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Attachment 2

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*JMA 7/14/89*

June 22, 1989

Mr. A. Bert Davis  
Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region III  
799 Roosevelt Road  
Glen Ellyn, IL 60137

Subject: Dresden Station Units 2 and 3  
Quad Cities Station Units 1 and 2  
Zion Station Units 1 and 2  
Response to Allegation No. RIII-89-A-0039  
NRC Docket Nos. 50-237/249; 50-254/265  
and 50-295/304

Reference: Letter from E.G. Greenman to Cordell Reed dated  
April 21, 1989.

Mr. Davis:

The referenced letter transmitted Allegation No. RIII-89-A-0039 concerning the documentation available at Dresden, Quad Cities and Zion Stations associated with changes to the original setpoints for Average Power Range Monitors. Although a 60 day response was requested, Mr. J.J. Harrison granted an extension of an additional three days in discussions with J.A. Silady on June 20, 1989. It should also be noted that the scope of CECO's review was expanded to include several other setpoints based on a clarification received earlier from Mr. Harrison.

The results of the CECO evaluation are provided in the Enclosure which includes, in addition to an Executive Summary, Introduction and Conclusions, a detailed discussion of the setpoint control and documentation practices at each of the three sites and a general background discussion of CECO's approach to assurance of proper setpoint design bases.

Appendices A and B to the Enclosure are the allegation statement and the CECO inspection plan, respectively.

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The Enclosure to this letter contains information that is exempt from Public Disclosure in accordance with 10 CFR 2.790(a).

Please contact this office should further information be required.

Very truly yours,

*T. J. Kovach*  
*for*

T. J. Kovach  
Nuclear Licensing Manager

lm

Enclosures

cc: B.L. Siegel - Dresden Project Manager, NRR  
T.M. Ross - Quad Cities Project Manager, NRR  
C.P. Patel - Zion Project Manager, NRR  
S.G. DuPont - Senior Resident Inspector, Dresden  
R.L. Higgins - Senior Resident Inspector, Quad Cities  
J.D. Smith - Senior Resident Inspector, Zion

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COMMONWEALTH EDISON COMPANY'S  
REVIEW OF ALLEGATION  
RIII-89-A-0039

EXECUTIVE SUMMARY

An evaluation of the alleged inadequacies in setpoint basis documentation has been performed including other setpoints besides the example cited. This review consisted of inspections of station setpoint control information and change practices as well as a detailed review of engineering practices and future programs. If the allegation is interpreted to assert that the stations do not maintain the design basis calculations supporting all setpoints onsite, the review substantiated that this is the case. These calculations are generally maintained by the NSSS vendor and/or corporate engineering departments. This review concluded, however, that the stations do (a) control safety-related setpoints carefully, (b) maintain the settings at the Technical Specification required values with appropriate drift tolerances, and (c) maintain appropriate documentation of changes. As a result of previous initiatives, efforts are currently in progress by Engineering to upgrade and standardize the methods of setpoint control for all six of our sites.

INTRODUCTION

This report documents the investigation conducted by CEC Co personnel of Allegation RIII-89-A-0039 (provided in Appendix A). This allegation contended that:

" the calculations associated with the changes to the original setpoints (for the Average Power Range Monitors) at Dresden, Quad Cities, and Zion are not retrievable."

Subsequent clarification/discussion with NRC Region III personnel resulted in expansion in scope beyond the Average Power Range Monitors to include a representative sample of key setpoints at each of the three sites. The salient features of the revised scope were:

1. Determine the basis of setpoints currently employed in the stations.
2. Consider the manner in which setpoints are controlled and/or changed.
3. Examine the record retention requirements of setpoint change documentation.
4. Generalize the investigation beyond nuclear instrumentation to include sampling of other safety related setpoints.

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An inspection plan (included as Appendix B) was prepared to address the revised scope. Inspections were conducted at Dresden, Quad Cities and Zion in early June, 1989. This report contains a section documenting each station inspection. Additional sections of this report discuss background philosophy regarding setpoint design bases as well as the conclusions reached by CECO from this allegation review.

#### DRESDEN INSPECTION

The information presented below is the result of an onsite inspection and interviews with the Dresden Staff (both Technical Staff and Instrument Maintenance Departments) and follow-ups to those interviews.

