INDIANA & MICHIGAN ELECTRIC COMPANY

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October 14, 1982
AEP:NRC:0746

Donald C. Cook Nuclear Plant Unit No. 1
Docket No. 50-315
License No. DPR-58
REQUEST FOR RELIEF FROM TECHNICAL SPECIFICATION 3.5.2

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

Attention: Mr. Steven A. Varga

Dear Mr. Denton:

This letter documents the discussions held with members of your Staff concerning our request for a license amendment granting relief from the requirements of Technical Specification 3.5.2.

During the surveillance test being performed on October 12, 1982, Unit No. 1's 1S Safety Injection Pump (SIP) was registering a higher than previously measured vibration. Even though the pump's flow and discharge pressure were acceptable, it was decided to declare the pump inoperable, approximately at 5 pm on October 12, 1982. In so doing, we entered the action statement of Technical Specification 3.5.2. The action statement requires, in particular, that the SIP be restored to operable status within 72-hours or that the Unit be in hot shutdown within the next 12-hours. In investigating the cause of the increased vibration it was decided to apply all of the lessons learned during the recent repair of the 1N SIP. This involves detailed inspection of close-tolerance parts, individual impeller balancing and extensive run-out checks which preclude restoring the pump to operable status within the allowed 72 hours. As such, we would like to request a one time license amendment to Unit No. 1's Technical Specification 3.5.2 which would allow us an additional 10 days to restore the SIP to operable status. The Technical Specification would then require us to restore the SIP to operable status within 10 days of the time at which

the allowed 72 hours expire or be in hot shutdown within the next 12-hours.

Each Unit of the Cook Nuclear Plant has two Safety Injection Pumps. The second SIP of Unit 1 (the 1N pump) is operable. The last surveillance on the 1N pump was performed on October 5, 1982 and the pump passed its surveillance requirements including suction pressure, discharge pressure and vibration. We believe that the operable 1N SIP will continue to be operable during the extension period requested by this Technical Specification change.

Attachment 1 to this letter contains the safety evaluation prepared by us in conjunction with Westinghouse. The conclusion is that even if we were to lose the operable 1N SIP sufficient margin would still exist to the limits specified in 10 CFR 50.46. Thus, this relief is not detrimental to the health and safety of the public.

We would appreciate the expeditious handling of this request by your Staff.

AEPSC interprets 10.CFR.170.22 as requiring that a Class III Amendment Fee be paid for the change. A check in the amount of $4,000 will be transmitted to you in a future letter.

This Technical Specification relief request has been reviewed by the Cook Plant PNSRC. It will be reviewed by AEPSC's NSDRC at the next scheduled meeting.

This request is similar in nature to those transmitted to you via our letters No. AEP:NRC:0701, dated June 7, 1982, and No. AEP:NRC:0739, dated September 7, 1982.

Due to this letter being written on short notice, it has not been prepared following our standard Corporate Procedures for such letters. We shall, however, review the letter according to our Corporate Procedures and will inform you if any modification is required.

Very truly yours,

R. S. Hunter
Vice President

/os

cc: John E. Dolan - Columbus
M. P. Alexich
R. W. Jurgensen
W. G. Smith, Jr. - Bridgman

LOCA Evaluation for D. C. Cook Unit 1 with One Safety Injection Pump Out of Service

The purpose of this evaluation is to assess the effect of one safety injection pump out of service for the Cook Unit 1 Nuclear Plant on Loss of Coolant Accident (LOCA) consequences. Presently, the plant is fueled by Exxon Nuclear Company. However, the evaluation provided below is judged to be applicable to the non Westinghouse fuel, since there are no known major design differences that would have a significant impact on the LOCA behavior important for this evaluation.

Large Break LOCA

Safety injection pump flow provides an insignificant proportion of the total ECCS flow during a large break accident, where RCS pressure rapidly drops to near atmospheric. Accumulator and low head safety injection (RHR) flow are important for this accident. Therefore, the loss of a safety injection pump has a negligible effect on large LOCA calculated peak clad temperature.

Small Break LOCA

The plant's protection against small LOCAs comes from a two train system including a total of two safety injection pumps and two high head charging pumps. Small LOCA FSAR licensing analyses assume the worst single failure to be loss of a train, leaving one intermediate head SI pump and one charging pump. The small LOCA analysis yields clad temperatures well below 10 CFR 50.46 limits. This analysis assumption bounds the present plant configuration with one safety injection pump out of service and no single failure.

If the worst single failure assumption is considered in addition to the loss of the safety injection pump, and further, the train lost is assumed to have the operational safety injection pump, ECCS flow is delivered from only the high head charging pump. The following paragraphs evaluate this scenario.

Reduction of ECCS flow in the range of 600 to 1200 psia has an adverse effect on calculated clad temperature for a range of small LOCA break sizes. The loss of a safety injection pump has the effect of reducing delivered ECCS flow in that important pressure range. Total ECCS flow will be degraded by approximately 56% averaged over this pressure interval. Established sensitivity studies have indicated that such a degradation results in as much as a 550^{o}F small LOCA PCT increase.

The small break analysis for Cook 1 does not use the latest NRC approved W small LOCA Evaluation Model. The current small break LOCA EM would calculate a PCT of approximately 1200°F, reduced from 1493°F, predicted by the analysis in the FSAR. This new PCT is established from analysis of a substantially equivalent plant (3250 MWt, 4 Loop, same SIS design) analyzed in WCAP-8970-P-A, "Westinghouse Emergency Core Cooling System Small Break, October 1975 Model", and applies to Cook.

Additionally, credit for conservative assumptions in the small LOCA FSAR analysis can mitigate the PCT penalty. Following is a summary of those assumptings, and estimates of their impact on PCT.

1.) ANS Decay Heat + 20% - A best estimate decay heat function would reduce PCT by 200°F.

2.) Analysis assumed a peaking factor of 2.32 - Large break limited FQT of 2.04 would reduce small break PCT by 100°F.

3.) Analysis assumed loss of steam dump - steam dump availability would reduce PCT by 100°F or more.

4.) Degraded SI pump performance - best estimate performance would reduce PCT by 50°F.

In conclusion, operation of Cook 1 with a safety injection pump out of service for a brief period of time reduces the small LOCA PCT margin in the unlikely event of a LOCA coincident with the worst single failure. However, when consideration of newer approved LOCA Evaluation Models and better estimate assumptions in the FSAR analysis are included, the PCT penalty is mitigated. In addition, the fact that the present analysis has significant margin to 10 CFR 50.46 PCT limits indicates that continued operation of the plant for a short period of time is not a safety concern.