

July 25, 2003

Mr. William R. Kanda  
Vice President - Nuclear, Perry  
FirstEnergy Nuclear Operating Company  
P. O. Box 97, A210  
10 Center Road  
Perry, OH 44081

SUBJECT: PERRY NUCLEAR POWER PLANT  
NRC INSPECTION REPORT 50-440/03-05

Dear Mr. Kanda:

On June 27, 2003, the NRC completed a team inspection at the Perry Nuclear Power Station. The enclosed report documents the inspection findings which were discussed on June 27 with T. Rausch and other members of your staff.

This inspection was an examination of activities conducted under your license as they relate to the identification and resolution of problems, compliance with the Commission's rules and regulations, and with the conditions of your operating license. Within these areas, the inspection involved selected examination of procedures and representative records, observations of activities, and interviews with personnel.

The team concluded that, in general, the licensee effectively identified, evaluated, and corrected plant problems. Generally, corrective actions were appropriate and were effective; however, a notable number of repetitive issues were identified indicating a need to be more aggressive in resolving issues. Plant staff willingness to identify safety issues supported a safety conscious work environment.

There were three Green findings identified during this inspection associated with the promptness and effectiveness of corrective actions. These issues were repetitive in nature involving multiple blown fuses on an emergency diesel generator fuel oil booster pump, fractures on a high pressure core spray system drain line, and weaknesses in contractor oversight. These findings were determined to be violations of NRC requirements. However, because of their very low safety significance and because they have been entered into your corrective action program, the NRC is treating them as Non-Cited Violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny this Non-Cited Violation, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Perry Nuclear Power Station.

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Sincerely,

*/RA/*

Mark Ring, Chief  
Branch 1  
Division of Reactor Projects

Docket No. 50-440  
License No. NPF-58

Enclosure: Inspection Report 50-440/03-05  
w/Attachment: Supplemental Information

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-440  
License No: NPF-58

Report No: 50-440/03-05

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Perry Nuclear Power Plant, Unit 1

Location: P.O. Box 97 A200  
Perry, OH 44081

Dates: June 9 through June 27, 2003

Inspectors: R. Lerch, Team Leader, Project Engineer  
J. Ellegood, Resident Inspector, Perry  
D. Jones, Reactor Inspector

Approved by: Mark A. Ring, Chief  
Branch 1  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000440-03-05; on 06/09/03-06/27/03; FirstEnergy Nuclear Operating Company; Perry Nuclear Power Plant; identification and resolution of problems.

The inspection was conducted by one resident inspector and two region-based inspectors. Three Green Non-Cited Violations (NCV) were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using NRC Inspection Manual Chapter 0609 "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### Identification and Resolution of Problems

The team concluded that, in general, the licensee effectively identified, evaluated, and corrected plant problems. Problem identification was determined to be effective based on the limited examples of missed issues the team identified. Licensee audits and assessments also identified issues similar to NRC observations. Generally, corrective actions were appropriate based on the identified causes and were effective; however, a notable number of repetitive issues were identified indicating need to be more aggressive in resolving issues. Plant staff willingness to identify safety issues, a user friendly condition report initiation process, and a low program threshold for initiating condition reports supported a safety conscious work environment.

#### A. NRC-Identified and Self-Revealing Findings

##### Cornerstone: Mitigating Systems

Green. An NCV, 50-440/03-05-01, was identified for failure to use an appropriate surveillance test procedure in accordance with 10 CFR 50, Appendix B, Criterion V. Condition reports documented four repetitive fuse failures for the Division 2 emergency diesel generator nonsafety-related fuel oil booster pump from July 16, 2002 to September 18, 2002. Although the booster pump is nonsafety related, it is utilized as part of the emergency diesel generator start and load surveillance (surveillance instruction SVI-R43-T1318) required by Technical Specifications (TS) 3.8.1. The surveillance was not appropriate due to inclusion of a nonsafety-related, unreliable piece of equipment since during those periods when the booster pump had failed, actual diesel start time may have been outside of TS limits. The surveillance had never been run without the booster pump to demonstrate that the diesel would pass if the booster pump tripped.

