Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515

February 18, 1994

U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Brent Clayton letter to R. Tuetken dated January 19, 1994 transmitting Notice of Violation (NOV) in NRC Inspection Report 50-295(304)/93023.

NRC Docket Numbers 50-295 and 50-304

Enclosed is the Commonwealth Edison Company (CECo) response to the subject Notice of Violation (NOV). The NOV cites one Severity Level IV violation for failure to adequately monitor a degraded starting time for a diesel driven containment spray pump and failure to adequately evaluate the degraded starting time prior to declaring the pump operable.

Upon close review of the events leading to this violation, CECo acknowledges and concurs with the NRC's assessment that the deficiencies in the July 1993, operability determination for the 1C diesel driven containment spray pump reflect the continuing need to ensure that design basis information is recaptured, documented, and disseminated to all appropriate personnel. CECo and Zion Management are committed to continuing these efforts. While some of these efforts are by their nature longer term, Zion has identified and is pursuing significant near term activities aimed at improving the quality and consistency of engineering activities.

Activities occurring in the near term include a number of corrective actions identified in the CECo response to a level III violation of 10 CFR 50.59 dated October 12, 1993, which are currently in progress. While these corrective actions were originally identified to focus on weaknesses associated with the performance of safety evaluations under 10 CFR 50.59, they are broad based in nature and contain direct applicability to some of the underlying issues in this violation. The actions include: (1) design basis accident analysis training to improve understanding of design basis accidents and their assumptions, (2) training for engineers emphasizing use of a questioning attitude in performing engineering analyses or evaluations, and providing a better knowledge of which references can be used to help in answering these questions, and (3) creation of a "50.59" resource library to provide readily available, comprehensive, and accurate sources of design basis information.

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In the longer term, CECo is continuing with the Zion Design Basis Document program as well as efforts in retrieving other plant design information. Also, in an effort to further increase experience levels within the Zion System Engineering department, a senior system engineer program is being developed. Lastly, Zion is currently developing new system specific qualification guides for system engineers and placing additional focus on completion of existing departmental training requirements for each individual engineer.

While Zion Station management is confident that the corrective actions identified in the attached response will prove effective in addressing the reasons for this violation, it is important to emphasize that CECo and Zion are committed to seeking to identify and implement new ideas through which further improvements in the quality of our engineering activities may be realized. With this in mind, both CECo and Zion Station welcome feedback on those initiatives described in this response and will endeavor to keep NRC advised of new initiatives as they are identified.

If you have any questions or require additional information, please contact Marcia Jackson, Regulatory Performance Administrator at (708) 663-7287.

Respectfully,

Dennis Farrar
Nuclear Regulatory Services Manager

cc: J. B. Martin, Regional Administrator, RIII
C. Y. Shiraki, Project Manager, NRR
J. D. Smith, Senior Resident, Zion Station

RESPONSE TO NOTICE OF VIOLATION
NRC INSPECTION REPORT
50-295/93023 - 50-304/92023

VIOLATION: 295(304)/93023-01

During an NRC inspection conducted on November 24, 1993 through January 6, 1994, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions", 10 CFR Part 2, Appendix C, the violation is listed below:

Title 10 of the Code of Federal Regulations (CFR), Part 50, Appendix B, Criterion XI, "Test Control" requires, in part, that tests be performed in accordance with test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. It further requires that test results be evaluated to ensure that test requirements are satisfied.

Contrary to the above, as identified on November 24, 1993, the procedure chosen to monitor the degraded 1C containment spray pump starting times (PT-6C-ST "Containment Spray C Pump System Tests and Checks") did not contain any requirements or acceptance criteria to evaluate the acceptability of starting time delays. Furthermore, again as identified on November 24, 1993, the test results for the July 28, 1993, test of the 1C containment spray pump, were not evaluated to ensure that starting time requirements were met before declaring the pump operable.

This is a Severity Level IV Violation (Supplement I)

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50-295/93023 - 50-304/92023

VIOLATION: 295(304)/93023-01

REASONS FOR THE VIOLATION

The reason for the violation is inadequate system knowledge of the diesel driven Containment Spray start sequence. The cognizant system engineers believed significant margin existed in the permissible start time for the diesel driven CS Pump. Consequently, it was concluded that a qualitative assessment of the engine's starting performance was adequate (i.e. provided a high degree of certainty that the CS diesel could be relied upon to start and run as required given a valid start demand). Had the start sequence been more completely understood it is likely that a concern would have been raised regarding the need to determine and monitor the exact start time value.

Contributing to the inadequate system knowledge of the start sequence are incomplete or inaccurate design basis information, in conjunction with an unusual system design. Architect-Engineer documentation used in the analysis of record incorrectly described the CS diesel start sequence. The Zion Operability Determination Manual (ZODM) and the draft CS Design Basis Document (DBD) did not identify specifics of the start sequence. The actual system design is peculiar in that a diesel driven pump start is dependent upon both an emergency diesel generator (EDG) start and a sequence timer actuation. Electrical schematics did properly depict the start sequence and were available, but were not originally reviewed.

