

February 4, 1983

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
THE CLEVELAND ELECTRIC	)	Docket Nos. 50-440
ILLUMINATING COMPANY, <u>et al.</u>	)	50-441
	)	
(Perry Nuclear Power Plant,	)	
Units 1 and 2)	)	

AFFIDAVIT OF DAVID R. GREEN  
IN SUPPORT OF NRC STAFF MOTION  
FOR SUMMARY DISPOSITION OF ISSUE NO. 9

David R. Green, being duly sworn, deposes and says as follows:

1. I, David R. Green, am Senior Project Engineer, Nuclear Engineering Department, The Cleveland Electric Illuminating Company ("CEI"). My business address is 10 Center Road, Perry, OH 44081. A summary of my professional qualifications and experience is attached hereto as Exhibit "A." I have personal knowledge of the matters set forth herein and believe them to be true and correct.

2. CEI is in the process of developing the surveillance and maintenance program for the Perry Nuclear Power Plant based on the guidance of Regulatory Guide 1.33 (Rev. 2). The program will be completed prior to fuel loading of Unit 1. The

program will have applicability for all phases of Perry operations. One function of the program will be to detect equipment degradation, including degradation to polymeric materials from radiation. Although the program is still in the developmental stage, it will include six program elements which will provide the means for detecting polymeric degradation and the approach to failures by age-related or other mechanisms.

3. Corrective Maintenance: Corrective Maintenance, when required, is performed by trained personnel experienced in the tasks being performed and in accordance with approved procedures. These maintenance actions are documented. Such documentation provides for a description of the failure and the corrective action taken. During work performance, job site component inspections are performed by the technicians and various levels of supervision. These inspections inherently include detection of component degradation which may be due to wear and/or in-service aging. Corrective maintenance, when performed in recurring situations on like or similar equipment, identifies component or component part performance trends. Maintenance personnel identify and correct such deficiencies.

4. Preventive Maintenance: Preventive Maintenance scheduled and performed on equipment and instrumentation identifies regular activities, such as lubrication of bearings, to extend component life and ensure performance of the component's function. Procedures for the Preventive Maintenance Program are developed taking

into account equipment manufacturers' recommendations and operating experience. Wherever applicable, preventive maintenance procedures specify the nature of the specific post-maintenance testing requirements and acceptance criteria. These procedures are periodically reviewed and updated to incorporate new and additional information obtained from the manufacturers, experience in plant operations, licensee event reports, NRC circulars and bulletins, and from equipment qualification tests. The preventive maintenance activities are documented and include descriptions of abnormalities noted and corrective actions taken.

5. Periodic Performance Testing: Periodic performance testing is scheduled and performed on a recurring basis. These tests are performed to monitor system and/or component (e.g., RHR System, valve operator) operation, and determine unacceptable component degradation. Results of these tests are evaluated; and, where necessary, corrective maintenance activities are initiated to ensure continued satisfactory equipment operability.

6. Surveillance Program: Plant Surveillance Programs identify the monitoring activities to be performed. Surveillance is geared at a minimum to monitor safety-related equipment and equipment inaccessible for monitoring during normal plant operation. These scheduled tasks on a particular component are to monitor and record component performance. This information is used to schedule and perform corrective actions prior to failure.

7. Manufacturer, Utility, NRC Communications: Information is received from these and other sources on a routine basis concerning existing or potential problems and/or failures of components or component parts. This information is reviewed and integrated into the existing plant maintenance programs as applicable. Through this effort, generic component deficiencies can be identified and corrected, thus minimizing the potential for equipment failures.

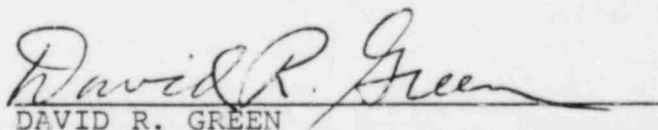
8. Operational and Performance Parameters-Monitoring and Evaluation: Operations Personnel routinely monitor plant, system and component operation and performance. When equipment performance degradation is noted, operational parameters are monitored and evaluated to identify equipment performance problems. This not only applies to system and component performance, but to the monitoring instrumentation used to verify the various equipments' performance. This review and analysis is used to detect causes of component performance degradation and correct such deficiencies prior to failure.

