



March 12, 1997

JSPLTR: 97-0054

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555-0001

SUBJECT: Dresden Nuclear Power Station Units 2 and 3  
Additional Information Regarding Application for Amendment to Facility  
Operating Licenses DPR-19 and DPR-25, Appendix A, Technical  
Specifications, **Section 3/4.7.K, "Suppression Chamber," and Section  
3/4.8.C, "Ultimate Heat Sink."**  
Docket Nos. 50-237 and 50-249

- Reference:
- a) J. Stephen Perry Letter to U.S. NRC, dated February 17, 1997;  
Dresden Nuclear Power Station Units 2 and 3, Application for  
Amendment to Facility Operating Licenses DPR-19 and  
DPR-25, Appendix A, Technical Specifications, Section 3/4.7.K,  
"Suppression Chamber," and Section 3/4.8.C, "Ultimate Heat  
Sink."
  - b) J. Stephen Perry Letter to U.S. NRC, dated February 27, 1997,  
Dresden Nuclear Power Station Units 2 and 3, Additional  
Information Regarding Application for Amendment to Facility  
Operating Licenses DPR-19 and DPR-25, Appendix A, Technical  
Specification

Pursuant to 10 CFR 50.90, ComEd has requested your approval of changes to Facility Operating Licenses DPR-19 and DPR-25 through the above reference a. The purpose of this letter is to respond to a request for additional information based on the March 4, 1997 meeting with your Staff in Washington D.C. In response to your request, ComEd is providing 1) an additional set of long term (greater than 600 seconds) containment sensitivity analyses with lower service water temperatures and without the use of containment spray, 2) values for containment overpressure available versus time, 3) a discussion of operator actions based on the Dresden Emergency Operating Procedures, and 4) added margin above the current licensing basis. This letter re-transmits a portion of attachment 15 to reference (a) which was originally submitted with missing pages due to a xerographic reproduction error.

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### **Long Term Containment Sensitivity Analyses**

Long Term Analyses were performed to demonstrate the effect 1) of service water temperature variation and 2) of initiation time for LPCI containment spray mode on suppression pool temperature and pressure for the time period from 600 seconds until termination of the accident. The results indicate that variations in service water temperature is limited, with minimal impact on the ECCS pump NPSH calculations. The nominal containment performance predictions support that the operators would be expected to initiate and maintain spray flow throughout the post-LOCA period. This evaluation is included as attachment 1 to this letter.

### **Containment Overpressure**

In order to provide adequate net positive suction head for the low pressure ECCS pumps, ComEd proposes to credit the available containment pressure as outlined below:

Time Period (seconds)	Containment Overpressure (psig)
0-240	9.5
240-600	2.9
600-6000	1.9
6000-accident termination	2.5

This containment overpressure provides an NPSH margin of approximately 3.0 psig at time of PCT (~170 seconds). Under worst case accident conditions (i.e. LPCI loop select logic failure), the Core Spray and Low Pressure Coolant Injection Pumps cavitate from 260 to 600 seconds. Graphs of the available containment pressure and credited containment pressure are provided in attachment 2 to this letter.

The use of containment overpressure provides adequate NPSH margin for the ECCS pumps for both the short and long term scenarios and therefore ensures ECCS pump capability to demonstrate compliance with 10 CFR 50.46 within Dresden's current design basis. The staff issued NRC Bulletin 96-03 "Potential Plugging of emergency Core Cooling Suction Strainers by Debris in Boiling water Reactors," which raised the potential of a common mode failure of the ECCS. Dresden Station has been aggressively addressing this issue and has implemented a number of corrective actions. Examples include operator training to recognize pump cavitation, enhancement of Foreign Materiel Exclusion practices for the drywell and torus and cleaning both suppression pools during the last two refueling outages. Furthermore, Dresden plans to install new strainers during the upcoming Unit 3 refueling outage. Dresden Station believes that the new strainers will resolve the Staff's concerns relative to ECCS performance raised by IEB 96-03 and will provide long-term assurance that the requirements of 10 CFR 50.46 are met. Compliance

with NRC Bulletin 96-03 will be demonstrated in accordance with our schedule as outlined in letters dated October 31, 1996 and February 26, 1997.

