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November 1, 1999  
PY-CEI/NRR-2442L

United States Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

Perry Nuclear Power Plant  
Docket No. 50-440  
License Amendment Request Pursuant to 10CFR50.90: Revision to the Technical Specification  
Surveillance Requirement Frequency for Containment Spray Nozzle Inspections

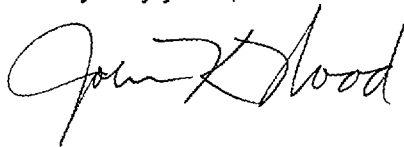
Ladies and Gentlemen:

Nuclear Regulatory Commission review and approval of a license amendment for the Perry Nuclear Power Plant is requested. The proposed amendment revises the Containment Spray Surveillance Requirement (SR) frequency for SR 3.6.1.7.4, from once per 10 years, to following maintenance which could result in nozzle blockage. The proposed change is similar to the surveillance requirement at another Boiling Water Reactor (BWR-6).

Attachment 1 provides the Summary, Description of the Proposed Technical Specification Change, Safety Analysis, and Environmental Consideration. Attachment 2 provides the Significant Hazards Consideration. Attachment 3 provides the annotated Technical Specification page reflecting the proposed change. Attachment 4 provides the annotated Bases page, for information, since the Bases are not a formal part of the Technical Specifications.

There are no regulatory commitments contained in this letter. If you have questions or require additional information, please contact Mr. Gregory A. Dunn, Manager - Regulatory Affairs, at (440) 280-6305.

Very truly yours,

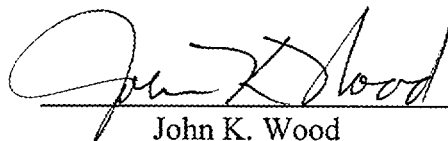


Attachments

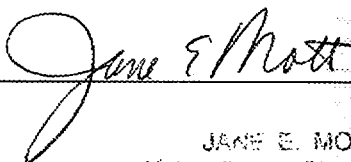
cc: NRC Project Manager  
NRC Resident Inspector  
NRC Region III  
State of Ohio

AOO1

I, John K. Wood, hereby affirm that (1) I am Vice President - Perry, of the FirstEnergy Nuclear Operating Company, (2) I am duly authorized to execute and file this certification as the duly authorized agent for The Cleveland Electric Illuminating Company, Toledo Edison Company, Duquesne Light Company, Ohio Edison Company, and Pennsylvania Power Company, and (3) the statements set forth herein are true and correct to the best of my knowledge, information and belief.

  
\_\_\_\_\_  
John K. Wood

Subscribed to and affirmed before me, the 1<sup>st</sup> day of November, 1999

  
\_\_\_\_\_  
JANE E. MOTT  
Notary Public, State of Ohio  
My Commission Expires Feb. 20, 2000  
(Recorded in Lake County)

## **Summary of Proposed Change**

Surveillance Requirement (SR) 3.6.1.7.4 requires that each containment spray nozzle be verified unobstructed on a 10-year frequency. The Technical Specification Bases further clarifies that the test is performed using an air or smoke flow test to verify that the spray nozzles are not obstructed and that flow will be provided when required. The requested revision would change the frequency to require this test following maintenance that could result in nozzle blockage. Nozzle blockage is considered unlikely during periods without maintenance, since the nozzles are of a passive design and the system is kept in a normally dry state. The proposed frequency has been shown to be acceptable through operating experience.

The air flow test impacts fuel movement in containment, presents a personnel safety risk for the individual(s) required to access the top of containment to check the nozzle air flow, and is expensive. Since plant safety can be ensured at the proposed frequency (performing this test if maintenance is performed that could block the nozzles), the proposed frequency change is being submitted for approval prior to the eighth refueling outage, when the test is next scheduled for performance.

## **Description of the Proposed Technical Specification Change**

Technical Specification SR 3.6.1.7.4 Frequency will be revised to read "Following maintenance which could result in nozzle blockage".

[Note: The annotated Bases page is contained in Attachment 4 "for information only". The Bases are not part of the Technical Specifications, and are not a formal part of this license amendment package. The Bases are revised under the PNPP Bases Control Program (Technical Specification 5.5.11).]

## **Safety Analysis**

Surveillance Requirement (SR) 3.6.1.7.4 requires that each containment spray nozzle be verified unobstructed on a 10-year frequency. The Bases further clarifies that the test is performed using an air or smoke flow test to verify that the spray nozzles are not obstructed and that flow will be provided when required. This change would require verification that the nozzles are unobstructed after maintenance that could cause obstruction.

The containment spray system, part of the Residual Heat Removal (RHR) system, consists of two-100% capacity loops (A & B). Each loop consists of 3 spray rings located in the top of the containment dome with 346 spray nozzles in loop A and 344 spray nozzles in loop B. The system, constructed of carbon steel, is a normally dry system and is isolated from the water in the RHR system by two Motor Operated Valves (MOVs) located in series. Both of the MOVs that isolate the spray headers are included in the plant's valve test program to ensure that they do not leak. The system also has an alarm, annunciated in the control room, that warns if liquid leaks past the first isolation valve. The alarm is located between the first and second isolation valve, about 45 feet below the lowest spray ring. The alarm, included in the plants repetitive task program, has a calibration check performed every four years. This check was last performed on August 19, 1999. These design features, combined with the MOV maintenance program, ensure that the spray headers and nozzles stay dry, and thus, limit corrosion susceptibility. The location of the nozzles, in the top of the containment dome, limits the possibility of the introduction of foreign material from sources external to the system as well.

