

Willis P. (Mike) Poore, III

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EMPLOYMENT HISTORY

Senior Research and Development Staff • Oak Ridge National Laboratory, Oak Ridge, TN

Mr. Poore is a senior staff member of the Oak Ridge National Laboratory. During his 30-year plus career at the Oak Ridge National Laboratory he has been involved with the assessment and evaluation of the operations, performance, safety and reliability of nuclear power plants and other complex industrial facilities, including their structures, systems, and components and the processes, policies, procedures, and human activities that govern their operations.

RELEVANT EXPERIENCE AND ACCOMPLISHMENTS

NUCLEAR POWER PLANT AND URANIUM PRODUCTION FACILITY SAFETY, OPERATIONS, PERFORMANCE ASSESSMENT, AND LICENSING

- 2000–Present Assessed the applicability of NRC’s Standard Review Plan for applicability to integral PWRs (Ch. 9), gas-cooled reactors, and liquid metal reactors. Prepared draft SRP Section 9-Auxiliary Systems for NuScale and mPower iPWRs. Summarized control and protection system designs for several HTGRs to illustrate regulatory implications of NNGP control and protection systems. Evaluated and recommended data sources to assess the penetration and characterize the performance of digital I&C systems. Prepared March 2007 SRP revision of Chapter 5.4.13, “Isolation Condenser System (BWR).” Prepared COL SER review templates to support NRC’s AP1000 and Generic Reactor COLA reviews in accordance with RG 1.206 and NUREG-0800. Developed action matrix of COL items to guide NRC’s COLA review and preparation of the SER for an ABWR application. Prepared NRC Draft Regulatory Guides governing sizing of large batteries and installation design/maintenance of valve-regulated lead-acid batteries. Conducted operating experience evaluations of U.S. commercial nuclear plants for numerous plant systems and topic areas.
- 2014–Present Developed documentation to govern the human factors assessments, installation plans, and maintenance plans for RF and electron current plasma heating systems for the ITER fusion reactor in Cadarache, France.
- 2012–Present Developed an application of an ORNL Geographical Information System for identification of potential siting options for small modular reactors in the continental U.S.
- 2011–2015 Participated in a consortium of national laboratory experts to assess the unfolding Fukushima-Daiichi nuclear power plant accident and recommend and evaluate response actions to facilitate plant recovery, stabilization, and mitigate radiation releases. Prepared a case study of BWR I&C system performance during the severe accident conditions at the Fukushima Daiichi plant.
- 2008–2013 Developed reliability models of Y-12 production facility HVAC, microwave furnace, and normal electric power systems to identify critical components and simulate system availability and productivity.
- 1984–2012 Designed, developed and managed operational event data systems to support NRC research, regulatory, and licensing programs, including an inventory of digital I&C used in U.S. nuclear power plants, evaluating digital I&C performance, evaluating the significance of passive component failures, and licensee adherence to equipment vendor recommendations.
- 1986–2010 Developed and implemented advanced analytical tools and techniques for analysis of rare events to identify adverse trends in plant safety and performance.

RELEVANT EXPERIENCE AND ACCOMPLISHMENTS (continued)

NUCLEAR POWER PLANT AND URANIUM PRODUCTION FACILITY SAFETY, OPERATIONS, PERFORMANCE ASSESSMENT, AND LICENSING

- 1990–2003 Managed staff efforts to conduct quick-turnaround risk assessments of potentially significant commercial nuclear power plant operational events for the Accident Sequence Precursor project.
- 1984–2003 Conducted safety and performance assessments of the operational experience of over 40 U.S. nuclear power plants to prepare NRC inspection teams for site visits.
- 1979–1984 Assessed appropriate levels of bulk electric power system reliability levels and reserve margins based on the minimization of society cost associated with a low reserve margin (high society costs of outages) and high reserve margins (high cost of un-utilized generating resources).
- 1977–1979 Developed and demonstrated at Arkansas Nuclear 1 and Millstone Unit 1 advanced temperature measurement techniques to permit *in-situ* instrument calibration with significant accuracy improvements, cost savings, and exposure reductions.

