AMERICAN ELECTRIC POWER *Service Corporation*

AEP

2 Broadway, New York, N. Y. 10004
(212) 440-9000

September 7, 1982
AEP:NRC:0739

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.

Each Unit of the Cook Nuclear Plant has two Safety Injection Pumps plus two Centrifugal Charging Pumps and two Residual Heat Removal Pumps.

In preparation for the blackout test performed on August 14, 1982, Unit No. 1's North Safety Injection Pump suffered severe damage. We have proceeded to repair the pump expeditiously but have not been able to complete the repairs as of the time of this letter. Unit No. 1 Technical Specification (T/S) No. 3.5.2 requires, among other things, that two Safety Injection (SI) Pumps be operable in Modes 1, 2 and 3. Unit No. 1 is currently completing its refueling outage and the return to Modes 3, 2 and 1 is prevented by the inoperability of the SI pump and the T/S mentioned above. In order to proceed with the low power physics testing, we request a waiver of the requirement to have two SI pumps operable in Modes 2 (reactor thermal power less than or equal to 5%) and 3 for a period of one week beginning at the time the Unit enters Mode 3. The South SI pump will be demonstrated operable prior to entering Mode 3. All remaining technical specification requirements will be met.

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 1S Safety Injection Pump sufficient margin

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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.

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. W. Jurgensen

/emc
Attachment

cc: John E. Dolan - Columbus
R. S. Hunter
M. P. Alexich
W. G. Smith, Jr. - Bridgman
R. C. Callen
G. Charnoff
Joe Williams, Jr.
NRC Resident Inspector at Cook Plant - 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. Also, the current small LOCA FSAR analysis is performed at 100% power while during the period of time for which we are seeking T/S relief the reactor will not exceed 5% power. The lower power level of 5% versus 100% would more than offset the consequences of reduced ECCS flow.

In conclusion, operation of Cook 1 with a safety injection pump out of service and a maximum power level of 5% for a brief period of time is still bounded by the small LOCA FSAR analysis. In addition, the fact that the present analysis has significant margin to 10 CFR 50.46 PCT limits indicates that startup of the plant from this refueling outage is not a safety concern.