

Committee on Energy and Commerce
U.S. House of Representatives

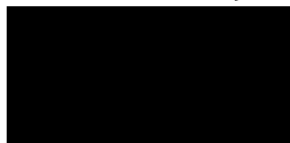
Witness Disclosure Requirement – “Truth in Testimony”
Required by House Rule XI, Clause 2(g)(5)

1. Your Name: Jess Gehin, PhD		
2. Your Title: <i>Associate Laboratory Director, Nuclear Science & Technology</i>		
3. The Entity(ies) You are Representing: Battelle Energy Alliance, LLC manages Idaho National Laboratory for the U.S. Department of Energy under contract no DE-AC07-05ID14517		
4. Are you testifying on behalf of the Federal, or a State or local government entity? (If “Yes,” skip Item 5 and Item 6.)	Yes	No X
5. Please list any Federal grants or contracts, or contracts or payments originating with a foreign government, that you or the entity(ies) you represent have received on or after January 1, 2020. Only grants, contracts, or payments related to the subject matter of the hearing must be listed. Department of Energy, Management and Operation of Idaho National Laboratory, Contract No. DE-AC07-05ID14517 19CR22-CRADA-Canadian Nuclear Laboratories-03/18/20-08/31/21 17CR13-CRADA-Central Research Institute of Electric Power Industry (CRIEPI)-07/25/17-07/25/20 21SP93-SPP-Central Research Institute of Electric Power Industry (CRIEPI)-10/07/21-09/30/22 19906-SPP-Jacobs Clean Energy Limited-01/18/21-01/17/26 20CR01-CRADA-Japan Atomic Energy Agency (JAEA)-03/20/20-03/20/23 21CRA19-CRADA-Japan Atomic Energy Agency (JAEA)-08/26/21-07/26/24 22CRA23-CRADA-Japan Atomic Energy Agency (JAEA)-03/13/23-03/12/27 14CR08-CRADA-Korea Atomic Energy Research Institute (KAERI)-05/12/14-06/30/22 14CR08-CRADA-Korea Atomic Energy Research Institute (KAERI)-05/12/14-12/31/21 22CRA2-CRADA-Korea Atomic Energy Research Institute (KAERI)-05/24/22-05/23/26 22CRA8-CRADA-Korea Atomic Energy Research Institute (KAERI)-09/26/22-09/25/27 22SP95-SPP-Korea Atomic Energy Research Institute (KAERI)-12/15/22-04/14/23 11CR13-CRADA-Korea Atomic Energy Research Institute (KAERI) Uchicago Argonne, LLC (ANL)-07/12/11-07/19/21 22SP94-SPP-OECD Nuclear Energy Agency-03/15/22-12/31/23 16CR05-CRADA-Pebble Bed Modular Reactor SOC Ltd (PMBR)-04/11/17-09/15/21 17907-SPP-The Belgian Nuclear Research Center (SCK CEN)-09/05/17-12/31/25 16CR17-1-CRADA-The Belgium Nuclear Research Centre SCK-CEN-11/14/16-12/31/25		
6. Are you a fiduciary (including, but not limited to, a director, officer, advisor, or resident agent) of any organization or entity that has an interest in the subject matter of the hearing? Idaho National Laboratory, operated by Battelle Energy Alliance, LLC	Yes X	No
7. Please attach your curriculum vitae to your completed disclosure form.		

Signature: _____

Date: April 16, 2023 _____

JESS C. GEHIN, Ph.D.



1. SUMMARY:

Jess Gehin is the associate laboratory director for INL's Nuclear Science & Technology (NS&T) Directorate and prior to taking this role in March 2021 he served as chief scientist since 2018. Over his 28-year career, he has built national strategies and priorities for nuclear energy, led complex projects and organizations, and developed strong relationships with senior leaders within INL, DOE and federal sponsors, and other laboratories, companies, and universities. In support of the DOE Office of Nuclear Energy, he served as the national technical director for the DOE Microreactor Program. He expanded NS&T's strategic direction and helped develop and establish key projects to build advanced reactors at INL, such as the Department of Defense's demonstration microreactor Project Pele, and the Microreactor Applications Research Validation and Evaluation (MARVEL) Project. Previously, he held research and leadership positions at Oak Ridge National Laboratory (ORNL) in nuclear reactor core physics, reactor core and system technologies, reactor modeling and simulation, and fuel cycle reactor applications. While at ORNL, he served as director of the Consortium for Advanced Simulation of Light Water Reactors. He earned a bachelor's degree in nuclear engineering from Kansas State University, and master's and doctoral degrees from the Massachusetts Institute of Technology. His was an associate professor at the University of Tennessee, is a Fellow of the American Nuclear Society, and has authored or co-authored more than 120 refereed journal and conference articles, technical reports, and conference summaries.

