

John M. Scaglione

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SUMMARY

Experienced in the development and use of computational methods for criticality safety, radiation shielding, and reactor analysis; particular expertise in spent fuel disposal for Department of Energy (DOE) owned and commercial spent nuclear fuel and high level waste, burnup credit criticality safety for spent fuel disposal, and computational validation. Experience in performing, documenting, and reviewing complex analyses, and license application safety analysis report development.

EXPERIENCE

- Oak Ridge National Laboratory (ORNL); 1 Bethel Valley Road, Oak Ridge, TN, Radiation Transport and Criticality Group, Nuclear Science & Technology Division.
 - Project Manager, September 2008 – present :
Supervisor: Dr. John C. Wagner
On assignment to the DOE Office of Civilian Radioactive Waste Management's (OCRWM) Lead Laboratory for Repository Systems as Technical Integration Lead for Postclosure Criticality Safety at the Yucca Mountain Project (YMP). Responsibilities include license application defense and maintenance of the postclosure criticality licensing basis for DOE-owned spent nuclear fuel (SNF), high-level waste, and commercial SNF; developing, planning, and coordination of work scope with the National Spent Nuclear Fuel Program and the Naval Nuclear Propulsion Program; and managing work activities and interfacing with the customer (DOE OCRWM), regulator, and other relevant stakeholders.
- Beckman & Associates; 1180 Town Center Drive, Las Vegas, NV, OCRWM Lead Laboratory for Repository Systems.
 - Technical Sciences Group Manager, April 2007 – September 2008
 - Nuclear Criticality Analyst, October 2006 – March 2007Supervisor: Cliff Howard
Manage approximately 6 staff working in support of nuclear criticality analyses operations in Las Vegas. Integrate functions between multiple organizations to ensure consistency of design, boundary conditions, and scenario descriptions to support Safety Analysis Report section development. Ensure products meet the applicable regulations, DOE Orders, and consensus standard objectives, and are developed within scope, schedule, and budget plans. Interact with the DOE customer and NRC staff. Coordinate and adjust work scope as needed with Naval Nuclear Propulsion Program and subcontractors. Cultivate staff to constitute witness pools for license defense and to comprehend a nuclear culture work environment. Review models and analyses for technical adequacy and integration with criticality control objectives for long-term storage of nuclear waste in a geologic repository. Co-author Yucca Mountain Project license application Safety Analysis Report sections involving the application of burnup credit, defensibility of applicable code biases and uncertainties regarding isotopic compositions and cross sections for reactivity evaluations, development of robust arguments for canister and configuration design variants, and a probabilistic assessment of the occurrence of a nuclear criticality event in the repository. Develop analyses regarding igneous and seismic scenario development considering the processes that affect mechanical impacts, material corrosion and sensitization, waste form degradation, and the combined effects on the parameters important for nuclear criticality. Qualified SCALE and MCNP computer code packages in accordance with stringent QA program requirements.

- Bechtel SAIC Company, LLC; 1180 Town Center Drive, Las Vegas, NV, Yucca Mountain Project. Licensing & Nuclear Safety Criticality Department.
 - Postclosure Criticality Lead, October 2005 – September 2006
 - Commercial Spent Nuclear Fuel Lead, September 2004 – October 2005
 - Senior Engineer, February 2001– September 2004
 Supervisors: Doug Brownson, William Hutchins, Abdelhalim Alsaed
 Criticality Department manager delegate. Coordinated and facilitated meetings with national laboratory personnel. Developed and presented presentations to NRC, national laboratory personnel, and DOE customer. Developed and reviewed criticality, shielding, and nuclear related technical products, and ensured that they are compliant with specified requirements. Extensive use of the SCALE and MCNP code systems in the evaluation of numerous configurations. Integrated work with other departments. Guided personnel assigned to projects. Implemented and monitored subcontractor work direction. Acted as subcontract technical representative and served as technical specialist for supplier audits. Leader for all aspects concerning commercial fuel and burnup credit analyses related to the development of improved or advanced concepts. Primary responsibilities included performing assignments independently, developing new approaches to problems, mentoring other staff members, developing work plans, and being knowledgeable of the consensus standards and regulations pertaining to criticality safety.
- Framatome Cogema Fuels; 1180 Town Center Drive, Las Vegas NV, Yucca Mountain Project.
 - Engineer III, Government Relations Department, February 1998-February 2001.
 Supervisor: Dan Thomas
 Developed and reviewed criticality and shielding analyses for various configurations. Demonstrated versatility with superior procedure following ability in a capricious procedural environment. Continuously delivered high-quality defensible documents on or ahead of schedule. Used strong analytical skills to solve problems independently. Primary responsibilities included extensive use of the SCALE and MCNP code systems in simulating commercial reactor core behavior.
- Department of Nuclear and Radiological Engineering;
 - University of Florida Research Assistant, August 1996 - January 1998.
 Advisor: Professor James Tulenko
 Computer code generation of data and spreadsheet manipulation evaluating new design considerations for extending fuel cycle length.
- Framatome Technologies; 3315 Old Forest Road, Lynchburg VA. Fuel Engineering Division.
 - Summer Intern 1997.
 Supervisor: Scott Robertson
 Used CASMO-NEMO code package and MCNP-4B to simulate reactor core operations modeling abnormal operating behavior and performed data analysis investigating cause of early fuel rod failure.
- Environmental Health and Safety Division, University of Florida.
 - Radiation Control Technician, April 1996-September 1996.
 Calibration of radiation detectors, environmental surveys, room surveys, decontamination of radioactive areas, and assisting in various projects involving the University of Florida Training Reactor.

