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**PERRY NUCLEAR POWER PLANT**

April 2, 1990  
PY-CEI/NRR-1161 L

U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D. C. 20555

Perry Nuclear Power Plant  
Docket No. 50-440  
Supplemental Response to Notice  
of Deviation 50-440/89026-01

Gentlemen:

This letter provides supplemental response to the Notice of Deviation contained within Inspection Report 50-440/89026 dated December 15, 1989.

The request for the necessary supplemental information was discussed in detail at a meeting with Mr. Mark Ring and others of your staff on February 9, 1990. This information is provided in the attachment to this letter, with changes to the original response (reference our letter PY-CEI/NRR-1116 L, dated January 16, 1990) identified by revision bars in the right margin.

Please feel free to call if there are any additional questions.

Very truly yours,

Al Kaplan  
Vice President  
Nuclear Group

AK:njc

Attachment

cc: T. Colburn  
P. Hiland  
R.C. Knop - USNRC, Region III  
USNRC, Region III

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FDR ADOCK 05000440  
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50-440/89026-01  
Restatement of Deviation

Perry Nuclear Power Plant Updated Safety Analysis Report, Revision 1, dated March 1989, Section 9.2.2.3 stated that the Unit 2 emergency closed cooling system is used as the Seismic Category I backup cooling water supply to the fuel pool heat exchangers. Further it was stated that: (1) "The Unit 2 emergency closed cooling system will be available to provide fuel pool heat exchanger cooling water prior to Unit 1 refueling;" and (2) "Any time after the start of emergency closed cooling system operation, cooling may be restored to the fuel pool heat exchangers by remote-manual action from the control room."

Contrary to the above; (1) the Unit 2 emergency closed cooling system was not available to provide fuel pool heat exchanger cooling water prior to Unit 1 refueling, and (2) the system cross-connect from Unit 1 emergency service water (current Seismic Category I backup) was not capable of being placed in service by remote-manual action from the control room. As identified in System Operating Instructions (SOI)-G41, "Fuel Pool Cooling and Cleanup System," Revision 6, dated December 30, 1988, and SOI-P45/49, "Emergency Service Water and Screen Wash Systems," Revision 0, dated August 22, 1989, the method utilized to provide a backup Seismic Category I source of fuel pool heat exchanger cooling was expected to take 24 hours to implement. In addition, those instructions required the selected Unit 1 emergency service water loop to be drained in order to remove "blind flanges." Draining of the selected Unit 1 emergency service water loop would make that loop incapable of performing other intended safety functions.

Background and Reason for Deviation

The Perry Nuclear Power Plant was originally designed as a twin unit facility with specific support systems common to both operating units. For example, Unit 2 Emergency Closed Cooling (ECC) was intended to support the operation of Unit 2 as well as providing backup cooling water to the fuel pool heat exchangers during loss of normal cooling flow from the Nuclear Closed Cooling System. Prior to receipt of the Unit 1 Operating License in 1986, construction of Unit 2 was indefinitely postponed and the Unit 2 ECC System was not completed. Design changes were made to enable Unit 1 Emergency Service Water (ESW) to be cross-tied into Unit 2 heat loads so that a safety related source of cooling water was available for the fuel pool heat exchangers. Design calculations were performed to ensure that Unit 1 ESW could supply enough cooling water to the fuel pool heat exchangers while still maintaining flow through the normal flow paths. At that time, it was estimated that the Unit 2 ECC System would be completed before spent fuel was introduced into the pools in the Unit 1 first refuel outage (RFO-1). A change to the Perry Final Safety Analysis Report (FSAR) was processed in Amendment 17, effective March 6, 1985, that indicated the fuel pool heat exchanger cooling water would be supplied from Unit 1 ESW prior to Unit 2 operation.

Although all necessary evaluations regarding heat removal capabilities of the ESW system had been performed to support the decision to suspend construction of the Unit 2 ECC system, the original FSAR text which stated that the Unit 2 ECC system would be available to provide fuel pool heat exchanger cooling water prior to Unit 1 refueling was not deleted from the FSAR in Amendment 17 due to an oversight.

