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Mr. John W. Stetkar is a principal of Stetkar & Associates. He has degrees in Electrical, Nuclear, and Environmental engineering and more than 29 years of experience as an engineering consultant. Mr. Stetkar is an internationally recognized expert in the fields of risk assessment, reliability analysis, and resource optimization. He has had lead technical responsibilities in more than 15 major nuclear power plant risk assessments, and has completed numerous smaller projects for the electric power industry. He has served on technical review committees for more than 20 other risk assessments, including the U.S. NRC Reactor Risk Reference Study NUREG-1150. In addition to his work with Stetkar & Associates, Mr. Stetkar is a member of the United States Nuclear Regulatory Commission Advisory Committee on Reactor Safeguards and serves as a technical expert for the International Atomic Energy Agency.

MAJOR TECHNICAL PROJECTS AND EXPERIENCE

Technical expert for the International Atomic Energy Agency (IAEA). Mr. Stetkar's most recent assignments have included technical support and review missions for KANUPP (Pakistan), CHASNUPP (Pakistan), Qinshan (China), Sizewell B (United Kingdom), Tianwan (China), Bohunice (Slovak Republic), Ignalina (Lithuania), Jose Cabrera (Spain), Novovoronezh (Russia), Temelin (Czech Republic), and Kozloduy (Bulgaria). He has also provided technical training on risk assessment methods for the nuclear regulatory authorities in Lithuania and Pakistan, and was a lecturer in IAEA regional training courses conducted in Indonesia, Spain, the United Kingdom, Russia, and the Ukraine. Mr. Stetkar is a lead author of IAEA Safety Series guides on the safety evaluation of older nuclear power plants, applications of Probabilistic Safety Assessment (PSA), and the use of PSA to determine the safety significance of operational events.

Lead technical role in PSAs for the Zion, Indian Point, Browns Ferry, Oconee, Midland, Bellefonte, Hatch, Fermi, Seabrook, Maine Yankee, South Texas Project, Mühleberg, Gösgen, Beznau, Bohunice, Paks, and Leibstadt nuclear power plants, and the U.S. Department of Energy High Flux Isotope Reactor. Mr. Stetkar's contributions to these projects included plant model development, systems analysis, data analysis, human reliability analysis, and external events analysis. He was Principal Investigator for four projects, including the benchmark Gösgen PSA, which was the first fully-integrated Level 2 PSA for a German plant design that includes analyses of internal events and external events for all plant operating and shutdown modes. Mr. Stetkar was most recently the Principal Investigator for a quantitative risk assessment of the New York State-Licensed Disposal Area at the Western New York Nuclear Service Center.

Independent technical reviews. In addition to his extensive work with the IAEA International Probabilistic Safety Assessment Review Team (IPSART), Mr. Stetkar has participated in independent technical reviews of PSA projects at Heysham 2, Torness, Hartlepool, Dungeness B, Wylfa, Hunterston B, Hinkley Point B (all in United Kingdom), and Krsko (Slovenia).

Recognized expert on modeling and evaluation of operator performance. Mr. Stetkar has performed human reliability analyses for eleven PSAs, including three PSAs for shutdown modes. He has pioneered the use of expert elicitation methods to consistently account for input from plant operations personnel. Mr. Stetkar has conducted several seminars and training courses on techniques for the integration of operator actions into plant response and recovery models.

Authority on the analysis of electric power systems. Mr. Stetkar developed and implemented the first fully-integrated PSA model for electric power failure and recovery, accounting for loss of offsite power, the timing of onsite power failures, variable recovery time windows, and time-phased recovery of power from multiple sources. He has consulted extensively with utilities, the U.S. NRC, and the Electric Power Research Institute on the analysis of offsite power failures and the reliability of onsite power supplies. He was a lead technical analyst for a comprehensive update to the U.S. NRC database for offsite power failure events (NUREG/CR-5496). Mr. Stetkar is a contributing author to a comprehensive white paper on the use of quantitative risk assessment techniques to evaluate potential terrorist threats to regional electric power supplies and associated infrastructure.

