

December 12, 2000

Mr. John K. Wood  
Vice President - Nuclear  
FirstEnergy Nuclear Operating Company  
P. O. Box 97, A200  
Perry, OH 44081

SUBJECT: PERRY NUCLEAR POWER PLANT - NRC INSPECTION REPORT  
50-440/00-10(DRS)

Dear Mr. Wood:

On November 2, 2000, the NRC completed a fire protection triennial baseline inspection at the Perry Nuclear Power Plant. The enclosed report presents the results of that inspection which were discussed on November 2, 2000, with Mr. Neal L. Bonner and other members of your staff.

The inspection examined the effectiveness of activities conducted under your license as they related to implementation of your NRC approved Fire Protection Program. The inspection consisted of a selected examination of design drawings, calculations, analyses, procedures, audits, field walkdowns and interviews with personnel.

The team determined that, for the fire areas reviewed, Perry's fire protection program, systems structures and components were acceptable and capable of performing their intended functions.

Based on the results of this inspection, two issues of very low safety significance (one green and one no-color) were identified. The two issues were considered examples of a violation of the Perry Nuclear Power Plant Operating License and involved inadequate and untimely corrective actions. However, the violation was not cited due to the very low safety significance of the issues and because they have been entered into your corrective action program. The violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A of the Enforcement Policy. The NCV is described in the subject inspection report. If you contest the violation or severity level of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region III, 801 Warrenville Road, Lisle, Illinois 60532-1396, the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Perry Nuclear Power Plant.

In accordance with 10 CFR Part 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

*/RA/*

Ronald N. Gardner, Chief  
Electrical Engineering Branch  
Division of Reactor Safety

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

Enclosure: Inspection Report Number 50-440/00-10(DRS)

cc w/encl: B. Saunders, President - FENOC  
N. Bonner, Director, Nuclear  
Maintenance Department  
G. Dunn, Manager, Regulatory Affairs  
K. Ostrowski, Director, Nuclear  
Services Department  
T. Rausch, Director, Nuclear  
Engineering Department  
R. Schrauder, General Manager,  
Nuclear Power Plant Department  
A. Schriber, Chairman, Ohio Public  
Utilities Commission  
Ohio State Liaison Officer  
R. Owen, Ohio Department of Health

In accordance with 10 CFR Part 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,  
**/RA/**  
 Ronald N. Gardner, Chief,  
 Electrical Engineering Branch  
 Division of Reactor Safety

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

Enclosure: Inspection Report Number 50-440/00-10(DRS)

cc w/encl: B. Saunders, President - FENOC  
 N. Bonner, Director, Nuclear  
 Maintenance Department  
 G. Dunn, Manager, Regulatory Affairs  
 K. Ostrowski, Director, Nuclear  
 Services Department  
 T. Rausch, Director, Nuclear  
 Engineering Department  
 R. Schrauder, General Manager,  
 Nuclear Power Plant Department  
 A. Schriber, Chairman, Ohio Public  
 Utilities Commission  
 Ohio State Liaison Officer  
 R. Owen, Ohio Department of Health

ADAMS Distribution:

DFT  
 DVP1 (Project Mgr.)  
 J. Caldwell, RIII  
 G. Grant, RIII  
 B. Clayton, RIII  
 C. Ariano (hard copy)  
 DRPIII  
 DRSIII  
 PLB1  
 JRK1  
 BAH3

DOCUMENT NAME: C:\Per00-10drs.wpd

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	RIII	RIII	RIII		
NAME	ZFalevits:jb/sd	RGardner	TKozak		
DATE	12/11/00	12/11/00	12/12/00		

**OFFICIAL RECORD COPY**

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 50-440/00-10

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Perry Nuclear Power Plant, Unit 1

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

Dates: October 23 - November 2, 2000

Team Leader: Z. Falevits, Senior Reactor Inspector  
Electrical Engineering Branch

Inspectors: D. Chyu, Reactor Inspector  
Electrical Engineering Branch  
R. Langstaff, Reactor Inspector  
Mechanical Engineering Branch  
T. Wheeler, Contractor  
Sandia National Laboratories  
F. Wyant Contractor  
Sandia National Laboratories

Approved By: Mr. Ronald N. Gardner, Chief  
Electrical Engineering Branch  
Division of Reactor Safety

# NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas) reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

## Reactor Safety

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness

## Radiation Safety

- Occupational
- Public

## Safeguards

- Physical Protection

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.