2. EDUCATION:

- Ph.D. Nuclear Engineering, Massachusetts Institute of Technology, Cambridge, MA, 1992
Thesis Title: A Quasi-static Polynomial Nodal Method for Nuclear Reactor Analysis
Advisor: Professor Alan F. Henry
- S.M. Nuclear Engineering, Massachusetts Institute of Technology, Cambridge, MA, 1990
Thesis Title: A Nodal Method for the Solution of the Static, Few-Group, Diffusion Equations in Hexagonal Geometry
Advisor: Professor Alan F. Henry
- B.S. Nuclear Engineering, *Summa Cum Laude*, Kansas State University, Manhattan, KS, 1988

3. PROFESSIONAL EXPERIENCE:

2021- Present *Associate Laboratory Director, Nuclear Science & Technology Directorate, Idaho National Laboratory, Idaho Falls, ID*

Responsible for leadership, management and direction of the NST Directorate with over 585 full time staff developing and implementing R&D strategies that leads to deployment of advanced nuclear energy technology.

- 2018-2021 *Chief Scientist for Nuclear Science & Technology, Nuclear Science & Technology Directorate, Idaho National Laboratory, Idaho Falls, ID*
- Responsible for providing scientific and technical direction within the NST Directorate and developing and implementing R&D strategies that leads to deployment of advanced nuclear energy technology. Foster collaborations with universities, laboratories, industry to develop partnerships that strengthen the INL and U.S. nuclear R&D enterprise. Engagements with DOE, NRC, and DOD sponsors. National Technical Director for the DOE Microreactor Program responsible for leading R&D to develop, demonstrate and deploy nuclear microreactors.
- 2015-2018 *Director, Consortium for Advanced Simulation of Light Water Reactors (CASL), and CASL Division, Oak Ridge National Laboratory, Oak Ridge, TN*
- Responsible for leadership, management and direction of CASL, the first DOE Energy Innovation Hub, which is focused on applying advanced modeling and simulation to improve the operation of current and near-term light water reactors. CASL consists of 10 founding partner organizations, more than 20 contributing partners, and industry and science councils with over 250 staff and students and a \$24M annual budget. Also responsible for operation and utilization of the Virtual Office Computing and Collaboration Laboratory, and collaboration and visualization venue supporting CASL research.
- 2011-2015 *Lead, Reactor Technology Research and Development Integration, Reactor and Nuclear Systems Division, Oak Ridge National Laboratory, Oak Ridge, TN*
- Responsible for managing and integrating reactor technology research and development with ORNL sponsors including the Department of Energy Office of Nuclear Energy, NNSA, Nuclear Regulatory Commission and Industry. Includes coordinating research on Light Water Reactors, Small Modular Reactors, Fluoride Salt Cooled Reactors, Molten Salt Reactors, and Research Reactors.
- 2010-2015 *Focus Area Lead, Consortium for Advanced Simulation of Light Water Reactors, Oak Ridge National Laboratory, Oak Ridge, TN*
- Responsible for directing research and development of advanced simulation of light water reactors with research staff from national laboratories, universities, and industry. As lead of the Advanced Modeling Applications Focus Area, successfully established collaboration between these organizations to demonstrate key simulations using CASL-developed software. As lead of the Physics Integration Focus Area, directing research to provide the integrated Virtual Reactor for Reactor Applications capability that is the primary CASL product. A primary author of the ORNL-led CASL proposal selected by DOE.
- 2010-2011 *Senior Program Manager, Reactor and Nuclear Systems Division, Oak Ridge National Laboratory, Oak Ridge, TN*
- Responsible for coordinating reactor technology R&D with programmatic sponsors, primary the DOE Office of Nuclear Energy, Office of Reactor Technology. Established ORNL's role in the advanced small reactor R&D