This issue is more than minor because if left uncorrected it could become a more significant safety concern. Because no failure occurred during a surveillance test or in use, this issue had very low safety significance. (Section 4OA2.b)

Green. A self-revealing NCV, 50-440/03-05-02, was identified for inadequate corrective action to preclude repetition of high pressure core spray (HPCS) drain line cracking in accordance with 10 CFR 50, Appendix B, Criterion XVI. On May 13, 2003, following

receipt of a high level sump alarm the licensee discovered a broken 3/4" HPCS drain valve on the test return line to the condensate storage tank. The broken valve sprayed water on equipment in the HPCS room which subsequently required drying and inspection. Prior to this failure, on January 11, 1998 and on April 19, 1999, the licensee had discovered and reworked the weld joint due to cracks and leakage.

This issue is more than minor because if left uncorrected it could become a more significant safety concern. Because the reactor was shut down at the time of the failure, this issue had very low safety significance. (Section 4OA2.c)

Green. The inspectors identified an NCV, 50-440/03-05-03, for failure to take corrective action as required by 10 CFR 50 Appendix B, Criterion XVI. Specifically, the licensee failed to take actions to correct deficiencies in contractor oversight which permitted contract personnel to err in ways that had the potential to adversely impact the safety of the site.

The finding is of very low safety significance because the specific items identified did not initiate an event nor result in the loss of function of a mitigating system. The inspectors determined that the violation was more than minor using guidance in Appendix B, of Inspection Manual Chapter 0612. The inspectors determined that the failure to correct this condition could reasonably be viewed as a precursor to a significant event and, in the case of local power range monitor configuration did affect the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. (Section 4OA2.c)

## **B. Licensee Identified Violations**

Violations of very low safety significance, which were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective actions are listed in Section 4OA7 of this report.

## Report Details

### **4. OTHER ACTIVITIES (OA)**

#### 4OA2 Problem Identification and Resolution

##### a. Problem Identification

##### (1) Inspection Scope

The inspectors reviewed inspection reports issued over the last 2 years, various condition reports (CR) and corrective action documents, industry operating experience documents, audits, and self-assessments in order to determine if problems were being identified at the proper threshold and entered into the corrective action process. The documents reviewed are listed in Attachment 1.

##### (2) Issues and Findings

The team concluded that the licensee was effectively identifying problems and entering them into the corrective action system. This was evidenced by the relatively few deficiencies identified that had not been previously identified by the licensee during the review period. Licensee assessments were conservative and identified issues similar to those that were self-revealing or identified by the team. No instances where conditions adverse to quality were being handled outside the corrective action program were identified. NRC inspectors have identified some examples of missed problem identification including the cross connection of emergency component cooling water with a nonsafety-related piping during chemical sampling, and work that left a fire barrier degraded in the high pressure core spray system equipment room. These were discussed in Inspection Report 50-440/03-03. In addition, a failure to recognize indications of a failing power supply is documented in Inspection Report 50-440/02-06.

More recently on May 7, 2003, the operator "at the controls" (ATC) left the operations area of the control room to obtain initials on a fuse replacement checklist. Another licensed operator, performing an emergency diesel generator surveillance run, responded to an expected alarm during the ATC operator's absence. When the designated operator ATC returned, the other operator informed him of his error; however, neither the Unit Supervisor nor the Shift Manager were informed of the absence until 16 hours later. Because of the delay in notification, prompt identification of the condition did not occur. This issue is further documented in Inspection Report 50-440/03-04 and in the Correction Action Program as CR 03-03032.

The licensee self-identified their failures to promptly identify and correct a main steam isolation valve (MSIV) packing leak, a potential water hammer in the Reactor Water Cleanup system and a recurring high temperature alarm for the drywell equipment sump. The licensee identified their weaknesses in evaluating material conditions in CR 02-03876. See Section 4OA7.



b. Prioritization and Evaluation of Issues

(1) Inspection Scope

The inspectors conducted an independent assessment of the prioritization and evaluation of a selected sample of CRs and associated corrective actions. The assessment included a review of the category assigned, the extent of repeated issues, and the appropriateness of the assigned corrective actions. The documents reviewed are listed in Attachment 1.

