Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515

October 14, 1991

Dr. Thomas E. Murley, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attn: Document Control Desk

Subject: Dresden Nuclear Power Station Units 2 and 3
Application for Amendment to Facility Operating Licenses
DPR-19 and DPR-25, Appendix A, Technical Specifications
NRC Docket Nos. 50-237 and 50-249

References:
(a) Conference call on December 20, 1990 between CECo (M. Richter) and NRR (B. Siegel).

(b) R. Stols (CECo) letter to T.E. Murley (NRC), dated December 18, 1990, transmitting Application for Amendment to Facility Operating License DPR-29 Appendix A, Technical Specifications.

(c) R. Stols (CECo) letter to T.E. Murley (NRC), dated April 18, 1991, transmitting Application for Amendment to Facility Operating License DPR-30 Appendix A, Technical Specifications

Dear Dr. Murley:

Pursuant to 10 CFR 50.90, Commonwealth Edison Company (CECo) proposes to amend Appendix A, Technical Specifications, of Facility Operating Licenses DPR-19 and DPR-25. This amendment was discussed with your Staff in the Reference (a) teleconference. The proposed amendment incorporates the scram setpoint and calibration frequency requirement for the turbine control valve fast acting solenoid valve pressure switches which initiate the turbine generator load rejection (turbine control valve fast closure) scram. The amendment request is similar to those previously submitted by References (b) and (c) for Quad Cities Station.

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The proposed amendment request is provided in the following manner:

- Attachment 'A' provides a description of the amendment request and environmental assessment.
- Attachment 'B' provides a summary of the proposed changes to the Technical Specifications.
- Attachment 'C' provides the marked-up Technical Specification pages with the requested changes.
- Attachment 'D' describes CECo's evaluation pursuant to 10 CFR 50.92 (c), which confirms that no significant hazards consideration is involved.
- Attachment 'E' provides an overview on the operation of the Electro-Hydraulic Control (EHC) system to assist in the Staff's review of the proposed amendment.
- Attachment 'F' provides the pressure switch setpoint calculation and associated documentation.

The proposed amendments have been reviewed and approved by CECo On-Site and Off-Site Review committees in accordance with company procedures.

To the best of my knowledge and belief, the statements contained herein are true and correct. In some respects these statements are not based on my personal knowledge, but obtained information furnished by other CECo employees, contract employees, and consultants. Such information has been reviewed in accordance with company practice, and I believe it to be reliable.

CECo is notifying the State of Illinois of this application for amendment by transmitting a copy of this letter and its attachments to the designated State Official.

Please contact this office should further information be required.

Respectfully,

Milton H. Richter

Milton H. Richter
Nuclear Licensing Administrator

Attachments: A - Description of Amendment Request and Environmental Assessment
B - Summary of Proposed Changes
C - Proposed Changes to Technical Specification Pages
D - Evaluation of Significant Hazards Consideration
E - Operation of the Electro-Hydraulic Control (EHC) System
F - Pressure Switch Setpoint Determination

cc: A.Bert Davis, Regional Administrator - Region III
B.L. Siegel, Project Manager - NRR
W.G. Rogers, Senior Resident Inspector - Dresden
Illinois Department of Nuclear Safety

Signed before me on this 14th day
of October, 1991,
by _____
Notary Public

" OFFICIAL SEAL "
SANDRA C. LARA
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 6/25/94

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ATTACHMENT A

DESCRIPTION OF PROPOSED AMENDMENT

AND ENVIRONMENTAL ASSESSMENT

INTRODUCTION

This amendment proposes to revise the Technical Specifications for Dresden Units 2 and 3 (Facility Operating Licenses DPR-19 and DPR-25, respectively) in order to reflect the current turbine control valve fast acting solenoid valve design, which utilizes a pressure switch to initiate the turbine generator load rejection scram (turbine control valve fast closure scram) function. To reflect the current fast acting solenoid valve design, the amendment proposes revisions to the following sections of the Technical Specifications: Section 2.1.F ('Limiting Safety System Setting') and associated Bases; Table 3.1.1 ('Reactor Protection System (Scram) Instrumentation Requirements'); and Table 4.1.2 ('Scram Instrumentation Calibrations/Minimum Calibration Frequencies for Reactor Protection Instrument Channels') and associated Bases.