- program with significant R&D scope and funding in SMR instrumentation and controls, materials, economics and licensing.
- 2008-2010 *Senior Program Manager, Nuclear Technology Programs Office, Oak Ridge National Laboratory, Oak Ridge, TN*
- Responsible for coordinating nuclear technology work across the laboratory with programmatic sponsors including DOE, NNSA, and NRC. Primary area of responsibility associated with expanding and developing reactor technology funding in small modular reactors, salt-cooled reactors, and fuel cycle systems analysis.
- 2003-2008 *Leader, Reactor Analysis Group, Nuclear Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee*
- Responsible for establishing a new group focused on reactor analysis including the development of reactor analysis methods and performing analysis of a wide variety of reactor types with a focus on nuclear reactor physics. Directed and managed 14 technical staff and nearly doubled the size of the group by adding significant new and talented staff. Performed program development of new funding sources and projects from the DOE Office of Nuclear Energy, NNSA and the Nuclear Regulatory Commission.
- 1992-2003 *Senior R&D Staff (final rank), Radiation Transport and Physics Group, Nuclear Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee*
- Performed and lead a wide array of projects ranging from performing all reactor physics analysis to support the development of the Advanced Neutron Source, analyze the High Flux Isotope Reactor, support to the Department of Defense on accident consequence analysis, and analysis of the disposition of plutonium in U.S. and Russian Reactors.
- 1990 *DOE Fellow, Los Alamos National Laboratory, Los Alamos, NM*
- Performed reactor physics and safety analysis of the Savannah River K reactor to support the potential research. Investigated numerical difficulties with the analysis tools being used by LANL
- 1986, 1987 Summer Engineer, Texas Utilities Electric Generating Company, Dallas, TX

4. MAJOR PROJECTS/ACTIVITIES

DOE Microreactor Research and Development Program, 2019-present

National Technical Director for the Department of Energy, Office of Nuclear Energy Microreactor Program. The DOE Microreactor program is responsible for performing early-stage research and development to support near-term demonstration and deployment of nuclear microreactors. In this position, plan, lead, and direct research and development activities across DOE's national laboratories and funded work at universities with a goal to support microreactor demonstrations the year 2025. Responsible for establishing two key microreactor R&D infrastructure projects including the Microreactor AGile Non-nuclear Experimental Test Bed (MAGNET) and the Microreactor Applications, Research and EvaLuation (MARVEL) project to develop the next operational reactor at INL. Programmatic funding is \$20M/year.

Consortium for Advanced Simulation of Light Water Reactors (CASL), 2010-2018

Director of CASL, providing leadership, technical direction, management, and operations of CASL facilities. CASL is an Energy Innovation Hub focused on advanced modeling and simulation on current and near-term light water reactors. Work is performed across 10 founding partners and over 20 contributing partners and strongly engages the nuclear energy community. Responsible for \$24M/year budget and over 250 research staff, operations staff, and students across the entire program.

Formerly, Technical lead of Physics Integration (PHI) focus area leading the development of the integrated Virtual Reactor for Reactor Applications (VERA) capability that is the primary CASL product and directing work at several DOE national laboratories and universities. Formerly, the technical lead for the Advanced Modeling Applications (AMA) Focus Area for the CASL Energy Innovation Hub coordinating and directing work of national laboratory and industry participants in projects on modeling requirements, modeling TVA reactors, defining challenge problems, model validation, and NRC engagement. Key CASL accomplishments have resulted in the work performed in the PHI and AMA focus areas including simulations of TVA Watts Bar Unit 1 and Westinghouse AP1000® reactors that have been highlighted DOE management as primary examples of CASL successes. As part of proposal team, developed winning proposal for five-year, \$122M project and the \$122M renewal through 2020.

Project Sponsor: Office of Nuclear Energy, Department of Energy

Fuel Cycle Research & Development Program, 2007-2015

As Deputy National Technical Director for Systems Analysis (2008-2011) performed work planning, budget planning, guidance, direction and review to technical work, and represents system analysis campaign at DOE, national, and international meetings. Leads ORNL systems analysis and systems engineering activities (note program formerly known as Advanced Fuel Cycle Initiative). Currently leading ORNL support to the Fuel Cycle Options Campaign and member of the fuel cycle options evaluation and screening team, which is focused on a major study of fuel cycle options to inform DOE R&D activities.