9. Records Management: In addition to these program elements, the CEI surveillance and maintenance program will be subject to Records Management, Document Control and Plant Program Administration and Technical Procedures. This ensures that the accuracy, quality assurance activities, and procedure completeness checks in addition to documentation and results review activities are performed. The documentation activities include:

- Documentation by approved procedures;
- Work performance sign-offs;
- Quality assurance sign-offs;
- Periodic procedure reviews;
- Maintenance work completion review and signatures;
- Records storage ensuring retrievability; and
- Follow-up action performance verification.

Documentation review activities of the existing maintenance programs and practices are designed to ensure that they are current and accurate.

10. The CEI surveillance and maintenance program thus includes features that enable identification of equipment degradation and the approach to failures whether caused by wear mechanisms, aging mechanisms or other mechanisms. Additionally, equipment/component failures are routinely evaluated by various levels of maintenance personnel including management. These evaluations are performed based on the experienced judgments of the various personnel involved, particularly maintenance technicians and foremen who are trained, experienced and familiar with the equipment. These failure evaluations provide for additional defense against the potential for further failures. The culmination of these activities, when performed by experienced personnel sensitive to component performance degradation and monitoring, helps minimize potential for failures.

  
DAVID R. GREEN

CITY OF WASHINGTON     )  
                              ) ss.  
DISTRICT OF COLUMBIA )

The foregoing AFFIDAVIT OF DAVID R. GREEN IN SUPPORT  
OF NRC STAFF MOTION FOR SUMMARY DISPOSITION OF ISSUE NO. 9  
was subscribed, sworn to and acknowledged before me by David  
R. Green this 4th day of February, 1983.

WITNESS MY HAND AND NOTARIAL SEAL.

Martha L. Lee  
NOTARY PUBLIC

My Commission Expires:

10/14/85

DATED: February 4, 1983.



EXHIBIT A

DAVID R. GREEN

PROFESSIONAL QUALIFICATIONS

My name is David R. Green. I am employed as a Senior Project Engineer in the Nuclear Engineering Department of the Cleveland Electric Illuminating Company. I have extensive and intensive experience in design, construction, startup, operations, maintenance, and electrical equipment failure diagnosis and repair engineering for both nuclear and fossil-fueled power plants. I also act as CEI's Rotating Electrical Machinery Specialist.

EXPERIENCE

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY  
since 1955.

1981 to present	Senior Project Engineer, Engineering Unit, Nuclear Design Section of Nuclear Engineering Department - responsible for construction and startup support engineering (electrical and mechanical) for Perry Nuclear Power Plant. Also responsible to serve as CEI's Rotating Electrical Machinery Specialist.
1979-81	Senior Project Engineer, Electrical and Instrumentation and Control - responsible for electrical, instrumentation and control design for Perry Nuclear Power Plant.
1975-79	Senior Electrical Engineer - responsible for all electrical design for Perry Nuclear Power Plant.
1973-75	Project Electrical Engineer - responsible for electrical design construction and startup for Avon 10 and Eastlake 6 plants, both 35-MW gas turbine projects.
1968-72	Project Electrical Engineer - responsible for electrical engineering on all phases of Eastlake Plant, a 650-MW coal-fueled unit, including the direction of the electrical check, test, and startup.
1969-71	Project Engineer - responsible for design, construction, startup on the world's first 345 KV SF6 Gas-Insulated Bus, installed at the Eastlake Plant.

1955-68

Project Electrical Engineer - participated in various engineering positions on the following projects: Avon 9 (a 650-MW fossil plant), Lakeshore 18, Avon 8, Ashtabula 5, and Eastlake 4 (all 250-MW coal-fueled plants).

