Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515

August 17, 1993

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, DC 20555

Attention: Document Control Desk

Subject: Compliance with Regulatory Guide 1.97, (Neutron Flux Monitoring)

Dresden Station Units 2 and 3,
(NRC Dockets 50-237 and 50-249)

Quad Cities Station Units 1 and 2,
(NRC Dockets 50-254 and 50-265)

LaSalle County Station Units 1 and 2,
(NRC Dockets 50-373 and 50-374)

Reference: Letter From C.P. Patel to D.L. Farrar dated June 3, 1993

As discussed in the referenced letter, the NRC has adopted the BWR Owners' Group report; NEDO-31558, "Position on NRC Regulatory Guide 1.97, Revision 3, Requirements for Post Accident Neutron Monitoring System," as an acceptable alternative to the reccomendations of Regulatory Guide 1.97 for current BWR license holders. The reference letter requests that a response be provided that discusses the results of the review of the criteria in this NEDO document with existing plant design. If any criterion are not met, the letter also requests that the utility provide a commitment to meet the criterion as well as stating when the criterion will be met.

The purpose of this letter is provide the requested information on the post-accident neutron flux monitoring system configurations at Dresden, Quad Cites and LaSalle Stations relative to the NEDO document. Attachments A, B, and C provide a discussion of compliance with the sixteen (16) post accident monitoring issues for Dresden, Quad Cities, and LaSalle respectively.

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However, because additional review is required to assess the actions necessary to comply with those NEDO recommendations not currently addressed by the system design, Commonwealth Edison will supplement this response in 90 days. This supplemental response will discuss the actions necessary to comply with the outstanding NEDO recommendations. The supplemental response will also provide either; a schedule for compliance or a justification for deviation from compliance.

If there are any questions or comments, please contact me at (708) 663-7292.

Sincerely,

D. J Chrzanowski

David J. Chrzanowski
Generic Issues Administrator
Nuclear Regulatory Services

Attachments:

cc: J. Martin, Regional Administrator-RIII
J. Stang, Dresden Project Manager-NRR/PDIII-2
C. Patel, Quad Cities Project Manager-NRR/PDIII-2
J. Kennedy, LaSalle Project Manager-NRR/PDIII-2
M. Leach, Senior Resident Inspector (Dresden)
T. Taylor, Senior Resident Inspector (Quad Cities)
D. Hills, Senior Resident Inspector (LaSalle)

ATTACHMENT A

**SUMMARY COMPARISON OF
NEDO 31558 SECTION 5.0 WITH
DRESDEN NUCLEAR STATION
NEUTRON MONITORING SYSTEM INSTRUMENTATION
CONFIGURATION**

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1. **RANGE**

CRITERIA - NEDO ALTERNATE REQUIREMENT (NAR) - 1 TO 100%

DRESDEN STATION - (DS) - **MEETS CRITERIA** - START UP RANGE AND POWER RANGE COVERS FROM ‹ 1% TO 100% RATE POWER.

2. **ACCURACY**

CRITERIA - NAR - ± 2% OF RATE POWER

DRESDEN - REVIEW INCOMPLETE AT THIS TIME - PROGRAM CURRENTLY UNDER DEVELOPMENT BY CECO TO PROVIDE LOOP CALCULATIONS. SCHEDULE FOR THIS NOT AVAILABLE.

3. **RESPONSE CHARACTERISTIC**

CRITERIA - NAR - 5 SEC/10% CHANGE

DRESDEN - REVIEW INCOMPLETE AT THIS TIME - NEDO 31558 INDICATES POWER RANGE MONITORS (GE SUPPLIED) DESIGNED TO EXCEED THE ALTERNATE REQUIREMENT.

4. **EQUIPMENT QUALIFICATION**

CRITERIA - NAR - OPERATE IN ATWS ENVIRONMENT

DRESDEN - REVIEW INCOMPLETE AT THIS TIME - IDENTIFY ATWS ENVIRONMENT.

5. **FUNCTION TIME**

CRITERIA - NAR - 1 HOUR

DRESDEN - REVIEW INCOMPLETE AT THIS TIME - SAME AS 4 ABOVE.

6. **SEISMIC QUALIFICATION**

CRITERIA - NAR - SEISMIC QUALIFICATION NOT REQUIRED

DRESDEN - **MEETS CRITERIA** - GE SUPPLIED SYSTEM.

