GLENN E. SJODEN, Ph.D., P.E.
PROFESSOR, DIRECTOR-NUCLEAR ENGINEERING / ENERGY SOLUTIONS PRESIDENTIAL ENDOWED CHAIR
DEPT OF CIVIL AND ENVIRONMENTAL ENGINEERING, UNIVERSITY OF UTAH
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PROFILE:

- **August 2019 – Present**, Director of the University of Utah Nuclear Engineering Program, and Energy Solutions Presidential Endowed Chair; Licensed Professional Nuclear Engineer (FL #44144, since 1991).

  ***Summary**: Over 36 years of experience, spanning a broad range of science and engineering applications serving in numerous capacities— professor, chief scientist (DoD DISL (ret)), technical director, nuclear research officer (Lt Col, USAF (ret) 61D), lead design engineer, author, and licensed engineering consultant. Expert in non-proliferation, radiation transport, and nuclear systems research and engineering. Significant experience in treaty monitoring with the Air Force Technical Applications Center (AFTAC), with expertise in nuclear, biological, and chemical (NBC) arms control and advanced technology defense programs for the US Government; technical expert and research lead for critical reviews supporting the Limited Test Ban Treaty (LTBT), the Comprehensive Test Ban Treaty Organization (CTBTO), the Intermediate-range Nuclear Forces (INF) Treaty, and numerous classified defense projects. Served as USAF laboratory associate at INL-Idaho for fuel reprocessing; served as nuclear engineering faculty at the USAF Academy, University of Florida, Georgia Tech, and University of Utah.*

- **From 2014-2019**, Chief Scientist of AFTAC (DISL (SES)). AFTAC operates and maintains the U.S. Atomic Energy Detection System, a suite of space-based, surface, and subsurface sensors, which monitors foreign compliance with the treaties limiting nuclear testing. It also operates a network of trace material analysis laboratories, 14 worldwide detachments and operating locations, and unmanned equipment locations to support the detection system, the International Atomic Energy Agency (IAEA), and CTBTO. As Chief Scientist, Glenn was the principal adviser to the AFTAC commander and senior USG officials on scientific and technical matters relating to AFTAC's mission, and maintaining national & international relationships. Awarded the *Presidential Rank Award* for exceptional civilian service, 2018-2019.

- **From 2010-2014**, Professor, Nuclear and Radiological Engineering, George W. Woodruff School of Mechanical Engineering, and Director, Radiological Science and Engineering Laboratory, Georgia Institute of Technology; **From 2004-2010**, Assoc. Professor of Nuclear and Radiological Engineering, University of Florida (UF), and Florida Power & Light (FP&L) Endowed Term Professor for Nuclear Power Research, 2007-2010; **From 1984-2004**, USAF Officer (61D-nuc. research), Lt Col, USAF (ret).

- **Research.** Perform research in deterministic and Monte Carlo radiation transport methods and computational numerical modeling in multiple disciplines, including parallel/high performance computing development, optimization, and integrated system simulation. Principal developer of the PENTRAN 3-D parallel deterministic particle radiation transport code. Related research interests include SNM/materials detection/monitoring, power generation, non-destructive testing, nuclear medicine, heat transfer, computational fluids. Authored numerous un/classified technical design/engineering reports for the US Government and others; served as a consultant to the Department of Homeland Security, national laboratories, US Government agencies, and industry on nuclear, forensics, and non-proliferation issues.

I. EARNED DEGREES:

Ph.D., Nuclear Engineering, Pennsylvania State University, University Park, Pennsylvania, 1997
M.S., Nuclear Engineering, Air Force Institute of Technology, WPAFB Ohio, 1992
B.S., Nuclear Engineering, Texas A&M University, College Station, Texas, 1984

II. EMPLOYMENT:

1. Director of Utah Nuclear Engineering & Energy Solutions Presidential Endowed Chair Professor, University of Utah, Salt Lake City, UT, 2019 to Present.

2. Research Consultant to PNNL and NNSA, Licensed Professional Nuclear Engineer, FL PE #44144, G. E. Sjoden, LLC, 2019 to Present.

3. Chief Scientist, Air Force Technical Applications Center (AFTAC), Rank: DISL (IP-00, Senior Executive Service (SES)), Department of the Air Force, Patrick AFB, FL, appointed by Secretary of the Air Force Deborah Lee James, June 2014 to July 2019.

4. Professor and Director, Radiological Science and Engineering Laboratory, Nuclear and Radiological Engineering and Medical Physics Program (NRE/MP), Georgia Institute of Technology, Atlanta, Georgia, November 2010 to June 2014.

5. Joint Faculty Appointment, Oak Ridge National Laboratory, Global Nuclear Security Technology Division, January 2011 to June 2014.

6. Research Consultant to various Government Agencies and Corporations, G. E. Sjoden, LLC, 1997 to June 2014.

7. Associate Professor and Florida Power and Light Endowed Term Chair, Department of Nuclear and Radiological Engineering (NRE), Univ. of Florida, Gainesville, Florida, March 2004 to October 2010.

8. Active service in the USAF 1984-2004, highest rank: *Lieutenant Colonel* (Retired 2004), Nuclear Research in Nuclear Weapons and Weapon Effects, AFSC 61D Officer.

   - Deputy Director of Materials Technology, Deputy Director for Technology and Research, AFTAC, US Air Force, Patrick AFB, Florida, April 2001 to March 2004.

   - Chief, Molecular Sciences Division, US Air Force, AFTAC, Patrick AFB, Florida, Directorate of Materials Technology, February 2000 to April 2001.

   - USAF Academy, Associate Professor, US Air Force, Department of Mathematical Sciences, USAF Academy, Colorado, January 1997 to January 2000.

   - *Other USAF Assignments Spanning 1984-1994:* USAF Academy Instructor and Assistant Professor, US Air Force, April 1992-July 1994; Nuclear Systems Evaluator/Special Program Manager-AFTAC, US Air Force, July 1987-July 1990; Education With Industry/Lab Associate in Nuclear Fuel Reprocessing and Manufacturing, INEL, US Air Force, July 1986-June 1987; Nuclear Systems Officer-AFTAC, US Air Force, December 1984-July 1986.

III. TEACHING

A. Individual Student Guidance

A.1. University of Utah

Ph.D. Students Supervised

1. Dr. Lucas Albright, August 2019 – January 2021 (advisee transfer from T. Jevremovic), Ph.D., "Novel Application of Uncertainty Analysis to Severe Accidents: Interrogating Model Form Uncertainty and Developing Insights into Severe Accident Progression," sponsored by NEUP Scholarship. Employed at Sandia National Laboratories.

2. Dr. Michael Hartos, January 2020 – January 2022, Ph.D., "Design and Optimization of a Neutron Radiography Beamport Capability with the University of Utah TRIGA Reactor", sponsored by NRC Fellowship. Employed at GE Hitachi Nuclear Energy.

3. Dr. Amanda Foley, August 2019 – May 2022 (Co advisor with S. Mohanty, advisee transfer from

T. Jevremovic), Ph.D., "Cadmium Zinc Telluride Gamma Spectrometers: Field Application Basis". Employed at Idaho National Laboratory.

4. Ted Goodell, June 2021 – Present, Ph.D. candidate.

5. Dr. Tanner Hall, June 2020 – June 2023, Ph.D. "Optimization and Utilization of Advanced Reactor Physics Calculations for Practical Applications in Transmutation and Burnup". Employed at Los Alamos National Laboratory, XCP-7.

6. Joseph Johnson, June 2021 – Present, Ph.D. candidate.

7. Taylor Kimball, August 2022 – Present, Ph.D. candidate.

M.S. Students (Advisees)

1. Brittney Saenz. August 2019 – August 2021, M.S. Awarded. Employed at Alpha-Tech, Salt Lake City.

2. Andrew Allison, June 2020 – Present, M.S. candidate.

3. Logan Forster, June 2020 – 2022, M.S. Awarded.

Ph.D. Committee Service

1. Dr. Michael R. Klosterman, 2019-2021, "Investigation of Oxygen Isotopes as a Forensic Signature in Uranium Oxides"; Advisor: L. McDonald.

2. Dr. Cody Nizinski; 2019-2021, "Neural Net Characterization of Morphological Image Data"; Advisor: L. McDonald.

3. Dr. Parker Okabe, 2019-2020, "Gas-Solid Based Chlorination to Support Separation of Actinides and Transition Metals from Rare Earths"; Advisor: M. Simpson.

4. Bishav Bhattarai, Ph.D. Candidate, 2019-2021, "Phage-host Interaction in Natural and Engineered Ecosystems"; Advisor: R. Goel.