CURRENT SYSTEM CONFIGURATION

The Dresden Station (Units 2 and 3) turbine generator design is provided with a power/load unbalance circuit which compares generator load (stator amps) to turbine thermal power (turbine crossover pressure). When a mismatch of greater than forty percent (40%) exists, the power/load unbalance relay will energize the fast acting solenoid valves (FASV) on the turbine control valves which causes the control valves to rapidly close (by decreasing the Electro-Hydraulic Control fluid pressure which positions the control valves). The fast closure of the control valves is to prevent overspeed of the turbine generator rotor (and prevent any potential damage). In order to avoid exceeding the Minimum Critical Power Ratio (MCPR) safety limit, a scram signal is generated to mitigate the anticipated rapid increase in reactor pressure and neutron flux due to the fast closure of the turbine control valves coupled with the subsequent failure of the bypass valves. This scram (turbine generator load rejection scram/turbine control valve fast closure scram) signal is initiated by a pressure switch (at each FASV) which senses the decreasing Electro-Hydraulic Control fluid (Fluid Actuator Supply Trip Control (FASTC) fluid) pressure. Attachment 'E' of this submittal provides an overview of the Electro-Hydraulic Control (EHC) System operation.

The current FASV design, with respect to the turbine generator load rejection scram, was modified in 1984 for each unit. In the original plant design, the turbine generator load rejection scram was initiated by limit switches on the FASVs. In response to General Electric (GE) Technical Information Letter 848, Dresden Station replaced the original equipment FASVs (manufactured by Vickers) with Parker-Hannifan FASVs. The Parker-Hannifan FASVs have a pressure port for a pressure switch to sense EHC fluid (FASTC) pressure for initiation of the turbine generator load rejection scram signal. The Parker-Hannifan FASV design has been used on GE turbines since 1976.

Currently, the Technical Specifications for Units 2 and 3 reflect the plant's original turbine control valve FASV design, which initiated the turbine generator load rejection scram by FASV limit switches. With the current FASV design, the Technical Specifications for each unit need to be revised to incorporate the Limiting Safety System Setting and calibration frequency for the FASV pressure switches.

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SECTION 2.1.F AND TABLE 3.1.1

Currently, Technical Specification Section 2.1.F ('Limiting Safety System Setting') and Table 3.1.1 ('Reactor Protection System (Scram) Instrumentation Requirements') specify that the generator load rejection scram initiates upon actuation of the FASVs, reflecting the original FASV design. The proposed amendment revises Section 2.1.F (and associated Bases) and Table 3.1.1 to reflect the FASV pressure switch design and a trip level setting of greater than or equal to 460 psig (EHC fluid pressure-FASTC).

The trip level setting for the FASV pressure switches was calculated by GE (see Attachment 'F'). The calculation was originally performed for Quad Cities Station; however, GE has indicated that the calculation is also applicable to Dresden Station (see GE letter in Attachment 'F') provided:

- The pressure switches installed at Dresden Station are the same model as those installed at Quad Cities Station.

- The FASTC fluid function is similar for both stations such that the mechanism for turbine control valve fast closure is the same.

- The pressure switch location at Dresden Station is similar to Quad Cities Station such that instrument line length has insignificant impact on pressure switch response.