PROJECT MANAGEMENT

- Provided technical and project management assistance for an NNSA project to govern Russian redesign of their LMFBR to reduce production of weapons usable plutonium.
- Led a multi-disciplinary ORNL and subcontractor team to develop and implement tools and techniques to identify and display adverse plant safety and performance trends.
- Led a multi-disciplinary team in the development of a Web-based nuclear plant operational data system to replace a proprietary mainframe system.
- Managed efforts to assess the benefits to the power grid and customers associated with the utilization of distributed energy generation resources.

EDUCATION/REGISTRATION

1979-Master of Science in Nuclear Engineering, University of Tennessee, Knoxville, TN
1977-Bachelor of Science in Nuclear Engineering, University of Tennessee, Knoxville, TN
Registered Professional Engineer in the State of Tennessee

PUBLICATIONS AND PRESENTATIONS

- A. Qualls and W. Poore, US_D_22WM3M, *ICH and CD Human Factors Assessment for Radio Frequency (RF) Building Components*, November 2015.
- A. Qualls and W. Poore, US_D_22SJF7, *Logistics, Operation, Maintenance, and Test and Inspection Plan for ICH Transmission Line and Associated Components in the RF Building*, October 2015.
- A. Qualls and W. Poore, US_D_22LHPZ, *Installation and Maintenance Plan for ICH&CD Radio Frequency (RF) Building Transmission Lines*, October 2015.
- D. Clayton and W. Poore, ORNL/TM-2015-278, *Post-Severe Accident Environmental Conditions for Essential Instrumentation for Boiling Water Reactors*, September 2015.
- T. Harrison, R. Belles, R. Hale, W. Poore, C. Weber, and D. Williams, ORNL/SPR-2015/144, *Review of Select Reactor Refueling Activities*, July 2015.
- R. Belles, G. Mays, O. Omitaomu, and W. Poore, *Siting Options and Challenges for SMR Deployment in the U. S.*, Nuclear Energy Insider Small Modular Reactor Summit, Charlotte, NC, April 2015.
- D. Clayton, W. Poore, and D. Peko, *A Case Study for BWR Instrumentation and Control Systems Performance During a Severe Accident*, ANS 9th International Conference on Nuclear Plant Instrumentation, Control & Human Interface Technologies, Charlotte, NC, February 2015.
- W. Poore, et. al., INL/EXT-14-41179 Revision 1, *Guidance for Developing Principal Design Criteria for Advanced (Non-Light Water) Reactors*, December 2014.

PUBLICATIONS AND PRESENTATIONS (continued)