Project Sponsor: Office of Nuclear Energy, Department of Energy

Safety Evaluation of Vermont Yankee Power Extended Power Uprate, 2006-2008

Supported the review of the nuclear analysis methods supporting extended power uprates of boiling water reactors providing input on the NRC safety evaluation report and presenting findings at meetings of the Advisory Committee on Reactor Safeguards (ACRS). The supporting physics analysis and review were noted by ACRS of being of high quality.

Project Sponsor: Office of Regulatory Research, Nuclear Regulatory Commission

Fissile Materials Disposition Program, 1997-2004

Responsible for reactor physics analysis of the use of weapons-grade mixed oxide fuel in Russian VVER-1000 reactors working as part of ORNL team and in collaboration with Russian team from the Russian Research Center (RRC) “Kurchatov Institute” in Moscow and the Institute of Physics and Power Engineering (IPPE) in Obninsk. Responsible for negotiation of Russian workshop and review of deliverables.

Project Sponsor: Office of Fissile Material Disposition, National Nuclear Security Administration

Hazard Predication Assessment Capability (HPAC) Development, 1996-2000

Responsible for development of reactor radionuclide inventories and dispersal models to support development of forward-deployable software tool in support of the U.S. Department of Defense working as part of a team of national laboratory and DoD contractors. The capability is widely used by DoD for consequence analysis planning for major events, military actions, and emergency response.

Project Sponsor: Defense Threat Reduction Agency, Department of Defense

High Flux Isotope Reactor (HFIR) Modeling and Simulation, 1995-2004

Responsible for developing and applying a very detailed model of the HFIR using Monte Carlo methods combined with other reactor analysis tools to support irradiation experiments and reactor design changes and upgrades and is widely used by ORNL staff. This model has been the work-horse model used for analysis of all HFIR reactor physics since 1996 including the development of advanced europium oxide thermal neutron shields, the cold neutron source, the design and change out of the beryllium reflector, nearly all irradiation experiment heating and reactivity analysis, conversion studies of HFIR to LEU, and the development of a novel fast flux neutron irradiation capability.

Project Sponsor: Office of Science, Office of Nuclear Energy, NNSA, Department of Energy

Advanced Neutron Source, Department of Energy, 1992-1995

Responsible for the reactor physics of the Advanced Neutron Source working as part of the design team. Developed advanced core designs, performed safety assessments, benchmarked and validated physics design codes, performed analysis of conversion of design to low-enriched uranium.

Project Sponsor: Office of Energy Research, Department of Energy

5. ADVISORY AND REVIEW COMMITTEES

2016-present	University of Tennessee, Nuclear Engineering Department Advisory Board
2016-present	Texas A&M University Nuclear Engineering Department Advisory Board
2009-present	Department of Energy, Office of Nuclear Energy, Reviewer of Nuclear Energy University Program (NEUP) proposal
2012-2014	Department of Energy, Office of Nuclear Energy, Fuel Cycle Research and Development Program, Fuel Cycle Options Evaluation and Screening Team
2010	Department of Energy, Office of Nuclear Energy, Fuel Cycle Research and Development Program, Initial Screening and Evaluation Panel
2009	Research Needs for Fusion-Fission Hybrids, Blanket and Nuclear Technology Panel.
2008	Department of Energy, Office of Nuclear Energy, Industry Review Team
2008-2010	Nuclear Regulatory Commission, Reviewer for Scholarship and Fellowship Program

2004-2007	National Nuclear Security Administration, Office on Nonproliferation Research and Development, Attribution Sciences Panel
2005-2008	Department of Energy, Office of Nuclear Energy, Reviewer of University Nuclear Energy Research Initiative (UNERI) proposals
2004-2008	Working Party on the Scientific Issues of Reactor Systems, Nuclear Energy Agency, Organization for Economic Cooperation and Development, Paris, France
1999-2001	Reactor Operation Review Committee, Oak Ridge National Laboratory
1998-2004	Experts Group on Reactor-Based Plutonium Disposition, Nuclear Energy Agency, Organization for Economic Cooperation and Development, Paris, France.
1998-2004	Working Party on the Physics of Plutonium Fuels and Innovative Fuel Cycles, Nuclear Energy Agency, Organization for Economic Cooperation and Development, Paris, France

6. ACADEMIC EXPERIENCE

2012-2018	Joint Associate Professor, Bredesen Center for Interdisciplinary Research and Graduate Education, University of Tennessee
2011-2018	Joint Associate Professor of Nuclear Engineering, University of Tennessee
2004-2011	Adjunct Associate Professor, Nuclear Engineering Department, University of Tennessee, Knoxville, TN
2006	Oak Ridge National Laboratory, Established Joint Faculty Position in ORNL Reactor Analysis group with the University of Tennessee Department of Nuclear Engineering. Served on search committee to fill position.
2006, 2007	Author and grader of Reactor Theory questions for Nuclear Engineering Department, University of Tennessee Ph.D. Qualifying Exam.
2005	Preparation of exhibits for Reactor Theory I course for Accreditation Board for Engineering and Technology (ABET) review, Department of Nuclear Engineering, University of Tennessee.