The test required for this SR has been performed two times since construction of the system (once in pre-operational testing, August of 1986, and again in Refuel Outage 2, November of

1990). The results of each test demonstrated unobstructed flow through each nozzle. These tests confirmed that the system was free from construction debris, and also free from obstructions following startup of the plant.

A review of the maintenance history since the 1990 test to date indicates that six maintenance work orders have been performed on MOV isolation valves or the system. Two work orders reinstalled orifices that were removed to perform the SR in RFO2. During RF04, the orifices were replaced with larger orifices. The last two work orders modified the valve discs for the valves 1E12-F028A and F028B. These valves are the first containment spray isolation valves for each loop. The 1E12-F537A and F537B valves, the second containment spray isolation valves, are downstream and prior to the spray ring headers. Cleanliness control practices, including post work inspections, were utilized and documented in the work order to ensure Class B cleanliness requirements were maintained.

Review of industry experience indicates that containment spray systems of similar design are highly reliable (not subject to plugging). In fact, one Boiling Water Reactor (BWR6) already has the surveillance frequency being requested. They currently are required to perform a similar test only after maintenance that could introduce foreign material. Their requirement is located in their Technical Requirements Manual (TRM). The industry review did identify one BWR plant that had a blockage, but this event occurred at an older plant that allowed water to enter their spray system during standby operation, which led to corrosion. The PNPP design precludes this condition.

These reasons make the potential for nozzle obstruction very low. The requirement to verify the nozzles are not obstructed every ten years is therefore unnecessary. Verifying that the nozzles are not obstructed following maintenance that could introduce foreign material internal to the spray headers is the appropriate frequency. This verification would consist of an inspection of the nozzles, or an air or smoke test.

### **Environmental Consideration**

The proposed Technical Specification change request was evaluated against the criteria of 10 CFR 51.22 for environmental considerations. The proposed change does not significantly increase individual or cumulative occupational radiation exposures, does not significantly change the types or significantly increase the amounts of effluents that may be released off-site and, as discussed in Attachment 2, does not involve a significant hazards consideration. Based on the foregoing, it has been concluded that the proposed Technical Specification change meets the criteria given in 10 CFR 51.22(c)(9) for categorical exclusion from the requirement for an Environmental Impact Statement.

## Significant Hazards Analysis

The standards used to arrive at a determination that a request for amendment does not involve a significant hazard are included in Nuclear Regulatory Commission regulation 10CFR50.92, which states that operation of the facility in accordance with the proposed changes would not:

- 1) involve a significant increase in the probability or consequences of an accident previously evaluated; or
- 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or
- 3) involve a significant reduction in a margin of safety.

The proposed amendment has been reviewed with respect to these three factors and it has been determined that the proposed change does not involve a significant hazard because:

- 1) The proposed change would not involve a significant increase in the probability or consequences of an accident previously evaluated;

The proposed change revises the surveillance frequency from every 10 years to following maintenance that could result in nozzle blockage. Analyzed events are initiated by the failure of plant structures, systems or components. The containment spray system is not considered as an initiator of any analyzed event. The proposed change does not have a detrimental impact on the integrity of any plant structure, system or component that initiates an analyzed event. The proposed change will not alter the operation of, or otherwise increase the failure probability of any plant equipment that initiates an analyzed accident. As a result, the probability of any accident previously evaluated, is not significantly increased.

The proposed change revises the Surveillance Frequency. Reduced testing is acceptable where operating experience has shown that these components usually pass the Surveillance when performed at the specified interval, thus the frequency is acceptable from a reliability standpoint. The proposed containment spray nozzle Surveillance Frequency has been established based on achieving acceptable levels of equipment reliability. This change does not affect the plant design. Due to the plant design, the spray header is maintained dry and alarmed on water intrusion. Formation of significant corrosion products is unlikely. Due to its location at the top of the containment, introduction of foreign material from exterior to the header is unlikely. Since maintenance that could introduce foreign material is the most likely cause for obstruction, testing or inspection following such maintenance would verify the nozzle(s) being unobstructed, and the system would be capable of performing its safety function. As a result, the consequences of any accident previously evaluated are not significantly affected.

Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

- 2) The proposed change would not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing

normal plant operation. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

- 3) The proposed change would not involve a significant reduction in a margin of safety.

The margin of safety for this system is based on the capacity of the spray headers. Since the system is not susceptible to corrosion induced obstruction or obstruction from external to the system, and performance of maintenance on the system would require evaluation of the potential for nozzle blockage and the need for a test or inspection, the spray header nozzles will not become blocked in the event that the safety function is required. Therefore the capacity of the system would remain unaffected. Hence, this change does not involve a significant reduction in the margin of safety.

Since NRC approval must be obtained prior to implementation, no unreviewed safety questions can exist.