- A. Qualls and W. Poore, US_D_22SLTZ, *Installation Plan for ICH&CD Gallery Transmission Lines*, November 2014.
- M. Muhlheim, G. Flanagan, and W. Poore, ORNL/TM-2014-533, *Initiating Events for Multi-Reactor Plant Sites*, September 2014.
- A. Qualls, W. Poore, and G. Flanagan, US_D_22S3M8, *ICH&CD Human Factors Assessment for Gallery Transmission Lines (TLs)*, September 2014.
- D. Clayton, and W. Poore, ORNL/LTR-2014-230, *Key Parameters for Operator Diagnosis of BWR Plant Condition During a Severe Accident*, August 2014.
- D. Clayton, and W. Poore, ORNL/TM-2013-154, *Fukushima Daiichi – A Case Study for BWR Instrumentation and Control Systems Performance during a Severe Accident (Rev.1)*, June 2014.
- M. Muhlheim, S. Cetiner, G. Mays, and W. Poore, ORNL/LTR-2014/248, *Integration of Advanced Probabilistic Analysis Techniques with Multi-Physics Model*, June 2014.
- R. Belles, G. Mays, and F. Omitaomu, ORNL/TM-2013/578, *Identification of Selected Areas to Support Federal Clean Energy Goals Using Small Modular Reactors*, December 2013.
- G. Mays, R. Belles, O. Omitaomu, and W. Poore, *Application of Spatial Data Modeling and Geographical Information Systems (GIS) for Identification of Potential Siting Options for Small Modular Reactors*, American Nuclear Society Winter 2013 Embedded Small Modular Reactor Conference.
- D. Clayton and W. Poore, ORNL/TM-2013-154, *Fukushima Daiichi—A Case Study for BWR Instrumentation and Control Systems Performance during a Severe Accident*, April 2013.
- W. Poore, R. Belles, G. Mays, O. Omitaomu, ORNL/TM-2013-118, *Evaluation of Suitability of Selected Set of Department of Defense Military Bases and Department of Energy Facilities for Siting a Small Modular Reactor*, March 2013.
- R. Belles, D. Copinger, G. Mays, O. Omitaomu, W. Poore, ORNL/TM-2013-109, *Evaluation of Suitability of Selected Set of Coal Plant Sites for Repowering with Small Modular Reactors*, March 2013.
- R. Belles, G. Mays, O. Omitaomu, and W. Poore, ORNL/TM-2014/578, *Identification of Selected Areas to Support Federal Clean Energy Goals Using Small Modular Reactors*, December 2013.
- R. Belles, G. Mays, O. Omitaomu, and W. Poore, ORNL/TM-2012-403, *Updated Application of Spatial Data Modeling and Geographical Information Systems (GIS) for Identification of Potential Siting Options for Small Modular Reactors*, September 2012.
- T. Wilson, S. Ball, R. Wood, M. Cetiner, and W. Poore, ORNL/TM-2012-170, *Advanced Control and Protection System Design Methods for Modular HTGRs*, May 2012.
- W. Poore, R. Joseph, K. Korsah, and R. Wood, LTR/NRC/RES/2012-002, *Initial Inventory of Digital I&C Systems used in Domestic Nuclear Power Plants*, January 2012.
- T. Wilson, W. Poore, T. Harrison, and R. Joseph, LTR/NRC/REC/2010-001, *Task 1—Control and Protection Systems in VHTRs for Process Heat Applications*, September 2010.
- K. Korsah, S. Cetiner, M. Muhlheim, and W. Poore, ORNL/TM-2010/32, *An Investigation of Digital Instrumentation and Control System Failure Modes*, March 2010.
- JCN-J3315: *Evaluation of EPIX Failure Reports on Human Errors as Potential Leading Performance Indicators of Future Problems*, Letter Report to NRC, March 2010.
- JCN-J3315: *Evaluation of EPIX Failure Reports for Reactor Primary Coolant System Pressure Boundary Leakage*, Letter Report to NRC, February 2010.
- R. Wood, R. Belles, W. Poore, et. al., *Diversity Strategies for Nuclear Power Plant Instrumentation and Control Systems*, NUREG/CR-7007, February 2010.
- JCN-J3315: *Evaluation of EPIX Failure Reports for Residual Heat Removal and Low Pressure Injection Systems Equipment Failures*, Letter Report to NRC, January 2010.
- T. Wilson, W. Poore, T. Harrison, R. Joseph, LTR/NRC/REC/2010-001, *Task 1—Control and Protection Systems in VHTRs for Process Heat Applications*, September 2010.

PUBLICATIONS AND PRESENTATIONS (continued)