8. STUDENT ADVISING AND MENTORING

ORNL Summer Students:

Cole Gentry, University of Tennessee, 2011

Tommy Cisneros, University of California Berkeley, 2010

Mark Massie, University of Tennessee, 2007

Sophia Kamero, Pennsylvania State University, 2007

Mathew Humberstone, University of Tennessee, 2007

Jessee Klinginsmith, Pennsylvania State University, 2003, 2004

Jonny Waldes, North Carolina State University, 2000

Cecil Dourougie, Intern, France, 1998

Robert J. Steffler, Texas A&M University, 1997

Brian Moore, North Carolina State University, 1994

MS/PhD Advisees:

Travis Lange, University of Tennessee, Bredesen Center for Interdisciplinary Research and Graduate Education, University of Tennessee, Advisor on Ph.D. degree. Degree conferred December 2017.

Erik Walker, University of Tennessee, Department of Nuclear Engineering, University of Tennessee, Advisor on Ph.D. degree. Degree conferred December 2017.

Erik Walker, University of Tennessee, Department of Nuclear Engineering, University of Tennessee, Advisor on M.S. degree, 2012-2014

Alan Wollaber, University of Tennessee, Department of Nuclear Engineering, Co-advisor on M.S. Degree, 2002-2004

9. PROFESSIONAL ACTIVITIES / FELLOWSHIPS:

2016	Fellow, American Nuclear Society “For outstanding and effective technical leadership in cross-disciplinary teams providing next-generation analysis capabilities for nuclear reactors and influencing decisions for advanced reactors and nuclear fuel cycle research and development”
2015-2016	Special Committee on the Future of the American Nuclear Society (ANS)
2014-2019	Technical Journals Committee, Chair, ANS
2011-Pres	Nuclear News Editorial Advisory Committee, ANS
2010-2019	Publications Steering Committee, ANS
2004-2019	Book Publications Committee, ANS
1992-Pres	Full Member, ANS
2007-2013	Chair of Scholarship Committee, Reactor Physics Division, ANS
2010-2013	Technical Journals Committee, Vice Chair, American Nuclear Society
2010-2012	General Chair, 2012 Topical Meeting on the Physics of Reactors (PHYSOR 2010), American Nuclear Society
2007-2010	Technical Journals Committee Member
2007-2010	National Program Committee, ANS
2007	Technical Program Chair, 2007 Winter Meeting, Washington, D.C., ANS
2007	Assistant Technical Program Chair, 2007 Annual Meeting, Boston, MA, ANS
2005-2006	Chair, Reactor Physics Division, ANS
2004-2005	Vice Chair/Elect, ANS Reactor Physics Division
2003-2004	Secretary, Reactor Physics Division, ANS
2000-2003	Chair, Technical Program Committee, Reactor Physics Division, ANS
1998-2001	Executive Committee, Reactor Physics Division, ANS

1995-1998	Program Committee, Reactor Physics Division, ANS
1995-Pres	Reviewer, technical journals (Nuclear Science and Engineering, Nuclear Technology, Annals of Nuclear Energy, and Progress in Nuclear Energy)
1988-1992	DOE Nuclear Science and Engineering Fellowship

