

RAS M-317

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OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

## RESUME

**Jeffrey S. Horowitz, ScD**

### PROFESSIONAL EXPERIENCE

**1985 – Present** Independent consultant working in the nuclear and mechanical engineering fields. Consultant to EPRI (Electric Power Research Institute) on single and two-phase flow-accelerated corrosion (also known as erosion-corrosion), cavitation, thermal-hydraulic analyses, void fraction correlation and service water corrosion.

Principal creator of CHEC, CHECMATE and CHECWORKS, the computer programs which predict single-phase and two-phase flow-accelerated corrosion. CHECWORKS is currently used to improve maintenance efficiency and enhance safety in more than 150 nuclear units worldwide.

Consultant to Arizona Public Service, the CANDU (Canadian Deuterium Uranium reactors) Owners Group, Exelon Corporation, Ontario Power Generation, Inc., Pacific Gas & Electric and Southern California Edison on issues of flow-accelerated corrosion and nuclear safety.

Co-author of three books and 34 published EPRI reports. Sole author of 16 published EPRI reports.

**1980 - 1984** Program Manager, U.S. Department of Energy, 9800 South Cass Avenue, Argonne, Illinois, 60439, 630-252-2000, Frank Herbaty, supervisor:

Managed substantial portions of the Industrial Co-generation, Magneto-hydrodynamics (MHD) and Ocean Thermal Energy Conversion (OTEC) Programs at the Chicago Operations Office. The annual value of the work I managed was about \$10 million.

Promoted from GS-13 to GS-14.

**1977 – 1980** Mechanical Engineer, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439, 630-252-2000. Dr. Norman Sather, supervisor:

U.S. NUCLEAR REGULATORY COMMISSION

In the Matter of Energy Nuclear Vermont License LLC

Docket No. 50-271 Official Exhibit No. E4-02-UY

OFFERED by Applicant/Licensee Intervenor \_\_\_\_\_

NRC Staff \_\_\_\_\_ Other \_\_\_\_\_

IDENTIFIED on 7/23/08 Witness/Panel NEC 4

Action Taken: ADMITTED REJECTED WITHDRAWN

Reporter/Clerk MAC

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Government Technical Manager on several, multi-million dollar OTEC power systems studies and heat exchanger construction programs.

Conducted design studies, computer modeling and laboratory testing on a metal-hydride heat pump system.

Promoted from Assistant Mechanical Engineer to Mechanical Engineer.

**1973 - 1977**

Principal Engineer, Combustion Engineering, 1000 Prospect Hill Road, Windsor, CT 06095, 860-688-1911, Dr. Hector Guerrero, supervisor:

Lead engineer on a series of nuclear safety experiments including tests on an alternate emergency core cooling system, steam generator depressurization, re-flood heat transfer and an innovative primary system flow meter.

**1972 - 1973**

Nuclear Engineer, Quadrex Corporation, 477 Division Street, Campbell, California, (company now defunct), Randolph Broman, supervisor:

Conducted various nuclear safety analyses.

Wrote and modified computer programs (e.g., RELAP and CONTEMPT) related to nuclear safety. The areas of focus included boiling water reactor loss of coolant accident analysis, pipe rupture loads and effects, building pressurization and hydraulic loads resulting from valve closure.

#### REFERENCES

Professional and personal references available on request.

#### EDUCATION

ScD	Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, MA 02139, 1972
Mech Eng	Mechanical Engineering, Massachusetts Institute of Technology, 1968
MS	Mechanical Engineering, Massachusetts Institute of Technology, 1968
BSME	Mechanical Engineering, Magna Cum Laude, New Jersey Institute of Technology, Newark, NJ 07102, 1966
	Bayonne High School, Bayonne, New Jersey 07002

#### HONORS

American Nuclear Society, Fellow  
American Society of Mechanical Engineers, Fellow  
Sigma Xi (Honorary Scientific Research Society)  
National Science Foundation Graduate Fellowship  
Tau Beta Pi (Engineering Honor Society)

Pi Tau Sigma (National Mechanical Engineering Honor Society)  
Honors on Admission, New Jersey Institute of Technology

## PATENTS AND PUBLICATIONS

**U.S. Patent** – Patent Number 4,372,376, Heat Pump Apparatus, February 8, 1983.

### Books

Co-author of the EPRI book, *Pressure Drop Technology for Design and Analysis*, published 1999.

Co-author of the EPRI book, *Flow-Accelerated Corrosion in Power Plants*, published 1996 and revised in 1998.

Co-author of the EPRI book, *Void Fraction Technology for Design and Analysis*, published 1997.