(2) Issues and Findings

Inspectors identified one NCV and several other examples of repetitive or longstanding issues that demonstrated an inadequate evaluation or a low priority. The failure of a HPCS pump to start was preceded by earlier opportunities to discover and correct an improper cell switch installation and this failure resulted in HPCS inoperability of sufficient length to constitute a White finding that was documented in Inspection Report 50-440/02-08. In another example, an abandoned sodium hypochlorite generation building was used as a paint facility in the year 2000. Although Condition Report 00-1976 stated this use was not appropriate, use of the building continued and additional audit findings in 2000 (CR 00-2544) and 2001 (CR 01-3187) were ineffective in curtailing use of the building. Finally, a third audit finding documented on CR 02-03548 resulted in cessation of painting activities in the building.

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Diesel Generator Fuel Oil Booster Pump Failures

Introduction. A Green NCV was identified for failure to use an appropriate surveillance test procedure in accordance with 10 CFR 50, Appendix B, Criterion V.

Description. Condition reports documented four repetitive fuse failures for the Division 2 emergency diesel generator (EDG) nonsafety-related fuel oil booster pump from July 16, 2002 to September 18, 2002. The inspectors reviewed the multiple corrective actions taken to address the pump's failure to start. Not only were these CRs ineffective at correcting the fuse problem, but the licensee failed to recognize that absence of this pump could adversely affect EDG start time. The booster pump is utilized during the emergency diesel generator start and load surveillance (surveillance instruction SVI-R43-T1318) required by Technical Specifications 3.8.1. The test procedure was not appropriate due to its inclusion of this nonsafety-related, unreliable piece of equipment (fuel oil booster pump) and the impact of the loss of the pump was not recognized by the licensee. Because of the lack of surveillance data to demonstrate operability of the EDG without the pump, the start time of the EDG during the pump's failures was unknown.

Analysis. Repeated fuse failures since July 2002 rendered the nonsafety-related booster pump as an unreliable piece of equipment. Despite the unreliability of the booster pump and its potential to affect DG start time, the pump remained part of the surveillance for the start and load of the emergency diesel generator. This issue is more than minor because if left uncorrected it could become a more significant safety concern. Because of the short duration of the fuel transfer pump failures and because no instances

occurred where the diesel failed to start, this issue had very low safety significance (Green).

Enforcement. 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, requires 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. Contrary to the above, the surveillance procedure, SVI-R43-T1318, was not appropriate to the circumstances due to inclusion of a nonsafety-related, unreliable piece of equipment (fuel oil booster pump) as part of the start and load surveillance. Failure to use an appropriate surveillance test procedure was a violation of Appendix B. This issue has been entered into the corrective action program as CR 03-03999. This violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy **(NCV 50-440/03-05-01)**.

#### Diesel Generator Air Compressor Thermal Overloads

The inspectors determined from review of condition reports that the diesel generator Division 2 air compressor thermal overload had tripped approximately 3 times since September 2002. Even though the air compressor was a nonsafety component, it was used as the source for starting air for the diesel generator. Subsequent problems with the desiccant towers on the redundant air compressor placed the plant in a condition where air recharge capability was significantly diminished. This issue was an example of inadequate prioritization and evaluation; however, it was a minor issue because the diesel generator Division 2 air compressor is nonsafety related and the air tanks were capable of holding enough air to start the diesel generator in an emergency situation. The licensee documented this issue in CRs 02-03359, 03-00372, and 03-01578.

#### Emergency Service Water Discharge Vacuum Breaker Failure

The inspectors determined from review of condition reports that the emergency service water (ESW) discharge vacuum breaker failed to close approximately 4 times since September 2001. During those periods when the vacuum breaker failed to close, some flow from ESW was directed from safety related loads to the floor of the ESW pump house. The ESW system was already in a flow constrained condition with little available margin to waste. This issue was an example of inadequate prioritization and evaluation; however, it was a minor issue because the system was always capable of supplying its design flow. The licensee documented the problem in CRs 01-3393, 01-342, 02-00568, and 03-00611.