Recognized expert in the evaluation of plant-specific and generic data. Mr. Stetkar developed plant-specific databases for the Zion, Indian Point, Oconee, Browns Ferry, Beznau, Mühleberg, and Brunsbüttel PSAs. His model for the treatment of standby and shock failures formed the basis for a risk-based optimization of the Technical Specifications for the South Texas Project Electric Generating Station.

Performed analyses of fires, seismic events, and other external events for nine PSAs. These analyses included detailed evaluations of the effects from fire-induced open circuits and short circuits in AC power supplies, DC power supplies, and instrumentation and control systems. Experience in seismic risk assessment includes combination of seismic hazards and fragilities, integration of seismic failures into plant risk models, and analysis of the impacts from seismic-induced relay chatter. Mr. Stetkar was task leader for model development in the Paks seismic PSA, the first full-scope seismic PSA performed for a Russian VVER plant design.

Lead technical contributor to the first published PSA for shutdown modes, performed for the Zion Nuclear Station. Mr. Stetkar was the principal investigator for full-scope PSAs for shutdown modes at Gösgen and Beznau. He was also the human reliability analysis task leader for a PSA for shutdown modes at Bohunice V2.

OTHER EXPERIENCE

Senior Consultant with PLG, Inc. from 1980 through 1993. Associate Senior Consultant with PLG, Inc. and EQE International, Inc. from 1993 through 2001. Mr. Stetkar was a lead engineer, principal investigator, and project manager for 13 years with PLG. After founding

Stetkar & Associates in 1993, he continued his affiliation with PLG and, later, its parent company EQE International as an associate consultant for selected projects.

Licensed Senior Reactor Operator and Shift Supervisor at Zion Nuclear Station. As a Shift Supervisor from 1978 through 1980, Mr. Stetkar was responsible for daily operations at this two-unit 1040 MWe nuclear power plant. While at Zion, he also developed comprehensive documentation and troubleshooting guides for all plant AC, DC, and instrumentation power circuits, including integrated summaries of system responses from deenergizing and reenergizing individual circuits.

EDUCATION

Engineer's Degree	Environmental Engineering, Massachusetts Institute of Technology, 1976.
M. Sc.	Nuclear Engineering, Massachusetts Institute of Technology, 1976.
B. S.	Electrical Engineering, Massachusetts Institute of Technology, 1973.

ASSOCIATIONS, AWARDS, AND HONORS

Member, U.S. Nuclear Regulatory Commission Advisory Committee on Reactor Safeguards (ACRS)
Member, Kastenberg Committee for Independent Peer Review of Reactor Risk Reference Document NUREG-1150
Member, American Nuclear Society
U.S. Nuclear Regulatory Commission Senior Reactor Operator License

PUBLICATIONS

"Quantitative Risk Assessment of the State-Licensed Radioactive Waste Disposal Area", prepared for New York State Energy Research and Development Authority, West Valley, New York, August 2009 (contributing author).

"Quantifying and Controlling Catastrophic Risks", Garrick, B. John, Academic Press, 2008 (contributing author).

"Confronting the Risks of Terrorism: Making the Right Decisions", Reliability Engineering & System Safety, Vol. 86, No. 2, November 2004 (contributing author).

"GPSA 2003: Gösgen Probabilistic Safety Assessment", Kernkraftwerk Gösgen-Däniken AG and ABS Consulting, R-1029953-1504, December 2003 (contributing author).

"Seismic PSA for NPP Paks of Hungary", presented at the 17th International Conference on Structural Mechanics in Reactor Technology, SMiRT17, Prague, Czech Republic, August 2003 (with Attila Bareith and Zoltan Karsa).

"Gösgen Seismic Analysis", EQE International, Inc., prepared for Kernkraftwerk Gösgen-Däniken AG, PLG-1330, December 2000 (contributing author).

"Mühleberg NPP Probabilistic Safety Assessment: MUSA2000", BKW FMB Energie AG, Kernkraftwerk Mühleberg, December 2000 (contributing author).