Commitments made in licensing documents and other regulatory correspondence are tracked by a computer based commitment tracking system (Perry Regulatory Information Management System (PRIMS)). Currently, procedures are in place to direct those responsible for such documents to enter commitments into PRIMS as the commitments are made. Additionally, a comprehensive effort was undertaken prior to plant licensing to review the FSAR, and ensure that all statements of commitment were properly identified for further tracking. During the efforts, apparently, the statement regarding the completion of Unit 2 ECC prior to Unit 1 refueling was not input to the system as required.

Prior to the first refueling outage, the database was searched for all commitments related to the outage, in order to properly schedule activities and ensure commitments were satisfied. As a result of the omissions mentioned above, the potential deviation went undetected.

Section 9.2.2 of the Updated Safety Analysis Report (USAR) provides a description of the Emergency Closed Cooling System which details the capability to restore fuel pool cooling from Unit 2 ECC by remote-manual action from the control room. This statement is not intended to imply that the alternate cooling systems will provide the same feature. Remote-manual action from the control room is not considered a design requirement for the alternate cooling supply to the fuel pool heat exchangers.

#### Corrective Actions Taken and Results Achieved

The present plant spent fuel pool heat loads were physically measured during RFO-1 to cause the fuel pool temperature to increase at a rate of 4 degrees Fahrenheit per day while fuel pool cooling and cleanup was out of service. Without alternate cooling measures, a loss of normal cooling would cause the normal spent pool temperatures (approximately 95 degrees F) to increase to the alarm setpoint (127 degrees F) in approximately eight days. Equipment operation is not affected until 150 degrees F is reached; this would occur in another five to six days. The total result is that it would take approximately 14 days, with no actions taken, for pool temperature to increase to consequential temperatures. As a function of fission product decay, the current heat input is even further reduced, providing an added measure of conservatism.



The transfer to Emergency Service Water System backup cooling, as described in System Operating Instructions (SOI-G41) "Fuel Pool Cooling and Cleanup System" and SOI-P45/49, "Emergency Service Water and Screen Wash Systems", involves draining the system to reverse spectacle flanges, and was demonstrated during the Startup Testing Program to take approximately 24 hours. Therefore, adequate time exists to implement the procedure prior to reaching excessive pool temperatures. Additionally, for the current conditions, adequate time exists to implement other alternate cooling measures (such as system bleed and feed, fill and drain or use of temporary external cooling systems) if conditions do not allow the 24 hour shutdown of the Unit 1 ESW System.

In order to correct the erroneous statement in the USAR, a change was processed and became effective in March, 1990. This change only removed the references to the Unit 1 refueling, since the initial refueling outage has already been completed. The change was not intended to replace the need for the additional evaluations discussed below.

#### Corrective Actions to Avoid Further Deviations

Corrective actions also included the calculation of a profile of heat generation from stored fuel versus time for the first four fuel load discharges. Followup engineering evaluation has identified that engineering design changes will be necessary to provide adequate backup cooling for the spent fuel pools after the second-cycle core offload. When completed this engineering evaluation will recommend the necessary engineering design and/or procedural modifications. As applicable, the necessary modifications will be developed and implemented on a schedule appropriate to support the second refueling outage. Additionally, the USAR will be modified to accurately represent plant configuration.

In order to ensure that the Safety Analysis Report accurately reflects plant design, and that other statements of commitment were not inadvertently overlooked, the USAR is being reviewed to identify all Unit 1 initial refueling outage commitments related to Unit 1-Unit 2 interface. This review is expected to confirm that the omission of this item from the commitment tracking system was an isolated occurrence.

#### Date When Corrective Actions Will Be Completed

The engineering evaluation to determine necessary modifications and the USAR review are expected to be completed by May 30, 1990. Upon completion, a supplemental response will be provided detailing the results of the evaluations and review activities. In addition, the proposed schedule for completion of additional necessary corrective actions will be provided at that time. It is currently expected that all corrective actions will be completed as necessary to support the second refueling outage, scheduled to begin approximately September 1990.