## SUMMARY OF FINDINGS

IR 0500440-00-10(DRS), on 10/23 - 11/2/2000, First Energy Nuclear Operating Company, Perry Nuclear Power Plant. Fire Protection Triennial Baseline Inspection.

The inspection was a risk informed baseline triennial fire protection inspection of selected aspects of Perry's fire protection program. The inspection identified two very low safety significant issues (one green and one no-color) which were considered examples of a Non-Cited violation. The significance of the findings is indicated by their color (green, white, yellow, red) and was determined by the Significant Determination Process (SDP) using IMC 0609 "Significant Determination Process" (SDP). Findings for which the SDP does not apply are indicated by "no color" or by the severity level of applicable violation.

### **Cornerstones: Initiating Events and Mitigating Systems**

No color. The team identified that Attachment 2 of procedure ONI-P54, "Off-Normal Instruction - Fire," Revision 3, did not include potential fire impacts upon selected RHR valves in Room 1CC-3a and CC-2a, despite the fact that such potential impacts were identified in the safe shutdown capability report (SSCR). Failure to update procedure ONI-054, in a timely manner, to include information used to alert operators as to which components could be potentially impacted by a fire is considered a nonconforming condition and is an example of a violation of Perry's license condition (Section 1R05.1).

Green. The team determined that the licensee failed to promptly address extended inoperability of the control room subfloor CO<sub>2</sub> system. This was a violation of the facilities license condition. The CO<sub>2</sub> system inoperability resulted in an extended degradation of the manual fire fighting capability, one of the defense-in-depth elements for fire protection, for the control room (Section 1R05.12).

## Report Details

### Summary of Plant Status

During the on-site inspection period, Perry Nuclear Power Plant operated at or near full power.

#### **1. REACTOR SAFETY**

Cornerstones: Initiating Events and Mitigating Systems

#### 1R05 Fire Protection

The purpose of this inspection was to review the Perry Nuclear Power Plant's (PNPPs) Fire Protection Program (FPP) for selected risk significant areas. Emphasis was placed on verification that the post-fire safe shutdown capability and the fire protection features provided for ensuring that at least one post-fire safe shutdown success path was maintained free of fire damage. The inspection was performed in accordance with the Nuclear Regulatory Commission's (NRC's) new regulatory oversight process using a risk-informed approach for selecting the risk significant areas and attributes to be inspected. The inspection team and a RIII senior reactor analyst used the Perry Nuclear Power Plant, Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities to choose several risk significant areas for detailed inspection and review. The fire zones chosen for review during this inspection were:

- Fire Zone CC1 (Control Complex, Elevation 574')
- Fire Zone 1CC2a (Control Complex, NCC Pump Room, Elevation 599')
- Fire Zone 1CC3a (Division 2 Switchgear Room) and
- Fire Zone 1CC5a (Main Control Room (MCR))

For each of these fire zones, the team focused their inspection effort on the fire protection features, the systems and equipment necessary to achieve and maintain safe shutdown conditions, determination of licensee commitments, and changes to the FPP.

#### .1 Systems Required to Achieve and Maintain Post-fire Safe Shutdown

The guidelines established by Branch Technical Position (BTP) CMEB 9.5-1, Section C.5.b, "Safe Shutdown Capability," paragraph (1), required the licensee to provide fire protection features that were capable of limiting fire damage to structures, systems, and components (SSCs) important to safe shutdown. The SSCs that were necessary to achieve and maintain post-fire safe shutdown were required to be protected by fire protection features that were capable of limiting fire damage to the SSCs so that:

- One train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) is free of fire damage; and
- Systems necessary to achieve and maintain cold shutdown from either the control room or emergency control station(s) can be repaired within 72 hours.

