

# Duquesne Light Company

Beaver Valley Power Station  
P.O. Box 4  
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JOHN D. SIEBER  
Senior Vice President and  
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March 24, 1994

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Director, Office of Enforcement  
U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

**Subject: Beaver Valley Power Station, Unit No. 2  
Docket No. 50-412, License No. NPF-73  
Reply to Notice of Violation and Proposed Imposition of  
Civil Penalty**

Gentlemen:

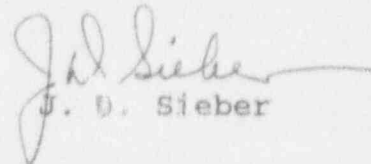
In response to NRC correspondence dated February 24, 1994 and in accordance with 10 CFR 2.201, the attached reply addresses the Notice of Violation and Proposed Imposition of Civil Penalty which was enclosed with your letter.

The cited events were discussed in Inspection Report No. 50-412/93-81 and also during an Enforcement Conference held on January 18, 1994.

A check in the amount of \$50,000 is enclosed for payment of the civil penalty.

If there are any questions concerning this response, please contact Mr. Nelson Tonet at (412) 393-5210.

Sincerely,

  
J. D. Sieber

Attachment

cc: Mr. L. W. Rossbach, Sr. Resident Inspector  
Mr. T. T. Martin, NRC Region I Administrator  
Mr. G. E. Edison, Project Manager

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Rec'd  
MEX # 119961  
for \$50,000.00

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DUQUESNE LIGHT COMPANY  
Nuclear Power Division  
Beaver Valley Power Station Unit No. 2

Reply to Notice of Violation and  
Proposed Imposition of Civil Penalty  
Letter dated February 24, 1994

VIOLATION (Severity Level I+I; Supplement I)

Description of Violation (50-412/93-81-01)

10 CFR Part 50, Appendix B, Criterion III (Design Control) requires, in part, that measures be established to assure that regulatory requirements and design bases as specified in the license application for those structures, systems and components to which the Appendix applies are correctly translated into design documents. Measures shall also be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components. Also design changes shall be subject to design control measures commensurate with those applied to the original design.

Contrary to the above, the licensee failed to establish adequate design control measures to assure that regulatory requirements and design bases are correctly translated into design requirements. Additionally, appropriate measures were not established for the selection of review for suitability of application of material, parts, equipment, and processes that are essential to the safety related structures, systems and components. Specifically, the design modification to the emergency diesel generators (EDGs) load sequencers (a system component for which Appendix B applies), which installed microprocessor based timer/relays in 1990, was not appropriately reviewed for suitability of application in that these timer/relays were not protected against the voltage spikes generated by the auxiliary relays in the circuit. Consequently, during a design basis event of a loss of coolant accident together with a loss of offsite power, the EDGs may not have successfully loaded safety related equipment on the emergency buses.

Admission of the Alleged Violation

Duquesne Light Company (DLC) admits to the violation as stated.

Reason for the Violation

A multi-discipline review team conducted a root cause evaluation on the diesel generator sequencer failures experienced at Beaver Valley Unit 2 on November 4 and 6, 1993. The root cause evaluation was conducted using the Independent Safety Evaluation Group (ISEG) root cause analysis guidelines.

Reason for the Violation, (Continued)

The team determined that inadequate post-modification testing was performed following the sequencer circuit design modifications. Post-modification testing is used to identify and evaluate any circuit operation anomalies and validate the design modification. The testing conducted did not adequately validate the long term effects of changing from electro-mechanical to microprocessor based timers.

Corrective Actions Taken

The following corrective actions were immediately initiated to resolve the problems found:

- 1) The required operability of the EDGs and the EDG load sequencers was verified for the plant mode at the time of discovery (Mode 5).
- 2) Once the nature of the event was determined, a four-hour notification was made to the NRC in accordance with 10 CFR 50.72(b)(2)(i). Licensee Event Report 93-012 was subsequently issued on December 6, 1993.

Duquesne Light notified the industry of this event via the INPO Nuclear Network System.

- 3) Bench and in-situ testing of the EDG load sequencer circuitry was performed. This testing determined that the cause of the load sequencer failures was misoperation of the safety injection reset microprocessor timer relays (ATC 365A) due to negative voltage spikes induced by auxiliary relays.
- 4) A modification (Minor Design Change Package 2057) was implemented based on the results of the testing program to correct the circuit deficiency. This modification involved the addition of voltage suppression diodes and an alteration to load sequencer step 4.
- 5) Reliability and operability testing was performed after the modifications were completed to confirm that it operated in accordance with design requirements. Technical Specification required surveillance testing was successfully completed in accordance with surveillance testing procedures OST 2.36.3 and 2.36.4 for EDG 2-1 and 2-2, respectively.
- 6) Design Change Packages performed within the last five years which involved installation of either solid state or digital relays to Class 1E equipment with third party qualification were reviewed for acceptability. No problems were identified.

Actions Taken to Prevent Recurrence

- 1) Interim engineering guidelines were developed and issued to address engineering requirements for the application of digital solid state components as replacements for non-digital components.
- 2) The feasibility of additional on-line testing of the EDG load sequencers was evaluated and determined to be impractical.
- 3) The qualification package for future replacement ATC 365A timer relays is being upgraded to satisfy IEEE 323-1974 standards. Documentation of electromagnetic interference (EMI) type testing conducted on the ATC relay will be included in the qualification package upon completion.
- 4) An ATC 365A timer relay is being tested for failure analysis by the original equipment manufacturer in conjunction with an auxiliary relay.
- 5) An evaluation of the Nuclear Engineering Department's (NED's) capability to identify and specify modification tests which detect functional degradation of modified equipment is being conducted. Until completion of the evaluation, Engineering Assurance and System Engineers are reviewing design change packages prior to installation for concurrence with the modification testing requirements.
- 6) A self-assessment of NED's design capability for digital solid-state circuits is being performed.
- 7) A review of test control and troubleshooting practices is being conducted.
- 8) We are participating with the EPRI EMI working group and will utilize feedback from this group to enhance our program.

Date When Full Compliance Will Be Achieved

Full compliance was achieved upon completion of the circuit modification and associated post modification testing.

The qualification package for future replacement ATC 365A timer relays will be upgraded by December 31, 1994.

The evaluation of NED's capability to identify and specify modification tests and the self-assessment of NED's design capability will be completed by June 30, 1994.

The review of test control and troubleshooting practices will be completed by June 1, 1994.