10. AWARDS / HONORS:

2016	R&D 100 Award for the Virtual Environment for Reactor Applications
2014	UT-Battelle Awards Night Award for 2014 Mentor of Student Researchers
2014	U.S. Department of Energy, Office of Nuclear Energy, Fuel Cycle Research and Development Technical Achievement Award (Team) for Outstanding Achievement of Completion of Fuel Cycle Evaluation and Screening
2014	International Data Corporation High Performance Computing Innovation Excellence Award for Applications of HPC for nuclear reactor simulation
2013	UT-Battelle Significant Event Award for Completion of Categorization of Used Nuclear Fuel Inventory in Support of a Comprehensive National Nuclear Fuel Cycle Strategy
2012	American Nuclear Society Materials Science and Technology Division 2012 Significant Contribution Award for “Fully Ceramic Microencapsulated Fuels for LWRs”
2012	Assistant Secretary for Nuclear Energy Dr. Peter Lyons Recognition for Contributions to the U.S. DOE Response to the 2011 Fukushima Dai-ichi Event.
2011	UT-Battelle Significant Event Award for Support to DOE in Response to Crisis at Fukushima Dai-ichi Damaged Reactors
2010	UT-Battelle Awards Night Legacy Impact Award for successfully capturing the Department of Energy’s first Energy Innovation Hub Award
2007	ANS President’s Recognition Award for Serving as Technical Program Chair of the 2007 Winter American Nuclear Society Meeting.
2007	ANS President’s Recognition Award for Serving as Assistant Technical Program Chair of the 2007 Annual American Nuclear Society meeting.
1997	Lockheed Martin Energy Research Awards Night Technical Achievement Award for developing the HASCAL computer code, which estimates atmospheric dispersion of radioactivity following possible accidents or terrorist/military incidents at nuclear facilities
1996	Significant Event Award (SEA) for support to Department of Defense
1994	Engineering Physics and Mathematics Division Extra-Effort Award
1993	Advanced Neutron Source (ANS) Project Extra-Kilometre Award for Development of advanced fuel grading design
1988	Kansas State University Department of Nuclear Energy Fermi Hatchet Award as top Nuclear Engineering 1988 Graduate.

Honor Societies: Alpha Nu Sigma, Tau Beta Pi, and Phi Kappa Phi

11. REFEREED PUBLICATIONS:

1. E.D. Walker, B. Collins, J.C. Gehin, "Low-Order Multiphysics Coupling Techniques for Nuclear Reactor Applications," *Annals of Nuclear Energy*, **132**, 325-338 (2019).
2. D. Petti, et al. [Jess C. Gehin], "A summary of the Department of Energy's Advanced Demonstration and Test Reactor Options Study," *Nuclear Technology*, **199**(2), 111-128 (2017).
3. A. Louis Qualls, et al. [Jess C. Gehin] "Preconceptual design of a fluoride high temperature salt-cooled engineering demonstration reactor: Motivation and overview," *Annals of Nuclear Energy*, **107**, 144-155 (2017).
4. Brendan Kochunas, et al. [Jess Gehin], "VERA Core Simulator methodology for pressurized water reactor cycle depletion," *Nuclear Science and Engineering*, **185**(1), 217-231 (2017)
5. J. C. Gehin, Jeffrey J. Powers, "Liquid Fuel Molten Salt Reactors for Thorium Utilization," *Nuclear Technology*, **192**(2), 152-161 (2016).
6. N.R. Brown, J.J. Powers, B. Feng, F. Heidet, N.E. Stauff, G. Zhang, M. Todosow, A. Worrall, J.C. Gehin, T.K. Kim, T.A. Taiwo, "Sustainable thorium nuclear fuel cycles: A comparison of intermediate and fast neutron spectrum Systems," *Nuclear Engineering and Design*, **289**, 252-265 (2015).
7. Nathan George, Ivan Maldonado, Kurt Terrani, Andrew Godfrey, Jess Gehin, Jeff Powers, Andrew Worrall, "Neutronics Studies of Uranium-Bearing Fully Ceramic Microencapsulated Fuel for Pressurized Water Reactors," *Nuclear Technology*, **88**, pp 228-251 (Dec 2014).
8. S.J. Zinkle, K.A. Terrani, J.C. Gehin, L.J. Ott, L.L. Snead, "Accident tolerant fuels for LWRs: A perspective," *Journal of Nuclear Materials*, **448**(2014), pp 374-379 (May 2014).
9. Cole Gentry, Ivan Maldonado, Andrew Godfrey, Kurt Terrani, Jess Gehin, Jeffrey Powers, "A Neutronic Investigation of the Use of Fully Ceramic Microencapsulated Fuel for Pu/Np Burning in PWRs," *Nuclear Technology*, **186**(1), pp 60-75 (April 2014).
10. Ling Zou, Hongbin Zhang, Jess Gehin, Brendan Kochunas, "Coupled Thermal-Hydraulic/Neutronics/Crud Framework in Prediction of Crud-Induced Power Shift Phenomenon," *Nuclear Technology*, **183**(3), pp 535-542 (September 2013).
11. Kurt A. Terrani, Lance L. Snead, Jess C. Gehin, "Microencapsulated fuel technology for commercial light water and advanced reactor application," *Journal of Nuclear Materials*, **427**(1-3), pp 209-224 (August 2012).
12. Dean Wang et al. [Jess C. Gehin coauthor], "Study of Fukushima Daiichi Nuclear Power Station Unit 4 Spent-Fuel Pool," *Nuclear Technology*, **180**(2) pp 205-215 (November 2012)
13. J. J. Klingensmith, Y. Y. Azmy, J. C. Gehin and R. Orsi, "Tort solutions to the three-dimensional MOX benchmark, 3-D Extension C5G7MOX," *Progress in Nuclear Energy*, **48**(5), pp 445-455 (July 2006).
14. Y. Y. Azmy, J. C. Gehin, and R. Orsi, "DORT Solutions to the Two-Dimensional C4G7 MOX Benchmark Problem," *Progress in Nuclear Energy*, **45**(2-4), pp 215-231 (2004).
15. K. Hesketh, G. Schlosser, D. F. Porsch, T. Wolf, O. Köberl, B. T. Lance, R. Chawla, J. C. Gehin, R. Ellis, S. Uchikawa, O. Sato, T. Okubo, H. Mineo, T. Yamamoto, Y. Sagayama, and E. Sartori, "Plutonium Management in the Medium Term," *Nuclear Technology*, **148**(3), pp 244-258 (December 2004).

