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 RECIP. NAME: BUTLER, W.R.    RECIPIENT AFFILIATION: Project Directorate I-2

SUBJECT: Forwards NPE-89-001, "PP&L Approach to Risk Mgt & Risk Assessment (Second Rev)."

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These are the results of the study.



**Pennsylvania Power & Light Company**

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Harold W. Keiser  
Senior Vice President-Nuclear  
215/770-4194

OCT 26 1989

Director of Nuclear Reactor Regulation  
Attention: Dr. W. R. Butler, Project Director  
Project Directorate I-2  
Division of Reactor Projects  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION  
PROPOSED RESPONSE TO GENERIC LETTER 88-20  
INDIVIDUAL PLANT EXAMINATIONS  
PLA-3280                      FILES R41-2, R41-1D

Docket Nos. 50-387  
and 50-388

Dear Dr. Butler:

The purpose of this letter is to provide PP&L's initial response to Generic Letter 88-20, "Individual Plant Examinations for Severe Accident Vulnerabilities." This response identifies the IPE option chosen by PP&L for Susquehanna SES along with a description of the approach being taken, the planned scope and format of our IPE, and the planned schedule for performing the work and submitting the IPE for review.

IPE Approach

PP&L's approach to IPE is classified as an "other systematic examination method". It is our judgement that the PP&L approach is equivalent to a plant specific PRA. However, because our processes (both analysis and quantification) are different, we have elected to classify the approach as indicated and explain our process. The method we employ couples an improved version of the IDCOR support state method with a defense-in-depth evaluation. The improvements made to the IDCOR support state method are discussed in the technical report, The PP&L Approach to Risk Management and Risk Assessment (Second Revision), NPE-89-001. A copy of this report is attached to this letter to assist in your review of our approach. Items of specific interest are listed below with a reference to NPE-89-001.

1. The incorporation of an algorithm that rigorously identifies support states (pp 216-235).
2. The explicit treatment of plant technical specifications in the plant damage frequency calculation (pp 231-235).

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3. The explicit treatment of event timing in the plant damage frequency calculation (pp 377-382 and pp 407-410).
4. The sequence quantification process which takes into account items 1 through 3 above (pp 104-107).

In this analysis process each accident sequence is propagated to a stable plant state. Plant damage state as used in this context is defined on page 403 and discussed on pages 160-190 of NPE 89-001. There is no front end or back end analysis; in other words, there is no binning of accident sequences. In this method the logical problem of sorting out the plant interdependencies is solved separately from the probability evaluation. This approach results in a manageable number of accident sequences. Therefore, it is practical to uniquely disposition each accident sequence to a stable condition.

The PP&L analysis method can be implemented in five basic steps.

1. Define a set of initiating events.
2. Identify mitigating functions, in terms of plant equipment and operator responses, which respond to each initiator.
3. Construct the logical relationships between each initiating event and those specific mitigating functions whose failure results in propagating an accident sequence.
4. Develop the logical relationships between primary mitigating functions and the support systems on which they rely.
5. Evaluate the plant damage state for each accident sequence.

The output of this analysis is a list of failures that result in a given plant damage state. Thus for each accident sequence we know what plant failures caused the specific plant damage. With this information we can establish whether our plant satisfies our defense-in-depth criteria for each accident sequence. (Our defense-in-depth criteria are listed on pages 12-15 of the attachment.) Modifications to our equipment, procedures or training will be considered if an accident does not. Accident management strategies unfold naturally when establishing defense-in-depth. This method of analysis is practical because the improved support state method generates a manageable number of accident sequences and using the defense-in-depth criteria focuses the accident management evaluation on identified vulnerabilities.

#### IPE Scope/Format

Our IPE will include internally initiated events, internal flooding, internal fires and the dual unit nature of Susquehanna SES. The examination of externally initiated events (seismic, transportation related and man-made hazards) will proceed separately and on a later schedule. Our IPE will



specifically address Unresolved Safety Issue (USI) A-45 entitled "Shutdown Decay Heat Removal Requirement". If, in the course of our examination we identify additional USIs or Generic Safety Issues (GSIs) that we wish to resolve based on the results of our IPE, then we will inform you of this through a subsequent submittal.

Our IPE will extend through a Level II evaluation where we will disposition the status of the containment focusing on failure mechanisms and timing. We will address the scope and issues raised in Appendix A of NUREG 1335, "Approach to Back-end Portion of IPE", even though our approach does not separate the front-end and back-end examination. (Again, we do not bin accident sequences into plant damage states.)

PP&L plans on conforming to the specified standard format for IPE submittals for sections 1, 2, 5, 6 and 7. In that PP&L is performing an "other systematic examination method" with different analysis and quantitative processes, sections 3 and 4 will be formatted differently. For these two sections we will provide a "road map" referencing the standard format to facilitate your review.

#### Schedule

PP&L is planning an aggressive schedule for completing the IPE. This schedule takes into account that we performed a demonstration IPE under the IDCOR Program and that we wish to enhance this previous evaluation prior to submitting it for review. Activities have already started in preparing our revision and will be completely underway by the beginning of 1990. A draft document is expected to be completed in late 1990. Our approach relies almost completely on PP&L permanent staff resources with limited consultant participation for technical review of specific areas. Once the draft document is completed, PP&L will conduct an in-house review. That activity will carry over into 1991, and it is planned that our IPE will be submitted to NRC late in the first quarter or in the second quarter of 1991.

This schedule is aggressive. Therefore, we request that you promptly review our approach and schedule for conducting the Susquehanna IPE and notify PP&L if this is acceptable.

Very truly yours,



H. W. Keiser

Attachment  
Affidavit





cc: ~~NRC Document Control Desk (original)~~  
NRC Region I  
Mr. G. S. Barber, NRC Resident Inspector  
Mr. M. C. Thadani, NRC Project Manager

Mr. Dave Modeen  
NUMARC  
1776 Eye Street, N.W., Suite 300  
Washington, D.C. 20006-2496




AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA)  
  : SS  
COUNTY OF LEHIGH                  )

I, HAROLD W. KEISER, being duly sworn according to law, state that I am Sr. Vice President - Nuclear of Pennsylvania Power & Light Company and that the facts set forth on the attached response to NRC Generic Letter 88-20 are true and correct to the best of my knowledge, information and belief.

  
\_\_\_\_\_  
Harold W. Keiser  
Sr. Vice President - Nuclear

Sworn to and subscribed  
before me this 20 day  
of October, 1989.

  
\_\_\_\_\_  
Notary Public

NOTARIAL SEAL  
MARTHA C. SEDORA, NOTARY PUBLIC  
ALLENTOWN, LEHIGH COUNTY  
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