#### c. Effectiveness of Corrective Action

##### (1) Inspection Scope

The inspectors reviewed past inspection results, selected CRs and associated corrective actions to evaluate the effectiveness of corrective actions. The inspectors focused on corrective action documents relating to repetitive issues. The documents reviewed are listed in Attachment 1.

(2) Issues and Findings

The inspectors identified two NCVs and other examples of minor issues where corrective actions were ineffective or untimely. The following examples showed ineffective use of the corrective action program to address repetitive problems and ineffective corrective actions:

High Pressure Core Spray Drain Valve Failure

Introduction. A Green self-revealing NCV was identified for inadequate corrective action to preclude repetition of high pressure core spray (HPCS) drain line cracking in accordance with 10 CFR 50, Appendix B, Criterion XVI.

Description. On May 13, 2003, following receipt of a high level sump alarm the licensee discovered a broken 3/4" HPCS drain valve on the test return line to the CST. The broken valve sprayed water on equipment in the HPCS room which subsequently required drying and inspection. Prior to this failure, on January 11, 1998, and on April 19, 1999, the licensee had discovered and reworked the weld joint due to cracks and leakage. During the May 13 event, the valve broke completely off and sprayed water through the HPCS room. The licensee created a root cause team (CR 03-03239, HPCS Drain Valve Appendage Failure Root Cause Team Charter, Rev. 0) to determine the root cause of the valve failure, identify the cause of the ineffectiveness of the previous corrective actions, and develop effective corrective actions to prevent recurrence. Investigation of the event revealed that the design of the drain valve and associated supports allowed for fatigue of the weld joint and the licensee modified the drain configuration to reduce the stress concentration at the weld. The changes included moving the drain line to a vertical orientation, reducing the length of the line, and decreasing the mass of the valve.

Analysis. Repeated failures (January 11, 1998, April 19, 1999, and May 13, 2003) of the HPCS drain line resulted in the repeated spraying with water of equipment in the HPCS room. This issue is more than minor because if left uncorrected it could become a more significant safety concern. The previous corrective actions were inadequate to address the effect of a nonsafety-related component failure on a safety-related system. Because the reactor was shut down at the time of the failure, this issue had very low safety significance (Green).

Enforcement. 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, requires that measures shall be established to assure that significant conditions adverse to quality are promptly identified and corrected and corrective action taken to preclude repetition. Contrary to the above, the repetitive cracking and eventual failure of the HPCS drain line represented inadequate corrective actions to address the vibration induced cracking. Failure to correct the causes for the HPCS drain line cracking from earlier occurrences on January 11, 1998 and April 19, 1999 was a violation of Appendix B. This issue has been entered into the corrective action program (CR 03-00090504), and this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy **(NCV 50-440/03-05-02)**.

## Outage Oversight of Contractors

Introduction. The inspectors identified a Green NCV for failure to take corrective action as required by 10 CFR 50 Appendix B, Criterion XVI. Specifically, the licensee failed to take actions to correct deficiencies in contractor oversight which permitted contract personnel to err in ways that had the potential to adversely impact the safety of the site.

Description. Throughout refueling outage 9, Perry experienced problems resulting from ineffective contractor oversight. One project that serves as a microcosm of the ineffectiveness at contractor oversight during the outage was the under vessel project. Early in the outage, the licensee identified that the contractor work force assigned to the undervessel work was significantly less experienced than expected. Despite this recognition, as the project managers and more senior contractors approached their radiological exposure limits, the less experienced contractors were permitted to work undervessel without supervision. On May 5, one of the project managers noted that six bolts were missing from one of the control rod drive mechanisms (CRDMs). This issue was discussed in report 50/440-0304. The subsequent root cause concluded that inadequate supervision of the undervessel work contributed to the condition. About a week after the licensee noted that one of the CRDMs had been unbolted, the licensee lost control of the configuration of the under vessel local power range monitor (LPRM) cables in part due to inadequate contractor oversight. In this case, the licensee failed to ensure that proper procedures were in use to maintain control of the cable configuration. Once discovered, the licensee reestablished configuration of the cables through a multi-day process to establish which end of the cable in the control room corresponded to which end of the cable undervessel. Had the loss of configuration not been detected, proper assignment of LPRMs to average power range monitors (APRMs) could not have been made. With improper assignment of LPRMs to APRMs, required radial and axial distribution of flux detection could not be maintained. In addition, LPRMs serve as inputs to computer algorithms that are used to determine proximity to thermal limits. Improper alignment would result in invalid thermal limit calculations.