12. INVITED AND CONTRIBUTED TALKS (recent key presentations)

1. *DOE Microreactor Program – Technology to Enable Microreactor Development, Deployment and Commercialization*, ARPA-E Nuclear Program Review, Houston, TX, January 15, 2020.
2. *Microreactors – Nuclear is Getting Even Smaller!*, North Carolina State University Seminar, November 21, 2019.
3. *History of the Molten Salt Reactor Program*, Workshop on Molten Salt Reactor Technologies - Commemorating the 50th Anniversary of the Startup of the MSRE, October 15, 2016.
4. *Enabling the Future of Nuclear Power through Innovation*, Plenary Speaker, 24th International Conference on Nuclear Engineering, American Society of Mechanical Engineers, June 28, 2016.
5. *Nuclear Power Reactors – An Example of Improvements in Reliability and Potential for Improvement*, Accelerator Reliability Workshop – ARW-2015, Knoxville, TN, April 28, 2015.
6. *CASL: Consortium for the Advanced Simulation of Light Water Reactors, A DOE Energy Innovation Hub*, Plenary presentation, Joint International Conference on Mathematics and Computation (M&C), Supercomputing in Nuclear Applications (SNA) and the Monte Carlo (MC) Method, Nashville, TN, April 20, 2015.
7. *Overview of Fluoride Salt-Cooled High Temperature Reactors*, North Carolina State University, Nuclear Engineering Department Seminar, January 8, 2015
8. *History and Technical Overview of Molten Salt Reactors* Atlanta Section, American Society of Mechanical Engineers, November 15, 2010.
9. *Overview of Advanced Modeling Applications Focus Area*, Panel Speaker, 2010 Winter Meeting, American Nuclear Society, Las Vegas, NV, November 10, 2010.
10. *CASL: The Consortium for Advanced Simulation of Light Water Reactors*, U.S. Nuclear Regulatory Agency, Office of Regulatory Research, October 28, 2010.
11. *Demonstration of ORIGEN for The Support of Fuel Cycle Screening*, FCR&D Annual Meeting, Gaithersburg, MD, October 27, 2010.
12. *Sensitivity and Uncertainty Analysis for HTGR Modeling*, IAEA 2nd Consultancy Meeting for CRP on HTGR Reactor Physics, Thermal-Hydraulics, and Uncertainty Analysis, Prague, Czech Republic, October 21, 2010.
13. *Development and Validation of SCALE Nuclear Analysis Methods for HTGRs*, 5th International Topical Meeting on High Temperature Reactor Technology, Prague, Czech Republic, October 18, 2010.
14. *Overview of Liquid Fluoride Salt Heat Transport Technology*, 5th International Topical Meeting on High Temperature Reactor Technology, Prague, Czech Republic, October 18, 2010.
15. *SMAHTR – A Concept for a Small, Modular Advanced High Temperature Reactor*, 5th International Topical Meeting on High Temperature Reactor Technology, Prague, Czech Republic, October 18, 2010.