"Beznau Unit 2 Full Power Probabilistic Risk Assessment (BERA)", Nordostschweizerische Kraftwerke, KKB 511 D 127, December 1999 (contributing author).

"Evaluation of Loss of Offsite Power Events at Nuclear Power Plants: 1980 - 1996", presented at the International Topical Meeting on Probabilistic Safety Assessment, PSA '99, Washington, D.C., August 1999 (with C. L. Atwood, D. L. Kelly, F. M. Marshall, and D. A. Prawdzik).

"Black Start-Based Recovery of Offsite Power to SONGS", presented at the International Topical Meeting on Probabilistic Safety Assessment, PSA '99, Washington, D.C., August 1999 (with P. Moieni, D. Henneke, S. Shepherd, P. Save, M. Mansell, D. Reny, and S. Rao).

"Evaluation of Loss of Offsite Power Events at Nuclear Power Plants: 1980 - 1996", NUREG/CR-5496, U.S. Nuclear Regulatory Commission, November 1998 (with C. L. Atwood, D. L. Kelly, F. M. Marshall, and D. A. Prawdzik).

"Applications of Simplified and of Detailed PSA Models", presented at PSAM 4, New York City, New York, September 1998 (with M. Richner, S. Zimmermann, and S. Rao).

"Beznau Unit 2 Shutdown and Low Power Probabilistic Risk Assessment (BESRA)", PLG, Inc., prepared for Nordostschweizerische Kraftwerke, PLG-1208, June 1998 (contributing author).

"Evaluation of the Safety of Operating Nuclear Power Plants Built to Earlier Standards - A Common Basis for Judgement", Safety Reports Series No. 12, International Atomic Energy Agency, 1998 (contributing author).

"The Role of Probabilistic Safety Assessment and Probabilistic Safety Criteria in Nuclear Power Plant Safety", International Atomic Energy Agency, draft Safety Series document, (update to IAEA Safety Series 106), 1996 (contributing author).

"Gösgen Probabilistic Safety Assessment", PLG, Inc., prepared for Kernkraftwerk Gösgen-Däniken AG, PLG-0870, Modules I through X, March 1994 (contributing author).

"An Evaluation of Cable Damage Susceptibility from Pullby Events at the Watts Bar Nuclear Plant", PLG, Inc., prepared for Tennessee Valley Authority, PLG-0744, December 1989 (with S. Kaplan).

"South Texas Project Probabilistic Safety Assessment", PLG, Inc., prepared for Houston Lighting & Power Company, PLG-0700, April 1989 (contributing author).

"Beznau Station Risk Assessment - Plant As Is", PLG, Inc., prepared for Nordostschweizerische Kraftwerke AG, PLG-0510, December 1988 (contributing author).

"Pneumatic Systems and Nuclear Plant Safety", Electric Power Research Institute, Nuclear Safety Analysis Center, NSAC-128, October 1988 (contributing author).

"Quantification of Human Error Rates Using a SLIM-Based Approach", 1988 IEEE Fourth Conference on Human factors and Power Plants, Monterey, California, June 5-9, 1988 (with S. H. Chien, A. A. Dykes, and D. C. Bley).

"The Significance of Sequence Timing to Human Factors Modeling", 1988 IEEE Fourth Conference on Human factors and Power Plants, Monterey, California, June 5-9, 1988 (with D. C. Bley).

"A Method for Quantitative Assessment of Human Engineering Discrepancies (HED) Using Risk and Cost Factors", Instrument Society of America Power Industries Division Symposium, St. Petersburg, Florida, May 23-25, 1988 (with E. L. Quinn, K. Ward, and W. Babcock).

"Findings of the Peer Review Panel on the Draft Reactor Risk Reference Document NUREG-1150", Lawrence Livermore National Laboratory, prepared for the Decision of Risk Analysis, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, NUREG/CR-5113, March 1988 (contributing author).

"The High Flux Isotope Reactor Probabilistic Risk Assessment", PLG, Inc., prepared for Martin Marietta Energy Systems, Inc., Oak Ridge National Laboratory, PLG-0604, January 1988 (contributing author).