The turbine control valve FASV pressure switches at each station are Barksdale model TC9622-3. The EHC System for each turbine generator unit at Dresden and Quad Cities Stations is a Mark I design, with a nominal system operating pressure of approximately 1600 psig for each system. The function of the turbine control valve FASVs and EHC fluid (FASTC) are identical for each station. The EHC fluid (FASTC) is used by the control valve actuator to position the control valve during normal operation. On a power/load unbalance (turbine generator load rejection) signal, the FASVs initiate rapid closure of the control valves by decreasing the EHC fluid (FASTC) pressure in the control valve actuator (for a more complete description see Attachment 'E' of this submittal). With respect to pressure switch response, the FASVs at each station are attached to the control valve actuator, with the pressure switches located approximately 6 to 12 inches from the FASV. The instrument tubing from the FASTC port on the FASV to the pressure switch is less than 2 feet at each station; therefore, this similar arrangement between the stations ensures that pressure switch response will not be significantly different. Based on these comparisons, Commonwealth Edison has concluded that GE's setpoint calculation is applicable to Dresden Station.

The FASV pressure switch setpoint calculation was performed utilizing GE methodology contained in NEDC-31336, "General Electric Instrument Setpoint Methodology", dated October 1986. Based on design documents, GE defined the lower bound for the setpoint calculation to be 400 psig (defined as the analytical limit). This lower bound value ensures that the trip signal will be generated within 30 milliseconds after the start of the control valve fast closure. Through the methodology contained in NEDC-31336, the allowable value (Technical Specification value) was determined to be equal to or greater than 460 psig. In addition, GE recommended a nominal trip setpoint of 590 psig to be consistent with an eighteen (18) month calibration period (every refueling outage). The nominal setpoint is procedurally controlled.

TABLE 4.1.2

Currently, Technical Specification Table 4.1.2 ('Scram Instrumentation Calibrations/Minimum Calibration Frequencies for Reactor Protection Instrument Channels') does not require calibration of the turbine generator load rejection scram. The basis for not requiring calibration of these instrument channels is found in Section 4.1.A Surveillance Requirement Bases (page B 3/4.1-20). The Bases indicates that the device which provides the trip signal for the generator load rejection (turbine control valve fast closure) scram is a simple 'on-off' switch and, therefore, calibration is not applicable. To reflect the current FASV design, the proposed amendment revises Table 4.1.2 to require calibration of the FASV pressure switches every Refueling Outage. Additionally, the Bases (page B 3/4.1-20) will be revised to delete the description of the generator load rejection scram device as a simple 'on-off' switch.

As indicated previously, the proposed calibration frequency for the FASV pressure switches is once every Refueling Outage (typically, a Refueling Outage occurs every 18 months). The proposed frequency is consistent with the guidance contained in the proposed Revision 4 to NUREG-0123, "General Electric Standard Technical Specifications" (which is the latest revision in use) and is consistent with Technical Specifications for Boiling Water Reactor plants that were licensed in the 1980's. This calibration frequency is also consistent with the calculations for the allowable and nominal setpoints. The GE calculation which determined the FASV pressure switch trip setting for these amendments (see Attachment 'F') assumes an instrument drift of $\pm$104 psig for an eighteen (18) month period. The calibration frequency is, therefore, supported by setpoint calculations as well as current NRC philosophy.

During recent FASV pressure switch calibrations at Dresden Station, pressure switch drift has been observed. In some cases, this drift has resulted in the pressure switch setpoint being below the analytical limit (less that 400 psig) presented in the setpoint calculation. The analytical limit is conservatively defined as the EHC fluid (FASTC) pressure at which the pressure switch must trip in order to ensure that a Reactor Protection System (RPS) trip signal will be generated within 30 milliseconds after the start of control valve fast closure (which is consistent with the pressure switch response time assumed in the turbine generator load rejection event analysis). Recent FASV pressure switch response time testing at Dresden Station provides assurance that switch actuation will occur within the response time (30 milliseconds) assumed in the turbine generator load rejection event analysis.