In the licensee's outage critique for refueling outage 8, the licensee identified that "the management team failed to anticipate the impact of inexperienced nuclear workers and craft supervision on the Perry outage. Additionally, decisions made concerning contractor work scope and owner oversight need to be revisited prior to refueling outage 9...several activities experienced delays and suffered from poor workmanship and inadequate worker preparation...." Further, following restart from the refueling outage, several high profile issues manifested that further emphasized the need to improve contractor oversight. These issues included design flaws in the feed pump diffuser vanes and circulating water pump impellers, both of which required the plant to shutdown. The licensee recognized the need to improve contractor oversight and concluded that these improvements would be a key element for success in refueling outage 9. Despite this recognition, numerous problems in addition to those undervessel, occurred during refueling outage 9 that can be attributed to ineffective contractor oversight.

From the beginning of refueling outage 9, the licensee experienced difficulties with contractor performance that they attributed in part to ineffective contractor oversight. During the outage, the Operations Manager noted that the foreign material exclusion

(FME) controls used by contractors on the turbine project were not in compliance with licensee requirements. The extent of the non-compliances were such that the Operations Manager concluded a loss of FME integrity had occurred. In this case, contractor oversight had been ineffective in ensuring compliance with site programs. Shortly after the outage ended, a leak developed in the reactor water cleanup system. The licensee had devoted considerable resources to this system during the outage in order to correct existing, and preclude further, leaks of the system. Despite this, shortly after the plant returned to power operations, a leak developed on the reactor water cleanup system. Investigation of the leak identified that the leaking flange was under torqued. The licensee attributed this leak to poor workmanship on the part of the contractor staff.

Analysis. The finding is more than minor because, if left uncorrected, it could result in a more significant safety concern. The finding is of very low safety significance because the specific items identified did not initiate an event nor result in the loss of function of a mitigating system. The inspectors determined that the violation was more than minor using guidance in Appendix B, of Inspection Manual Chapter 0612. The inspectors determined that the failure to correct this condition could reasonably be viewed as a precursor to a significant event and, in the case of LPRM configuration did affect the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.

Enforcement. The performance deficiency associated with this event is a failure to take measures to correct conditions adverse to quality. Appendix B of 10 CFR Part 50, required, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to these requirements, despite identifying weakness in contractor oversight, the licensee failed to provide adequate oversight of contractor personnel during refueling outage 9, particularly with the undervessel project. This violation is being treated as an NCV **(NCV 50-440/03-05-03)** consistent with Section VI.A. of the NRC Enforcement Policy. This violation was entered in the licensee's corrective action system as CR 03-04048.

#### Operations Performance

Operations improvement: On February 17, 2002, the Operations Superintendent initiated a Condition Report to document Operations Section performance. The CR developed four corrective actions, none of which included substantial actions to improve Operations performance. One of the corrective actions, perform a self assessment of control room burden, generated a follow-on Condition Report, 02-04847, with 19 additional, and more substantiative corrective actions. However, the first of these actions did not occur until a almost year after the initial condition report was written and the final action is not scheduled for completion until December 2003.

