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Washington, DC 20555

Perry Nuclear Power Plant  
Docket No. 50-440  
Reply to a Notice of Violation

Ladies and Gentlemen:

Enclosed is the Perry Nuclear Power Plant staff's reply to the Notice of Violation contained in NRC Inspection Report 50-440/96-14, which was transmitted by letter dated January 29, 1997. The Notice of Violation involves a failure to conduct a risk assessment, as required by plant procedure, prior to taking equipment out of service. Additionally, as requested in your cover letter, a response is provided for the two unresolved items identified in the inspection report.

If you have questions or require additional information, please contact Mr. Henry L. Hegrat, Manager - Regulatory Affairs at (216) 280-5606.

Very truly yours,

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Enclosure

cc: NRC Region III Administrator  
NRC Resident Inspector  
NRC Project Manager

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## REPLY TO A NOTICE OF VIOLATION

### **Violation 96014-04**

#### Restatement of the Violation

10 CFR 50.65 (a)(3) requires, in part, that in performing monitoring and preventive maintenance activities, an assessment of the total plant equipment that is out of service should be taken into account to determine the overall effect on performance of safety functions.

Technical Specification 6.8.1 requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures or drawings.

Plant Administrative Procedure 0130, "On-Line-Schedule Development," Revision 1, Step 6.6.2, requires that risk assessments be performed for activities on Risk Significant Systems that are added before and after schedules are issued.

Contrary to the above, on August 20 and 21, 1996, the licensee performed a division 1 outage which removed residual heat removal train A, the division 1 emergency diesel generator, the control rod drive pump train B and the reactor core isolation cooling system without performing an adequate risk assessment for removing these SSCs from service.

#### Issue

In NRC Inspection Report No. 50-440/96-014(DRS), the NRC concluded that a violation of plant procedures occurred because of an unanalyzed configuration due to emergent work activities. Specifically, during a Divisional 1 outage, on August 20 and 21, 1996, the Control Rod Drive (CRD) pump and the Reactor Core Isolation Cooling (RCIC) pump were rendered unavailable as emergent work that was not accounted for in the outage schedule. The total effect of the emergent work activity on the risk significance of the divisional outage was not analyzed as required by Plant Administrative Procedure (PAP)-0130, "On-Line-Schedule Development."

Reason for the Violation

In July 1996, one week prior to the start of a division 1 on-line scheduled outage, CRD pump B was removed from service and made unavailable as an on-line emergent work activity. The Work Control Senior Reactor Operator (SRO) identified the activity as emergent work on a risk significant system, and as required by procedure PAP-0130, a routine risk assessment was requested from the On-Line Scheduler. The On-Line Scheduler consulted the Maintenance Rule database and determined that the CRD pump did not provide a risk significant function (i.e., the CRD pump does not affect reactor scram capability nor is it utilized in a station blackout event). According to PAP-0130, if the system is not listed in the database, there is a low risk impact and further review is not required. Therefore, no additional evaluation was performed and the CRD pump was released for the necessary corrective maintenance. However, the CRD pump was not carried forward on the next weeks preliminary On-Line Schedule (i.e., plan of the day schedule). Since this type of activity is routinely handled through verbal communications and the procedure does not require formal documentation, the risk determination/assessment was not documented by the plant staff.

On August 7, 1996, the division 1 outage On-Line Scheduled risk evaluation was performed by the Probabilistic Risk Assessment (PRA) engineer and documented as part of the On-Line Schedule. The PRA engineer determined the scheduled outage activity to be a risk level 3 category (i.e., a Core Damage Frequency (CDF) of  $7.7 \text{ E-}5$  per year), and documented the level 3 category determination on the On-Line Schedule cover. Additionally, the On-Line Schedule contained the risk evaluation results which were documented on a memorandum and attached as part of the On-Line Schedule package. This risk evaluation did not include the CRD pump which remained unavailable through the start of the division 1 outage on August 19, 1996, since the pump was not carried forward on the preliminary On-Line Schedule. The Work Control SRO and On-Line Scheduler performed a risk determination as a separate assessment according to the same logic used above after identifying that the CRD pump remained unavailable. The results of this determination was the same as stated above. There is no existing documentation of this risk assessment.

