Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515

10 CFR 50.90

March 26, 1993

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 to Amendment to Facility Operating
Licenses DPR-19 and DPR-25;
Appendix A, Technical Specifications
NRC Docket Nos. 50-237 and 50-249

Dear Dr. Murley:

Pursuant to 10 CFR 50.90, Commonwealth Edison (CECo) proposes to amend Appendix A, Technical Specification, of Facility Operating Licenses DPR-19 and DPR-25. The purpose of this amendment request is to modify the allowable trip level settings for the Isolation Condenser and HPCI Steam lines to more conservative values. A revision to the ECCS Low-Low Water Level initiation trip level setting tolerance is also proposed. CECo requests approval of this amendment request within 90 days of receipt. It is requested that the proposed changes be made effective 45 days after approval.

This proposed amendment is subdivided as follows:

1. Attachment A gives a description and safety analysis of the proposed changes in this amendment.

2. Attachment B includes the marked-up Technical Specification pages with the requested changes indicated for Dresden and Quad Cities Station.

3. Attachment C describes CECo's evaluation performed in accordance with 10 CFR 50.92(c), which confirms that no significant hazards consideration is involved.

4. Attachment D provides the Environmental Assessment.

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The proposed amendment has 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 above are true and correct. In some respect these statements are not based on my personal knowledge, but obtained information furnished by other Commonwealth Edison employees, contractor employees, and consultants. Such information has been reviewed in accordance with company practice, and I believe it to be reliable.

Commonwealth Edison is notifying the State of Illinois of this application for amendment by transmitting a copy of this letter and its attachment to the designated state official.

Please direct any questions you may have concerning this submittal to this office.

Sincerely,

Peter L. Piet
Nuclear Licensing Administrator

Attachments:

A. Description of Safety Analysis of the Proposed Changes
B. Marked-up Technical Specification Pages
C. Evaluation of Significant Hazards Consideration
D. Environmental Assessment

cc: A.B. Davis - Regional Administrator, RIII
M.N. Leach - Senior Resident Inspector - DNPS
J.F. Stang - NRR, Project Manager - Dresden
Office of Nuclear Facility Safety - IDNS

Signed before me on this 26 day of March, 1993,
by Maryellen D. Long
Notary Public

" OFFICIAL SEAL "
MARYELLEN D. LONG
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 8/11/93

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ATTACHMENT A

DESCRIPTION AND SAFETY ANALYSIS OF THE PROPOSED AMENDMENT TO FACILITY OPERATING LICENSES DPR-19 AND DPR-25, APPENDIX A, TECHNICAL SPECIFICATIONS DRESDEN UNITS 2 AND 3

BACKGROUND

- Primary Containment Isolation Instrumentation Table 3.2.1 within Dresden Station's Technical Specifications lists 150 inches of water differential as the trip level setting for HPCI Steamline High Flow Isolation. Dresden Station proposes to change the trip level setting for HPCI Steamline High Flow Isolation to less than or equal to 300% steam flow based on plant specific data obtained from tests recommended by General Electric Co. (GE) in Services Information Letter No. 475 (SIL-475). SIL-475 alerted licensees to an inconsistency in the original calculational methodology utilized in the determination of the original setpoint.

  Dresden also proposes to change the Isolation Condenser Steamline High Flow Isolation trip level settings to less than or equal to 300% steam flow for both Units 2 and 3 based on plant specific data obtained from tests recommended by NRC Information Notice (IEN) 82-16. Technical Specification Table 3.2.1 lists for High Flow Isolation/Condenser Line Steamline Side, the trip level setting to be less than or equal to 20 psi differential on the steamline side. In IEN 82-16, licensees were warned of a potential problem concerning incorrect high steam flow isolation setpoints found on the HPCI and RCIC systems.

  For the trip level settings requested above, Dresden proposes to revise Table 3.2.1 to read "less than or equal to 300% rated steam flow" to be consistent with the format of the BWR Standard Technical Specifications (NUREG-0123, Revision 4).