#### Clearances

In refueling outage 8, the licensee experienced two clearance removal related errors with the potential to severely injure or kill operators. These events occurred about one week

apart and, were characterized as significant condition adverse to quality by the licensee. In the first event (CR 01-1027), a plant operator closed the power supply to a motor-operated valve while removing a clearance. An electrician went to the valve to perform work and detected 480V on his energization checks. On the second event (CR 01-1222), a work supervisor authorized removal of a clearance on the motor feedwater pump. When the operators were walking down the work prior to tag removal, they observed several workers still working on the pump. In both cases, significant injury was prevented by plant personnel exercising diligence prior to performing assigned work. In refueling outage 9, an event (CR 03-03707) similar to these occurred when a clearance removal was authorized with piping not installed. In this event, the operator noted that pipe was removed and did not remove the clearance. The inspectors concluded that the actions taken as a result of the refueling outage 8 events were not completely effective at preventing premature clearance authorization.

#### I&C errors

In February 2003, the licensee initiated an evaluation (CR 03-00530) to determine causal factors and implement corrective actions to address several personnel errors that had occurred. The corrective actions consisted of discussions and reminders with I&C staff and supervisors to increase awareness of job requirements. While I&C worked on the corrective actions, additional personnel errors occurred on March 20 and 22. Even though the licensee completed corrective actions on April 2, similar errors have persisted. For example, on April 26, a technician failed to recognize data was left outside the leave-as-is-zone. This error was found by a peer check. On May 9, 2003, the technicians placed a jumper across incorrect terminals, causing an alarm in the control. These and subsequent errors demonstrate that the actions to date have not been entirely effective at preventing recurrence; however, most were licensee identified and the inspectors concluded that all were minor in nature. The inspectors also identified that in August 2000, the licensee had written a Significant Condition Adverse to Quality Condition Report to document a human performance error involving I&C.

#### Other Issues

Measuring and test equipment used for reactor protection testing had been previously identified as inadequate; however, the equipment was used again when the selected corrective action of writing a memo to specify the proper M&TE was not sufficient to preclude recurrence. In 2003, operators recognized that a three-way ball valve in the offgas system was not human factored in its position indication. Although operators were trained on determining the position of the valve, they later improperly lined up this valve as documented in Condition Report 03-03726. In addition, corrective actions for the degraded fire barrier in the HPCS equipment room wall were not timely as documented in CRs 03-1484 and 03-1537.

#### d. Assessment of Safety-Conscious Work Environment

##### (1) Inspection Scope

During the inspection, the inspectors asked plant staff the type of questions that might indicate any unwillingness to raise safety questions. The types of questions that were

asked are listed in Appendix 1 to Inspection Procedure 71152, "Suggested Questions for Use in Discussions with Licensee Individuals Concerning PI&R Issues." The inspectors also discussed the implementation of the Employee Concerns Program with the Ombudsman.

(2) Issues and Findings

No significant findings were identified. Plant staff interviewed indicated a willingness to identify safety issues. The low threshold for initiating CRs, the increasing number of CRs, and management support for using the CR process observed during the daily management meeting also supported a safety conscious work environment. Inspectors observed employee access to computers and found that the corrective Action Process "Crest" software appeared easy to use and contained a tutorial section.

40A6 Meetings

Exit Meeting

The inspectors presented the inspection results to Mr. Rausch and other members of licensee management in an exit meeting on June 27, 2003. Licensee management acknowledged the findings presented and indicated that no proprietary information was provided to the inspectors.

40A7 Licensee Identified Violations

The following violation of very low safety significance was identified by the licensee and was a violation of NRC requirements which met the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

10 CFR 50, Appendix B, requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to these requirements, the licensee failed to promptly identify and correct an MSIV packing leak, a potential water hammer in the Reactor Water Cleanup system and a recurring high temperature alarm for the drywell equipment sump. The licensee identified their weaknesses in evaluating material conditions in CR 02-03876. This finding was of very low safety significance because in each instance the licensee identified the condition before a loss of safety function occurred.