- K. Korsah, S. Cetiner, M. Muhlheim, and W. Poore, ORNL/TM-2010/32, *An Investigation of Digital Instrumentation and Control System Failure Modes*, March 2010.
- JCN-J3315: *Evaluation of EPIX Failure Reports on Human Errors as Potential Leading Performance Indicators of Future Problems*, Letter Report to NRC, March 2010.
- ORNL/TM-2009/302, *Diversity Strategies for Nuclear Power Plant Instrumentation and Control Systems*, February 2010.
- JCN-J3315: *Evaluation of EPIX Failure Reports for Reactor Primary Coolant System Pressure Boundary Leakage*, Letter Report to NRC, February 2010.
- JCN-J3315: *Evaluation of EPIX Failure Reports for Residual Heat Removal and Low Pressure Injection Systems Equipment Failures*, Letter Report to NRC, January 2010.
- *Availability Assessment of the Uranium Processing Facility Normal AC Electric Power System*, AR-EJ-801768-A015, November 2009.
- JCN-J3315: *Evaluation of EPIX Failure Reports for Component Cooling Water System Equipment Failure*, Letter Report to NRC, November 2009.
- JCN-J3315: *Evaluation of EPIX Failure Reports for Engineered Safety Features Actuation System Equipment Failures*, Letter Report to NRC, October 2009.
- *Availability Assessment of the HVAC System for the Uranium Processing Facility*, AR-EJ-801768-A014, September 2009.
- *Failure Modes, Effects, and Criticality Analysis for Microwave Casting Furnaces for the Uranium Processing Facility*, AR-EJ-801768-A004, October 2008.
- JCN-J3315: *Evaluation of EPIX Failure Reports for High Pressure Injection Systems*, Letter Report to NRC, July 2008.
- JCN-J3315: *Evaluation of EPIX Failure Reports for the Feedwater System*, Letter Report to NRC, July 2008.
- JCN-J3315: *Evaluation of EPIX Failure Reports for High Pressure Injection Systems*, Letter Report to NRC, July 2008.
- JCN-J3315: *Trends in Passive Component Degradation from 2002 to early 2007 (DRAFT)*, Letter Report to NRC, August 2007.
- *Reactor Technology Options Study for Near-Term Deployment of GNEP Grip-Appropriate Reactors*, ORNL/TM-2007/157, March 2007.
- JCN-J3315: *ORNL Proposed Plan for Analysis of Degradation of Passive Components*, Letter Report to NRC, January 2007.
- JCN-J3315: *Analysis of U.S. Commercial Nuclear Power Plant Operational Experience for the January-June 2006 Time Period*, Letter Report to NRC, October 2006.
- *Systematic Assessment of U.S. Nuclear Power Plant Operating Experience*, DOE Meeting on Nuclear Facilities Safety, Oak Ridge, TN, February 2006.
- S. Hadley, J. Van Dyke, W. Poore, T. Stovall, ORNL/TM-2003/20, *Quantitative Assessment of Distributed Energy Resource Benefits*, May 2003.
- *Connecting Distributed Energy Resources to the Grid: Their Benefits to the DER Owner/Customer, Other Customers, the Utility, and Society*, ORNL/TM-2001/290, February 2002.
- *Integrated Performance Management for Complex Systems*, presentation to Federal Aviation Administration Staff, October 2001.
- *Review of the Operating Experience for Clinton from July 1995–1997*, ORNL/NOAC-310, September 1997.
- *LER Screening Algorithm for Identification of Potential Accident Sequence Precursor Events*, CONF-960912-30, International Topical Meeting on Probabilistic Safety Assessment - Moving Toward Risk Based Regulation, Park City, UT, September 1996.
- *Review of the Operating Experience for Dresden from January 1993–March 1996*, ORNL/NOAC-308, August 1996.

PUBLICATIONS AND PRESENTATIONS (continued)