- Dresden Station Technical Specification Table 3.2.2 lists instrumentation that initiates or controls the Core and Containment Cooling Systems. The trip level settings and minimum number of operable instrument channels per trip system are included in Table 3.2.2. Within Table 3.2.2 is the trip function and trip level setting for Fuel Clad Integrity Limiting Safety System Setting (LSSS) (Specification 2.1.D) for Reactor Low-Low Water Level. The current setting at Dresden Station for Reactor Low-Low Water Level is 84 inches (+ 4, - 0 inches) above top of active fuel (TAF). Top of active fuel is defined as 360 inches above vessel zero for all water levels used in the LOCA analyses. This limit is different than the requirement specified for Quad Cities Station ($\geq$ 84 inches above TAF).

  Due to minor fluctuations of the system, Dresden Station has experienced many instances where the setting has been found to be greater than 84 (+ 4) inches of water level. Although these fluctuations resulted in a more

conservative trip setting (earlier than required ECCS initiation), the result is a creation of a reportable event. To avoid unnecessary reportable events and to maintain consistency between Dresden and Quad Cities' requirements where no technical basis exists for the difference, Dresden proposes changing the Reactor Low-Low Water Level trip level setting tolerance to be consistent with Quad Cities' requirements and the format of the BWR Standard Technical Specifications (NUREG-0123, Revision 4).

CURRENT REQUIREMENTS

Technical Specification Table 3.2.1 lists 150 inches of water differential as the trip level setting for HPCI Steamline High Flow. This value is designed to provide isolation capability in the event that the HPCI steam supply line suffers a break. At the time of initial licensing, 150 inches of water differential was determined by General Electric to be equivalent to approximately three times rated steam flow (300%). 300% steam flow was recommended by GE to be the analytical limit for the detection of steam line breaks.

Two differential pressure transducers are designed to trip when a differential pressure equivalent to 300% rated steam flow is experienced. 300% steam flow provides margin to allow momentary peaks in startup flow rates and to ensure a trip would occur during an actual pipe break. Normal flow rates have been measured in excess of 250% of rated steam flow during startup or transient conditions.

Technical Specification Table 3.2.1 lists the Isolation Condenser Steamline High Flow Isolation trip level setting to be less than or equal to 20 psi differential. This value has been established to isolate on high steam flow prior to reaching 300% rated steam flow. 300% rated steam flow is the analytical limit for the Isolation Condenser line. 300% rated steam flow provides margin to allow normal flow rates and to ensure a trip would occur during a pipe break. Normal flow rates have been measured at up to 272% of rated steam flow during startup or transient conditions.

Table 3.2.2 for Dresden Station lists the instrumentation requirements for actuation of the ECC Systems on Reactor Low-Low Water Level. The current requirement for Dresden Station is specified at 84 inches (+4, -0 inches) above TAF. The same trip level setting at QCS is set at $\geq$ 84 inches above TAF. The current setting at Dresden Station has resulted in many instances where the setting has been found to be greater than 84 (+ 4) inches of water level. These fluctuations resulted in a more conservative trip setting (higher water level for low-low level) but was required to be reported as the as-found conditions exceeded the Technical Specification tolerance. To avoid unnecessary reportable events and to maintain consistency between Dresden and Quad Cities' requirements where no technical basis exists for the difference, Dresden proposes changing the Reactor Low-Low Water Level to greater than or equal to 84 inches above TAF.

DESCRIPTION AND SAFETY SIGNIFICANCE OF THE PROPOSED CHANGES

HPCI Steamline High Flow Isolation Trip Level Setting

The leak detection (isolation) instrumentation in HPCI/RCIC systems are designed to detect a break in system piping. Isolation would occur if flow

exceeds 300% of the system's high process flow conditions. With a postulated break, flows up to 500% of rated can be expected.

GE SIL-475 Recommendations

Some utilities performed tests to confirm the acceptability of using the current Analytic Limits as a basis for the setpoints for the isolation instrumentation. The results of these tests showed that the original method of converting from 300% of rated flow to a differential pressure value may not have been conservative with respect to the Analytic Limits which require initiation of HPCI/RCIC system isolation at 300% of rated flow. GE recommended utilities to review the results of startup testing and determine if changes to the isolation setpoint were necessary. If startup testing data results were inconclusive, GE recommended calculating the 300% rated flow from an updated equation. GE's equation included measured data for reactor pressure, HPCI pump discharge pressure, measured differential pressure from each HPCI transmitter, and the system flow rates into the condensate storage tank.

