

## RESUME

### **JAMES S. DUKELOW, JR.**

Senior Research Engineer (retired)  
Battelle Pacific Northwest Laboratories  
Principal  
Red Mountain Consulting, LLC

### **EDUCATION**

M.S., Nuclear Engineering, University of Missouri (Columbia), 1977  
M.A., Mathematics, University of Kansas, 1974  
A.B., Mathematics, University of Kansas, 1961

### **EXPERIENCE**

Mr. Dukelow has extensive experience as a researcher, a manager, and a teacher. He has held responsible positions in the areas of reactor licensing, nuclear safety coverage during plant startup, probabilistic risk assessment, thermal hydraulic analysis, nuclear power plant simulation, and high-level nuclear waste repository safety analysis. He recently retired from Pacific Northwest National Laboratory. He is an active member of the adjunct faculty of the Tri-Cities Branch Campus of Washington State University. He is a Principal of Red Mountain Consulting, LLC, providing consulting in risk, engineering, mathematics, statistics, and management systems.

#### **Red Mountain Consulting**

- Developing statistical algorithms and providing statistical analyses for Washington River Protection Systems.
- Member of an international team of experts assessing the safety of conditions in the Pasta de Conchos coal mine in Neuva Rosita, Mexico (subcontractor to Dana Engineering).
- Statistical analyses for CH2MHill (subcontractor to Cenibark International).

#### **Battelle (PNNL) – International Technology Assessment**

- Statistical analyses for CH2MHill. Responsible for development of statistical protocols for qualification on new operators for the CCMS system for estimating waste volume remaining in tanks after retrieval. Performing statistical analyses of CCMS estimates

(using MS Excel spreadsheets developed for the purpose) to support regulatory compliance.

- Reviewer of safety and hazard analyses (for both DOE-RL and contractor customers) of five Hanford Site Safety Analysis Reports.
- Provided support to the TTQP QA organization, particularly in oversight of the design task and performance of surveillances and audits.
- Primary developer of a conceptual model (and a computer program implementing it) that allows subject matter experts to assess the fissile material proliferation risk of various nuclear weapons research, fabrication, and storage sites in the former Soviet Union. This model allows the experts to characterize the uncertainty of their estimates and propagates that uncertainty through the analysis to the final risk estimates.
- Task Manager and technical contributor on the Hanford Integrated Risk Assessment Program; responsible for analysis of the risks associated with degradation of the Sr/Cs capsule storage facility, the 100 K Basins spent fuel storage facility, potential waste tank exothermic reactions, and for development of external event accident initiators.
- Developed and implemented most of the statistical analysis on a project to analyze the results of NRC operator licensing requalification examinations.
- Project Manager and Principal Investigator for an NRC Severe Accident Research Program task evaluating proposed accident management strategies for the in-vessel phase of PWR severe accidents.
- Participant in IAEA Consultant's Meeting in Vienna, July 1989, for preparation of first draft of the IAEA Safety Series No. 50-P-3, Data Collection and Record Keeping for the Management of Nuclear Power Plant Ageing.
- Invited Lecturer for the IAEA Interregional Training Course on Safety Aspects of Ageing and Related Maintenance in Nuclear Power Plant Operations.
- Developer of course material and instructor for NRC and DOE Training Courses on Probabilistic Risk Assessment.

### **Westinghouse Hanford Company - Basalt Waste Isolation Project (BWIP)**

- Manager of the BWIP Preclosure Safety Section.
- Responsible for planning and implementation of a seven-year, \$1.5M/year safety analysis and safety review program for the nation's first high level nuclear waste repository.

- Responsible for preparation and response to review comments for the safety-related portions of the document describing the \$2 billion program to characterize the proposed basalt repository site.

### **Boeing Computer Services Richland, Inc.**

- Developed primary coolant system and pressurizer thermal hydraulic computer models for the N-Reactor Operator Training Simulator.

### **Washington Public Power Supply System**

- Lead engineer and vendor interface on the WNP-2 BWR full-scope Operator Training Simulator.

### **Westinghouse Hanford Company**

- Safety Department Cognizant Engineer for the Primary Coolant System during the last year and a half of Fast Flux Test Facility plant startup. This position carried Safety Department signature authority on all plant modifications, procedure revisions, acceptance tests, event responses, etc. affecting the primary coolant system.

### **Sargent & Lundy Engineers**

- Represented Sargent & Lundy and its clients on three of the Mark II Containment Analysis Program technical committees. This involved technical oversight of an extensive multi-company research program in a mixed cooperative/adversarial environment.
- Performed a Failure Mode and Effects Analysis (FMEA) on the Dresden 1 ECCS and defended it before the Nuclear Regulatory Commission.

### **Washington State University Tri-Cities**

- Adjunct Faculty in Computer Science since 1986.
- Adjunct Faculty in Mathematics since 1997.

### **University of Kansas**

- Passed written and oral Ph.D. comprehensive examinations in Mathematics at KU.
- Held a NASA-funded research assistantship with the Neurobiology Research Laboratory at KU.

### **Westminster College (Fulton, MO)**

- Assistant Professor of Mathematics (1970-75).

### **Universidad de Oriente (Cumana, Venezuela)**

- Profesor Asistente de Matematicas (1965-67).

### **PROFESSIONAL AND HONORARY SOCIETIES**

- Society for Industrial and Applied Mathematics
- Association for Computing Machinery
- American Mathematical Society
- Society for Risk Analysis (charter member), President of Columbia-Cascades Chapter of SRA
- Institute of Electrical and Electronic Engineers
- American Geophysical Union
- Member of organizing and technical program committees of eight national and international technical meetings; organizer and chair of a number of technical sessions at such meetings
- Tau Beta Pi (engineering honorary)
- Pi Mu Epsilon (mathematics honorary)
- Sigma Xi (scientific research honorary)

### **RISKANAL MAILING LIST**

- Recently retires as List Manager for more than a decade for an Internet mailing list for risk analysis professionals with approximately 800 subscribers from 40+ countries

### **STANDARDS COMMITTEES**

- Formerly member of ANS-10 Mathematics and Computation Standards Committee
- Formerly member of IEEE 1012 Working Group, which revised the IEEE Standard for Software Verification and Validation Plans

### **LANGUAGE CAPABILITIES**

- Fluent in Spanish and German
- Good reading fluency in French and Russian
- Taught mathematics in Spanish for two years at a Venezuelan university

- Has translated German patents for the PNNL Counsel and Russian mathematics articles for the American Mathematical Society