Served as Plant Electrical Operator during two company strikes for periods totaling 6 months (1968 and 1973).

EDUCATION:

B.S. Electrical Engineering, Case Institute of Technology, 1955.

Power Systems Engineering Course (9 months), General Electric, 1966-67.

Numerous seminars and short courses including General Electric BWR training.

REGISTRATION:

Professional Engineer, Ohio, 1958.

SOCIETIES:

IEEE Memberships include:

Rotating Machinery Committee, 1967-present.

Synchronous Machinery Subcommittee, 1967-present.

Working Group Chairman - Turbine Generator Shaft Stress, 1972-present.

Excitation Systems and Equipment, 1967-present.

Nuclear Power Engineering - Qualification Subcommittee, 1975-present.

Working Group Member, IEEE 649 Qualification of Motor Control Centers for Nuclear Plant Use, 1977-present.

Working Group Member, IEEE 323 Electrical Equipment Qualification for Nuclear Plants, 1975-78.

Liaison IEEE 387 Diesel-Generators for Nuclear Plant Use, 1980-present.

ANSI Memberships include:

Rotating Synchronous Machinery (C50.10-14).

Power Plant Motors (C50.19).

PUBLICATIONS:

IEEE 62-970 - Proper Motor Application Engineering Can Reduce Costs and Improve Reliability.

IEEE 70 CP 217 - Electrical Features of Avon Unit 9

Electrical World - 1973, Worlds First 345 KV SF6 Bus.



February 8, 1983

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
THE CLEVELAND ELECTRIC	)	Docket Nos. 50-440
ILLUMINATING COMPANY, <u>et al.</u>	)	50-441
	)	
(Perry Nuclear Power Plant,	)	
Units 1 and 2)	)	

CERTIFICATE OF SERVICE

This is to certify that copies of the foregoing "Applicants' Answer in Support of NRC Staff Motion for Summary Disposition of Issue No. 9", "Affidavit of Srinivasan Kasturi in Support of NRC Staff Motion for Summary Disposition of Issue No. 9", and "Affidavit of David R. Green in Support of NRC Staff Motion for Summary Disposition of Issue No. 9" were served by deposit in the United States Mail, first class, postage prepaid, this 8th day of February 1983, to all those on the attached Service List.

Michael A. Swiger  
MICHAEL A. SWIGER

February 8, 1983

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
THE CLEVELAND ELECTRIC	)	Docket Nos. 50-440
ILLUMINATING COMPANY	)	50-441
	)	
(Perry Nuclear Power Plant,	)	
Units 1 and 2)	)	

SERVICE LIST

Peter B. Bloch, Chairman  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dr. Jerry R. Kline  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Mr. Glenn O. Bright  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Christine N. Kohl, Chairman  
Atomic Safety and Licensing  
Appeal Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dr. John H. Buck  
Atomic Safety and Licensing  
Appeal Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Gary J. Edles, Esquire  
Atomic Safety and Licensing  
Appeal Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Atomic Safety and Licensing  
Board Panel  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Atomic Safety and Licensing  
Appeal Board Panel  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Docketing and Service Section  
Office of the Secretary  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

James M. Cutchin, IV, Esquire  
Office of the Executive  
Legal Director  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Ms. Sue Hiatt  
OCRE Interim Representative  
8275 Munson Avenue  
Mentor, Ohio 44060

Daniel D. Wilt, Esquire  
Post Office Box 08159  
Cleveland, Ohio 44108

Donald T. Ezzone, Esquire  
Assistant Prosecuting Attorney  
Lake County Administration Center  
105 Center Street  
Painesville, Ohio 44077

John C. Cardinal, Esquire  
Prosecuting Attorney  
Ashtabula County Courthouse  
Jefferson, Ohio 44047

Terry Lodge, Esquire  
915 Spitzer Building  
Toledo, Ohio 43604