### **Operator Response based on Emergency Operating Procedures**

The operator's actions are governed by the plant parameter's which exist during the accident scenario. The Emergency Operator Procedures (EOP's) direct operator action based on symptoms and not specified time periods. The operator may perform steps in multiple EOP's concurrently. During the DBA-LOCA, the operator's priorities include vessel level and ensuring that the containment design limits are not exceeded. The operator responds by use of the available safety and non-safety systems to maintain level, and use of LPCI containment spray and the LPCI containment cooling modes to control the drywell and suppression pool parameters. A more detailed explanation of the operator's actions based on containment parameters is provided in attachment 3 to this letter.

### **Added Margin above Current License Basis**

**Peak Clad Temperature**-The proposed License Amendment shows a Peak Clad temperature of 2030 degrees F at approximately 170 seconds. This analysis was done at a Core Spray flow rate of 11,300 gpm (5650 gpm per pump), with a failure of the LPCI injection valve assumed. The present License Basis shows a PCT of 2163 at approximately 170 seconds after the Design Basis-LOCA with a Core Spray flow rate of 10,552 gpm (5276 gpm per pump). The proposed License Amendment provides higher Core Spray flowrates and lower Peak Clad Temperature which results in additional margin to the PCT limit of 2200 degrees F.

**NPSH Margin**-The present License basis indicates that LPCI and Core Spray pump cavitation will occur for the entire short term (10 minute) period post accident, resulting in reduced pump flows and a higher Peak Clad Temperature. The proposed License amendment shows that no pump cavitation occurs until 260 seconds post accident; therefore, no flow reduction takes place before this time. The following items provide an explanation of additional NPSH margin:

- The current license basis for reduced flow under cavitation is based on reduced NPSHR curves, the proposed license amendment is based on the manufacturer's published NPSHR curve
- Actual Core Spray flow at the highest Peak Clad Temperature (~170 seconds) is 11,600 gpm whereas the PCT analysis assumes 11,300 gpm

- Core Spray flow for core reflood is as follows\*:

Time seconds	Available gpm	Required gpm
0-170	11,600	11,300
170-300	>10,200	9,000
>300	10,200	1,500

- Analysis includes closeout of Containment Cooling Service Water Issues  
LPCI heat exchanger heat transfer rate of 71 MBTU/hr at a CCSW flowrate of 5000 gpm and a LPCI flowrate of 5000 gpm  
2 pump CCSW flowrate of 5000 gpm  
20 psid differential pressure to ensure no radioactive release across the LPCI to CCSW interface at the LPCI heat exchanger

\*Reference 2, 28 and 30 to reference (a)

This submittal contains items which are proprietary in nature to General Electric Company. ComEd has provided the material which is considered proprietary in attachment 4 and requests that all material in attachment 4 be withheld from public disclosure. ComEd has included an affidavit per the requirements of 10 CFR 2.790 (b) explaining the reasons and circumstances for withholding the applicable information from public disclosure.

The information provided herein has been reviewed by the onsite review groups in accordance with Company procedures and policies.

ComEd 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.

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

USNRC  
March 12, 1997

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If there are any questions regarding this issue, please contact Frank Spangenberg of my staff at (815) 942-2920, extension 3800.

Sincerely,



J. Stephen Perry  
Site Vice President  
Dresden Station

Signed before me on this 12 day,

March, 1997,

by Sherry L. Butterfield  
Notary Public



- Attachments: 1) NFS:BSH:97-034 Transmittal of Containment Post LOCA Sensitivity Analysis
- 2) Graphs of Available and Credited Containment Overpressure
- 3) Operator Actions based on Dresden Emergency Operating Procedures
- 4) Proprietary Document NEDE-30911-SHEX-04-User Manual dated August 1985.

cc: A. Bill Beach, Regional Administrator - RIII  
Senior Resident Inspector -Dresden  
J. F. Stang, Dresden Project Manager, NRR  
Office of Nuclear Facility Safety - IDNS