System Engineering personnel responsible for trouble-shooting and monitoring the 1C Containment Spray (CS) diesel engine performed PT-6C-ST rather than the more involved PT-6C-ST-RT which included response time testing for starting the CS diesel. PT-6C-ST is a routine quarterly surveillance performed during power operations. PT-6C-ST-RT is scheduled on a refueling outage frequency and thus is typically performed only during refueling outages. The belief was that increasing the frequency of testing the diesel engine utilizing PT-6C-ST to bi-weekly would be effective at limiting the degradation of diesel start time that occurred between runs. This belief was based on the observation that the magnitude of the delay in the diesel starting increased as the time between starts increased. In this instance, rather than collecting response time data from PT-6C-ST-RT for use in trending and operability assessments, the focus was on minimizing the diesel start time degradation through frequent performance of PT-6C-ST only.

REASONS FOR THE VIOLATION (cont'd)

The evaluation of the test results for the July 28, 1993, test of the 1C Containment Spray diesel engine was incomplete in that response time data was neither rigorously obtained nor consistently generated. These errors would not have occurred if PT-6C-ST-RT had been performed. Ultimately, the evaluation of the July 28, 1993, test results was reviewed by the system engineer against the results of the June, 1993 OSR (the latest available OSR at the time) and found to be acceptable based on the results of that OSR.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

On October 22, 1993, Unit 1 entered mode 4 and there was no longer a requirement for the 1C containment spray pump to be operable. Therefore, as of that date it was no longer necessary to monitor the 1C CS pump for degraded performance.

On November 24, 1993, when it was recognized that the permissible start time for the CS diesel engine was less than originally identified in the evaluation of the July 28, 1993 test results, the evaluation was re-performed. This new evaluation determined that the conclusions of the original evaluation were valid.

The System Engineering personnel and members of the On-Site Review committees involved with the 1C CS diesel degraded starting issue have been counselled regarding the importance of utilizing a questioning attitude, and a rigorous approach in preparation for, and execution of, all On-Site Review activities. Particular emphasis was placed on the potential consequences of an inadequate OSR whenever operability issues or evaluation of degraded equipment is involved.

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CORRECTIVE STEPS TO BE TAKEN TO AVOID FURTHER VIOLATIONS

The following corrective actions identified in the CECo response to a level III violation of 10 CFR 50.59 dated October 12, 1993, are currently in progress. While these corrective actions focus on weaknesses associated with the performance of safety evaluations under 10 CFR 50.59, the corrective actions are broad-based and contain direct applicability to the issue of supporting a rigorous approach in engineering activities:

1. Accident Analysis Training Course - designed to enhance the understanding of accident initiators, equipment credited for accident mitigation, key assumptions, and predicted consequences of accidents. Training for system engineers currently scheduled for completion by June 15, 1994.

2. NSAC-125/Source Document Training - designed to reinforce clarifying concepts contained in NSAC-125 "Guidelines for 10 CFR 50.59 Safety Evaluations", but also focuses on increasing the engineer's awareness of where information is located (ie. UFSAR, Fire Protection Report, NRC Operating License SERs, and Amendment SERs). This training is being provided to engineers qualified to prepare or approve safety evaluations by June 15, 1994.

3. Zion Station 50.59 Resource Library - intended to provide comprehensive, well organized, and readily available reference materials for the system engineers. The center will include a computer searchable copy of the UFSAR and Zion's Technical Specifications. Also included will be hard copies of Zion's Fire Protection Report, ODCM, license amendments and SERs. The center is to be fully functional by February 28, 1994.

The senior participant of the OSR function (the station System Engineering Supervisor) will provide direction to all OSR committee members to consider upon convening an OSR for any given issue whether there exists a need for including a knowledgeable design engineer for participation in the OSR. This action will be complete by March 15, 1994.

CORRECTIVE STEPS TO BE TAKEN TO AVOID FURTHER VIOLATIONS (continued)

A sample of accident analyses, including the containment pressure analysis, were reviewed to ensure that nominal plant data (pump starting times, etc.) are consistent with inputs utilized in the accident analyses and to assess the availability of the data for use by plant personnel. The results of this review indicate that there is an acceptable correlation between plant parameters and accident analysis inputs, with the exception of the containment spray inputs into the control room habitability analysis. The availability of the analysis inputs to site personnel was also determined to be less than desired. As a result, the control room habitability analysis is being re-performed, and a listing of inputs to all accident analyses is being developed. This listing of inputs to accident analyses will require concurrence by System Engineering, Modification Design Engineering, and Nuclear Fuel Services. The development of the input listings for all accident analyses are expected to be completed by the end of 1994.

The Zion CS system DBD, which is currently in draft form and nearing completion, will be reviewed to ensure that additional information on the starting sequence and times for the CS diesels is included. This document is currently expected to be completed by March 31, 1994.

The ZODM will be revised to include appropriate guidance regarding diesel driven CS pump start sequencing. This revision will be complete by June 30, 1994.

The investigation to determine the root cause of the degraded starting performance of the Unit 1 CS diesel engine is continuing. Every effort will be made to arrive at a conclusive root cause in this investigation. Upon completion of this investigation, the results will be provided to Zion's NRC Resident Inspectors for review (Inspector Follow-up Item No. 295/304-93011-01(DRP)).

The Unit 1 CS diesel will be overhauled and fully tested to ensure operability prior to Unit 1 starting up from the current refueling outage. In addition, as a result of inspection of the Unit 1 diesel internals, a boroscope inspection was done of the Unit 2 diesel. This resulted in the decision to perform some of the same overhaul on the Unit 2 diesel. The Unit 2 CS diesel will be overhauled and tested as required.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Zion Station was in full compliance on October 22, 1993, when Unit 1 entered mode 4 and there was no longer a requirement for the 1C CS Pump to be operable.