5. George Diehl, Ph.D. Candidate, 2019, Advisor: T. Mastren.

6. Codey Olson, Ph.D. Candidate, 2019, Advisor: E. Cazalas

7. Dr. Teancum Quist, 2019-2023, "Modernizations in the Measurement and Analysis of Low-Flux Neutron Sources"; Advisor: E. Cazalas

8. Jesse Snow, Ph.D. Candidate, 2021, Advisor: E. Cazalas.

A.2. Georgia Institute of Technology

Ph.D. Students Supervised

1. Dr. Kevin Manalo, May 2008- December 2013, M.S./Ph.D., "Transport Synthetic Aperture Detection System" and "3-D Reactor Transport/ Burnup Simulations," sponsored by NNSA, DoD. Employed at Georgia Institute of Technology Supercomputing Center.

2. Dr. Mimi Manalo, May 2011- June 2014, Ph.D., "Application of Deterministic 3D Sn Transport Driven Dose Kernel Calculation Methods for In-Field and Out-of-Field Dose Assessments in Clinical High Energy Radiation Therapy." Employed at Duke University.

3. Dr. Scottie Walker, Jan 2011-Aug 2013, Ph.D., "Design of Spectrally Equivalent n-Detector Alternatives to He-3 in Support of Non-Proliferation." Employed at Sandia National Laboratory.

4. Dr. Christopher Edgar, Jan 2011-June 2014, M.S./Ph.D., "Transport Synthetic Aperture Detection System" and "Validation of the Pool Critical Facility Benchmark using PENTRAN," sponsored by NNSA, DoD; "RKF solution methods for Time-Dependent transport with delayed neutrons". Employed at General Electric - Hitachi Nuclear.

5. Dr. Jessica Paul, Jul 2011-June 2014, M.S./Ph.D., "Design of a Mobile Pit Verification System for Pu Detection," sponsored by DHS (DHS Fellow); "Synthetic processing for resolution enhancement in sodium iodide models for spent fuel assessments". Employed at Lawrence Livermore National Laboratory.

M.S. Students Supervised, Thesis

1. Michael Chin, Jan 2011-Jan 2013, Thesis: "Design of a Mobile Pit Verification System for HEU Detection," sponsored by US Dept of State.

2. Matthew Molinar, Aug 2011-Dec 2012, Thesis: "SNM Neutron Detection Using a Time-Gated Synthetic Aperture Hybrid Approach" sponsored by NNSA, DoD. Employed at NRC.

3. Dr. Evan Redd, Jul 2012-Dec 2013, Thesis: "Investigation of X-10 Reactor Burnup," sponsored by DHS (DHS Fellow). Employed at National Geospatial Intelligence Agency.

A.3. University of Florida

Ph.D. Students Supervised

1. Dr. Monica Ghita, Aug 2009, Thesis: "Computer Simulations of Estimate Organ Doses From Clinically Validated Cardiac, Neuro, and Pediatric Protocols for Multiple Detector Computed Tomography Scanners".

2. Dr. Ahmad Al-Basheer, Aug 2008, Thesis: "3-D Deterministic Radiation Transport for Dose Computations in Clinical Procedures"

3. Dr. Gabriel Ghita, Aug 2008, Thesis: "Comprehensive Modeling of Special Nuclear Materials Detection Using 3-D Deterministic and Monte Carlo Methods". Employed at Defense Threat Reduction Agency

M.S. Students Supervised

1. Todd Mock, Aug 2010, Thesis: "Evaluation of Material Response to Thermal Flash". Employed at IAEA.

2. Tucker Stachitas, Dec 2009, Thesis: "Evaluation of 3-D Radiant Heat Transfer in Street Canyons". Employed in US Navy.

3. Mireille Rowe, May 2009, Thesis: "Analysis of Light Water Reactors Including 3-D Deterministic Burnup of a Boiling Water Reactor Fuel Assembly". Employed at Westinghouse.

4. Thomas Plower, Dec 2008, Thesis: "Fully Automated 3-D Parallel Simulation and Optimization of a Full Scale PWR Fuel Assembly with Burnup-Corrected Cross Sections". Employed at FP&L.

5. Kevin Manalo, Aug 2008, Thesis: "Development, Optimization, and Testing of a 3-D Zone Based Burnup/Depletion Solver for Deterministic Transport"

6. Spring Cornelison, May 2008, Thesis: "Calculation of Argon-41 Concentrations for the UFTR Reactor Using Atmospheric Dispersion Modeling Codes: STAC2.1 and CALPUFF"; Employed at Savannah River National Laboratory.

7. Eric LaVigne, Aug 2006, Thesis, "Advanced Synthetically Enhanced Detector Resolution Algorithm: A System For Extracting Photopeaks From a NaI Detector System"

8. Travis Mock, Aug 2007, Thesis: "Tandem Use of Monte Carlo and Deterministic Methods for Analysis of Large Scale Heterogeneous Radiation Systems". Employed at US Government.

M.S. Students Supervised, Non-Thesis

1. Trevor McLaughlin, May 2011, Non-Thesis: "Detector Placement Optimization for Cargo Containers Using Deterministic Adjoint Transport Examination for SNM Detection," and "Comparison of Lattice & Homogenized Models in MCNP". Employed at US Army.

2. Courtney Thomas, Dec 2010, Non-Thesis, report: "Analysis of the SEPHIS-4 Code"

3. Alexandra Kusnezov, Dec 2010, Non-Thesis, paper: "Sensitivities in Modeling with Plate Fuel Moderated by Graphite"

B. Other Teaching Activities/Curriculum Development

B.1. Graduate Committee Service

1. Dr. Nathan Roskoff, Ph.D. in Nuclear Engineering, Virginia Polytechnic Institute and State University, June 2018

2. Dr. Kevin Muhs, Ph.D. in Operations Research, University of Central Florida, May 2018

3. Taylor Schulmeister, M.S. in Nuclear Engineering, Air Force Institute of Technology, March 2017

4. Dr. Evan Redd, Ph.D. in Nuclear Engineering, Georgia Institute of Technology, May 2017

5. Dr. Katherine Royston, Ph.D. in Nuclear Engineering, Virginia Polytechnic Institute and State University, May 2016

6. Dr. William Walters, Ph.D. in Nuclear Engineering, Virginia Polytechnic Institute and State University, May 2016

7. Dr. Daniel Lago, Ph.D. in Nuclear Engineering, Georgia Institute of Technology, May 2015

8. Dr. James Fee, Ph.D. in Nuclear Engineering, Air Force Institute of Technology, April 2015

B.2. Curriculum Development at University of Utah

1. NUCL 6050 (Nuclear Reactor Theory). A graduate level course in reactor physics, to include discussion an application of forward and adjoint neutron transport and diffusion theory, with investigations commensurate with graduate level discussion and elocution. The course includes steady state and time-dependent analytical and numerical problems and solutions in reactor physics, radiation interactions, and criticality eigenvalue computations ('criticality') using diffusion and transport theory.

2. CVEEN 6120 (Numerical Methods Applications). Graduate Numerical Methods, navigates use of numerical routines and programming languages to solve numerical engineering problems. Overview of numerical procedures such as root finding, curve fitting, integration, differentiation, solutions of

simultaneous equations, solving ordinary and partial differential equations, and uncertainty modeling. Emphasis on real world applications of these techniques to problems encountered in Civil, Environmental, and Nuclear Engineering.

3. NUCL 5060/6060 (Reactor Operation and Regulatory Policy). A graduate level course covering the theory and application of nuclear reactor engineering principles supporting the operation of the University of Utah TRIGA Reactor (UUTR), including technical engineering and policy measures that enable understanding of nuclear reactor engineering principles, operations, and regulations (U.S. Nuclear Regulatory Commission/Title 10 of the Code of Federal Regulations). Along with additional practical experience through experimental procedures in a TRIGA reactor, the course provides students with an opportunity to learn research reactor operation, enabling pursuit of reactor operator licensing.

4. NUCL 3000 (Nuclear Principles in Engineering and Science). Nuclear principles in engineering and science will introduce students to fundamental concepts in nuclear engineering. Students will study the basics of nuclear energetics, radioactive decay, and radiation doses and hazards. The basic concepts will be used to introduce applications of nuclear technology including power, weapons, and medicine.

B.3. Curriculum Development at Georgia Institute of Technology

1. NRE 3208 (Nuclear Reactor Theory I). This course requires students to focus their talents from engineering, math, and physics courses on problems of interest in nuclear reactor physics, including analytical and numerical solutions of partial differential equations, and in particular, the neutron diffusion approximation of the transport equation and related problems in nuclear reactor theory.

2. NRE 4208 (Nuclear Reactor Theory II). A second course in reactor physics to include the derivation of the neutron transport equation and approximations to this equation, with investigations in neutron scattering and diffusion. The course includes steady state and time-dependent analytical and numerical problems and solutions in reactor physics, radiation interactions, and criticality eigenvalue computation ('criticality') using diffusion theory, and transport theory.