7. **REDUNDANCY AND SEPARATION**

CRITERIA - NAR - REDUNDANCY TO ASSURE RELIABILITY

DRESDEN - ADDITIONAL REVIEW FOR ANY COMMON FAILURE EFFECTS FROM POWER RANGE MONITORING SUBSYSTEM WITH RPS TRIP SYSTEM.

8. **POWER SOURCES**

CRITERIA - NAR - UNINTERRUPTABLE AND RELIABLE POWER SOURCES

DRESDEN - REVIEW INCOMPLETE AT THIS TIME.

9. **CHANNEL AVAILABILITY**

CRITERIA - NEDO REQUIREMENT - AVAILABLE PRIOR TO ACCIDENT

DRESDEN - **MEETS CRITERIA** - GENERAL ELECTRIC SUPPLIED SYSTEM.

10. **QUALITY ASSURANCE**

CRITERIA - NAR - LIMITED QA REQUIREMENTS BASED ON GENERIC LETTER 85-06

DRESDEN - REVIEW INCOMPLETE AT THIS TIME.

11. **DISPLAY AND RECORDING**

CRITERIA - NEDO REQUIREMENT - CONTINUOUS RECORDING

DRESDEN - REVIEW INCOMPLETE AT THIS TIME.

12. **EQUIPMENT IDENTIFICATION**

CRITERIA - NEDO REQUIREMENT - IDENTIFY IN ACCORDANCE WITH CRDR

DRESDEN - **MEETS CRITERIA** - CONTROL ROOM DESIGN REVIEW COMPLETE WITH COMPONENTS ON PANELS IDENTIFIED AS REQUIRED.

13. **INTERFACES**

CRITERIA - NAR - NO INTERFACES WITH RPS TRIP FUNCTIONS

DRESDEN - REVIEW INCOMPLETE AT THIS TIME.

14. **SERVICE, TEST AND CALIBRATION**

CRITERIA - NEDO REQUIREMENT - ESTABLISH IN-PLANT PROCEDURES

DRESDEN - **MEETS CRITERIA** - PROCEDURES IN PLACE FOR NORMAL MAINTENANCE PROGRAM ON NMS.

15. **HUMAN FACTORS**

CRITERIA - NEDO REQUIREMENT - INCORPORATE HFE PRINCIPLES

DRESDEN - **MEETS CRITERIA** - INCORPORATES HUMAN FACTOR ENGINEERING PRINCIPLES - RESOLUTION OF HUMAN ENGINEERING DISCREPANCIES IN PROCESS.

16. **DIRECT MEASUREMENT**

CRITERIA - NEDO REQUIREMENT - DIRECT MEASUREMENT OF NEUTRON FLUX

DRESDEN - **MEETS CRITERIA** - NMS MEASURES NEUTRON FLUX DIRECTLY.

ATTACHMENT B

**SUMMARY COMPARISON OF
NEDO 31558 SECTION 5.0 WITH
QUAD CITIES NUCLEAR STATION
NEUTRON MONITORING SYSTEM INSTRUMENTATION
CONFIGURATION**

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1. **RANGE**

   CRITERIA - NED ALTERNATE REQUIREMENT (NAR) - 1 TO 100%

   QUAD CITIES (QCS) - **MEETS CRITERIA** - START UP RANGE AND POWER RANGE COVERS FROM $\leq$ 1% TO 100% RATED POWER.

2. **ACCURACY**

   CRITERIA - NAR - $\pm$ 2% OF RATE POWER

   QCS - REVIEW INCOMPLETE AT THIS TIME - PROGRAM CURRENTLY UNDER DEVELOPMENT BY CECO TO PROVIDE LOOP CALCULATIONS. SCHEDULE FOR THIS NOT AVAILABLE.

3. **RESPONSE CHARACTERISTIC**

   CRITERIA - NAR - 5 SEC/10% CHANGE

   QCS - REVIEW INCOMPLETE AT THIS TIME - NEDO 31558 INDICATES POWER RANGE MONITORS (GE SUPPLIED) DESIGNED TO EXCEED THE ALTERNATE REQUIREMENT.