16. *Development of a Forced Convection Liquid-Fluoride-Salt Test Loop*, 5th International Topical Meeting on High Temperature Reactor Technology, Prague, Czech Republic, October 18, 2010.
17. *Molten Salt Reactor Activities*, Gen-IV Molten Salt Reactor Provisional Steering Committee Meeting, Oak Ridge National Laboratory, September 22, 2010.
18. *Advanced Modeling Applications*, DOE Nuclear Energy Modeling and Simulation Hub Review Committee, Site Visit, April 23, 2010.
19. *Current Interest and Directions for Molten Salt Reactors*, Thorium Energy Alliance Conference, Google Headquarters, Mountain View California, March 29, 2010.
20. *Advances in Analysis Methods and Reactor Simulation*, Key-Note Presentation, PHYSOR-2006 International Topical Meeting on the Physics of Reactors, Vancouver, Canada, September 11, 2006.

13. TRANSACTIONS, CONFERENCE PROCEEDINGS, TECHNICAL REPORTS:

1. S. Bragg-Sitton, D. Ingersoll, M. Baker, J. Gehin, "Joint Use Modular Plant Program to Support RD&D needs for Integrated Energy Systems," *Proc. IAEA Technical Meeting on Nuclear-Renewable Hybrid Energy Systems for Decarbonized Energy Production and Cogeneration*, Vienna, Austria, 2018.
2. E.D. Walker, B. Collins, J.C. Gehin, "Jacobian-Free Newton-Krylov Coupling Methods for Nuclear Reactors," *Int. Conf. on Mathematics and Computational Methods Applied to Nuclear Science and Engineering*, American Nuclear Society, Jeju, Korea, 2017.
3. Andrew Godfrey, Benjamin Collins, Kang Seog Kim, Jeffrey Powers, Robert Salko, Shane Stimpson, William Wieselquist, Kevin Clarno, Jess Gehin, "VERA Benchmarking Results for Watts Bar Nuclear Plant Unit 1 Cycles 1-12," *Proc Int. Conference on Unifying Theory and Experiments in the 21st Century (PHYSOR 2016)*, American Nuclear Society, Chicago, Illinois, May 2016.
4. Brendan Kochunas, Thomas Downar, Dan Jabaay, Benjamin Collins, Shane Stimpson, Andrew Godfrey, Kang Seog Kim, Jess Gehin, Scott Palmtag, Fausto Franceschini, "Validation and Application of the 3D Neutron Transport MPACT within CASL VERA-CS," *NURETH-16*, American Nuclear Society, Chicago, Illinois, August 2015.
5. Brendan Kochunas, Benjamin Collins, Daniel Jabaay, Shane Stimpson, Aaron Graham, Kang Seog Kim, William Wieselquist, Kevin Clarno, Scott Palmtag, Thomas Downar, Jess Gehin, "VERA Core Simulator Methodology for PWR Cycle Depletion," *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, American Nuclear Society, LaGrange Park, IL (2015)
6. F. Franceschini, A. T. Godfrey, S. Stimpson, T. Evans, B. Collins, J. C. Gehin, J. Turner, A. Graham, T. Downar, "AP1000® PWR STARTUP CORE MODELING AND SIMULATION," *Advances in Nuclear Fuel Management V (ANFM 2015)* Hilton Head Island, South Carolina, USA, March 29 - April 1, 2015, American Nuclear Society, LaGrange Park, IL (2015)
7. Robert K. Salko, Travis Lange, Vefa Kucukboyaci, Yixing Sung, Scott Palmtag, Jess Gehin, Maria Avramova, "Development of COBRA-TF for Modeling of Full-Core, Reactor Operating Cycles," *Advances in Nuclear Fuel Management V (ANFM 2015)*

Hilton Head Island, South Carolina, USA, March 29 - April 1, 2015, American Nuclear Society, LaGrange Park, IL (2015)

8. Jess C. Gehin, Jeffrey Powers, "Liquid Fuel Molten Salt Reactors For Thorium Utilization," 2014 ANS Winter Meeting, *Trans. Am. Nuc. Soc.* 111, November 2014.
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