The response time testing measured the time difference between initiation of control valve movement and actuation of the FASV pressure switch following initiation of a fast closure signal to a control valve. The testing was performed with the control valves initially in the full open position, which ensured that the results would bound the expected response times during normal plant operation (see General Electric letter dated January 28, 1991 in Attachment 'F'). The response time testing was performed at various pressure switch setpoints (from the nominal trip setpoint of 590 psig to 120 psig), and the results indicated that pressure switch actuation occurred within 30 milliseconds of control valve movement; thereby confirming that pressure switch setpoint drift had insignificant impact with respect to the pressure switch response time assumed in the turbine generator load rejection event analysis. These results are

TABLE 4.1.2 (continued)

attributed to the rapid decrease of the EHC fluid (FASTC) pressure, which is sensed by the pressure switch, during the turbine generator load rejection event (depressurization of EHC fluid pressure occurs in 10 milliseconds or less). Additionally, it should be noted that the nominal trip setting (590 psig) for the pressure switch is at a value which has pressure switch actuation occurring prior to control valve movement (see Attachment 'E' for further discussion).

TABLE 4.1.1

Currently, Technical Specification Table 4.1.1 ('Scram Instrumentation Functional Tests') requires a functional test of the turbine generator load rejection scram circuitry on a monthly basis. This testing cycles each control valve, and ensures that the FASV pressure switch for each valve de-energizes the appropriate Reactor Protection System (RPS) channel. The functional test requirement remains unchanged by this amendment request.

ENVIRONMENTAL ASSESSMENT

The proposed amendment to the Technical Specification reflects the currently installed turbine control valve FASV design, which utilizes a pressure switch to initiate the turbine generator load rejection scram function. The use of a pressure switch to initiate RPS is common throughout the industry. The pressure switch will be functionally tested on a monthly basis and calibrated every Refueling Outage to ensure its reliability.

The trip setpoint for the pressure switch ensures that RPS is actuated in sufficient time to avoid exceeding the MCPR safety limit. The use of the pressure switch will not result in increased environmental consequences and does not involve irreversible consequences beyond those already accepted by the NRC.

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ATTACHMENT B

SUMMARY OF PROPOSED CHANGES TO APPENDIX A,

TECHNICAL SPECIFICATIONS, OF OPERATING LICENSES

DPR-19 and DPR-25

Page 1/2.1-5

- Delete "shall initiate upon actuation of the fast closure solenoid valves which trip the turbine control valves."
- Add "which initiates from actuation of the fast acting solenoid valve pressure switches shall be greater than or equal to 460 psig EHC fluid pressure."

Page B 1/2.1-15

- Add "The trip setpoint of greater than or equal to 460 psig EHC fluid pressure was developed to ensure that the pressure switch is actuated prior to closure of the turbine control valves (at approximately 400 psig EHC fluid pressure) yet assure that the system is not actuated unnecessarily due to EHC system pressure transients which may cause EHC system pressure to momentarily decrease."

Page 3/4.1-5

- Add "(GT/E) 460 psig" to Trip Level Setting for the Generator Load Rejection scram.
- Add ", turbine control valve trip system oil pressure low" to the trip function description.

Page 3/4.1-7

- Replace existing "*****" note with: "Trip is indicative of turbine control valve fast closure (due to low EHC fluid pressure) as a result of fast acting solenoid valve actuation."

Page 3/4.1-10

- Add to Table 4.1.2: "Generator Load Rejection, A, Pressure Source, Once per Refueling Outage".

Page B 3/4.1-16

- Add a new paragraph:

  "The turbine control valve fast acting solenoid valve pressure switches directly measure the trip oil pressure that causes the turbine control valves to close in a rapid manner. The reactor scram setpoint was developed in accordance with NEDC-31336, "General Electric Instrument Setpoint Methodology" dated October, 1986. As part of the calculation, a specific calibration period is utilized to achieve a nominal trip point and an allowable setpoint (Technical Specification value). The nominal setpoint is procedurally controlled. Based on the calculation input, the calibration period is defined to be every Refueling Outage."

Page B 3/4.1-20

- Delete: "Generator Load Rejection,"

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