#### General Description of Perry's Safe Shutdown Paths and Capability

Three redundant safe shutdown paths (A(1), A(2), and B) and one Alternative Safe Shutdown path are defined in the licensee's Safe Shutdown Capability Report (SSCR). The A paths are comprised of systems and components which are primarily powered off of Division 1 emergency electrical power, and the B path is comprised of systems and components which are primarily powered off of Division 2 emergency power. The safe shutdown analysis credits either one or both A paths for fires in which Division 2 cables are exposed to fire hazard and credits the B path for fires in which Division 1 cables are exposed to fire hazard. The Alternative Safe Shutdown path is predominantly a Division 1 powered path which is employed for fires which disable the main control room.

#### a. Inspection Scope

The team reviewed the licensee's performance goals necessary for achieving and maintaining post-fire safe shutdown conditions to determine whether the licensee's post-fire safe shutdown methodology properly identified the SSCs necessary to achieve and maintain post-fire safe shutdown conditions. The team focused on the following performance goals to ensure that at least one post-fire safe shutdown success path was available in the event of a fire in each of the selected fire zones: (1) Reactivity Control, (2) Reactor Coolant Makeup, (3) Reactor Heat Removal, (4) Process Monitoring, and (5) Support Functions.

The team examined the licensee's Safe Shutdown Equipment List (SSEL) to determine whether the components necessary for safe shutdown systems to accomplish their required shutdown functions were included in the SSEL. In addition, the team reviewed the safe shutdown systems' piping and instrumentation diagrams (P&IDs) to identify the components necessary for successful system operation, which included components that could cause flow diversion or system isolation. The team's review included relevant safe shutdown procedures.

#### b. Findings

The team determined that all the functions required to accomplish safe shutdown were addressed in the SSCR. The review of the safe shutdown equipment indicated that the systems identified in the SSCR were capable of achieving these functions. However, the team identified discrepancies between assumptions made in the Safe Shutdown Analysis, Safe Shutdown procedures and practices used by the plant operators, as follows:

Attachment 2 of procedure ONI-P54, "Off-Normal Instruction - Fire" Revision 3, contained a table in which operators are alerted, for each of several fire areas, as to



which components required to achieve safe shutdown could be potentially impacted by a fire. The team identified that Attachment 2 of the procedure did not include RHR suction valves E12-F006B and E12-F009 for Room 1CC-3a, and valves E12-F006A, E12-F006B, E12-F008, and E12-F009 for Room CC-2a as components which could be impacted by a fire, despite the fact that such potential impacts were identified in the SSCR. The team noted that the need to revise and correct procedure ONI-P54 was identified by the fire protection engineer in a February 18, 1998, memo to the design engineering supervisor. As of the end of this inspection, no action was taken to incorporate the required changes into the procedure.

The team determined that lack of accurate information on Attachment 2 could cause the reactor operators to misunderstand potential impacts on the safe-shutdown paths. Being unaware of potentially damaged components could increase the likelihood that the operators would initiate improper actions for achieving shutdown cooling, given the actual availability of various segments of the safe-shutdown path. An attempt by the operators to achieve safe-shut down through a path that is unavailable could ultimately lead to a failure to successfully achieve safe-shutdown.

Perry Nuclear Power Plant, Unit No. 1, facility operating license NPF-58 section C(6) states that the licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report, as amended, for the Perry Nuclear Power Plant. Section 9A.5, Position C.8 of the Final Safety Analysis Report, as amended, states, in part, that measures are established to ensure that conditions adverse to fire protection, such as failures, malfunctions, deficiencies, deviations, defective components, uncontrolled combustible material, and nonconformances are promptly identified, reported, and corrected.

Failure to update procedure ONI-054, in a timely manner, and include information used to alert operators as to which components could be potentially impacted by a fire is considered an example of a violation of Perry's license condition. However, because of very low safety significance of this item and because the licensee has included this item in their corrective action program (CR 00-3418), the license condition violation is being treated as an example of a Non-Cited Violation (NCV 50-40-00-010-01a)

## .2 Fire Protection of Safe Shutdown Capability

The guidelines established by BTP CMEB 9.5-1, Section C.5.b, "Safe Shutdown Capability," paragraphs (2).(a) and (3), required separation of cables and equipment and associated circuits of redundant trains by a fire barrier having a 3-hour rating. If the guidelines cannot be met, then alternative or dedicated shutdown capability and its associated circuits, independent of cables, systems or components in the area, room, or zone under consideration should be provided.