3. NRE 6201 (Nuclear Reactor Theory). A graduate level course in reactor physics, to include discussion an application of forward and adjoint neutron transport and diffusion theory, with investigations commensurate with graduate level discussion and elocution. The course includes steady state and time-dependent analytical and numerical problems and solutions in reactor physics, radiation interactions, and criticality eigenvalue computations ('criticality') using diffusion theory, and transport theory.

4. ME 8803 (Elements of Nuclear Safeguards, Non-Proliferation, and Security). Fall 2013. Taught at Georgia Tech Lorraine (GTL) Campus, in residence at Metz, France. The course provides all engineering students with a brief background and overview of key topics important to nuclear materials safeguards, accountability, non-proliferation and security; it is most useful for engineers who may enter the workforce and are required to handle issues relating to nuclear materials to include homeland security, customs and border security, IAEA, fuel enrichment and fabrication services, nuclear power plants, and related disciplines. Included special topics guest lectures from industry and government.

B.4. Curriculum Development at University of Florida

1. ENU 4001 (Nuclear Engineering Analysis). This course presents to the students the fundamentals of analysis required for success in a nuclear engineering curriculum, with special emphasis on analytical and numerical evaluation and computer code applications. Overall, the course provides students with the opportunity to focus their talents already gained in engineering, math, and physics courses on problems of interest in nuclear engineering. This course enhances analytical and numerical skills that enable students to solve a suite of problems essential to various nuclear processes, ultimately preparing them well for nuclear reactor analysis, thermal hydraulics, and other topics in nuclear engineering.

2. ENU 4103 (Nuclear Reactor Analysis and Computation-I (Statics)). This course presents to the students the fundamentals of reactor physics to enable a unique perspective on the derivation of the neutron transport equation, and understand the approximations to this equation, including neutron scattering and diffusion. In addition to the core elements of reactor theory, I mapped the course to cover essential elements of analytical and numerical solutions in physics, radiation interactions, criticality eigenvalue computation ('criticality') using diffusion theory, and transport theory.

3. ENU 4191 (Nuclear Engineering Design I). This course serves as a prerequisite to the "Capstone" design course (ENU4192), and was first team taught in the department in the Fall of 2007. This course introduces concepts and reinforces skills necessary for success in ENU4192, providing the extra instruction to enable the students to enter their design course with a more complete set of skills to enable more immediate focus on the "Capstone" design objective.

4. ENU 4192 (Nuclear Engineering Design II). Team taught "Capstone" design course. The design course presents to the students a unique challenge to achieve a viable, integrated design that makes use of all available skills, including analytical and computational, as well as creative thinking skills acquired as an aggregate in the nuclear engineering curriculum. Moreover, skills such as teamwork, communication, problem resolution, and multidisciplinary work were emphasized, and the necessary situations were created to examine these skills.

5. ENU 6937-9261 (Nuclear Reactor Kinetics). "Kinetics" is viewed as an absolutely essential yet difficult subject by nuclear power utilities and reactor engineering firms, yet it was not taught for over 10 years previously because of the limited number of faculty. Developed to integrate the best of historical knowledge with modern computational methods and integrated reactor analysis concepts. The course implemented a large computational modeling component with theory and analysis of reactor kinetics. Further, the UFTR nuclear reactor was used to really demonstrate key theoretical concepts. Both analytical methods and broad based numerical methods were covered in a complementary way to enable simulation of feedback in the reactor system for a variety of scenarios, to identify the strengths and weaknesses of analytical and numerical approaches. By the close of the course, the students were well acquainted with numerous issues in time dependent reactor physics.

6. ENU-Special Topics. (Elements of Nuclear Non-proliferation and Safeguards, Summer 2010). A course tailored for nuclear engineering students with key topics including nuclear materials safeguards, accountability, non-proliferation and security; nuclear materials management, to include homeland security, customs and border security, the role of IAEA and inspections, fuel enrichment and fabrication, nuclear power plants, and related topics. Includes special topics/guest lectures from industry and government, and a field trip to Oak Ridge National Laboratory.

B.5. Curriculum Development at USAF Academy

1. Chief of Applied Mathematics Division, Associate Professor, US Air Force, Department of Mathematical Sciences, USAF Academy, Colorado – responsible for up to 1000 cadets and all applied mathematics courses in the curriculum supporting the USAF Academy.

2. Course Director, Math 243, Vector Calculus, Associate Professor, US Air Force, Department of Mathematical Sciences, USAF Academy, Colorado – responsible for new curriculum development and *Mathematica* Computer Algebra Teaching in vector calculus and analytic geometry for up to 1000 cadets; Also Math 470: Mathematical Physics, Math 245: Differential Equations, and Math 499: Special Topics—Parallel Computing, and Inertial Confinement Fusion I, II.

3. Course Director, Math 243Z, Associate Professor, US Air Force, Department of Mathematical Sciences, USAF Academy, Colorado, Computer Based Vector Calculus in the *Classroom of the Future* – responsible for new course development for a 100% computer-based instruction course in vector calculus.

IV. SCHOLARLY ACCOMPLISHMENTS

A. Published Books and Parts of Books

A.1. Books

1. G. E. Sjoden, *Foundations in Applied Nuclear Engineering Analysis, 2nd edition*, Textbook, World Scientific Publishing Co., Hackensack, New Jersey, 07601, 418 pages, pub. June 2014, ISBN-13: 978-981-463-093-1.

2. G. E. Sjoden, *Foundations in Applied Nuclear Engineering Analysis*, Textbook, World Scientific Publishing Co., Hackensack, New Jersey, 07601, 329 pages, pub. July 2009, ISBN-13: 978-981-283-775-2.

A.2. Book Chapters, Contributed

1. A. Haghighat and G. E. Sjoden, "Three-Dimensional Particle Transport Methods and Their Applications," text chapter in *Applied Modeling and Computations in Nuclear Science*, T. M. Semkow, S.Pommé, and S.M. Jerome, Eds. ACS Symposium Series 945, American Chemical Society, Wash, DC, 2006.

2. V. Kucukboyaci, A. Haghighat, and G. Sjoden, "Performance of PENTRAN™ 3-D Parallel Particle Transport Code on the IBM SP2 and PCTRAN Cluster" book chapter in *Recent Advances in Parallel Virtual Machine and Message Passing Interface*, Springer Berlin/Heidelberg, ISSN 0302-9743, Vol 2131 (2001), ISBN 978-3-540-42609-7, pp. 36-43.

3. G. Sjoden, A. Haghighat, "Implementation of PENTRAN on Distributed Memory Architectures"; "PENTRAN—A 3-D Discrete Ordinates Transport Code with Complete Phase Space Decomposition for Parallel Computers"; "An Adaptive Differencing Strategy and a Simplified Multigrid Acceleration Method with TPMC in PENTRAN", 3 chapters in *3-D Deterministic Radiation Transport Computer Programmes: Features, Applications, and Perspectives*, (Paris) Organisation for Economic Co-operation, Nuclear Energy Agency, NEA/OECD, OECD Publishing (1999), ISBN 9264160205, 9789264160200, pp. 37-46, 157-166, 221-225.

B. Refereed Publications

B.1. Archival Journals

1. Luther W. McDonald IV, Kari Sentz, Alex Hagen, Brandon W. Chung, Cody A. Nizinski, Ian J. Schwerdt, Alexa Hanson, Scott Donald, Richard Clark, Glenn Sjoden, Reid Porter, Matthew T. Athon, Tolga Tasdizen, Vincent Noel, Samuel M. Webb, Arjen Van Veelen, Sarah M. Hickam, Cuong Ly,"Review of Multi-Faceted Morphologic Signatures of Actinide Process Materials for Nuclear Forensic Science", *Journal of Nuclear Materials*, Vol 588, 154779, October 2024.
2. T. Goodell, G. Sjoden, R. Porter, L. McDonald, and K. Sentz, "Parallel Processing of Image Databases for Accelerated Morphological Analysis," accepted, *Nuclear Science and Engineering*, November (2023).
3. C. Olson, J. Snow, M. Wang, G. Sjoden, and E. Cazalas, "An Experimental Validation of Spectrally Matched Neutron Detection Systems using ^{3}He and BF_3," *Nuclear Technology*, Vol 209, 1241-1251, May (2023), https://doi.org/10.1080/00295450.2023.2203291

