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 RECIP. NAME                      RECIPIENT AFFILIATION  
 MILLER, C.L.                      Project Directorate I-2

SUBJECT: Application for amends to licenses NPF-14 & NPF-22,  
 respectively, deleting TS 3/4.3.8, Turbine Overspeed  
 Protection Sys, requiring weekly testing of Stop valves &  
 CIVs associated w/main turbine.

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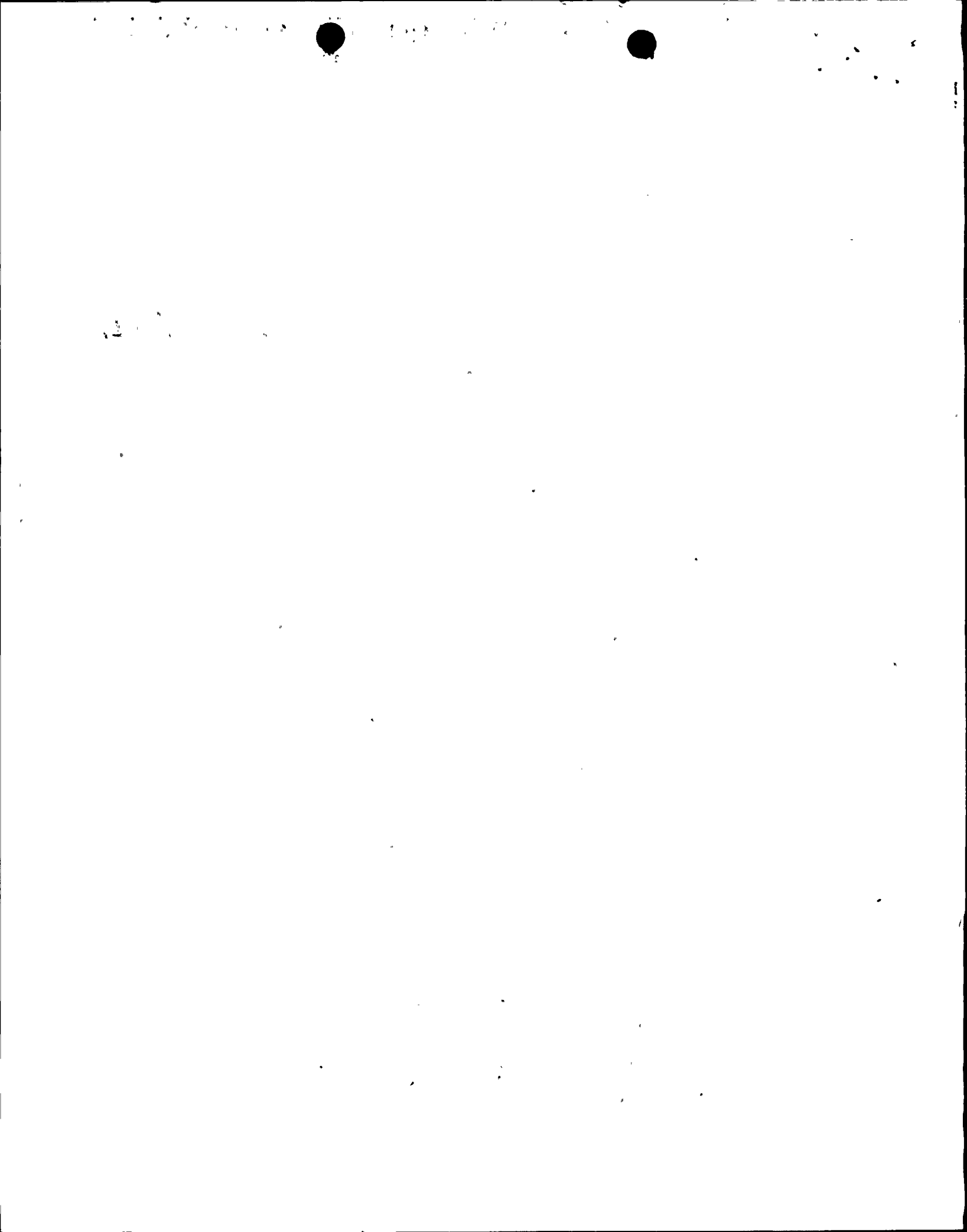
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Robert G. Byram  
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215/774-7502

APR 30 1993

Director of Nuclear Reactor Regulation  
Attention: Mr. C. L. Miller, Project Director  
Project Directorate I-2  
Division of Reactor Projects  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

**SUSQUEHANNA STEAM ELECTRIC STATION  
PROPOSED AMENDMENT 159 TO LICENSE NO. NPF-14 AND  
PROPOSED AMENDMENT 112 TO LICENSE NO. NPF-22 :  
CHANGES TO TURBINE OVERSPEED PROTECTION SYSTEM  
PLA-3964**

Docket Nos. 50-387  
& 50-388

**FILE R41-4**

Dear Mr. Miller:

The purpose of this letter is to propose changes to the Susquehanna SES Units 1 and 2 Technical Specifications.

**BACKGROUND**

The Turbine Overspeed Protection System provides overspeed/missile protection of the main turbine at Susquehanna SES. Redundant mechanical and electrical systems are in place to protect the turbine from overspeed.