1. The original setpoint information is not maintained on site. It may be possible to find the information by reviewing instrument calibration data sheets, since they are saved for the life of the plant. This would not be easy since the records are in storage on micro-fiche.
2. The calibration setpoints in use are based on current Technical Specification values, not on the original setpoints. The Tech Spec value normally appears on the instrument calibration data sheet since it is needed for the as-found check by the Instrument Maintenance Foreman.
3. Review of the instrument calibration procedures for several major setpoints confirmed that the Tech Spec limit appeared on each calibration data sheet. Procedures reviewed were DIS 700-6, APRM flow biased scram; DIS 1600-4, drywell high pressure - ECCS initiation; DIS 500-2, vessel low water level - analog trip system; and DIS 500-1, reactor high pressure.
4. A setpoint change procedure, DAP 11-11, has been used since 1975. The current revision of this procedure is used to change instrument setpoints, unless they are controlled within other approved procedures or within modification packages. The setpoint control work sheet is retained for the life of the plant.
5. DAP 10-1, which governs on-site review, requires that proposed Tech Spec change packages identify affected procedures. The Nuclear Tracking System (NTS) is used to follow the change. Therefore, a Tech Spec change passing through on-site review would be implemented in the instrument calibration procedures concurrent with the subsequent receipt of NRC approval for the proposed Tech Spec change.

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6. The degree of conservatism to be applied to the actual calibration is decided by the IM department and the Tech Staff system engineer. Changes to the degree of conservatism normally involve the IM department and the Tech. Staff. A change to a less conservative value would also require the approval of the Engineering Department.
7. No recent setpoint changes were made to any of the major trip setpoints selected for the allegation review. However, review of Work Request D46243, which changed the Scram Discharge Volume Level setpoint, found that the setpoint change procedure DAP 11-11 had been used. This setpoint change was performed in 1985.

In summary, Dresden bases its calibration setpoints on the Tech Spec limits, so the original setpoints are not readily accessible at the station. Procedures are in place and in use to control changes to instrument setpoints, and documentation related to any such changes is retained for the life of the plant.

#### QUAD CITIES INSPECTION

The information presented below is from an on-site inspection and interviews with the Quad Cities Staff (Technical Staff and Instrument Maintenance) and follow-ups to those interviews.

1. The original setpoint information is not maintained on-site. Some early information may be in file, but it is not readily available.
2. The calibration setpoints in use are based on the Technical Specification limits, not on the original setpoints. The Tech Spec value normally appears on the instrument calibration data sheet.
3. Review of the instrument calibration procedures for several major setpoints found that the Tech Spec limit appeared on each calibration data sheet. Procedures reviewed were QIS 03, APRM flow biased scram; QIS 10, vessel low water level; QIS 5, reactor high pressure; and QIS 6, drywell high pressure - ECCS initiation.
4. A setpoint change procedure, QAP 400-5, has been used since 1975. This procedure, in its current revision, is used to process and approve setpoint changes. The setpoint change form is retained in the Tech Staff office for five years, then filed in the storage vault.

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5. The instrument setpoint change procedure, QAP 400-5, requires the Tech Staff Supervisor to identify procedure changes arising from an instrument setpoint change. The procedures coordinator then processes the procedure changes.
6. The actual instrument settings are usually set on the conservative side of the Tech Spec limits, rather than setting them exactly on the Tech Spec limits. The degree of conservatism is decided by the Tech Staff engineer and the IM department, considering such issues as instrument drift. An Engineering Department review is performed if deemed necessary by the Tech Staff Supervisor. The actual setting receives further review when the calibration procedure passes through on-site review.
7. One of the major trip setpoints selected for the allegation review had been changed in 1987, providing the chance to review relatively recent documentation of the actual setpoint change process. Change number 329 increased the drywell high pressure setpoint from 1.95 psi to 2.4 psi, as allowed under a Tech Spec change. The setpoint change was processed under the setpoint change procedure QAP 400-5 and the associated change form (QAP 400-T1) was properly completed. Copies of the setpoint change forms were filed in the Instrument Maintenance and Tech Staff offices.

In summary, Quad Cities bases its calibration setpoints on the Tech Spec limits, so the original setpoints are not readily accessible at the station. Procedures are in place and in use to control changes to instrument setpoints. Documentation related to any such changes is retained in the station vault for the life of the plant.