4. T. Hall, M. Wang, G. Sjoden, and M. Watrous, "Computationally Optimized Irradiation Chamber Design for Production of ^{135}Xe in the Washington State University TRIGA Reactor", *Nuclear Science and Engineering*, American Nuclear Society, 2023. https://doi.org/10.1080/00295639.2023.2178227
5. A. Foley, S. Mohanty, and G. Sjoden, "Investigation and Analysis of Thermoelectrically Cooled CZT Performance", *Nuclear Technology*, Vol 228, pp. 228-243, September (2022), https://doi.org/10.1080/00295450.2022.2131972
6. T. Hall, M. Wang, G. Sjoden, and M. Watrous, "Computational and Experimental Optimization of ^{135}Xe Production in Calibration Sources," *Journal of Environmental Radioactivity,* pp. 244–245, 106814, January (2022). *(note—this paper won a national student award from DOE for an outstanding journal)* https://doi.org/10.1016/j.jenvrad.2022.106814
7. M. Hartos, M. Wang, and G. Sjoden, "Design of an Ultra-Compact Imaging Chamber and Radiation Beamstop for a Neutron Radiography System Employing Particle Transport", *Nuclear Engineering and Design*, Vol. 386, 111570, January (2022). https://doi.org/10.1016/j.nucengdes.2021.111570
8. A. Foley, S. Mohanty, G. Sjoden, "Developing a basis for heavy metal in-situ detection using CZT," *Journal of Instrumentation*, Vol 17, May (2022), A. Foley et al 2022 JINST 17 P05026. https://doi.org/10.1088/1748-0221/17/05/P05026
9. L. Albright, N. Andrews, L. Humphries, M. Piro, G. Sjoden, D. Luxat, T. Jevremovic, "Material Interactions in Severe Accidents – Benchmarking the MELCOR V2.2 Eutectics Model for a BWR-3 Mark-I Station Blackout: Part I-Single Case Analysis," *Nuclear Engineering and Design*, Vol. 382, 111292, October (2021). https://doi.org/10.1016/j.nucengdes.2021.111292
10. M. Hartos, M. Wang, and G. Sjoden, "Computational Design and Optimization of a Neutron Imaging Beamline Using Monte Carlo and Deterministic S_N Radiation Transport for the Utah TRIGA Reactor," *Nuclear Engineering and Design,* Vol. 382, 111374, October (2021). https://doi.org/10.1016/j.nucengdes.2021.111374
11. M.-J. Wang, G.E. Sjoden, "Experimental and Computational Dose Rate Evaluation using S_N and Monte Carlo Method for a Packaged ^{241}AmBe Neutron Source," *Nuclear Science and Engineering*, Vol. 195, Issue 11, pp. 1154-1175, June (2021). https://doi.org/10.1080/00295639.2021.1906587
12. M. Wang, G. Sjoden, A. Foley, S. Mohanty, "3D S_N and Monte Carlo calculations of the Utah TRIGA reactor core using PENTRAN and MCNP6," *Annals of Nuclear Energy*, Vol 155, June (2021). https://doi.org/10.1016/j.anucene.2021.108158
13. E.M. Redd, G. Sjoden, A. Erickson, "Computationally Generated Nuclear Forensic Characteristics of Early Production Reactors with an Emphasis on Sensitivity and Uncertainty," *Annals of Nuclear Energy*, Vol 110, pp. 941-947 (2017).
14. K. Manalo, C.D. Ahrens, G. Sjoden, Advanced Quadratures for three-dimensional discrete ordinate transport simulations: A Comparative Study," *Annals of Nuclear Energy*, Vol 81, pp. 196-206 (2015).
15. K. Royston, A. Haghighat, W. Walters, C. Yi, G. Sjoden, "Determination of current at a detector window using a hybrid adjoint function methodology", *Progress in Nuclear Science and Technology Journal*, Vol 4, 528-532, (2014).
16. W. Walters, A. Haghighat, K. Royston, C. Yi, G. Sjoden, "A Response Function Methodology to Calculate Induced Fission Neutron Flux Distribution in an Active Interrogation System." *Progress in Nuclear Science and Technology Journal*, Vol 4, 533-537, (2014).
17. A. Haghighat, K. Royston, G. Sjoden, C. Yi, M. Huang, "Unique formulations in TITAN and PENTRAN for medical physics applications", *Progress in Nuclear Science and Technology Journal*, Vol 4. 883-887. (2014).
18. C. Yi and G. Sjoden, "Energy Group Structure Determination Using Particle Swarm Optimization", *Annals of Nuclear Energy*, Vol 56, pp. 53-56 (2013). https://doi.org/10.1016/j.anucene.2012.12.020
19. G. Sjoden, J. Maniscalco, M. Chapman, "Recent Advances in the use of ASEDRA in Post-Processing Scintillator Spectra for Resolution Enhancement", *Journal of Radio-analytical and*

Nuclear Chemistry, Volume 291, Issue 2, pp. 365-371 (2012).
20. T. Courau and G. Sjoden, "3D Neutron Transport and HPC: A PWR Full Core Calculation Using PENTRAN S_N Code and IBM BLUEGENE/P Computers," *Progress in Nuclear Science and Technology Journal*, Vol. 2, pp. 628-633 (2011).
21. A. Al-Basheer, G. Sjoden, M. Ghita, "Critical Discretization Issues in 3-D S_N Simulations Relevant to Dosimetry and Medical Physics", *Nuclear Technology Journal,* Vol 169, pp. 252-262 (2010).
22. A. Al-Basheer, G. Sjoden, and M. Ghita, "Electron Dose Kernels to Account for Secondary Particle Transport in Deterministic Simulations", *Nuclear Technology Journal*, Vol 168, pp. 906-918 (2009).
23. G. Ghita, G. Sjoden, and J. Baciak, "On Neutron Spectroscopy Using Gas Proportional Detectors Optimized by Transport Theory," *Nuclear Technology Journal*, Vol 168, pp. 620-628 (2009).
24. G. Ghita, G. Sjoden, and J. Baciak, "Computational and Experimental Validation of a WGPu Neutron Leakage Source Using a Shielded PuBe (α,n) Neutron Source," *Nuclear Technology Journal*, Vol 168, pp. 310-316 (2009).
25. G. Sjoden, R. Detwiler, E. LaVigne, and J. Baciak, Jr. "Positive SNM Gamma Detection Achieved through Synthetic Enhancement of Sodium Iodide Detector Spectra", *IEEE TNS v.56 n.3*, p.1329-1339 (2009).
26. Ghita G., G. Sjoden, and J. Baciak, "A Methodology for Experimental and 3-D Computational Radiation Transport Assessments of Pu-Be Neutron Sources," *Nuclear Technology Journal*, Vol 159, pp. 319-328 (2007).
27. G. Sjoden, "An Efficient Exponential Directional Iterative Differencing Scheme for 3-D Sn Computations in XYZ Geometry," *Nuclear Science and Engineering Journal*, Vol 155, pp. 179-189 (2007). https://doi.org/10.13182/NSE07-A2655
28. Longoni G., Haghighat A., Ce Yi, and G. Sjoden, "Benchmarking of PENTRAN-SSn parallel transport code and FAST preconditioning algorithm using the VENUS-2 MOX-Fueled Benchmark Problem," *Journal of Testing and Evaluation* (ASTM International), Vol 3, No 7 (2006).
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99. A. Haghighat, V. Kucukboyaci, G. Sjoden, and B. Petrovic, "Dose Estimation at a BWR Core Shroud Using PENTRAN," *Proceedings of the Joint International Conference on Mathematics and Supercomputing for Nuclear App.s*, Saratoga Spr., New York, Vol I, pp.819-828 (Oct 1997).

100. G. Sjoden and A. Haghighat, "Computer Code Abstract: PENTRAN – Parallel Environment Neutral-particle TRANsport in 3-D Cartesian Geometry," *Proceedings of the Joint International Conference on Mathematics and Supercomputing for Nuclear Applications*, Saratoga Spr., New York, Vol I, pp.232-234 (October 1997).
101. G. Sjoden and A. Haghighat, "A Simplified Multigrid Acceleration in the PENTRAN 3-D Parallel Code," *Transactions of the ANS*, 75, 152-154 (1996).
102. G. Sjoden, and A. Haghighat, "A New Adaptive Differencing Strategy in the PENTRAN 3-D Parallel SN Code," *Transactions of the ANS*, 75, 147-149 (1996).
103. G. Sjoden, and A. Haghighat, "Taylor Projection Mesh Coupling Between 3-D Discontinuous Grids for SN," *Transactions of the ANS*, 74, 178-179 (1996).
104. G. Sjoden, and A. Haghighat, "PENTRAN, A 3-D Scalable Transport Code with Complete Phase Space Decomposition," *Transactions of the ANS,* 74, 181-183 (1996).
105. G. Sjoden, "Effluent Dispersion Model," *Transactions of the ANS*, 55, 79-80 (1987).
106. G. Sjoden, "Determination of Neutron Flux Densities in the TAMU Triga Reactor Through Radioactivation Methods," TEES-TR-9038-83-13, Texas Engineering Experiment Station, Texas A&M University, College Station, Texas (1983).

