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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

## ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:  
James P. Gleason, Chairman  
Frederick J. Shon  
Dr. Oscar H. Paris

In the Matter of	)	
	)	
CONSOLIDATED EDISON COMPANY OF	)	Docket Nos.
NEW YORK, INC.	)	50-247 SP
(Indian Point, Unit No. 2)	)	50-286 SP
	)	
POWER AUTHORITY OF THE STATE OF	)	
NEW YORK	)	March 31, 1983
(Indian Point, Unit No. 3)	)	
	)	

LICENSEES' SUPPLEMENTAL TESTIMONY  
OF DENNIS C. BLEY  
ON CONTENTION 2.2(a)

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SUPPLEMENTAL TESTIMONY ON CONTENTION 2.2(a)

My name is Dennis C. Bley. I am a consultant in reliability, risk, and decision analysis for electrical generating plants at Pickard, Lowe and Garrick, Inc. I was a principal investigator on the Indian Point Probabilistic Safety Study. A statement of my professional qualifications is attached.

The purpose of this Supplemental Testimony is to correct a misstatement in my testimony as filed on January 12, 1983, and in the Indian Point Probabilistic Safety Study (IPPSS), upon which my testimony was based.

The correction pertains to the statement that the flooding event at Unit 2 on October 17, 1980, led to

numerous hardware and administrative changes for both units . . . including for both units:

- o Revised technical specifications regarding limiting conditions for operation of the various leakage detection systems and operating leakage limits.

Licensees' Testimony of Dennis C. Bley on Contention 2.2(a) at 2 (Jan. 12, 1983); IPPSS § 7.4.2.2.5.

This statement is in error regarding Unit 3 because Unit 3's Technical Specifications in existence prior to the flooding event at Unit 2 already addressed the subject of fan cooler leakage. See Amendment No. 31; Technical Specifications for Indian Point Unit No. 3 at 4.4-10. The

testimony of the Nuclear Regulatory Commission Staff on this subject is accurate: "Technical specifications at Unit 3 already existed that required testing of the air cooler system that limited the leak rate to 0.36 gallons per minute, this leakage limit includes all valves, coils and pipes, not just the isolation valves." NRC Staff Testimony of William T. LeFave, Frank Rowsome and Bernard Turovlin on Contention 2.2.a at 14 (Jan. 12, 1983) (emphasis added).

## NAME

DENNIS C. BLEY

## EDUCATION

Ph.D., Nuclear Reactor Engineering, Massachusetts Institute of Technology, 1979.

Courses in nuclear engineering and computer science, Cornell University, 1972-1974.

U.S. Navy Nuclear Power School, 1968.

University of Cincinnati, B.S.E.E., 1967.

Courses in Mathematics and Physics, Centre College of Kentucky, 1961-1963.

## PROFESSIONAL EXPERIENCE

### General Summary

A consultant at Pickard, Lowe & Garrick, Inc., 1979-present. Technical analysis of power plant availability and risk. Cost-benefit analysis of power plant system changes. Preparation of technical reports, expert testimony, and proposals. Supervision of the technical quality of PLG reports and direction of some PLG projects. Instructor at availability, risk, and decision analysis courses offered by PLG. Oyster Creek Probabilistic Risk Assessment (OPSA). Assisted in the completion and review of this complete risk assessment of an operating BWR performed for Jersey Central Power & Light. Work Order Scheduling System (WOSS). Assisted in developing the San Onofre 2 and 3 plant model for a computer based work order prioritizing, scheduling, and record keeping system for Southern California Edison Company. Steam Turbine Diagnostics Cost-Benefit Analysis. Developed and applied a procedure for evaluating diagnostic alternatives for EPRI. Reliability Analysis of Diablo Canyon Auxiliary Feedwater System for Pacific Gas & Electric. Midland Plant Auxiliary Feedwater System Reliability Analysis for Consumers Power. Technical Review of the "Office of Emergency Services Recommended Emergency Planning Zone Considerations..." for Southern California Edison. Prioritization of NRC Action Plan for NSAC. Development of a methodology and participation in an AIF workshop to apply it for EPRI/NSAC. Zion and Indian Point Probabilistic Safety Studies. Methods development, systems analysis, and plant modeling. Other PRAs--LaSalle, Browns Ferry, Midland, Pilgrim 1, and Oconee.

On USS Enterprise, Reactor Training Assistant, 5 months, 1971.

Responsible for technical training of approximately 400 nuclear trained officers and men prior to annual safeguards examination. Propulsion Plant Station Officer, 9 months, 1970-1971. Responsible for maintenance and operation of one propulsion plant (two reactors, eight steam generators, and associated equipment) during power range testing of new reactors and during deployment. Approximately 50 enlisted personnel were assigned to the plant. Shift Propulsion Plant Watch Officer, 15 months, 1969-1970. Supervised a crew of about 20 navy enlisted operators and many shipyard workers on 8-hour shift rotation conducting maintenance

and testing in one propulsion plant during refueling-overhaul. Shipboard qualifications: Propulsion Duty Officer, responsible for all propulsion equipment during absence of Reactor Officer and Engineer Officer. Engineering Officer of the Watch, operational watch in Central Control, responsible for all propulsion and engineering equipment and watch standers. Propulsion Plant Watch Officer, operational watch in one propulsion plant, directed and responsible for all operations in the plant.

