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 COPELAND,R.A. Siemens Power Corp. (formerly Siemens Nuclear Power Corp.,  
 RECIP.NAME RECIPIENT AFFILIATION  
 PHILLIPS,L.E. Office of Nuclear Reactor Regulation, Director (Post 870411)

SUBJECT: Discusses Siemens Power Corp cycle stability analyses.  
 Analyses should be augmented based on results of instability  
 event at facility.Topical rept,describing STAIF code,  
 expected to be submitted in June 1993.

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# SIEMENS

December 2, 1992  
RAC:92:145

Mr. L. E. Phillips  
Section Leader, Reactor Systems Branch  
Division of Engineering and System Technology  
Office of Nuclear Reactor Regulation  
Mail Station P1-137  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. Phillips:

Subject: **SPC Stability Evaluations**

Based on the knowledge gained as a result of the WNP-2 instability event, Siemens Power Corporation (SPC) has concluded that the cycle stability analyses performed by SPC should be augmented. The revised stability evaluation procedure will augment the cycle dependent COTRAN analyses with STAIF analyses to conservatively establish potential changes to the exclusion regions. The more conservative of the two analytical results will be used. STAIF is a one-dimensional, multichannel frequency domain code which explicitly includes fuel and power/flow characteristics on a channel basis. Therefore, different fuel types, thermal hydraulic, and core loading effects are explicitly considered. In general the STAIF code, when compared to COTRAN, gives results which are more conservative at lower flow conditions and COTRAN gives results which are more conservative than STAIF at higher flow conditions.

SPC is currently planning to submit a topical report describing the STAIF code to the NRC in June 1993. The approach of using the more conservative of STAIF and COTRAN results is an interim approach directed at conservatively addressing the impact of stability until STAIF is generically approved.

In addition to incorporating STAIF results in future cycle stability evaluations, Siemens Power Corporation is also reassessing the current cycle stability evaluations for the utilities supported with SPC COTRAN analyses. This reassessment provides a comparison of COTRAN-STAIF as a function of the power/flow at 0.75 decay ratio. This comparison is then adjusted to the plant specific power/flow map so that the utility can review the results for consistency with their Technical Specifications and Operating Procedures.

Another concern highlighted by the WNP-2 instability event was the sensitivity to power distribution and the need for operator awareness that the boundaries of the exclusion regions are not absolute due to variables such as power distribution. This is of particular concern

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Mr. L. E. Phillips  
December 2, 1992  
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during reactor maneuvering close to the exclusion regions. Although the scope of the SPC support to utility customers has been contractually limited, i.e., the scope has not included defining additional reactor maneuvering limits, SPC will offer to the utility to better define the stability limits during reactor maneuvering. This definition of stability limits during reactor maneuvering can be adapted to be consistent with the revisions to the interim stability criteria being developed by the BWR Owners Group.

In addition to these evaluations, SPC is developing the STAIF/MODES code into a package capable of using the POWERPLEX™ II core monitoring information. This stability predictor can be coupled with ANNA™, to provide an on-line monitor/predictor for the operator. A prototype of this system should be available in early 1993.

If you have questions about our actions, or if additional information is needed, please contact me.

Very truly yours,



R. A. Copeland, Manager  
Product Licensing

/smg

cc: Mr. R. C. Jones