C. Non-Refereed Publications

1. G. Sjoden, J. Fee, B. O'Day, J. Petrosky, 'CARD' – Characterization of Adjoint Response for Ge Detectors, in "Design of Sensor Systems and Advanced Sensor Technologies," CTBTO Science and Technology Conference 2017, Vienna, Austria
2. G. Sjoden, Special to CNN:"Why Nuclear Power is a Necessity", CNN Op-Ed Opinion Article, (http://articles.cnn.com/2011-03-16/opinion/sjoden.nuclear.japan_1_fuel-rods-nuclear-fuel-reactor?_s=PM:OPINION), March 2011 (viewed/recommended by over 4200 people on *Facebook*); interviewed by CNN on *The Don Lemon Show*, March 13, 2011.
3. Gabriel Ghita, Nancy Huang, Glenn Sjoden, and James Baciak, "Computational and Experimental Radiation Transport Assessments of a PuBe Source Capsule," *Radiation Shielding and Protection Division 14th Biennial Topical Meeting*, Carlsbad, NM, p. 113, 2006.
4. Ahmad Al-Basheer, Monica Ghita, Glenn Sjoden, and Benoit Dionne, "Critical Discretization Issues in a 3-D Discrete Ordiantes Medical Physics Simulation Benchmarked with Monte Carlo," *Radiation Shielding and Protection Division 14th Biennial Topical Meeting*, Carlsbad, NM, p. 186, 2006.
5. Monica Ghita, Ahmad Al-Basheer, Glenn Sjoden, Jim Baciak, Manuel Arreola, and Carly Williams, "Validation of DXS: A Diagnostic X-Ray Source Generator for X-Ray Transport Simulations", *Radiation Shielding and Protection Division 14th Biennial Topical Meeting*, Carlsbad, NM, p. 189, 2006.
6. Eric Lavigne, Glenn Sjoden, and James Baciak, "Chi-Square Based Selective Data Smoothing for Detector Spectra", *Radiation Shielding and Protection Division 14th Biennial Topical Meeting*, Carlsbad, NM, p. 217, 2006.
7. G. Sjoden, G. Ghita, and J. Baciak, "Comparison of 3-D Computational and Experimental Neutron Response in BF_3 and He-3 Detectors Using Graded Moderators", *Radiation Shielding and Protection Division 14th Biennial Topical Meeting*, Carlsbad, NM, p. 335, 2006.
8. Kucukboyaci, V., A. Haghighat, and G. E. Sjoden, "Performance of the PENTRAN 3-D Parallel Particle Transport code on the IBM SP2 and PCTRAN Cluster," Proc Euro PVM-MPI 2001 Workshop, Fall 2001.
9. G. E. Sjoden and A. Haghighat, "Updated Solutions to the Kobayashi Benchmark Shielding Problems using PENTRAN," submitted for participation in the OECD 3-D Deterministic Transport Benchmark Study, (July 1998).
10. G. E. Sjoden, "PENTRAN: A Parallel 3-D Sn Transport Code with Complete Phase Space Decomposition, Adaptive Differencing, and Iterative Solution Methods," *Ph.D. Thesis* in Nuclear Engineering, The Pennsylvania State University, (May 1997).

11. G. Sjoden and A. Haghighat, "An Adaptive Differencing Strategy and a Simplified Multigrid Acceleration Method with TPMC in PENTRAN," 1996 OECD 3-D Deterministic Radiation Transport Programs, Features, Applications, & Perspectives Conference, Paris, France (Dec 1996).
12. G. Sjoden and A. Haghighat, "Implementation of PENTRAN on Distributed Memory Architectures," 1996 OECD 3-D Deterministic Radiation Transport Programs, Features, Applications, and Perspectives Conference, Paris, France (December 1996).
13. A. Haghighat and G. Sjoden, V. Kucukboyaci, and B. Petrovic, "Determination of the Neutron Flux at the Core Shroud Using PENTRAN," 1996 OECD 3-D Deterministic Radiation Transport Programs, Features, Applications, and Perspectives Conference, Paris, France. (December 1996).
14. A. Haghighat and G. Sjoden, "PENTRAN - A 3-D Discrete Ordinates Transport Code With Complete Phase Space Decomposition for Parallel Computers," 1996 OECD 3-D Deterministic Radiation Transport Programs, Features, Applications, and Perspectives Conference, Paris, France (December 1996).
15. A. Haghighat, I. Balachov, B. Petrovic, and G. Sjoden, "Development of a Coupled Sn and Monte Carlo Method to simulate Radiation Beams from a Power Reactor Biological Shield," Penn State University Nuclear Engineering Technical Report prepared for Pennsylvania Power & Light Company, Allentown, Pennsylvania (1994). (Proprietary Report)
16. G. Sjoden, J. Akerson, W. Skeith, et. al, "Scattered X-Ray Environment Capabilities in the National Ignition Facility," *Proceedings of the Workshop on Nuclear Weapons Effects Testing Applications for the National Ignition Facility,* pp. 73-109, Livermore, California (March 1994).
17. G. Sjoden, "Exponential Characteristic Spatial Quadrature for Discrete Ordinates Neutral Particle Transport in Slab Geometry," *M.S. Thesis*, AFIT/GNE/ENP/92-M10, Air Force Institute of Technology, Wright-Patterson AFB, Ohio (1992).
18. W. Kiele, J. Norton, and G. Sjoden, "Comparing Two Treatments of Multivariate Calculus Between Two Matched Groups of Students: Traditional with Technology as Supplement vs Technology Based Course," *Proceedings of the Sixth Annual International Conference on Technology on Collegiate Mathematics*, Parsippany, New Jersey (November 1993).
19. G. Sjoden, "Determination of Neutron Flux Densities in the TAMU Triga Reactor Through Radioactivation Methods," TEES-TR-9038-83-13, Texas Engineering Experiment Station, Texas A&M University, College Station, Texas (1983).
20. Authored over 100 Classified Technical Design/Engineering Evaluation Reports for the US Government.

D. Presentations
(University of Utah)

1. G. Sjoden, "Adjoint-Informed Synthesis of Steady State Source Analogs in Deterministic Transport Models," *M&C 2023 Conference Presentation*, Niagara Falls, CA, August 2023.
2. G. Sjoden, "Experimental Benchmark of BSOLVE using the WSU TRIGA Reactor," *M&C 2023 Conference Presentation*, Niagara Falls, CA, August 2023.
3. G. Sjoden, "Nuclear Energy as a Solution to Carbon Free Power", presentation to *Young Presidents' Organization (YPO)-Gold*, U. Utah Marriott, July 2023.
4. G. Sjoden, "Nuclear Energy as a Solution to Carbon Free Power", presentation to *Alta Club*, *Salt Lake City*, Utah, June 2023.
5. G. Sjoden, "Direct Multi-group Cross-sections via NJOY+OJOYU for PWR and FLiBe-MSR Reactor Systems," presentation at *2023 ANS Summer Meeting*, June 2023.
6. G. Sjoden, invited seminar (virtual), "U Utah Nuclear Reactor and Engineering Capabilities," presented to *Pentagon DDR&E* and *DoD Radiation Hardness Laboratories*, 22 February 2022.
7. G. Sjoden, invited speaker, "U Utah Nuclear Reactor and Engineering Capabilities" presentation to *Radiation Hardness on Electronics Conference*, U. Utah Marriott, February 2022.
8. G. Sjoden, Presentation "BSOLVE: Energy Dependent Depletion with Algorithm-adapted Error Control for 3-D Transport", *2021 ANS Winter Meeting*, December 2021.
9. G. Sjoden, invited seminar (virtual), "Assessment of Environmental Monitoring Technology Development Efforts," *National Academy of Sciences, Engineering, and Medicine, Committee on*

Non-Proliferation and Monitoring of Nuclear Weapons and Fissile Material and Environmental Monitoring, via WebEX, Sep. 23, 2020.

10. G. Sjoden, "Radiation Transport Tools Supporting Computational Simulations in Nuclear Engineering at the University of Utah," invited seminar, *Ohio State University Nuclear Engineering*, Columbus, OH, Feb. 18-19, 2020.
11. G. Sjoden, "Radiation Transport Computational Simulations at the University of Utah," invited seminar, Utah Materials Science and Engineering Seminar, hosted by Prof. K. Carlson at *University of Utah*, Jan. 29, 2020.
12. G. Sjoden, invited seminar, "Radiation Transport Simulations Supporting Non-Proliferation Studies," *National Nuclear Data Center, Brookhaven National Laboratory*, Brookhaven, New York, Jan. 27-28, 2020.
13. G. Sjoden, "Radiation Transport Tools Supporting Computational Simulations in Nuclear Engineering at U. Utah", invited seminar, *Georgia Institute of Technology Nuclear Engineering*, Atlanta, GA, Jan. 16-17, 2020.
14. G. Sjoden (with UU Nuclear Faculty Cazalas and McDonald), invited presentation, *University of Alaska-Fairbanks UARC*, "Joint Partnership in Geophysical Detection of Nuclear Proliferation UARC," in support of joining University Affiliated Research Center for the Department of Defense, Fairbanks, AK, Dec 6-7 2019.
15. G. Sjoden, presentation with Tara Mastren, "Utah TRIGA Reactor Isotope Generation Capabilities", *DOE Isotopes Fall 2019 Meeting,* Department of Energy, Germantown, MD, Nov. 3-6, 2019.
16. G. Sjoden, lecture on Nuclear Energy to "Energy and Society Course", co-led with Prof. McDonald, *University of Utah*, Fall 2019.