#### ZION INSPECTION

The Zion Instrument Maintenance and Technical Staffs were visited to observe their implementation of setpoint changes and routine calibration work. The following items are key points of this inspection:

1. The station does maintain copies of the original Precautions, Limitations, and Setpoints (PLS) document which details the original setpoints applied during the startup of the plant.
2. A new setpoint study was commissioned several years ago, and provides an updated understanding of the setpoints as utilized in the safety analysis. The station is still in the process of implementing this study and expects to merge this effort with the installation of the upgraded protection system modifications (Eagle 21 digital system) currently being considered.

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3. The station does not maintain copies of vendor analysis other than that included in the updated FSAR. NFS has verified that Westinghouse does maintain the original calculations during recent visits to their Monroeville, PA. offices under the auspices of fuel upgrade efforts and design participation. In addition, NFS is in the process of re-performing the Chapter 14 non-LOCA transients as part of a vendor independence program and as such is reestablishing the design bases of the plant.
4. Zion utilizes procedure ZAP 3-52-1 to change instrument setpoints or scalings. A typical change involving the OT Delta T instrument was reviewed (SPCR#A647 dated 3/9/87; Work Request Z51347). We found that the calculations performed in support of the setpoint change were correctly performed and reviewed, and were maintained in the NIS Scaling book maintained by the IM department. The checklist associated with this procedure requires Engineering Department approval on any safety-related setpoint change, as well as the approval of the Tech Staff Supervisor, the Operating Engineer, the Asst. Superintendent for Maintenance and the Station Manager.
5. The Technical Staff utilizes a document entitled "Reactor Protection and Engineering Safeguard Scaling Assurance Program" to provide the basis for supporting calculations. This document was supplied by Westinghouse in June 1979.
6. The setpoints are set at Technical Specification values during calibration. The instrument is not considered to be drifted beyond licensing requirements unless it exceeds the tolerance band contained in a document entitled "Process Control Accuracies, WNES I&C Protection and Control System dated 1971" which is maintained in the IM shop.
7. The calibration procedures for the Power Range Monitors (1N-41), the Reactor Coolant Flow (1F-414 E), the Steam Generator Level (1L-517 E), and the Pressurizer Pressure (1P-455 E) were reviewed. These procedures contained and/or referenced the acceptable setpoint and tolerance, and require the issuance of an instrument deficiency report and deviation report in the event that an instrument is out of calibration beyond the allowable values.

In summary, we found that Zion Station has a setpoint control program in place and appears to be following it appropriately. The original setpoints are described by the PLS. It is interesting to note that very few changes to the trip setpoints have been made to date. The improvements to the protection system, coupled with the revised setpoint control programs being developed by the Engineering Department, will provide additional assurance of positive setpoint control in the future.

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SETPOINT DESIGN BASES BACKGROUND

In assessing the validity of this allegation it is important to also consider the issue of setpoint control from a corporate position, rather than to focus only on station practices. In addition, particularly with respect to these older plants which have been licensed and operating for 15 to 20 years, a historical perspective needs to be appreciated. Finally, a summary of ongoing improvements to setpoint documentation and control will be discussed.

The setpoints evaluated in this report are process instrumentation equipment necessary to support plant operation within analyzed conditions. These setpoints form the basis for the safety analysis documented in the FSAR. The Technical Specifications are based on these calculations and form the licensing basis for the operation of the plant. Key setpoints are designated in the Tech Specs and controlled accordingly. Calibrations are performed either to the Tech Spec value or to this value modified by a predetermined drift allowance, based on the methodology applied by the NSSS vendor in the performance of the safety analysis. Changes to Tech Spec setpoints are controlled strictly, and require offsite engineering department support as well as a detailed Onsite Review to implement. The NSSS vendors maintain the documentation of their calculations in accordance with their approved QA programs. The FSAR contains summaries of these calculations and constitutes the design basis document used for safety evaluation efforts within CECO.

Currently the setpoints are maintained primarily by the station Technical staff and Instrument Maintenance departments. Their primary source of information is the Technical Specifications. The basis of the Technical Specifications is the FSAR, with NSSS vendor calculations forming the detailed bases behind the FSAR. The stations do not maintain copies of NSSS calculations other than those included in the FSAR.

In the case of the BWR plants, a review of selected setpoints as well as other pertinent design information, is performed every cycle as a part of the reload safety analysis effort. During this reload analysis, limiting analyses are repeated (Turbine trip w/o bypass, MSIV closure, Loss of FW heating) to ensure that adequate margins exist for the reload core. In addition, whenever a new LOCA analysis is performed, a similar type of design review of setpoints is performed to ensure that the new analysis accurately represents the plant configuration. A reload summary report is provided to document the cycle specific calculations. The LOCA analyses are also documented in separate reports and ultimately are included in updates of the FSAR.