On August 21, 1996, at 1630 hours, during the division 1 on-line scheduled outage, the RCIC pump was declared inoperable while the CRD pump also remained unavailable. The control room Shift Supervisor identified the RCIC pump as emergent work which would affect the risk assessment of the outage and, therefore, notified the Work Control SRO and On-Line Scheduler in order to determine/assess the change in risk and determine what actions would be required. However, since the previous risk assessment determined that the CRD pump did not provide a risk significant function and, therefore, would not impact the risk category resulting from the RCIC unavailability, it was not necessary to consider the effects of the CRD pump unavailability.

The Work Control SRO responded, as required by procedure PAP-0130, and requested a routine risk determination/assessment from the On-Line Scheduler. The On-Line Scheduler consulted the Maintenance Rule database and identified that the RCIC pump provided a risk significant function. According to PAP-0130, if the activity (i.e., division 1 outage coincident with the RCIC pump unavailability) impacts the function of more than one risk significant system or train listed in the Maintenance Rule database, "further evaluation" is to be performed. Additional guidance is provided in the procedure for the On-Line Scheduler and Work Control SRO to obtain further evaluation. Since the activity was listed in the risk matrix as a pre-analyzed risk evaluation/determination, the On-Line Scheduler concluded that the activity was a level 2 risk category. The risk matrix pre-analyzed condition bounded the RCIC pump being made unavailable, coincident with the division 1 outage activity which included removing from service the Residual Heat Removal (RHR) train A, the Low Pressure Core Spray (LPCS) system, the Emergency Closed Cooling (ECC) train A, the Emergency Service Water (ESW) train A, and the division 1 Emergency Diesel Generator (EDG).

The Work Control SRO consulted with the Operations Superintendent, the Senior Operations Scheduler, and the On-Line Scheduler Supervisor to determine if compensatory actions were necessary. Therefore, as required by the procedure, the Work Control SRO determined that, based on the time allowed by Technical Specifications limiting the RCIC pump from being inoperable and the status of on-going scheduled outage work activity, the compensatory actions would be to expedite the corrective action and minimize the pump unavailable time. There were no other work activities affected as part of the compensatory action. This compensatory action would ensure heightened awareness by the appropriate plant personnel of the risk significant configuration and would ensure exiting the higher risk category in an expeditious manner.

Since the PRA engineer was not available at the time, no further evaluation was performed beyond the determination made from the risk matrix nor was it required at that step in the procedure. The Work Management and Operations staff were satisfied that the procedure identified and bounded the activity as a pre-analyzed condition. Therefore, the RCIC pump was allowed to be made unavailable to perform the required TS surveillances.

The cause of this violation was an inadequate procedure which did not provide clearly written guidance to Work Management or Operations personnel. It was unclear that the risk category was required to be annotated or documented on the schedule after the daily On-Line schedule was issued. The risk assessment that was performed was limited to an immediate risk determination made between Work Management and Operations personnel, and it was unclear if further risk evaluation was necessary beyond that already performed. However, the risk determination was conservative and would not have been adversely affected if the risk was further evaluated by the PRA engineer. Additionally, since the On-Line Schedule was already issued, it was unclear if the identified compensatory action needed to be reflected in the schedule. Since the RCIC pump unavailability occurred between On-Line-Schedule issuance times, the activity was not documented. Therefore, PAP-0130 is not clear that the emergent work activity needed further evaluation by the PRA engineer for accumulated effects or if the increased risk category and the identified compensatory action should have been communicated via the daily On-Line Schedule.

#### Corrective Steps Taken and Results Achieved

On October 10, 1996, interim guidance was provided to Work Management and Operations personnel; risk significant functions which become unavailable and were not previously identified in the On-Line Schedule will be further evaluated by the PRA engineer for the cumulative risk effect.

On February 26, 1997, the plant configuration of concern was again evaluated, and it was confirmed that a level 2 risk category existed at that time (i.e., CDF of  $1.12 \text{ E-}04$ ).

#### Corrective Steps That Will Be Taken To Avoid Further Violations

A separate risk assessment procedure will be developed in order to consolidate the guidance for the risk assessment process under one procedure. This improvement effort will provide clear guidance for processing both scheduled and unscheduled work activities and will also include appropriate guidance on the level of documentation required for these activities. Additionally, as an enhancement to the risk matrix, a new "top-logic" risk model will be incorporated into the procedure.