Calculational Results

Dresden performed the tests recommended by GE SIL-475 in September 1988. The results of the testing and subsequent calculations yielded new setpoints equivalent to $\leq$ 300% steam flow. The proposed field settings of $\leq$ 300% steam flow are different for the two units due to differences in piping geometry. Although the current Technical Specification value (150 inches) meet the design requirement and provides an adequate margin of protection, the revised values ensure the station is at an minimum point of susceptibility to spurious trips while still maintaining margin to the 300% analytical limit. There are no changes necessary to the Technical Specification Bases as the intent of the new specifications is identical to the original.

Isolation Condenser Steamline High Flow Isolation Trip Level Setting

The purpose of the Isolation Condenser is to provide reactor core cooling in the event that the reactor becomes isolated from the main condenser by closure of the main steam isolation valves. The Isolation Condenser cools the core without loss of water inventory.

In NRC Information Notice (IEN) 82-16, the NRC informed licensees of potential problems concerning incorrect high steam flow isolation setpoints found on the high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) systems. High steam flow setpoints are normally derived by design calculations (performed by GE) and confirmed or revised based on startup testing at the individual BWR facilities. The setpoints are typically established at 300% of measured rated steam flow.

The incorrect setpoint discussed in IEN 82-16 was based upon a noted difference in the design calculation setpoint that was not updated to reflect a measured, tested data set. GE recommended that utilities review plant

startup test data to ensure HPCI/RCIC flow setpoints were consistent to FSAR limits. If inconsistencies were discovered, changes should be incorporated. However, the problem of spurious isolations also need consideration to avoid making a setpoint that was too conservative. The NRC recognized that some licensees have installed time delay instrumentation to reduce the possibility of spurious signal isolations.

Test Methodology

The purpose of the test was to determine the apparent flow characteristics of the elbow flow instrument in the steam line to the Isolation Condenser to determine the high flow setpoint. The method used was to set the reactor at a relatively constant power level with two (2) steam bypass valves open, and then open the steam line to the Isolation Condenser. Flow through the condenser was controlled by throttling valve MO 3-1301-3 in the Isolation Condenser condensate return line to the reactor vessel. Two data points were obtained with the throttling valve in an approximately 10% open position (the normal operating position set with limit switches). One data point was obtained with the throttling valve closed an additional 1/2 inch from the 10% position.

Before opening the steam line to the Isolation Condenser, and at each of the subsequent valve positions, Dresden Operations personnel recorded APRM readings to indicate core power, feedwater flow rate, steam and feedwater enthalpy, and bypass valve position (as a fraction of full open). Also, steam pressure and temperature to the isolation condenser, and condensate temperature were recorded. The differential pressure at the elbow flow instrument was recorded.

Calculational Results

An estimate of Isolation Condenser heat removal rate was obtained by taking the difference between the apparent reactor heat output before and after opening the steam line to the Isolation Condenser. A heat and mass balance was performed for the Isolation Condenser using the estimated isolation condenser heat removal rate. The flow constant for the elbow flow instrument was calculated using the calculated steam flow rate to the Isolation Condenser and the measured differential pressure at the elbow flow instrument. Using this information, GE calculated a differential pressure equivalent to 300% steam flow. A complete discussion of the calculational methodology is discussed in Reference 1.

Significance of the Proposed Change

As stated in Reference 1, GE's review indicated that the current Technical Specification limit of 20 psi (equivalent to 554.6 inches water) differential was equivalent to 336% steam flow. Therefore, the current limit is less conservative from the design intent of initiating line break protection at 300% flow. This deviation is of minimal safety significance because actual line breaks would cause steam flow to be an order of magnitude higher than 300%. GE recommended a new instrument setting equivalent to $\leq$ 300%

rated steam flow. This setpoint includes a conservative adjustment for instrument loop accuracy, drift, channel error, process measurement accuracy and primary element accuracy.