(Georgia Tech)

17. G. Sjoden, "Synthetic Scoring Scheme for Isotope Identification SmartID," *54th Annual Meeting of the Institute of Nuclear Materials Management (INMM)*, Palm Desert, CA, July 2013.
18. G. Sjoden, "New Laboratory Capabilities in Medical Physics and Nuclear Engineering Research at Georgia Tech", *Transactions of the ANS*, Atlanta, GA, June 2013.
19. G. Sjoden, "Design of a Mobile Pit Detection System," *ANS Student Conference at MIT*, Boston, Massachusetts, May 2013.
20. Invited speaker: SRNL Director's Colloquium, "3-D Radiation Transport Computations in Full Core Power Reactor Simulations and Mobile Pit SNM Detection," Savannah River National Laboratory, November 2012.
21. Georgia Tech Spokesperson for nuclear issues on Atlanta/*DOE President's Blue Ribbon Commission Response*, Atlanta Hyatt Hotel Peachtree Center, 2012
22. Co-chaired a Workshop representing Georgia Tech on 3-D Particle Transport Methods in collaboration with Virginia Tech in Washington D.C. in Fall 2011
23. G. Sjoden, "Applications of Radiation Transport Computations in Reactor Physics and Detection", (Invited Seminar), *The Ohio State University*, October 2011.
24. Technical commentator on Fukushima, resulting in national and international exposure for nuclear engineering expertise at Georgia Tech: Interviewed on *CNN* (Don Lemon), *CNN International*, *FOX* (Sean Hannity), *ABC News* (Lauren Pearl), *CBS News*, *CBS Radio* (P. Combs), *GT-Forums* (Dr. R. Bras), in interviews for the *Wall Street Journal, Atlanta Journal Constitution, Christian Science Monitor, USA Today*, others, March-May 2011.
25. Invited Speaker, ANS Student Conference, Hyatt Hotel Peachtree Center, Spring 2011
26. G. Sjoden, J. Maniscalco, M. Chapman, "Recent Advances in the use of ASEDRA in Post-Processing Scintillator Spectra for Resolution Enhancement", (Invited), *13th International Conference on Modern Trends in Activation Analysis*, Texas A&M University, March 2011.

E. Patents:

1. Patent number: 8513618, "Radioactive anomaly discrimination from spectral ratios," Issued: August 20, 2013, Assignee: Quintell of Ohio, LLC, Inventors: James Maniscalco, Glenn Sjoden,

Mac Clements Chapman

2. US Patent Serial No. 60/971,770, September 12, 2007, "Method and Apparatus for Spectral Deconvolution of Detector Spectra," US Patent Application, Docket UF-595P, E. LaVigne, G. Sjoden (PI), J. Baciak, and R. Detwiler.

V. ACADEMIC SERVICE:

A. University of Utah

1. Director of the Nuclear Engineering Program, and Level II Supervisor/Reactor Director, Utah TRIGA Facility (2020-Present)

2. Member, University of Utah Radiation Safety Committee, (December 2020 – Present)

3. Chair, Civil and Environmental Engineering Safety Committee (August 2019-Present)

4. Presenter, University of Utah Engineering Day, Nuclear Engineering Program (Fall 2020-2021)

5. Hiring committee chair, Nuclear Reactor Supervisor and Nuclear Research Scientist positions, (Fall 2020)

6. Evaluator, Peer Teaching RPT Evaluations: Prof. Yushan Wang, U. Utah Chemical Engineering, Prof. Tara Mastren, U. Utah Nuclear Engineering (Fall 2020), Prof. Edward Cazalas, U. Utah Nuclear Engineering (Spring 2021), Profs Chris Pantiledis, Prof. Bryan .

7. Factory Acceptance Testing reviewer and installation supervisor, new Thermo-Fisher Reactor Control System, University of Utah TRIGA Reactor (Fall 2020-Spring 2021).

8. Member, CVEEN RPT Subcommittee, Evaluation of Prof Tara Mastren (Fall 2020).

9. CVEEN 6555 Speaker Engagement for Graduate Seminar, Mr. Bill Vass, VP of Technology, Amazon Web Services (Fall 2020).

10. INMM Utah Chapter Faculty Advisor (Fall 2020-Present)

B. Georgia Institute of Technology

1. NRE/MP: Director, Radiological Science and Engineering Laboratory (RSEL) (2011-2014)

2 Woodruff School: Member, Faculty Advisory Committee (2010 – 2014)

3. Woodruff School: Member, Tenure and Promotion Committee, George W. Woodruff School of Mechanical Engineering (2011-2014)

C. University of Florida

1. UF Training Reactor: Chief of Nuclear Reactor Safety (2005-2009), including oversight of safety for refueling from HEU to LEU plate fuel conversion

2. NRE Program: Chair, New Faculty Hiring (2007-2009)

VI. CONSULTATIONS:

Consultant to US/Government agencies, National Laboratories, and Industry:

1. *Antares Nuclear, Inc,* Redwood City, CA, Consultant on Reactor Design, May 2023-Present
2. *S2 Tech LLC*, Smithfield, NC (Consultant to DOD), 2022-Present
3. *Zel Technologies LLC*, Hampton VA (Consultant to DOD), 2021-Present
4. Member, PNNL FIE (DOE), *Pacific Northwest National Laboratory*, 2021-Present
5. Special consultant to DOE/*Pacific Northwest National Laboratory*; Q-cleared, Fall 2019-Present.
6. Member, "Light Speed Grand Challenge Executive Advisory Board", *Sandia National Laboratory*, M. Welliver, 2021-2023
7. Chairman, "Science of Signatures Review Panel," *Los Alamos National Laboratory*: Report to the Los Alamos Laboratory Director: T. Mason, March 2021.
8. Special Consultant to *National Academies of Science, Engineering, and Medicine:* 2019-2021
9. *Comprehensive Test Ban Treaty Organization* Bi-Annual Science and Technology Meeting Technical Advisory Panel, CTBTO, Vienna, Austria (2015, 2017, 2019)
10. Special Consultant to *Delta Air Lines*, Appointed by Richard Anderson, CEO, Delta Air Lines, Delta Air Lines Operations, Atlanta, GA Headquarters, (2011-2014)
11. Special Consultant to *Director of National Intelligence Organization / Central Intelligence Agency* Special Program Review Panel (2011-2014).
12. Consultant to *Electricite' de France*, EDF R&D SINETICS Department, 1 avenue du Général de Gaulle, F-92141 CLAMART CEDEX, France (2010-2014)
13. Senior Technical Reviewer, *National Nuclear Security Administration*, *Department of Energy*, assigned by *Pacific Northwest National Laboratory*--Battelle, Richland, WA (2009 – 2014)
14. Advisor, Panel Member, *Department of Homeland Security*, Nuclear Forensics Science Panel (NTNF – National Technical Nuclear Forensics, 2007-2013)
15. *National Nuclear Security Administration* (Classified Reviewer, 2005 - 2014)
16. *Zel Technologies LLC*, Hampton VA (Classified Reviewer and consultant to DOD, 2004-2014)
17. *Quintell, LLC*, Beachwood, OH (2008 - 2013)
18. *US Air Force* (Chairman, Atmospheric Sciences Advisory Panel, AFTAC, 2005-2010, 2012-2013)
19. *Energy and Engineering Services Directorate Advisory Committee*, Oak Ridge National Laboratory (Advisory Committee, ORNL, 2009 – 2010)
20. *Modeling, Experimentation, and Validation (MeV) Summer School* (Advisory Board, Idaho National Laboratory, 2008 – 2010, 2022-Present)
21. *Idaho National Laboratory* (SASP Board of Directors, 2006 - 2010)
22. *Oak Ridge National Laboratory* (Chairman, Nuclear Science and Technology Division Review Board of Directors, 2006- 2010)
23. *DHS National Technical Nuclear Forensics (NTNF) Systems Engineering Panel* (2007 – 2009)
24. *FBI Scientific Working Group on Forensic Analysis of Rad. Matls.* (SWGFARM) (2006 - 2007)
25. *Lawrence Livermore National Laboratory* (ASP and Nuc. Forensics Science Panels, 2002-2009)
26. *Department of Defense* (Defense Threat Reduction Agency, Forensics Review, 2007-2009)
27. *Nucsafe, LLC*, Oak Ridge TN, (2005-2008)
28. *University of Florida Research Foundation: UF Office of Technology Licensing* (FL Board of Governors, Product Development, funded through HSW Technologies LLC, 2008-2010).