EDUCATION

- University of Florida, Gainesville, FL
Master of Engineering in Nuclear Engineering, December 1997.
Concentration on high burnup fuel cycle and radiation interactions.
(Member of Alpha Nu Sigma [National Honor Society])
- University of Florida, Gainesville, FL
Bachelor of Science in Nuclear Engineering, August 1996
Concentration on power reactor physics, thermal-hydraulic design, and nuclear fuel management.

COMPUTER SKILLS

- Windows, UNIX, Spreadsheet programs, Wordprocessors, PowerPoint, Internet
- Programming: FORTRAN, C, Turbo C++, Pascal, LabView
- Code Experience: MCNP, SCALE, SAPHIRE, CASMO, SIMULATE, NEMO, COBRA, COMBINE, VENTURE, BRT, PHROG, CORA, EASCYC, EASCOST, NFUEL

CERTIFICATES AND MEMBERSHIPS

Certified as an Engineer Intern by the Florida State Board of Professional Engineers
Certified Six Sigma Yellow Belt
L Clearance

REFERENCES

Available upon request

PUBLICATIONS

Tulenko, J.S.; Schoessow, G.; Scaglione, J.M. "A New Fuel Rod Design for Ultra High Burnup Cycles" *ICONE 5: Proceedings of the 5th International Conference on Nuclear Engineering, Nice, France, May 26-30, 1997.*

Scaglione, J.M. "Spent Fuel Criticality Benchmark Experiments" *Proceedings of 2001 ANS Embedded Topical Meeting on Practical Implementation of Nuclear Criticality Safety*, November 11-15, 2001. Reno, Nevada.

Scaglione, J.M. "Isotopic Bias and Uncertainty for Burnup Credit Applications" *Transactions of the American Nuclear Society*. 87, 105-107(2002).

O'Leary, P.M.; Scaglione, J.M. "An Empirical Approach to Bounding the Axial Reactivity Effects of PWR Spent Nuclear Fuel" *Transactions of the American Nuclear Society*. 84, 352-353 (2001).

Anderson, W.J.; O'Leary, P.M.; Scaglione, J.M. "Selection of Reactor Criticals as Benchmarks for Spent Nuclear Fuels" *Transactions of the American Nuclear Society*. 83, 140-141 (2000).

Wells, A.H.; Scaglione, J.M. "Burnup Credit Isotopic Validation with Commercial Reactor Criticals" *Transactions of the American Nuclear Society*. 88, (2003).

Scaglione, J.M. et al. "Applicability of CRC Benchmark Experiments for Burnup Credit Applications" *Transactions of the American Nuclear Society*. 83, 138-139 (2000).

YUCCA MOUNTAIN PROJECT SPECIFIC PUBLICATIONS

Authored the following Yucca Mountain Project Publications among others and contributed as author or primary reviewer of 50+ other reports:

CRWMS M&O 1998. *CRC Depletion Calculations for Crystal River Unit 3*. B00000000-01717-0210-00001 REV 00. Las Vegas, Nevada: CRWMS M&O.

CRWMS M&O 1998. *CRC Reactivity Calculations for Crystal River Unit 3*. B00000000-01717-0210-00002 REV 00. Las Vegas, Nevada: CRWMS M&O.

BSC (Bechtel SAIC Company) 2001. *PWR Assembly End-Effect Reactivity Evaluation*. CAL-UDC-NU-000006 REV 00. Las Vegas, Nevada: Bechtel SAIC Company.

BSC (Bechtel SAIC Company) 2001. *PWR Depletion Parameter Sensitivity Evaluation*. CAL-UDC-NU-000009 REV 00. Las Vegas, Nevada: Bechtel SAIC Company.

BSC (Bechtel SAIC Company) 2002. *Calculation of Isotopic Bias and Uncertainty for PWR Spent Nuclear Fuel*. CAL-DSU-NU-000001 REV A. Las Vegas, Nevada: Bechtel SAIC Company.

BSC (Bechtel SAIC Company) 2003. *PWR Axial Burnup Profile Analysis*. CAL-DSU-NU-000012 REV 00A. Las Vegas, Nevada: Bechtel SAIC Company.

BSC (Bechtel SAIC Company) 2004. *44-BWR Waste Package Loading Curve Evaluation*. CAL-DSU-NU-000008 REV 00A. Las Vegas, Nevada: Bechtel SAIC Company.

BSC (Bechtel SAIC Company) 2005. *21-PWR Site-Specific Canister Loading Curve Evaluation*. 000-00C-HA00-00200-000-00A. Las Vegas, Nevada: Bechtel SAIC Company.

SNL (Sandia National Laboratories) 2007. *Commercial Spent Nuclear Fuel Igneous Scenario Criticality Evaluation*. ANL-EBS-NU-000009 REV 00. Las Vegas, Nevada: Sandia National Laboratories.