- *Review of the Operating Experience for Maine Yankee from January 1993–March 1996*, ORNL/NOAC-307, June 1996.
- “Probabilistic Risk/Safety Analysis Operations Analysis,” presented at the *Joint DOE/NRC Assessment Nuclear Power Technology Capabilities*, Rockville, MD, April 16, 1996.
- *Review of the Operating Experience for Beaver Valley Units 1 and 2 from January 1991–March 1994*, ORNL/NOAC-305, November 1994.
- *Review of the Operating Experience for Cooper from January 1992–March 1994*, ORNL/NOAC-303, August 1994.
- *Review of the Operating Experience for South Texas Projects Units 1 and 2 from January 1993–March 1994*, ORNL/NOAC-302, July 1994.
- ORNL/NOAC-301, *Identification of Common-Cause Failure Events and Independent Failure Events from Licensee Event Reports Utilizing the Sequence Coding and Search System Database*, July 1994.
- *Review of the Operating Experience for McGuire Units 1 and 2 from January 1991–January 1994*, ORNL/NOAC-299, June 1994.
- “Identifying Safety-Significant Issues at Commercial Nuclear Power Plants,” presented at the *1994 Engineering Technology Division Information Meeting*, Oak Ridge, TN, May 20, 1994.
- *Review of the Operating Experience for Point Beach Units 1 and 2 from January 1991–November 1993*, ORNL/NOAC-297, April 1994.
- *Review of the Operating Experience for Palisades from January 1992–October 1993*, ORNL/NOAC-296, February 1994.
- *Assessment of LER Data Screening Techniques for [NRC]Senior Management Meeting Preparation*, ORNL/NOAC-280, July 1993.
- *Review of the Operating Experience for Quad Cities Units 1 and 2 from January 1991–March 1993*, ORNL/NOAC-279, July 1993.
- *Review of the Operating Experience for South Texas Units 1 and 2 from January 1991–December 1992*, ORNL/NOAC-276, March 1993.
- *Evaluation of Proposed Modifications to the Nuclear Regulatory Commission’s Performance Indicators Program*, ORNL/NOAC-272, November 1992.
- *Brief Review of Selected Operating Experience Categories for Brunswick from January 1990–December 1991*, ORNL/NOAC-268, April 1992.
- *Development and Evaluation of Proposed Modifications to the Nuclear Regulatory Commission’s Performance Indicator Program*, ORNL/NOAC-265, July 1991.
- *Development of Commercial Nuclear Plant Peer Groups for Presentation of Performance Indicator Data*, ORNL/NOAC-261, October 1990.
- *Review of the Operating Experience for Oyster Creek from January 1987–April 1990*, ORNL/NOAC-262, September 1990.
- *Review of the Operating Experience for Zion Units 1 and 2 from January 1988–December 1989*, ORNL/NOAC-259, April 1990.
- *Evaluation of Performance of Selected Nuclear Power Plants for 1989 (Arkansas Units 1 and 2, Calvert Cliffs Units 1 and 2, Clinton, Crystal River 3, Duane Arnold, Ginna, Nine Mile Point Units 1 and 2, Palo Verde Units 1-3, Salem Units 1 and 2, Surry Units 1 and 2, Trojan, Turkey Point Units 3 and 4, and Zion Units 1 and 2)*, ORNL/NOAC-259, January 1990.
- *Analysis of Corrective Action Data from Trial Program on Programmatic Performance Indicators*, CONF-890833-1, Biennial Conference on Reactor Operating Experience: Plant Operations - The Human Element, Charlotte, NC, August 1989.
- *Review of the Operating Experience for Palo Verde Units 1, 2, and 3 from July 1987–June 1989*, ORNL/NOAC-251, October 1989.
- *Review of the Operating Experience for Arkansas Units 1 and 2 from January 1987–March 1989*, ORNL/NOAC-250, July 1989.

PUBLICATIONS AND PRESENTATIONS (continued)

- *Review of the Operating Experience for Perry from July 1987–October 1988, ORNL/NOAC-246, March 1989.*
- *Review of the Operating Experience for Brunswick Units 1 and 2 from January 1987–December 1988, ORNL/NOAC-248, March 1989.*
- *Brief Review of Operating Experience for Arkansas Nuclear One–Units 1 and 2, ORNL/NOAC-247, March 1989.*
- *Review of the Operating Experience for Fort Calhoun for 1986–1988, ORNL/NOAC-238, May 1988.*
- *Review of the Operating Experience for Hatch Units 1 and 2 for 1986–1988, ORNL/NOAC-240, June 1988.*
- *Review of the Operating Experience for Fermi Unit 2 for 1987–1988, ORNL/NOAC-237, April 1988.*
- *Brief Review of the Operating Experience for Turkey Point Units 3 & 4 for 1985–1987, ORNL/NOAC-236, January 1988.*
- *Brief Review of the Operating Experience for McGuire Units 1 & 2 for 1985–1987, ORNL/NOAC-235, November 1987.*
- *Review of Dresden Units 2 and 3 Operating Experience for 1985–1987, ORNL/NOAC-258, August 1987.*