VII. EDITOR/REVIEWER FOR SCHOLARLY JOURNALS:

1. Reviewer, *Nuclear Instruments and Methods in Physics Research, A* (2020-Present).
2. Reviewer, *IEEE Transactions in Nuclear Science* (2020-Present).
3. Reviewer, *Geophysics Journal International* (2020-Present)
4. Reviewer, *ANS Mathematics and Computation Division International Meeting* (2021-Present).
5. Member, *Nuclear Science and Engineering Journal*-Editorial Advisory Board (Fall 2020-Present).
6. Reviewer, Briefer, *National Academies of Science, Engineering, and Medicine* (2020-Present).
7. Reviewer, *DOE/NNSA SBIR Research Grant Program* (2020-Present).

8. Reviewer, *Laboratory Directed Research and Development*, Los Alamos National Laboratory, "Hyperspectral X-Ray Imaging", (August 2020).
9. Reviewer, *Laboratory Directed Research and Development*, Los Alamos National Laboratory, "Integrated Nuclear Detonation Detection", (March 2020).
10. Reviewer, *Geophysics Journal International*, (2020-Present)
11. Reviewer, *Nuclear Technology* (2017-2018) [2 papers/year]
12. Associate Editor, *IEEE Transactions in Nuclear Science* (2008-2014) [several/year]; Duties include soliciting reviewers for refereed journals; Additional duties include reviewing papers
13. Reviewer*, IEEE Transactions in Nuclear Science* (2008-2014) [3 papers/year]
14. Reviewer, *Health Physics Journal* (2006 – 2014) [3 papers/year]
15. Reviewer, *Nuclear Science and Engineering Journal* and *ANS Transactions* (2000 – 2014) [1-2 papers/year]
16. Reviewer, *Math and Computation Division Topical of the American Nuclear Society*, held every other year (1999- 2014) [2 papers/conference]

VIII. PROFESSIONAL MEMBERSHIPS/AFFILIATIONS:

1. American Nuclear Society (ANS), 1980-Present, Life Member
2. Institute of Nuclear Materials Management (INMM) (2011-2014, 2019-Present)
3. ANS Professional Engineering (Nuclear Exam Development) Committee, 2002-Present
4. Institute of Nuclear Materials Management (INMM), U. Utah chapter advisor, 2020-2021
5. ANS Mathematics and Computation Division Executive Committee, 2012-2014
6. ANS Reactor Physics Division Executive Committee, 2010-2013
7. ANS Radiation Protection & Shielding Div. Exec. Com., 2009-2012, Vice Chair 2013, Chair 2014
8. American Chemical Society, 2005-2012
9. American Association of Physicists in Medicine, 2007-2010
10. ANS Professional Engineering Exam Committee (PEEC) Chair/Vice Chair, ANS, 2002-2007
11. ANS Mathematics and Computation Division Exec. Com., 2007-2009, Treasurer, 2002-2003
12. Tau Beta Pi Engineering Honor Society Life Member, Texas Delta Chapter, 1983-Present
13. Alpha Nu Sigma Nuclear Engineering Honor Society, 1982-Present

IX. TRAINING AND SHORT COURSES ATTENDED:

1. Helicopter Pilot Training (Private Pilot), 65 flight training hours, with solo in Robinson R44 Helicopter N544AB, Utah Helicopter/Platinum Aviation, South Valley, UT, training 2021-Present
2. PE Continuing Education, State of Florida, INFORMED Annual Short Courses for Licensed Professional Engineering Continuing Education, 2004-Present
3. Nuclear Non-Proliferation & Safeguards Laboratory, Oak Ridge National Laboratory, TN, 2010
4. Nuclear Non-Proliferation & Safeguards Faculty Workshop, Santa Fe and Los Alamos, NM, 2009
5. Advanced Underground Nuclear Weapons Testing Orientation, Nevada Test Site, NV, Feb 2003
6. SCALE/ORIGEN-ARP Training Course, Nuclear S&T Division, Patrick AFB, FL, Jan 2003
7. Laws and Rules Professional Engineering Continuing Education, FBPE, Tampa, FL, April 2002
8. SCALE/KENO V.a Criticality Training Course, Nuclear S&T Div., Oak Ridge, TN, October 2001
9. Methodologies for Particle Transport Simulation, University Park, PA, June 1996
10. Transport Methodologies/Uncertainty Est. for PWR Vessel Dose, University Park, PA, June 1995
11. Design of Experiments: The Best of Classical and Taguchi, USAF Academy, CO, August 1993
12. Essentials of Quality Control Processes, USAF Academy, CO, July 1992
13. Medical Effects of Nuclear Weapons, Defense Nuclear Agency, WPAFB, OH, May 1991
14. Synthetic Aperture Radar Short Course, ERIM/University of Michigan, Ann Arbor, MI, July 1989
15. Fundamentals of Uranium Enrichment/Isotope Sep., Oak Ridge National Lab, TN, May 1989
16. Nuclear Nonproliferation (Advanced, Z-Div), Livermore Nat'l Lab, CA, September 1988
17. Air Pollution Measurement, University of Idaho, Idaho Falls, ID, January-May 1987
18. Nuclear Fuel Reprocessing, University of Idaho, Idaho Falls, ID, August-December 1986
19. Nuclear Weapons Orientation Advanced Course, Kirtland AFB, NM, July 1985

20. Financial Planning and Control Techniques, DOD Programs, Rock Island Arsenal, IL, June 1985

X. COURSES DEVELOPED AND TAUGHT:

1. Reactor Operation and Regulatory Policy (graduate), NUCL 5060/6060, U. Utah, 2021-Present
2. Numerical Methods Applications (graduate), CVEEN 6120, U. Utah, Spring 2020-Present
3. Nuclear Reactor Physics (graduate), NUCL 6050, U. Utah, Fall 2010-Present
4. Elements of Nuclear Safeguards, Non-Proliferation, and Security (graduate), GT-Lorraine Campus, Metz, France, ME-8803, Fall 2013
5. Nuclear Reactor Physics (graduate), NRE 6201, Georgia Institute of Technology, Spring 2013-14
6. Nuclear Reactor Physics II, NRE 4208, Georgia Institute of Technology, Fall 2011-2014
7. Nuclear Reactor Physics I, NRE 3208, Georgia Institute of Technology, Spring 2011-2012
8. Elements of Nuclear Non-proliferation and Safeguards, U. Florida, Summer 2010
9. Nuclear & Radiological Engineering Design I and II, U. Florida, Spring 2006-2010
10. Special Topics in Reactor Physics (graduate), U. Florida, Spring 2006-2010
11. Nuclear Reactor Analysis and Computation I—Statics, U. Florida, Spring 2005-2010
12. Nuclear Engineering Analysis I (graduate), U. Florida, University of Florida, Fall 2004-2010
13. Selected Topics, Methods of Computational Particle Transport, U. Florida, June 2004
14. Selected Topics, Methods of Computational Particle Transport, U. Florida, June 2002
15. Physics of Electromagnetism and Optics (Physics 215), USAF Academy, 1999
16. Systems Engineering (graduate), Colorado Technical University (CS 672), 1997-98
17. Selected Topics, Methodologies for Particle Transport Simulation, Penn State, June 1996
18. Advanced Integral Calculus with *Mathematica* (Math 152), USAF Academy, 1998
19. Special topics in Parallel Computing I (Math 499), USAF Academy, 1998
20. Mathematical Physics with *Mathematica* (Math 470), USAF Academy, 1998
21. Multivariate Calculus with *Mathematica* (Math 243Z, 243), USAF Academy, 1992-94, 1997-99
22. Special Topics in Inertial Confinement Fusion II (Math 499), USAF Academy, 1994
23. Special Topics in Inertial Confinement Fusion I (Math 499), USAF Academy, 1993
24. Differential Equations and Matrices (Math 245), USAF Academy, 1993-94

XI. AWARDS:

1. 2023: *Top 15% of Faculty--Excellence in Teaching Award*, Dean of the Price College of Engineering, University of Utah, Salt Lake City, Utah
2. 2019: *Tenured Professor and Director of Nuclear Engineering*, U. of Utah, Salt Lake City, Utah
3. 2019: *Air Force Meritorious Civilian Service Award*, AFTAC, Patrick AFB, Florida
4. 2018: *Presidential Rank Award*, USAF (IP-00 DISL) Senior DOD Leader Award for Exceptional Public Service, awarded by the President of the United States, presented by the USAF Secretary, The Pentagon, Washington D.C. (presented June 14, 2019).
5. 2018: *Air Combat Command (ACC) winner, ACC nominee: USAF Harold Brown Award for Innovative R&D*, Patrick AFB, Florida
6. 2014-2018: *Senior Executive Service/DISL Performance Award*, Senior Executive Management Office, Pentagon, Washington D.C.
7. 2011: *American Nuclear Society Presidential Citation for Service to the Public and the Society for Rapid Response to the Fukushima*, Japan Nuclear Accident, Hollywood, Florida
8. 2010: *Tenured Professor of Nuclear Engineering*, Georgia Inst. of Technology, Atlanta, Georgia
9. 2009: *Tenure awarded, UF College of Engineering*, University of Florida
10. 2007: *Florida Power & Light (FP&L) Endowed Term Professor for Nuclear Power Research*, 2007-2010
11. 2006: *Nominated for Best Professor/Instructor of the Year by the UF College of Engineering*
12. 2006: *International Researcher of the Year Award*--UF College of Engineering
13. 2004: *USAF Meritorious Service Medal*, 3rd Oak Leaf Cluster
14. 2000: *USAF Meritorious Service Medal*, 2nd Oak Leaf Cluster
15. 1999: *Certificate of Appreciation and Recognition for Contributions to U.S. Intelligence by the*

Director of Central Intelligence (DCI), Scientific and Technical Intelligence Committee, Washington, D.C.