## KEY POINTS OF CONTACT

### Licensee

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### NRC

R. Powell, Senior Resident Inspector, Perry



## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened and Closed

|                     |   |
|---------------------|---|
| 50-440/03-05-01 NCV | Failure to use an appropriate surveillance test procedure.                      |
| 50-440/03-05-02 NCV | Inadequate corrective action to preclude repetition of HPCS drain line cracking |
| 50-440/03-05-03 NCV | Inadequate oversight of contractor personnel                                    |

### LIST OF ACRONYMS USED

|       |   |
|-------|---|
| ADAMS | Agencywide Documents Access and Management System |
| APRM  | average power range monitor                       |
| ATC   | at the controls                                   |
| CFR   | Code of Federal Regulations                       |
| CR    | condition report                                  |
| CRDM  | control rod drive mechanism                       |
| ECC   | Emergency Core Cooling                            |
| EDG   | emergency diesel generator                        |
| ESW   | emergency service water                           |
| FENOC | FirstEnergy Nuclear Operating Company             |
| FME   | foreign material exclusion                        |
| GL    | Generic Letter                                    |
| HPCS  | high pressure core spray                          |
| LPRM  | local power range monitor                         |
| NCV   | non-cited violation                               |
| MSIV  | main steam isolation valve                        |
| NRC   | Nuclear Regulatory Commission                     |
| NRR   | Office of Nuclear Reactor Regulation              |
| PARS  | Publicly Available Records                        |
| SDP   | Significance Determination Process                |
| SRO   | Senior Reactor Operator                           |
| SVI   | surveillance instruction                          |
| TS    | Technical Specifications                          |

## LIST OF DOCUMENTS REVIEWED

The following is a list of licensee documents reviewed during the inspection, including documents prepared by others for the licensee. Inclusion of a document on this list does not imply that NRC inspectors reviewed the entire documents, but, rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. In addition, inclusion of a document on this list does not imply NRC acceptance of the document, unless specifically stated in the body of the inspection report.

### Condition Reports

|          |  |
|----------|--|
| 02-03541 | Outboard MSIV B packing leak should be Isolated                                  |
| 02-02640 | Annulus Atmosphere   |
| 02-00904 | Drywell Equipment Drain Sump Discharge High Temperature Alarm Received           |
| 02-03876 | Organizational Weaknesses in Evaluating Consequences of Material Conditions      |
| 02-03032 | Requirements of PAP-0126 Not Met for Section 6.0                                 |
| 02-01691 | Degraded fire Barrier  |
| 02-03359 | Div. 2 DG Air Compressor C0001B Thermal Overloads Tripping                       |
| 03-00372 | Request Engineering Review of R44 Thermal Overload Sizes Based on Test Results   |
| 03-01578 | Division 2 Starting Air Compressor Tripped Thermal Overloads. Repeat Issue       |
| 01-3393  | ESW B Discharge Vacuum Breaker Failed To Close Following Pump Start              |
| 01-3421  | HPCS ESW Discharge Vacuum Breaker Failed to Close Following Pump Start           |
| 02-00568 | ESW A Pump Vacuum Breaker 1P45F0502A Not Seating With Pump Running               |
| 03-00611 | ESW A Discharge Vacuum Breaker Failed To Close Following Pump Start              |
| 02-02340 | Div. 2 DG DC Fuel Oil Booster Pump Failed to Start During Weekly Test Per Rounds |
| 02-03357 | Blown Fuse, Repeat Occurrence  |
| 02-02892 | Repeated Blown Control Power Fuse on 1R45C003B (D.C. FOBP)                       |
| 03-00221 | From CR 02-02894: Division 2 DC Fuel Oil Booster Pump Fuse Failure               |
| 03-03239 | HPCS Drain Valve Broke Off   |
| 02-04847 | POS Human Performance/Work Activities and Workload Control Self-Assessment       |
| 02-00501 | Evaluation of Human Performance Trend in Operations Section                      |
| 01-1359  | MOV Breaker Placed in Closed Position without Workers Knowledge                  |