"Light Water Reactor Sequence Timing: Its Significance to Probabilistic Safety Assessment Modeling", *Reliability Engineering and System Safety*, Vol. 22, 1988 (with D. C. Bley and D. R. Buttemer).

"HIPRIM: A Limited-Scope Living PRA for the Edwin I. Hatch Nuclear Plant", International American Nuclear Society / European Nuclear Society Topical Meeting on Probabilistic Safety Methods and Applications, PSA '87, Z□ rich, Switzerland, August 30- September 4, 1987 (with A. A. Farruk).

"The Significance of Sequence Timing to Human Factors Modeling", International Post-SMiRT 9 Seminar on Accident Sequence Modeling: Human Actions, System Response, Intelligent Decision Support, Munich, Germany, August 24-25, 1987 (with D. C. Bley and D. R. Buttemer).

"Zion Probabilistic Risk Assessment Models and Results Loaded into the SARA-RLPL117-86", PLG, Inc., prepared for EG&G Idaho, Inc., PLG-0567, July 1987 (contributing author).

"Hatch Integrated Plant Risk Model", PLG, Inc., prepared for Georgia Power Company, PLG-0471, April 1986 (contributing author).

"Seismic Risk Assessment of System Interactions", Eighth International Conference on Structural Mechanics in Reactor Technology (SMiRT), Brussels, Belgium, August 19-23, 1985 (with R. D. Campbell, R. H. Sues, D. C. Bley, and L. G. H. Sarmanian).

"Zion Nuclear Plant Residual Heat Removal PRA", Electric Power Research Institute, Nuclear safety Analysis Center, NSAC-84, July 1985 (contributing author).

"System Failure Modeling", Seminar on Nuclear Power Plant Risk Management, Washington, D.C., June 1985.

"RISKMAN3 - An Interactive Computer Code to Assist in the Review and Quantification of System Analyses", PLG, Inc., prepared for Tennessee Valley Authority, PLG-0398, March 1985 (with D. B. Simpson and S. Kaplan).

"Browns Ferry Nuclear Plant - Variation in Test Intervals for High Pressure Core Injection (HPCI) System", International American Nuclear Society / European Nuclear Society Topical Meeting on Probabilistic Safety Methods and Applications, San Francisco, California, February 24-28, 1985 (with R. F. Christie).

"Browns Ferry Nuclear Plant Unit 1 Probabilistic Risk Assessment", PLG, Inc., prepared for Tennessee Valley Authority, December 1984 (contributing author).

"Oconee PRA: A Probabilistic Risk Assessment of Oconee Unit 3", Electric Power Research Institute, Nuclear Safety Analysis Center, NSAC-60, June 1984 (contributing author).

"Seismic and Risk Related Assessment of Identified Systems Interactions, Indian Point Unit 3", PLG, Inc., prepared for New York Power Authority, PLG-0364, June 1984 (contributing author).

"Midland Nuclear Plant Probabilistic Risk Assessment", PLG, Inc., prepared for Consumers Power Company, May 1984 (contributing author).

"Human Reliability Analysis in Contemporary Probabilistic Risk Assessment Studies", PLG, Inc., prepared for Swedish Nuclear Power Inspectorate, PLG-0349, March 1984 (with B. O. Y. Lydell and J. G. Stampelos).

"Systems Analysis - Tutorial: Development of a Data Base", presentation to American Nuclear Society Executive Conference, Arlington, Virginia, April 4-7, 1982.

"Indian Point Probabilistic Safety Study", PLG, Inc., prepared for Consolidated Edison Company of New York, Inc., and the Power Authority of the State of New York, March 1982 (contributing author).

"Zion Probabilistic Safety Study", PLG, Inc., prepared for Commonwealth Edison Company, September 1981 (contributing author).

"A Strategic Plan for a National Data System for Electric Power Plants", PLG, Inc., prepared for Electric Power Research Institute, PLG-0144, July 1980 (with S. Kaplan, R. S. Hanson, and B. J. Garrick).