Although the current Technical Specification limit is 554.6 inches water differential, Dresden Instrument Surveillance DIS-1300-2 requires a field setting of 400 $\pm$ 5 inches water differential which is more conservative as compared to 300% steam flow. Station records have shown that this field setting has been maintained since at least 1973. Therefore, the conservative limit of $\leq$ 300% steam flow has been maintained since that time.

Conclusion

The proposed Technical Specification limit of $\leq$ 300% rated steam flow is more conservative than the existing limit. The system will continue to isolate on high steam line flow to prevent uncovering the core and/or exceeding the site exposure limits. Changes to the Technical Specification Bases are necessary to change the trip level setting discussions.

Reactor Low-Low Water Level ECCS Actuation Trip Level Setting Tolerance

The ECCS Reactor Low-Low Water Level Actuation trip setting is designed to initiate the ECCS when reactor water level is less than or equal to 444 inches above vessel zero (with TAF defined as 360 inches above vessel zero, -59 inches indicated level is 84 inches above the TAF). This trip initiates the ECC (Emergency Core Cooling) subsystems and starts the emergency diesel generators. This trip setting level was chosen to be low enough to prevent spurious operation but high enough to initiate ECCS operation and the diesel generators so that no melting of the fuel cladding will occur; and so that post accident cooling can be accomplished and the guidelines of 10 CFR 100 will not be exceeded.

For the complete circumferential break of a 28-inch recirculation line and with the trip setting at 444 inches, ECCS are initiated in time to meet the above criteria. The low-low water level instrumentation also encompasses detection of the full spectrum of breaks and meets the above criteria.

Reduction in Investigation and Reporting of Minor Deviations

The present requirements at Dresden Station have historically resulted in several unnecessary Deviation Reports being generated by the Station due to the level switches being found outside of the tolerances specified by Station procedures or the Technical Specifications. The purpose of the proposed amendment request is to enable the site to set the trip setting at a value conservatively greater than the current level within the tolerances allowed by the Technical Specifications. Although the Technical Specification absolute low-low limit remains unchanged (84 inches), by allowing a higher instrument setting, the Station will be able to calibrate the instrument to a slightly higher, yet more conservative limit. Any subsequent as-found

indications in the negative, less conservative direction would be less likely to fall below the absolute limit of 84 inches.

A minor change to the Technical Specification Bases is being proposed for inclusion with the above mentioned changes for Reactor Low-Low Water Level. For clarification and consistency to the Quad Cities requirements, the Bases are being modified to clarify that the ". . . trip setting level was chosen to be low enough to prevent spurious operation but high enough to initiate ECCS operation . . . " This change is minor and administrative in nature and has no impact on plant operation.

SUMMARY

The revised HPCI Steamline Flow Isolation setpoint does not adversely impact plant safety at Dresden Station. Although the current values (150 inches) meet the design criteria and provide an adequate margin of protection, the revised values ensure the station is at an minimum point of susceptibility to spurious trips while still maintaining margin to the 300% analytical limit.

The revised Isolation Condenser Steamline High Flow Isolation trip level setting does not adversely impact plant safety at Dresden Station. The proposed limit ($\leq$ 300% steam flow) is more conservative than the existing limit. The Isolation Condenser system will continue to isolate on high steam line flow to prevent uncovering the core and/or exceeding the site exposure limits.

The revised Reactor Low-Low Water Level trip level setting tolerance does not adversely impact plant safety at Dresden Station. The purpose of the proposed amendment request is to enable the site to set the trip setting at a value greater than the current level within the tolerances allowed by the Technical Specifications. The new limit is more conservative than the existing limit such that the probability of the instruments to drift below 84 inches will be significantly reduced. This change will result in an enhancement to the safe operation of Dresden Station and will continue to remain low enough to prevent premature initiation.

SCHEDULE

The proposed change to the HPCI, Isolation Condenser, and the Reactor Low-Low Water Level instrument settings will not require changes to the facility to implement. Therefore, it is requested that the proposed amendment request be processed within 90 days of receipt. It is requested that the package be made effective within 45 days upon issuance to allow the site sufficient time to incorporate the technical changes into Station procedures.

REFERENCES

1. GE Calculation: EAS 23-0387, March 1987, "Isolation Condenser High Steam Flow Setpoint Evaluation for the Dresden Station, Unit 3."