At Cincinnati Bell, Plant staff assistant, 4 months, 1967. Worked in central office and transmission group supplying technical assistance to the line organization. Cooperative trainee, 3 years, 1964-1967, work-study program with alternate three month periods at the University of Cincinnati.

#### Chronological Summary

1979-Present	Consultant, Pickard, Lowe and Garrick, Inc.
1974-1979	Massachusetts Institute of Technology. Research assistant for Department of Energy LWR Assessment Project. Teaching assistant in engineering of nuclear reactors.
Summer 1976	Northeast Utilities. Engineer: economy studies, plant startup, analysis of physics tests.
1967-1974	U.S. Naval Reserve, active duty. Instructor of naval science, Cornell University, 1971-1974; Reactor Department of USS Enterprise, deployment and refueling-overhaul, 1969-1971; Nuclear Power training program and Officer Candidate School, 1967-1969.
1964-1967	Cincinnati Bell. Plant staff assistant and work-study program trainee.

#### MEMBERSHIPS, LICENSES, AND HONORS

The Society for Risk Assessment.  
Institute of Electrical and Electronics Engineers.  
American Nuclear Society.  
American Association for the Advancement of Science.  
The New York Academy of Sciences.  
U.S. Naval Reserve, Commander.  
Registered Nuclear Engineer, State of California.

Sigma Xi (national science honors society), 1976.  
Sherman R. Knapp Fellowship (Northeast Utilities), 1975-1976.  
Sloan Research Traineeship, 1974-1975.  
Eta Kappa Nu (national electrical engineering honors society), 1967.

#### REPORTS AND PUBLICATIONS

"Seabrook Probabilistic Safety Assessment," Public Service Company of New Hampshire, to be published in 1983.

Pickard, Lowe and Garrick, Inc., "Midland Probabilistic Risk Assessment," Consumers Power Company, to be published in 1982.

Oconee Probabilistic Risk Assessment," a joint effort of the Nuclear Safety Analysis Center, Duke Power, and other participating utilities, to be published in 1982.

Tennessee Valley Authority and Pickard, Lowe and Garrick, Inc., "Browns Ferry Probabilistic Risk Assessment," to be published in 1982.

Apostolakis, G., M. Kazarians, and D. C. Bley, "A Methodology for Assessing the Risk from Cable Fires," accepted for publication in Nuclear Safety, 1982.

Kaplan, S., H. F. Perla, and D. C. Bley, "A Methodology for Seismic Safety Analysis of Nuclear Power Plants," proposed presentation at the International Meeting on Thermal Nuclear Reactor Safety, Chicago, Illinois, August 29-September 2, 1982.

Bley, D. C., S. Kaplan, and B. J. Garrick, "Assembling and Decomposing PRA Results: A Matrix Formalism," proposed presentation at the International Meeting on Thermal Nuclear Reactor Safety, Chicago, Illinois, August 29-September 2, 1982.

Garrick, B. J., S. Kaplan, and D. C. Bley, "Recent Advances in Probabilistic Risk Assessment," prepared for the MIL Nuclear Power Reactor Safety Course, Cambridge, Massachusetts, July 19, 1982.

Fleming, K. N., S. Kaplan, and B. J. Garrick, "Seabrook Probabilistic Safety Assessment Management Plan," PLG-0239, June 1982.

Garrick, B. J., "Lessons Learned From First Generation Nuclear Plant Probabilistic Risk Assessments," to be presented at the Workshop on Low-Probability/High-Consequence Risk Analysis, Arlington, Virginia, June 15-17, 1982.



Garrick, B. J., S. Kaplan, D. C. Iden, E. B. Cleveland, H. F. Perla, D. C. Bley, D. W. Stillwell, H. V. Schneider, and G. Apostolakis, "Power Plant Availability Engineering: Methods of Analysis, Program Planning, and Applications," EPRI NP-2168, PLG-0165, May 1982.

Bley, D. C., and R. J. Mulvihill, "Comments on Evaluation of Availability Improvement Options for Moss Landing Units 6 and 7," PLG-0226, March 1982.

Stillwell, D. W., G. Apostolakis, D. C. Bley, P. H. Raabe, R. J. Mulvihill, S. Kaplan, and B. J. Garrick, "EEI Availability Handbook," PLG-0218, January 1982.

Bley, D. C., L. G. H. Sarmanian, and D. W. Stillwell, "Reliability Analysis of Safety Injection System Modification, San Onofre Nuclear Generating Station - Unit 1," PLG-0206, October 1981.

"Zion Probabilistic Safety Study," Commonwealth Edison Company, September 1981.

Buttemer, D. R., "Analysis of Postulated Accidents During Low Power Testing at the San Onofre Nuclear Generating Station--Unit 2," PLG-0199, September 1981.

Bley, D. C., D. W. Stillwell, and R. R. Fray, "Reliability Analysis of Diablo Canyon Auxiliary Feedwater System," presented at the Tenth Biennial Topical Conference on Reactor Operating Experience, Cleveland, Ohio, August 17-19, 1981.