16. 1997, 1998: *Top Mathematical Sciences Nominee--Frank Seiler Award*, USAF Academy Outstanding Researcher
17. 1997, 1998: *Certificates of Appreciation for Outstanding Research*, Livermore National Laboratory, Q-Division
18. 1996: *1st Place--Engineering, 11th Annual Graduate Research Exhibition*, Penn State University
19. 1994-1996: *College of Engineering Awards for Academic Excellence*, Penn State University
20. 1994: *Awarded Air Force Ph.D. Fellowship*, Penn State University
21. 1994: *USAF Meritorious Service Medal*, 1st Oak Leaf Cluster
22. 1992: *Top Graduate and Distinguished Graduate, AFIT Master of Science Degree Program*
23. 1992: *Tau Beta Pi Award for Outstanding Thesis*, Air Force Institute of Technology
24. 1992: *Tau Beta Pi Award for Outstanding Academics*, Air Force Institute of Technology;
25. 1992: *Air Force M.S. Fellowship*, Air Force Institute of Technology
26. 1991: *USAF Meritorious Service Medal*
27. 1988: *Company Grade Officer of the Quarter*, Winter
28. 1987: *Outstanding Young Men in America*
29. 1987: *Certificate of Appreciation for Outstanding Research*, USAF "Education With Industry" Program, INEL, Idaho
30. 1986: *Air Force Education With Industry Laboratory Associate Fellowship*, INEL, Idaho
31. 1986: *USAF Commendation Medal*
32. 1984: *National Dean's List*
33. 1992: *Air Force B.S. Fellowship*, Texas A&M University
34. 1983: *Mitty Plummer Award*, Outstanding Junior Nuclear Engineering Student, Texas A&M
35. 1980-1984: *Dean of Engineering Distinguished Student Awards*, Texas A&M University

XII. RESEARCH SCIENTISTS and POST GRADUATE RESEARCHERS:

1. Meng-Jen "Vince" Wang, 2019 – 2023, Research Scientist, University of Utah Nuclear Engineering Program.

2. Ce Yi, Ph.D., "Dynamic Deterministic Transport Optimization Research Program", sponsored by Sandia National Laboratories and NNSA, 2008 – 2012.

3. George Goergiev, Ph.D., "Passive SNM Detector Technology Literature Review and Assessment", G. E. Sjoden, Principal Investigator, NucSafe, Inc, October 2006 – February 2007.

4. Travis Mock, M.S., "PENBURN: 3-D Reactor Transport/Burnup Simulations," sponsored by the US Air Force, August 2007 – December 2007.

5. Robert Smith, Ph.D., "PENBURN: 3-D Reactor Transport/Burnup Simulations," USAF, 2004-2005.

XIII. CONTRACTS AND GRANTS: Externally Funded Research (U. Utah only, 2019-Present)

Title of Grant	Funding Agency	PI/ Co-PI/Key Pers	Effective Start	Effective End	Value of Contract/ Grant	Dr Sjoden's Portion
"Xe-133m Production Tuning Campaign"	DOE – Idaho Nat'l Lab	PI	July 2023	Sep 2023	$90,000	$90,000
"WSU Xenon-Optimization, Phases I and II"	DOE – Idaho Nat'l Lab	PI	Sep 2022	August 2023	$128,063	$128,063
"LEO Space Radiation Assessment, Phase I"	Patz Materials, NRO	PI	Feb 2022	Sep 2022	$49,245	$34,410
"ES3 STTR with AFWERX"	AFWERX	PI	2021	2022	$16,900	$12,000
"Improved ^{135}Xe Source"	DOE – Idaho Nat'l Lab	PI	May 2020	August 2021	$104,304	$104,304
"NNSA Morphology Signatures Testbed"	DOE- Los Alamos National Lab	Key Pers	Aug 2021	March 2026	$2,763,000	$800,000
"Morphological Signatures through the Nuclear Fuel Cycle"	DOE – Idaho Nat'l Lab	Co-PI	Sep 2021	August 2022	$104,000	$52,000
TOTAL EXTERNAL FUNDING AWARDED	=========	===	2019	Present	$3,255,512	$1,220,777

XIV. CONTRACTS AND GRANTS: Externally Funded Research (U. FL, Ga. Tech, 2004-2014)

Title of Grant	Funding Agency	PI/ Co-PI/Key Pers	Effective Start	Effective End	Value of Contract/ Grant	Dr Sjoden's Portion
"Comprehensive Modeling of SNM Detection Using 3-D Deterministic and Monte Carlo Methods"	NNSA	PI	October 2004	September 2007	$249,714	$249,714
"PENBURN: 3-D Reactor Transport/Burnup Simulations"	DOD, U.S. Air Force	PI	May 2005	July 2008	$302,697	$302,697
"Synthetically Enhanced Detector Resolution Algorithm (SEDRA)"	HSARPA-DNDO*	PI	June 2005.	June 2006.	$236,934	$160,000
"Conversion of the UFTR Reactor from High Enriched Uranium to Low Enriched Uranium"	Battelle, NNSA	Co-PI	June 2006	October 2006	$199,876	$40,000
"Feasibility Study for the Use of Gamma Spectroscopy to ID Material in Closed Containers in a High Radiation Environment"	Southern Nuclear Operating Company, Inc	PI	June 2006	August 2006	$48,257	$48,257
"Passive SNM Detector Technology Literature Review and Assessment"	NucSafe, Inc	PI	October 2006	February 2007	$59,643	$59,643
"Data Algorithm Analysis" Denoising Applications	DOD, U.S. Air Force	PI	June 2007	June 2008	$43,647	$43,647
"Evaluation of the Detector Post-Processing Algorithm ASEDRA"	Sandia National Laboratories	Co-PI	March 2008	September 2008	$39,670	$15,800
"Analysis of Thermal Flash Effects for Post-Event Forensics Yield"	Air Force Institute of Technology	PI	June 2008	December 2010	$245,559	$225,000
"Dynamic Deterministic Transport Optimization Research Program"	Sandia National Laboratories	PI	November 2008	September 2011	$282,050	$282,050
"CARMON—Cargo Monitoring Validation Project"	Quintell, LLC	PI	October 2009	September 2010	$159,606	$150,000
"NESS: Nuclear Engineering Simulation Support", Primary and Supplemental awards	DOD, U.S. Air Force	PI	January 2009	January 2011	$506,599	$506,599
"Transport Simulation & Validation of a Synthetic Aperture SNM Detection	NNSA	PI	August 2009	October 2012	$795,000	$780,000

System" *moved to Ga Tech						
"Safeguards and Non-Proliferation Course Development Funding"	UT-Battelle, NNSA	PI	August 2009	September 2010	$51,512	$40,000
"Design of a Mobile Pit Verification System"	US Dept of State (GTRI I- Head)	PI	August 2011	September 2012	$141,437	$141,437
"ORNL Joint Faculty Appointment"	UT-Battelle	PI	January 2011	January 2013	$92,704	$92,704
"Multigroup Theory Enabling Accurate Coarse Group Simulation of Gen-IV Reactors"	DOE	Investi-gator	July 2010	July 2013	'------	$77,125
"YGROUP at Georgia Tech"	Sandia Nat'l Lab	PI	Jan 2011	Jan 2012	$62,000	$62,000
"Reactor Modeling Study"	DoD	PI	Oct 2011	Apr 2012	$55,000	$55,000
"An Innovative Hybrid Deterministic/Monte Carlo Radiation Transport Method for Modeling Radiation Sensor Systems – Part I"	NNSA	Investi-gator	Sep 2009	Sep 2012	'------	$52,779
"Automatically Optimized High-Fidelity Few-Group Cross Sections for SNM Detection Applications"	NNSA	Co-PI	Aug 2012	Sep 2015	$522,000	$130,000
"Fast Reactor Modeling Study ('Fast Burner')	DoD	PI	Sep 2012	Mar 2013	$55,000	$55,000
"Integral Inherently Safe Light Water Reactor (I2S-LWR)"	DOE	Investi-gator	Feb 2013	Feb 2016	$6,000,000	$381,000
TOTAL EXTERNAL FUNDING AWARDED	=========	===	**2004**	**2014**	$10,148,905	$3,950,452