Date When Full Compliance Will Be Achieved

Full compliance was achieved on February 26 1997, with the performance of a risk assessment evaluation.

Additional Response Information

In NRC Inspection Report No. 50-440/96-014(DRS), the NRC identified two Unresolved Items (URIs), 96014-02(DRS) and 96014-05(DRS). URI 96014-02(DRS) documents an NRC concern that the expert panel's review and determination of risk significant system classifications lacked appropriate justification, and a potential existed for misclassification of risk significant functions. URI 96014-05(DRS) documents an NRC concern that the methodology used to establish reliability performance criteria to ensure that unacceptable equipment performance is monitored to established goals commensurate with safety. As requested in your cover letter, the following is a response for the two URIs identified in the inspection report.

URI 96014-02(DRS) issue is based on an NRC position stated in the inspection report which is not specifically supported by Nuclear Utilities Management And Resources Council (NUMARC) 93-01, Revision 0, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," nor in Regulatory Guide (RG) 1.160, Revision 1, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," in that, all three NUMARC 93-01 importance measures must be used to classify high risk significant functions. The NRC concluded that a potential misclassification of risk significant function exists. Additionally, the NRC identified examples where risk significant determinations lacked appropriate justification.

Perry plant staff has adequately implemented the guidance of NUMARC 93-01 and RG 1.160 for making risk significant determinations; however, we will clarify the risk determination methodology to include all three NUMARC importance measures where appropriate. The technical bases for determination of risk significance will be documented in the supporting PRA engineering calculations and in the expert panel's risk determination document. Additionally, the PRA staff and the maintenance rule expert panel will provide documented justification and/or clarification to address the other NRC concern where lack of appropriate justification was identified as specific examples in the inspection report. It is our intention that these enhancements will provide adequate stand alone documentation for risk significant determinations.

URI 96014-05(DRS) issue was related to a generic issue identified at the October 16, 1996, Nuclear Energy Institute (NEI) workshop. NUMARC 93-01 provides licensees guidance on using "functional failures" as a measure/parameter to meet reliability performance criteria. RG 1.160 endorses the NUMARC 93-01 document as acceptable guidance for implementation of the Maintenance Rule. During NRC Maintenance Rule Baseline Inspections, the NRC developed a position requiring licensees to establish a technical basis that linked the functional failure methodology to the PRA reliability assumptions.

Since this NRC position was not covered by specific guidance provided in NUMARC 93-01 nor RG 1.160, the Perry Maintenance Rule program did not establish this link. The Perry Maintenance Rule program assigned a selected number of "functional failures" per fuel cycle as the reliability performance criteria based on a qualitative assessment. Following the NEI workshop, the issue was self-identified and subsequently evaluated within our Corrective Action program. As a result of the evaluation, the PRA staff is presently revising the functional failure methodology to link the number of functional failures to the PRA reliability assumptions. This methodology will use the technical bases provided by Electric Power Research Institute (EPRI) Technical Bulletin 96-11-01, "Monitoring Reliability for the Maintenance Rule." NEI forwarded the EPRI resolution to the NRC, and although the NRC could not endorse the document, it was found to be a reasonable approach and considered it acceptable in an NRC Memorandum dated February 4, 1997, from Stewart L. Magruder to David B. Matthews. Perry will utilize the EPRI guidance and additional consideration will be given to making other appropriate changes for some highly reliable risk significant Structures, Systems, and Components (SSCs).

The following table identifies those actions which are considered to be regulatory commitments. Any other actions discussed in this document represent intended or planned actions, are described for the NRC's information, and are not regulatory commitments. Please notify the Manager-Regulatory Affairs at the Perry Nuclear Power Plant of any questions regarding this document or any associated regulatory commitments.

Commitment
<p>By August 7, 1997, a separate risk assessment procedure will be developed and the affected personnel trained in order to consolidate the guidance for the risk assessment process under one procedure. This improvement effort will provide clear guidance for processing both scheduled and unscheduled work activities and will also include appropriate guidance on the level of documentation required for these activities.</p>