For the PWR plants, a similar process is followed during reload verifications. A Safety Parameter Interaction List is prepared during the course of reload calculations. A portion of this list includes modifications and setpoint changes that could potentially impact the safety analysis. The input for revised LOCA calculations is reviewed for potential impact on the

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analysis. The PWR reload safety evaluation typically does not require significant reanalysis of plant transients. If a new analysis is generated, it is included in the updated FSAR. New LOCA analyses are also included in the updated FSAR.

It has been recognized within CECo that the methods applied to the documentation and control of setpoints in the newer stations are more complete and superior to the systems applied at the older sites. An independent assessment of setpoint control has been completed for the Engineering Department, and changes to the setpoint control program are currently under development. This program is expected to result in the development of standardized instrument setpoint data sheets for each instrument, controlled by the Engineering Department. This should facilitate uniformity in the manner in which setpoints are controlled, and provide a better data base for decision making and reference purposes. It should be noted that even following the completion of this effort, the NSSS vendor/ in-house analysis personnel will still be responsible for maintaining the design basis calculations upon which the setpoint data sheets and Tech Specs are established.

#### CONCLUSIONS

The investigation of this allegation has been completed in accordance with the inspection plan. The control of setpoints at the three sites visited was found to be acceptable. The manner of control was different at each site to some degree; this will be addressed by the Engineering Department setpoint program which is in progress. The stations do not maintain the original vendor calculations, other than the FSAR. They refer to the Tech Specs as the setpoint basis, as modified by instrument drift tolerance requirements. The stations do maintain records for the life of the plant regarding setpoint changes. Safety related setpoint changes in a less restrictive direction typically involve Engineering Department approval with the original vendor often enlisted to support the requested setpoint change.

This review has gone beyond the question of design bases reconstitution, and has tried to examine the manner in which the stations check, change, and control setpoints. In all cases we were satisfied that the stations adequately control their key safety system setpoints. As explained in the Background section, the design basis calculations are not required to be maintained in station files. This investigation did point out the value of the program which is underway to upgrade the corporate setpoint control methods. This program will enhance and standardize CECo methods in this area as it is fully implemented over the next few years.

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APPENDIX A

Summary of Allegation

(RIII-89-A-0039)

Allegation: On March 13, 1989, the NRC received an allegation that: the calculations associated with the changes to the original setpoints (for the Average Power Range Monitors) at Dresden, Quad Cities and Zion are not retrievable.

In your response provide the details and methodology of your inspection plan, including documentation to support a conclusion that the concern is substantiated or unsubstantiated. If substantiated, provide your corrective actions to address the immediate concern and actions to prevent recurrence.

These items are forwarded as an indication of the minimum effort that would resolve this issue but are not intended to limit or prevent your pursuit of other additional measures you determine are appropriate for addressing the allegation.

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## APPENDIX B

INSPECTION PLAN: ALLEGATION RIII-89-A-0039

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Allegation: The calculations associated with the changes to the original setpoints (for the Average Power Range Monitors) at Dresden, Quad Cities and Zion are not retrievable.

Plan: To verify whether the allegation is substantiated, the inspection will review several major trip setpoints. For Dresden and Quad Cities, they are:

- APRM Flux Scram Trip-Flow Biased
- Reactor Low Water Level Scram
- Reactor Coolant High Pressure Scram
- High Drywell Pressure-Core Cooling Initiation.

For Zion they are:

- Power Range High Flux Reactor Trip
- Pressurizer High Pressure Reactor Trip
- Low Primary Coolant Flow Reactor Trip
- Low Steam Generator Level Reactor Trip

Schedule: The planned inspection order is as follows:

1. Station Manager:

- Introduction
- General discussion

2. Instrument Department:

- Current setpoints with associated bases
- Prior setpoints with associated bases
- Setpoint changes implementation
- Record retention

3. Technical Staff:

- Setpoint change calculations
- Setpoint change implementation (modifications, Tech Spec changes, procedure changes)
- Record retention

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4. Central File:

- Record retention

5. Station Manager:

- Exit meeting.

The inspection will focus primarily on the bases for setpoints, rather than the calibration procedures themselves. Note that although the outline suggests certain topics will be discussed within certain departments, it is expected that the topics will actually overlap between departments. Each department should be prepared to discuss its interaction with the other departments.

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