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 DENTON, H. R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Revised application for amend to License DPR-74. Amend  
 reflects addl limitation on nuclear enthalpy rise hot  
 channel factor due to new LOCA/ECCS analysis in support of  
 Cycle 5 reload. Application part of 840301 submittal.

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# INDIANA & MICHIGAN ELECTRIC COMPANY

P.O. BOX 16631  
COLUMBUS, OHIO 43216

May 21, 1984  
AEP:NRC:0860K

Donald C. Cook Nuclear Plant Unit No. 2  
Docket No. 50-316  
License No. DPR-74  
REVISION TO THE APPLICATION FOR CHANGES TO THE  
UNIT 2 TECHNICAL SPECIFICATION FOR THE CYCLE 5 RELOAD

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Denton:

This letter and its attachments constitute a revision to our application (AEP:NRC:0860, dated March 1, 1984) for amendment to the Donald C. Cook Nuclear Plant Unit No. 2 Appendix A Technical Specifications (T/S). This proposed revision is in response to concerns raised by the NRC during the review of our proposed Unit 2 Cycle 5 reload license application. Specifically, the proposed change reflects an additional limitation on the nuclear enthalpy rise hot channel factor ( $F_{\Delta H}^N$ ), due to the new LOCA/ECCS analysis. The analysis was performed in support of the Cycle 5 reload as a result of your staff's review.

Attachment 1 to this letter provides the results and bases of the new LOCA/ECCS analysis as it relates to  $F_{\Delta H}^N$ . The analysis was performed by our fuels vendor (Exxon Nuclear, Co.). The results of this analysis were not available to us until May 18, 1984. We met with your staff on May 18, 1984 in an open meeting to discuss the results of the new analysis and our suggested T/S changes. We have revised the proposed T/S based on the NRC's comments. Due to the fact that our Unit 2 startup (i.e., entry into MODE 4) is currently scheduled for June 10, 1984 and that we were only able to verify the need for the proposed change very recently, we request that the time for notice and publication in the Federal Register be shortened on schedule commensurate with our scheduled reload startup date.

Based on our review, the proposed change to the technical specification is based on analytical methods which we were told were found acceptable to the NRC. In addition, the results of the analysis are within all acceptance criteria with respect to the ECCS. Therefore, we believe the proposed change does not involve a significant hazards consideration as defined in 10 CFR 50.92. In addition, since the proposed T/S keeps the plant within all design bases, the change will not adversely impact the environment.

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Attachment 2 to this letter contains the proposed revised T/S pages. The changes are indicated by vertical bars drawn on the right hand margin of the page.

The proposed changes have been reviewed by the Plant Nuclear Safety Review Committee and will be reviewed by the Nuclear Safety and Design Review Committee at its next meeting.

Pursuant to the requirement of 10 CFR 50.91(b)(1), a copy of this letter and its attachments have been transmitted to the State of Michigan. In addition, commensurate with our request for shortening the period for notice and publication in the Federal Register, we notified the State of Michigan by telephone on May 21, 1984 of this requested amendment to our T/S.

We consider this application for a licensee amendment to be part of the application submitted in our letter AEP:NRC:0860. Therefore, we interpret 10 CFR 170.22 as not requiring any additional payments for processing the aforementioned request.

This document has been prepared following Corporate procedures which incorporate a reasonable set of controls to insure its accuracy and completeness prior to signature by the undersigned.

Very truly yours,

  
M. P. Alexich  
Vice President *PAK*  
5/21/84

MPA/dew

Attachment

cc: John E. Dolan  
W. G. Smith, Jr. - Bridgman  
R. C. Callen  
G. Charnoff  
E. R. Swanson, NRC Resident Inspector - Bridgman

1. The first part of the document is a list of names and addresses of the members of the committee.

2. The second part of the document is a list of names and addresses of the members of the committee.

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## ATTACHMENT 1

The LOCA/ECCS analysis for Unit 2, Cycle 5 operation with up to five percent (5%) of the steam generator tubes plugged was performed by Exxon Nuclear Co. (ENC). The analysis was performed using the EXEM/PWR model with changes as explained in the ENC letter JCC:076:84 dated May 7, 1984. Letter JCC:076:84 was transmitted to you in our letter AEP:NRC:0860F, dated May 11, 1984. The results of the new ECCS/LOCA analysis are presented in the attached Tables 2.1, 3.2, 3.4, and Figures 3.41, 3.42, and 3.43.

For breaks up to and including the double-ended severance of a reactor coolant pipe, the new analysis showed that the Unit 2 Emergency Core Cooling System will meet the acceptance criteria as presented in 10 CFR 50.46 for operation with ENC 17x17 fuel operating in accordance with the peaking factor limits noted in Table 2.1. That is:

1. The calculated peak fuel element clad temperature does not exceed the 2200°F limit.
2. The amount of fuel element cladding that reacts chemically with water or steam does not exceed 1% of the total amount of zircaloy in the reactor.
3. The cladding temperature transient is terminated at a time when the core geometry is still amenable to cooling. The hot fuel and cladding oxidation limits of 17% are not exceeded during or after quenching.
4. The core temperature is reduced and decay heat is removed for an extended period of time, as required by the long-lived radioactivity remaining in the core.

Based on the new LOCA/ECCS analysis performed, the limit on  $F_{\Delta H}^N$ , is 1.415. When included in the T/S, this value is reduced by 4 % to account for measurement uncertainty. Thus the  $F_{\Delta H}^N$  limit for operation at 100% power is 1.36.

In addition to the above limitation, it was also necessary to change the allowance for increased  $F_{\Delta H}^N$  based on reduced power when  $F_{\Delta H}^N$  is limited by ECCS analyses, but not limited by Departure from Nucleate Boiling (DNB). This change is reflected by the phrase " $F_{\Delta H}^N = 1.36/P$  for Exxon Nuclear Co. fuel" included in the revised Technical Specifications.

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

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bc: J. G. Feinstein  
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AEP:NRC:0860K  
DC-N-6015.1  
DC-N-6485.5  
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