Technical Specification 3/4.3.8 requires that the turbine overspeed protection system be operable. In addition, the Technical Specification requires; weekly testing of the Stop Valves, Control Valves, and CIVs associated with the main turbine, 18 month channel calibration of the Turbine Overspeed Protection System instrumentation, and 40 month disassembly and inspection of one of each of the valves.

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The risk due to potential turbine missiles for Susquehanna SES is acceptable due to the low probability of turbine failure in conjunction with the even lower probability of damage to safety-related equipment. Redundant mechanical and electrical systems are in place to protect the turbine from overspeed. Susquehanna SES has installed monoblock low pressure rotors which are less susceptible to turbine burst. Requirements for testing and maintenance of the Turbine Overspeed Protection System are being met.

### DESCRIPTION OF CHANGE

PP&L proposes deleting Technical Specification 3/4.3.8, Turbine Overspeed Protection System. The testing and maintenance requirements will be maintained in an administrative program to ensure the performance of periodic testing and maintenance in line with vendor recommendations.

### SAFETY ANALYSIS

Technical Specifications require that the Turbine Overspeed Protection System be operable. In addition, the Technical Specification requires; weekly testing of the Stop Valves, Control Valves, and CIVs associated with the main turbine, 18 month channel calibration of the Turbine Overspeed Protection System instrumentation, and 40 month disassembly and inspection of one of each of the valves.

NUREG 0776, the Safety Evaluation Report (SER) related to the operation of Susquehanna SES, provided the evaluation for the potential for turbine missile damage impacting the safe operation of the plant. The SER noted that the risk due to potential turbine missiles for Susquehanna Units 1 and 2 is acceptable because of the low probability of turbine failure in conjunction with the even lower probability of damage to safety-related equipment from potential missile(s).

Since the SER analysis, Susquehanna SES has replaced the original keyway/shrunk-on disk designed low pressure turbine rotors with monoblock (solid disk) designed rotors. The monoblock design is less susceptible to turbine burst; and therefore, the risk due to potential turbine missiles is even lower than the original SER analysis reflected. The Susquehanna SES FSAR has been updated to reference the rotor change out and the lower failure probability associated with the current monoblock rotor design.

Although the potential for a safety impacting turbine missile is very low, the Turbine Overspeed Protection System consists of separate mechanical and electrical sensing mechanisms which are capable of initiating fast closure of the turbine steam valves. These multiple systems provide redundant protection designed to terminate an overspeed condition and prevent a turbine missile.

For the surveillance requirements associated with the Technical Specification, the proposed change does not alter the testing and maintenance regime for the valves; it only affects the administrative placement of the commitment. Whereas the current commitment is included in Technical Specifications, the change would relocate this commitment into an administrative program outside of Technical Specifications.

Several events have occurred in the industry where the potential for turbine overspeed was increased due to equipment failures in the overspeed protection systems. In addition, actual overspeed events have occurred. The most recent overspeed event of consequence was the November 9, 1991 overspeed and failure of the Salem Generating Station Unit 2 main turbine.

A review of the Salem event was performed for Susquehanna SES applicability. The event was found to be applicable; however, differences in design, maintenance, and testing were significant. The degree of difference between Salem and Susquehanna SES in terms of design and practice was deemed to be sufficient to conclude that the Salem event did not require a change to the existing design or maintenance regime for Susquehanna SES.

#### NO SIGNIFICANT HAZARDS CONSIDERATION

- I. This proposal does not involve a significant increase in the probability or consequences of an accident previously evaluated.

No technical change in the operation, maintenance, and testing of the Turbine Overspeed Protection System is being proposed. The requirements for testing and maintenance of the Turbine Overspeed Protection System will be kept in an administrative program outside of Technical Specifications, to ensure the performance of periodic testing and maintenance in line with vendor recommendations.

Deletion of the Turbine Overspeed Protection System Technical Specification does not impact the safe operation of Susquehanna SES. From the perspective of missile protection, which is the basis for the Technical Specification, Susquehanna SES has been determined to be adequately protected from all postulated turbine missiles per NUREG-0776. Susquehanna SES has installed monoblock low pressure rotors which are less susceptible to turbine burst. In addition, separate mechanical and electrical sensing mechanisms are used which are capable of initiating fast closure of the turbine steam valves.

- II. This proposal does not create the possibility of a new or different kind of accident or from any accident previously evaluated.

The proposed change does not alter the operation of the Turbine/Generator System or the design function of the Overspeed Protection System. As such, plant operation remains bounded by the existing safety analyses given in the FSAR. Maintenance and testing of the overspeed system will be continued in line with vendor recommendations.

- III. This change does not involve a significant reduction in a margin of safety.

No physical change to the system or its design purpose is being proposed. No change to the maintenance and testing regime for the system is being proposed. Therefore, the margin of safety associated with the Overspeed Protection System is maintained.

Continuation of the maintenance and testing regime will ensure that the system continues to be available for its design purpose.

### ENVIRONMENTAL CONSEQUENCES

The proposed change imposes no new environmental consequences. No environmental consequences that have not been considered previously are anticipated.

### IMPLEMENTATION

It is requested that these changes be approved as soon as possible.

Any questions regarding this request should be directed to Mr. Terence Bannon at (215) 774-7918.

Very truly yours,

  
R. G. Byram

Attachment

cc: NRC Document Control Desk (original)  
NRC Region I  
Mr. G. S. Barber, NRC Sr. Resident Inspector  
Mr. R. J. Clark, NRC Sr. Project Manager



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