Garrick, B. J., and D. C. Bley, "Lessons Learned from Current PRAs," presented to the ACRS Subcommittee on Reliability and Probabilistic Risk Assessment, Los Angeles, California, July 28, 1981.

Kaplan, S., G. Apostolakis, B. J. Garrick, D. C. Bley, and K. Woodard, "Methodology for Probabilistic Risk Assessment of Nuclear Power Plants," draft version of a book in preparation, PLG-0209, June 1981.

Perla, H. F., "Project Plan: Probabilistic Risk Assessment, Midland Nuclear Power Plant," PLG-0150, May 1981.

Bley, D. C., C. L. Cate, D. W. Stillwell, and B. J. Garrick, "Midland Plant Auxiliary Feedwater System Reliability Analysis Synopsis," PLG-0166, March 1981.

Pickard, Lowe and Garrick, Inc., "A Methodology to Quantify Uncertainty of Cost of Electricity for Alternate Designs of (Combustion) Turbine Combined Cycle Plants," PLG-0162, March 1981.

Garrick, B. J., S. Ahmed, and D. C. Bley, "A Methodology for Evaluating the Costs and Benefits of Power Plant Diagnostic Techniques," submitted for presentation at the Ninth Turbomachinery Symposium, Houston, Texas, December 9-11, 1980.

Pickard, Lowe and Garrick, Inc., "Seminar: Probabilistic Risk Assessment of Nuclear Power Plants," PLG-0154, November 1980.

Pickard, Lowe and Garrick, Inc., "Project Plan: Probabilistic Risk Assessment, Browns Ferry Nuclear Plant Unit 1," PLG-0149, October 1980.

Garrick, B. J., S. Kaplan, D. C. Iden, E. B. Cleveland, H. F. Perla, D. C. Bley, and D. W. Stillwell, "Power Plant Availability Engineering, Methods of Analysis - Program Planning - Applications," 2 Vols., PLG-0148, October 1980.

Bley, D. C., C. L. Cate, D. W. Stillwell, and B. J. Garrick, "Midland Plant Auxiliary Feedwater System Reliability Analysis," PLG-0147, October 1980.

Bley, D. C., D. M. Wheeler, C. L. Cate, D. W. Stillwell, and B. J. Garrick, "Reliability Analysis of Diablo Canyon Auxiliary Feedwater System," PLG-0140, September 1980.

Garrick, B. J., et al, "Project Plan: Oconee Probabilistic Risk Assessment," PLG-0138, August 1980.

Garrick, B. J., D. M. Wheeler, E. B. Cleveland, D. C. Bley, L. H. Reichers, and C. B. Morrison, "Operating Experience of Large U.S. Steam Turbine-Generators; Volume 1 - Data, Volume 2 - Utility Directory," PLG-0134, June 1980.

Garrick, B. J., S. Kaplan, and D. C. Bley, "Seminar: Power Plant Probabilistic Risk Assessment and Reliability," PLG-0127, May 1980.

Garrick, B. J., and S. Kaplan, "Oyster Creek Probabilistic Safety Analysis (OPSA)," presented at the ANS-ENS Topical Meeting on Thermal Reactor Safety, Knoxville, Tennessee, April 8-11, 1980.

Garrick, B. J., S. Kaplan, G. E. Apostolakis, D. C. Bley, and T. E. Potter, "Seminar: Probabilistic Risk Assessment as Applied to Nuclear Power Plants," PLG-0124, March 1980.

Garrick, B. J., S. Ahmed, and D. C. Bley, "A Methodology for Evaluating the Costs and Benefits of Power Plant Diagnostic Techniques," PLG-0118, January 1980.



Kaplan, S., B. J. Garrick, and D. C. Bley, "Notes on Risk, Probability, and Decision," PLG-0113, November 1979.

Bley, D. C., C. L. Cate, D. C. Iden, B. J. Garrick, and J. M. Hudson, "Seismic Safety Margins Research Program (Phase I), Project VII - Systems Analysis," PLG-0110, September 1979.

Cate, C. L., and B. J. Garrick, "W-501 Combustion Turbine Starting Reliability Analysis," PLG-0103, June 1979.

Pickard, Lowe and Garrick, Inc., "Plant Availability Program Specification, San Onofre Nuclear Generating Station," March 1979.

Pickard, Lowe and Garrick, Inc., "Work Order Scheduling System, Design Specification," March 1979.

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In the Matter of )

CONSOLIDATED EDISON COMPANY OF )  
NEW YORK, INC. )  
(Indian Point, Unit No. 2) )

Docket Nos.  
50-247 SP  
50-286 SP

POWER AUTHORITY OF THE STATE OF )  
NEW YORK )  
(Indian Point, Unit No. 3) )

March 31, 1983

CERTIFICATE OF SERVICE

I hereby certify that on the 31st day of March, 1983, I caused a copy of Licensees' Supplemental Testimony of Dennis C. Bley on Contention 2.2(a) to be served by first class mail, postage prepaid on all parties:

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