4. **EQUIPMENT QUALIFICATION**

   CRITERIA - NAR - OPERATE IN ATWS ENVIRONMENT

   QCS - REVIEW INCOMPLETE AT THIS TIME - IDENTIFY ATWS ENVIRONMENT.

5. **FUNCTION TIME**

CRITERIA - NAR - 1 HOUR

QCS - REVIEW INCOMPLETE AT THIS TIME - SAME AS 4 ABOVE.

6. **SEISMIC QUALIFICATION**

CRITERIA - NAR - SEISMIC QUALIFICATION NOT REQUIRED

QCS - **MEETS CRITERIA** - GE SUPPLIED SYSTEM.

7. **REDUNDANCY AND SEPARATION**

CRITERIA - NAR - REDUNDANCY TO ASSURE RELIABILITY

QCS - ADDITIONAL REVIEW FOR ANY COMMON FAILURE EFFECTS FROM POWER RANGE MONITORING SUBSYSTEM WITH RPS TRIP SYSTEM.

8. **POWER SOURCES**

CRITERIA - NAR - UNINTERRUPTABLE AND RELIABLE POWER SOURCES

QCS - REVIEW INCOMPLETE AT THIS TIME.

9. **CHANNEL AVAILABILITY**

CRITERIA - NEDO REQUIREMENT - AVAILABLE PRIOR TO ACCIDENT

QCS - **MEETS CRITERIA** - GE SUPPLIED SYSTEM

10. **QUALITY ASSURANCE**

CRITERIA - NAR - LIMITED QA REQUIREMENTS BASED ON GENERIC LETTER 85-06

QCS - REVIEW INCOMPLETE AT THIS TIME.

11. **DISPLAY AND RECORDING**

CRITERIA - NEDO REQUIREMENT - CONTINUOUS RECORDING

QCS - REVIEW INCOMPLETE AT THIS TIME.

12. **EQUIPMENT IDENTIFICATION**

CRITERIA - NEDO REQUIREMENT - IDENTIFY IN ACCORDANCE WITH CRDR

QCS - **MEETS CRITERIA** - CONTROL ROOM DESIGN REVIEW COMPLETE WITH COMPONENTS ON PANELS IDENTIFIED AS REQUIRED.

13. **INTERFACES**

CRITERIA - NAR - NO INTERFERENCE WITH RPS TRIP FUNCTIONS

QCS - REVIEW INCOMPLETE AT THIS TIME.

14. **SERVICE, TEST AND CALIBRATION**

CRITERIA - NEDO REQUIREMENT - ESTABLISH IN-PLANT PROCEDURES

QCS - **MEETS CRITERIA** - PROCEDURES IN PLACE FOR NORMAL MAINTENANCE PROGRAM ON NMS.

15. **HUMAN FACTORS**

CRITERIA - NEDO REQUIREMENT - INCORPORATE HFE PRINCIPLES

QCS - **MEETS CRITERIA** - INCORPORATES HUMAN FACTOR ENGINEERING PRINCIPLES - RESOLUTION OF HUMAN ENGINEERING DISCREPANCIES IN PROCESS.

16. **DIRECT MEASUREMENT**

CRITERIA - NEDO REQUIREMENT - DIRECT MEASUREMENT OF NEUTRON FLUX

QCS - **MEETS CRITERIA** - NMS MEASURES NEUTRON FLUX DIRECTLY.

ATTACHMENT C

**SUMMARY COMPARISON OF
NEDO 31558 SECTION 5.0 WITH
LASALLE COUNTY NUCLEAR STATION
NEUTRON MONITORING SYSTEM INSTRUMENTATION
CONFIGURATION**

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1. **RANGE**

   CRITERIA - NEDO ALTERNATE REQUIREMENT (NAR) - 1 TO 100%

   LASALLE COUNTY STATION (LSCS) - **MEETS CRITERIA** - START UP RANGE AND POWER RANGE COVERS FROM ‹ 1% TO 100% RATE POWER.

2. **ACCURACY**

   CRITERIA - NAR - ± 2% OF RATE POWER

   LSCS - REVIEW INCOMPLETE AT THIS TIME - PROGRAM CURRENTLY UNDER DEVELOPMENT BY CECO TO PROVIDE LOOP CALCULATIONS. SCHEDULE FOR THIS SYSTEM NOT AVAILABLE.

