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 RECIPIENT NAME      RECIPIENT AFFILIATION  
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SUBJECT: Application for amends to licenses NPF-14 & NPF-22, changing  
 TS extending frequency for performing SR 4.7.1.3.c from  
 monthly to biannually.

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**MAY 31 1994**

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 NO. 165 TO LICENSE NPF-14 AND  
PROPOSED AMENDMENT NO. 120 TO LICENSE NPF-22:  
SPRAY POND GROUND WATER SURVEILLANCE  
SURVEILLANCE REQUIREMENT 4.7.1.3.C  
PLA-4146**

**FILES R41-1/A17-2**

Docket Nos. 50-387  
and 50-388

Dear Mr. Miller:

The purpose of this letter is to propose changes to the Susquehanna SES Units 1 and 2 Technical Specifications. Currently, Technical Specification Surveillance Requirement 4.7.1.3.c requires monthly monitoring of Spray Pond ground water level at six observation well locations. The proposed Technical Specification change will extend the frequency for performing Surveillance Requirement 4.7.1.3.c from monthly to biannually.

The attached analysis discusses the safety basis for the proposed Technical Specification change and concludes that the change involves no significant hazards. This change has been reviewed by the Plant Operations Review Committee (PORC) and the Susquehanna Review Committee (SRC) and has been approved by both committees.

Pennsylvania Power & Light is committed to making this change to reduce the number of man-hours required to perform Surveillance Requirement 4.7.1.3.c. The proposed change is expected to reduce costs associated with performing this surveillance requirement by \$300,000 over the remaining life of the plant.

Any questions regarding this request should be directed to Mr. Terence Bannon at (610) 774-7918.

Very truly yours,

R.G. Byram

Attachment

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cc: NRC.Document-Control.Desk.(original)  
NRC Region I  
Mr. G. S. Barber, NRC Sr. Resident Inspector  
Mr. C. Poslusny, Jr., NRC Project Manager

**SAFETY ASSESSMENT  
SPRAY POND GROUND WATER SURVEILLANCE  
SURVEILLANCE REQUIREMENT 4.7.1.3.C**

**Background**

Technical Specification Surveillance Requirement 4.7.1.3.c requires monthly monitoring of Spray Pond ground water level at six observation well locations. The Spray Pond is considered inoperable if ground water elevations rise above the acceptance value stated in Surveillance Requirement 4.7.1.3.c. High ground water level has the potential to cause structural failure of the Spray Pond liner. This failure may result from a combination of liquefaction and a seismic event or as a result of buoyant forces applied to the liner by the rising ground water. However, over twelve years of monthly data from this surveillance indicate that ground water level at the observation sites is stable, predictable, and consistently below the acceptance value established in Technical Specifications.

**Description of Change**

Pennsylvania Power & Light proposes altering Technical Specification Surveillance Requirement 4.7.1.3.c to extend the current monthly surveillance frequency to biannual. Ground water level measurements will be performed in April and October; historically, the highest readings have been measured in these months. Ground water level is an important factor in the operability of the Spray Pond and should be monitored. However, the initial monthly monitoring frequency established in Technical Specifications does not reflect the predictability and stability of the ground water level around the Spray Pond. During the past twelve years, monthly observation of well water level has shown that ground water level in the vicinity of the Spray Pond has remained at least 10 feet below the Technical Specification limit of 663 feet. Average water level is even lower.

**Safety Analysis**

This safety analysis evaluates the basis for measuring ground water level elevation, and the safety significance of decreasing the frequency of this measurement from monthly to biannually.

The Susquehanna Spray Pond has a liner elevation of 668 feet above sea level and spray header trench elevations of 663.25 feet above sea level. Technical Specification Surveillance Requirement 4.7.1.3.c establishes an acceptance value for ground water at 663 feet above sea level. The Spray Pond is considered inoperable if ground water elevation as measured at the observation wells is determined to exceed this acceptance value.

Ground water elevation is a factor in the operability of the Spray Pond because high ground water levels (above 663 feet) have the potential to cause structural failure of the Spray Pond liner. Failure may occur as a result of the combined affects of liquefaction and a seismic event, or as a result of buoyant forces applied to the Spray Pond liner.

The Spray Pond and attached Engineered Safeguards Service Water Pump-House are located on a buried bedrock valley about 100 feet deep, filled up with cobbles and boulders and draining into the river. The thickness of these deposits below pond bottom is approximately 70 feet. These deposits are stratified, and contain variable amounts of silt. The compact nature of these deposits and their coarse-grain content are favorable to the soil resistance against particle movement during an earthquake, and hence to settlement and liquefaction. If ground water levels rise above the acceptance value of 663 feet, liquefaction of the fine deposits combined with a seismic event could result in the settling or movement of the liquefied deposits and potential structural failure of the Spray Pond liner and/or interconnected piping. Structural failure could result in a loss of Spray Pond water inventory and the functionality of the ESW and RHRSW systems.

Even without a seismic event, increases in ground water level above the bottom of the liner elevation feet would apply buoyant forces on the liner. As the buoyant forces increase, additional stresses would be applied to the liner leaving it susceptible to structural failure.

Ground water level has been monitored monthly at six observation wells over the past twelve years. The data shows that during the past twelve years, ground water level in the vicinity of the Spray Pond has remained at least 10 feet below the Technical Specification limit of 663 feet. Average water levels are even lower, and the readings are fairly stable. Three of the six wells show almost no change in water level over the measurement period. The other three wells do show level changes, but these changes are less than  $\pm 5$  feet from the mean well levels. Historically, the high ground water level readings have been measured in the April and October time frames. Given that the highest well readings are ten feet below the acceptance limit, substantial margin exists in ground water level.

#### No Significant Hazards Consideration

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

The proposed Technical Specification change to extend the monthly surveillance interval for Spray Pond ground water level measurement to biannual does not affect the probability or consequences of an accident previously evaluated. The safety analysis performed for this change concludes that the ground water level is stable, predictable, and significantly below the acceptance criteria established in the Technical Specifications. Thus, less frequent monitoring of the ground water level does not increase the probability that the Spray Pond will become inoperable due to rising ground water levels or the probability of any accident scenarios associated with Spray Pond inoperability. The Technical Specification change will not impact the function or the method of operation of plant systems, structures, or components. Thus, the consequences of a malfunction of equipment important to safety previously evaluated in the FSAR are not increased by the change.



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

The proposed Technical Specification change to extend the monthly surveillance interval for Spray Pond ground water level measurement to biannual does not create the possibility of a new or different kind of accident or from any accident previously evaluated. The proposed change does not affect systems, structures, or components (SSCs) or the operation of the SSCs; and therefore does not create the possibility of a new or different kind of accident.

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

The proposed Technical Specification change to extend the monthly surveillance frequency to biannual does not reduce the margin of safety. The ground water level in the vicinity of the Spray Pond has been proven to be stable and predictable through twelve years of monthly data collection. This data has shown the highest ground water levels (still considerably lower than the Technical Specification limit) to occur in the months of April and October. Therefore, surveillance of the ground water level at the observation sites during April and October will adequately monitor this aspect of the Spray Pond operability.

### **Implementation**

- It is requested that this change be approved as soon as possible.





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