomparison Study for Codes and Nuclear Data Validation,” *Proceedings of the 11<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC2019)*, Paris, France (2019).

K. Banerjee, J.B. Clarity, H. Liljenfeldt, W.J. Marshall, P. Miller, and J.M. Scaglione, “Criticality Safety Analysis of Spent Nuclear Fuel Canisters using As-loaded Configurations,” *Proceedings of the 11<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC2019)*, Paris, France (2019).

T.M. Greene, W.J. Marshall, and G.I. Maldonado, “Analysis of D<sub>2</sub>O Benchmark Criticality Experiments,” *Proceedings of the 11<sup>th</sup> International Conference on Nuclear Criticality Safety (ICNC2019)*, Paris, France (2019).

W.J. Marshall, J.B. Clarity, and S.M. Bowman, “Validation of  $k_{\text{eff}}$  Calculations for Extended BWR Burnup Credit Calculations,” *Trans. Am. Nucl. Soc.* **120**, 554-557 (2019).

W.J. Marshall, J. Yang, U. Mertzyurek, and M.A. Jessee, “Preliminary TSUNAMI Assessment of the Impact of Accident Tolerant Fuel Concepts on Reactor Physics Validation,” *Trans. Am. Nucl. Soc.* **120**, 500-503 (2019).

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J.B. Clarity, W.J. Marshall, and E.M. Saylor, “User Experiences with ICSBEP Distributed Sensitivity Data Profiles with the SCALE Sensitivity and Uncertainty Methods as of Winter 2019,” *Trans. Am. Nucl. Soc.* **120**, 550-553 (2019).



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W.J. Marshall and A.M. Holcomb, "A Testing Trifecta: Data, Codes, and Evaluations," *Trans. Am. Nucl. Soc.* **119**, 724-727 (2018).

W.J. Marshall, J.B. Clarity, and E.M. Saylor, "Sensitivity Calculations for Systems with Fissionable Reflector Materials Using TSUNAMI," *Trans. Am. Nucl. Soc.* **119**, 787-790 (2018).

E.L. Jones, J.B. Clarity, W.J. Marshall, B.T. Rearden, and G.I. Maldonado, "A Case Study in the Application of TSUNAMI-3D – Part 3, Continuous Energy – Iterated Fission Probability Method," *Trans. Am. Nucl. Soc.* **119**, 845-848 (2018).

E.M. Saylor, W.J. Marshall, J.B. Clarity, Z.J. Clifton, and B.T. Rearden, *Criticality Safety Validation of SCALE 6.2.2*, ORNL/TM-2018/884, Oak Ridge, TN (2018).

W.J. Marshall, "The Case for and Against a Gadolinium Bias in SCALE: Opening Arguments," *Trans. Am. Nucl. Soc.* **118**, 554-557 (2018).

W.J. Marshall and E.M. Saylor, "Enhanced Engineering Analyses with Visualization of Geometry and Mesh-Based Data in Fulcrum," *Trans. Am. Nucl. Soc.* **118**, 987-990 (2018).

Z.J. Clifton, W.J. Marshall, and I. Hill, "Benchmark Model Temperatures Incorporated into DICE," *Trans. Am. Nucl. Soc.* **118**, 543-546 (2018).

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C.M. Perfetti, B.T. Rearden, and W.J. Marshall, "Estimating Computational Biases for Criticality Safety Applications with Few Neutronically Similar Benchmarks," *Trans. Am. Nucl. Soc.* **118**, 561-564 (2018).

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