3. **RESPONSE CHARACTERISTIC**

   CRITERIA - NAR - 5 SEC/10% CHANGE

   LSCS - **MEETS CRITERIA**

4. **EQUIPMENT QUALIFICATION**

CRITERIA - NAR - OPERATE IN ATWS ENVIRONMENT

LSCS - **MEETS CRITERIA** - FROM UFSAR SECTION 3.11 DATA THAT ATWS ENVIRONMENTAL CONDITIONS ARE WITHIN THE BOUNDING CONDITIONS FOR THE CASE WHICH ESTABLISHES NMS DESIGN REQUIREMENTS.

5. **FUNCTION TIME**

CRITERIA - NAR - 1 HOUR

LSCS - **MEETS CRITERIA** - STUCK OPEN RELIEF VALVE EVENT.

6. **SEISMIC QUALIFICATION**

CRITERIA - NAR - SEISMIC QUALIFICATION NOT REQUIRED

LSCS - **MEETS CRITERIA** -APPROPRIATE SAFETY RELATED PORTIONS OF POWER RANGE MONITORING SYSTEM ARE SEISMICALLY QUALIFIED.

7. **REDUNDANCY AND SEPARATION**

CRITERIA - NAR - REDUNDANCY TO ASSURE RELIABILITY

LSCS - **MEETS CRITERIA** - IRM/APRM ARE DESIGNED TO MEET IEEE 279 REDUNDANCY AND SEPARATION REQUIREMENT.

8. **POWER SOURCES**

CRITERIA - NAR - UNINTERRUPTABLE AND RELIABLE POWER SOURCES

LSCS - REVIEW INCOMPLETE AT THIS TIME.

9. **CHANNEL AVAILABILITY**

CRITERIA - NEDO REQUIREMENT - AVAILABLE PRIOR TO ACCIDENT

LSCS - **MEETS CRITERIA** - GE SECTION 2.6 AND RESEARCH NPRDS DATA BASE DURING PERIOD FROM 1985 TO 1991.

10. **QUALITY ASSURANCE**

CRITERIA - NAR - LIMITED QA REQUIREMENTS BASED ON GENERIC LETTER 85-06

LSCS - **MEETS CRITERIA** - LAS Q-LIST, TAB NR - CECO QA PROGRAM BOUNDS GL 85-06 REQUIREMENTS.

11. **DISPLAY AND RECORDING**

CRITERIA - NEDO REQUIREMENT - CONTINUOUS RECORDING

LSCS - **MEETS CRITERIA** - SRM, IRM AND APRM ARE MONITORED BY RECORDERS; EVERY NMS CHANNEL ASSOCIATED WITH RPS DIV A OR B MAY BE SELECTED BY OPERATOR FOR CONTINUOUS RECORDING.

12. **EQUIPMENT IDENTIFICATION**

CRITERIA - NEDO REQUIREMENT - IDENTIFY IN ACCORDANCE WITH CRDR

LSCS - **MEETS CRITERIA** - CONTROL ROOM DESIGN REVIEW COMPLETE WITH NO HED's IDENTIFIED.

13. **INTERFACES**

CRITERIA - NAR - NO INTERFACES WITH RPS TRIP FUNCTIONS

LSCS - **MEETS CRITERIA** - NMS CONFORMS WITH REQUIREMENTS FOR ISOLATION AND ASSOCIATION OF SAFETY-RELATED AND NON-SAFETY RELATED CIRCUITS.

14. **SERVICE, TEST AND CALIBRATION**

CRITERIA - NEDO REQUIREMENT - ESTABLISH IN-PLANT PROCEDURES

LSCS - **MEETS CRITERIA** - PROCEDURES IN PLACE FOR CALIBRATION AND FUNCTIONAL TESTING OF SRM, IRM, LPRM AND APRM.

15. **HUMAN FACTORS**

CRITERIA - NEDO REQUIREMENT - INCORPORATE HFE PRINCIPLES

LSCS - **MEETS CRITERIA** - INCORPORATES HUMAN FACTOR ENGINEERING PRINCIPLES

16. **DIRECT MEASUREMENT**

CRITERIA - NEDO REQUIREMENT - DIRECT MEASUREMENT OF NEUTRON FLUX

LSCS - **MEETS CRITERIA** - NMS MEASURES NEUTRON FLUX DIRECTLY.