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SUBJECT: Clarifies info presented in XN-NF-86-146, "Susquehanna Unit 2 Single Loop Operation Analysis," re actinide nitride fuel analysis of idle loop startup transient, presented in Section 3.4 of rept & shown graphically in Figure 3.1.

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OCT 30 1987

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Director of Nuclear Reactor Regulation
Attention: Dr. W.R. Butler, Project Director
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SUSQUEHANNA STEAM ELECTRIC STATION
ADDITIONAL INFORMATION ON PROPOSED
AMENDMENT 52 TO LICENSE NO. NPF-22
PLA-2935 FILES R41-2, A17-2, A7-9 Docket No. 50-388

References: 1. PLA-2885, H.W. Keiser to W.R. Butler, dated June 30, 1987.
2. PLA-2661, B.D. Kenyon to E. Adensam, dated June 19, 1986.

Dear Dr. Butler:

The purpose of this letter is to clarify information presented in XN-NF-86-146, "Susquehanna Unit 2 Cycle 2 Single Loop Operation Analysis", which was transmitted to you in support of Reference 1.

The clarification concerns ANF's analysis of the Idle Loop Startup transient, which is presented in Section 3.4 of the report and shown graphically in Figure 3.1. The results shown in the figure indicate to us that a problem exists, because total core flow only reaches 75% of rated when in reality we believe (since the pump is modeled as reaching rated speed) that total core flow would approximate 100%. Our review of this anomaly indicates an inadequacy with how the computer code models going from reverse to forward recirculation loop flow in this particular transient.

We have reviewed the significance of this problem and have determined that generic information exists which obviates the need to have performed explicit analysis of this transient, because it is bounded by the MCPR limits which result from the Recirculation Flow Control Failure With Increasing Flow event. This is not new information; PP&L has relied on it for dispositioning the Idle Loop Startup event in all of our previous reload amendment submittals.

For GE fuel, the reference document is NEDE-24011-P-A-4-US, "General Electric Company Standard Application for Reactor Fuel", August 1985, which states:

> "The generic Kf curves were developed on the basis that the flow increase event was the most limiting at reduced flow. This basis was justified by studies performed on BWR/3 and 4 FSAR data (7x7 fuel). Specifically, inadvertent startup of an idle recirculation pump and feedwater flow controller failure (maximum demand) events were analyzed at reduced power and flow as summarized in Table 5.2-2, demonstrating the adequacy of Kf.

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> The results...are considered generic because the data used bound the BWR/2-4 projected equilibrium conditions. While there may be variations between plants in their reduced power and flow transient response, a similar variation would also exist for the limiting rated power and flow transient, creating a sufficiently high operating limit MCPR that, when combined with the Kf curves, an appropriately high reduced flow operating limit is established."

For ANF fuel, the generic argument is documented in XN-NF-79-71(P), Revision 2, "Exxon Nuclear Plant Transient Methodology for Boiling Water Reactors", November 1981, which states:

> "An additional event possible is inadvertent startup of an idle recirculating loop. Previous safety analyses of BWR plants have generally confirmed that such operation is no more limiting to operation than the failure of the flow controller."

This conclusion is confirmed based on the similarities between the GE and ANF fuel types in use at Susquehanna. These similarities are described in various sections of PP&L's "Susquehanna SES Unit 2 Cycle 2 Reload Summary Report", which was attached to our proposed reload amendment for Unit 2 Cycle 2 (Reference 2). Each of the above generic documents has been approved by the NRC for use by PP&L; the GE document by a generic NRC SER, and the ANF document via various approved amendments which referenced it as part of their basis.

Based on the above, we believe that PP&L has provided adequate documentation to show that the Idle Loop Startup event does not have to be explicitly analyzed in support of our referenced submittal. This supplemental information does not represent a substantive change from our previous submittal for the following reasons:

1. The subject transient has been shown to be bounded by a more limiting transient, as it was in Reference 1, so its impact on the proposed changes to the Technical Specifications remains the same (i.e.,none).

2. The philosophy PP&L has presented with regard to the analysis of this transient is consistent with the previous submittals which have been approved by the NRC.

Questions on this letter should be directed to Mr. R. Sgarro at (215) 770-7916.

Very truly yours,

H. W. Keiser
Vice President-Nuclear Operations

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