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| 03-03239 | HPCS Drain Valve Broke Off   |
| 01-1027  | Clearance Removal Discrepancy  |
| 01-1222  | Active Work on Equipment with no Clearance in Place  |
| 03-03707 | Work Group Released Clearance with Piping not Re-installed                                       |
| 03-00530 | APRM F Calibration Current Switch (S7) Found Out of Position                                     |
| 03-02470 | Data Written in As Left Section of SVI-C51T0029C That is out of LAIZ                             |
| 03-03075 | Error During SVI-B21-T1317B  |
| 03-03982 | Mis-Operation of Instrument and Control Valves During Performance of SVI-E12-T2001               |
| 03-01432 | Step Not Performed During SVI-C71T0039   |
| 03-01391 | Wrong Transmitter Adjusted   |
| 03-00363 | Dose Rate Alarm Received by Individual   |
| 03-00500 | LPRM's Bypassed in APRM C  |
| 03-00570 | Wrong M&TE Installed During Performance of SVI-P45-T2001   |
| 03-00748 | APRM H Meter Function Switch was Found Out of Position   |
| 00-2455  | During Performance of APRM Gain Adjustments for APRM A, the Incorrect Potentiometer was Adjusted |

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| 02-03357 | Blown Fuse, Repeat Occurrence  |
| 02-02892 | Repeated Blown Control Power Fuse on 1R45C003B (D.C. FOBP)                       |
| 03-00221 | From CR 02-02894: Division 2 DC Fuel Oil Booster Pump Fuse Failure               |
| 03-03239 | HPCS Drain Valve Broke Off   |
| 03-03999 | DG Fuel Oil Booster Pump Operability Requirement                                 |
| 03-03174 | Possible Loss of Configuration Control on New LPRM Connectors.                   |
| 03-02895 | LPRMs Failed Post Installation Testing.  |
| 03-02179 | Does Rates in Undervessel Area are Higher than Expected.                         |
| 03-03634 | RWCU HX 1G33B0002A Tube Side Inlet Flange Fasteners Found Under torqued.         |
| 03-02807 | Concerns with Undervessel Project.   |
| 03-03023 | Collective Significance of LPRM Problems in RFO9.                                |
| 03-02350 | Improper Reassembly of Both Recirc Pump Motors.                                  |
| 03-02371 | Turbine Project FME Controls are Not IAW NOP-WM-4001.                            |
| 01-1721  | Poor FME Program Implementation.   |
| 03-03253 | FME Concern: Foreign Material Found in G33-RWCU Heat Exchanger Drain Line        |
| 03-02930 | Poor Housekeeping and FME Controls.  |
| 03-03284 | FME Controls Lacking for N11-F0020A.   |
| 03-02916 | Potential Loss of FME Controls on Turbine Deck.                                  |

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| 02-02892 | Repeated Blown Control Power Fuse on 1R45C003B (D.C. FOBP)                              |
| 03-00221 | From CR 02-02894: Division 2 DC Fuel Oil Booster Pump Fuse Failure                      |
| 03-03239 | HPCS Drain Valve Broke Off  |
| 03-02480 | Ineffective Response to Condition Report 03-02371.                                      |
| 01-1519  | Collective Significance of Poor Workmanship Seen on Jobs Performed by Contractors.      |
| 01-0609  | Possible Foreign Material in Replacement HP Turbine Rotor.                              |
| 01-2827  | Damaged 2 <sup>nd</sup> Stage Diffuser Vanes-N27 Motor Feed Pump.                       |
| 01-2188  | Cracked Welds on 'B' Circulating Water Pump   |
| 03-02857 | CRDM 22-35 Fasteners not as Required.   |
| 03-02086 | Stop Work Order to Address Radiological Control Deficiencies During REFUELING OUTAGE 9. |
| 02-1037  | SVI B21-T0035D Failure  |

#### Procedures

|               |   |    |
|---------------|---|----|
| NOP-LP-2001   | Condition Report Process                          | 4  |
| NOBP-LP-2009  | FENOC CR Process Reference Guide                  | 00 |
| SVI-R43-T1318 | Diesel Generator Start and Load Division 2        | 8  |
| S0I-R45       | Division 1 and 2 Diesel Generator Fuel Oil System | 9  |

Miscellaneous Documents

Perry Nuclear Power Plant Refueling Outage and Critique

Self Assessment 622PIU2003 Corrective Action Effectiveness Evaluation

Change Management Plan for Revision of the CR Process