**Published Reports** – sole author of the following EPRI Reports

*Development of an Averaged Point-to-Point Method for Inspection Data*, EPRI, Palo Alto, CA, to be published.

*Investigation into Combining Single and Multiple Outage Inspection Data*, EPRI, Palo Alto, CA, to be published.

*Development of a Figure of Merit for Evaluating CHECWORKS™ SFA Pass 2 Results*, EPRI, Palo Alto, CA, to be published.

*Investigation into Flow-Accelerated Corrosion at Low Temperatures*, EPRI Report, 1013474, November 2007.

*Flow-Accelerated Corrosion – The Entrance Effect*, EPRI Report, 1015072, November 2007.

*Interim Recommendations for an Effective Program against Erosive Attack*, EPRI Report, 101507, December 2007.

*Investigation into Flow-Accelerated Corrosion at Low Temperatures*, EPRI Report, 1013474, November 2006.

*Computer-Based Training Module on Erosion in Piping Systems*, EPRI Report 1013570, November 2006.

*Computer Based Training Module on Flow-Accelerated Corrosion (FAC) for non-FAC Personnel*, EPRI Report 1013249, May 2006.

*Determining Piping Wear Caused by Flow-Accelerated Corrosion from Single-Outage Inspection Data*, EPRI Report 1013012, March 2006.

*An Evaluation of Flow-Accelerated Corrosion in the Bottom Head Drain Lines of Boiling Water Reactors*, EPRI Report 1013013, March 2006.

*Chemistry Effects on Flow-Accelerated Corrosion – PWR: Hydrazine and Oxygen Investigations*, EPRI Report 1011835, November 2005.

*Chemistry Effects on Flow-Accelerated Corrosion – BWR: Dissolved Oxygen Investigation*, EPRI Report 1011833, November 2005.

*Recommendations for Controlling Cavitation, Flashing, Liquid Droplet Impingement, and Solid Particle Erosion in Nuclear Power Plant Piping Systems*, EPRI Report 1011231, November 2004.

*Flow-Accelerated Corrosion Investigations of Trace Chromium*, EPRI Report 1008047, November 2003.

*Selective Attack of Welds by Flow-Accelerated Corrosion*, EPRI Report 1007057, July 2002.

**Published Reports** – co-author of the following EPRI Reports

*Recommendations for an Effective Flow-Accelerated Corrosion Program (NSAC-202L-R3), Non-Proprietary Version*, EPRI, Palo Alto, CA: 2007. 1015425.

*Recommendations for an Effective Flow-Accelerated Corrosion Program (NSAC-202L-R3)*, EPRI Report 1011838, May 2006.

*Recommendations for an Effective Flow-Accelerated Corrosion Program*, NSAC-202L, Revision 2, April 1999.

*CHECUP™, a CHECWORKS™ Application for FAC Evaluation of Fossil Power Plants – Users Guide*, EPRI TR-103198-P5, November 1998.

*CHECWORKS™ Computer Program Users Guide*, EPRI TR-103198-P1, December 1997.

*Guidelines for Controlling Flow-Accelerated Corrosion in Fossil Plants*, EPRI TR-108859, November 1997.

*Recommendations for an Effective Flow-Accelerated Corrosion Program*, NSAC-202L, Revision 1, January 1997.

*Understanding Void Fraction in Steady State and Dynamic Environments*, EPRI TR-106326, August 1996.

*Recommendations for an Effective Flow-Accelerated Corrosion Program*, NSAC-202L, November 1993.

*An Analysis of BWR Fuel Heatup During a Loss of Coolant While Refueling*, NSAC-169, November 1991.

*CHEC-NDE™ a Tool for Managing Non-Destructive Evaluation Data from Pipe Inspections*, EPRI NP-7017-CCML, NSAC-149L, April 1991.

*CHECMATE™ Computer Program Users Guide*, NSAC-145L, Original May 1989, and Rev. 1, April 1991.

*The Chexal-Lelouche Void Fraction Correlation for Generalized Applications*, NSAC-139, April 1991.

*CHEC® Computer Program Users Manual*, NSAC-112L, Original July 1987 and Rev. 1, July 1989.

*An Assessment of Eight Void Fraction Models for Vertical Flows*, NSAC-107, December 1986.

*A Full-Range Drift-Flux Correlation for Vertical Flows (Revision 1)*, EPRI NP-3989-SR, September 1986.

*Response of a B&W Plant to Steam Generator Tube Ruptures*, NSAC-101, September 1986.

*EPRI R&D Contributions to the Technical Basis for Revision of ECCS Rules*, EPRI NP-4146-SR, July 1985.

**Technical Papers** – More than 45 published technical papers on nuclear safety analysis, thermal-hydraulics, and flow-accelerated corrosion.