### a. Inspection Scope

For each of the selected fire areas, the team reviewed the licensee's safe shutdown analysis to ensure that at least one post-fire safe shutdown success path was available in the event of a fire. This included a review of manual actions required 11to achieve and maintain hot shutdown conditions and to make the necessary repairs to reach cold

shutdown within 72 hours. The team also reviewed procedures to verify that adequate direction was provided to operators to perform these manual actions. Factors, such as timing, access to the equipment, and the availability of procedures, were considered in the review.

The team also evaluated the adequacy of fire suppression and detection systems, fire area barriers, penetration seals, and fire doors to ensure that at least one train of safe shutdown equipment was free of fire damage. To do this, the team observed the material condition and configuration of the installed fire detection and suppression systems, fire barriers, and construction details and supporting fire tests for the installed fire barriers. In addition, the team reviewed license documentation, such as deviations, detector placement drawings, fire hose station drawings, carbon dioxide pre-operational test reports, smoke removal plans, fire hazard analysis reports, safe shutdown analysis, and National Fire Protection Association codes to verify that the fire barrier installations met license commitments.

b. Findings

No findings of significance were identified.

.3 Post-Fire Safe Shutdown Circuit Analysis

The guidelines established by BTP CMEB 9.5-1, Section C.5.b, "Safe Shutdown Capability," paragraph (1), required that SSCs important to safe shutdown be provided with fire protection features capable of limiting fire damage to ensure that one train of systems necessary to achieve and maintain hot shutdown conditions remained free of fire damage. Options for providing this level of fire protection were delineated in BTP CMEB 9.5-1, Section C.5.b, "Safe Shutdown Capability," paragraph (2).

Where the protection of systems whose function was required for hot shutdown did not satisfy BTP CMEB 9.5-1, Section C.5.b, paragraph (2), an alternative or dedicated shutdown capability and its associated circuits, was required to be provided that was independent of the cables, systems and components in the area. For such areas, BTP CMEB 9.5-1, Section C.5.c, "Alternative or Dedicated Shutdown Capability," paragraph (3), specifically required the alternative or dedicated shutdown capability to be physically and electrically independent of the specific fire areas and capable of accommodating post-fire conditions where offsite power was available and where offsite power was not available for 72 hours.

a. Inspection Scope

On a sample basis, the team investigated the adequacy of separation provided for the power and control cabling of redundant trains of shutdown equipment. This investigation focused on the cabling of selected components in systems important for safe shutdown. The team's review also included a sampling of components whose inadvertent operation due to fire may adversely affect post-fire safe-shutdown capability. The purpose of this review was to determine if a single exposure fire, in one of the fire areas selected for this inspection, could prevent the proper operation of both safe shutdown trains.

The team reviewed the licensee's fuse/breaker coordination analysis for the 4.16 kV and 480 Vac switchgears required for post-fire safe shutdown and the vital low-voltage AC and DC buses. The purpose of this review was to verify that selective coordination exists between branch circuit protective devices (fuses, breakers, relays, etc.) and the bus feeder breaker/fuse to ensure that in the event of a fire-induced short circuit, the fault is isolated before the feeder device trips. In addition, a review of the licensee's fuse replacement procedure was conducted to determine if adequate administrative controls exist to prevent the inadvertent substitution of incorrectly sized fuses in critical circuits.

b. Findings

No findings of significance were identified.

.4 Alternative Shutdown Capability

The guidelines established by BTP CMEB 9.5-1, Section C.5.b, "Safe Shutdown Capability," paragraph (1), required the licensee to provide fire protection features that were capable of limiting fire damage so that one train of systems necessary to achieve and maintain hot shutdown conditions remained free of fire damage. Specific design features for ensuring this capability, were provided in BTP CMEB 9.5-1, Section C.5.b, paragraph (2).

Where compliance with the separation criteria of BTP CMEB 9.5-1, Section C.5.b, paragraphs (1) and (2) could not be met, BTP CMEB 9.5-1, Section C.5.b, paragraph (3) and Section C.5.c, required an alternative or dedicated shutdown capability be provided that was independent of the specific fire area under consideration. Additionally, alternative or dedicated shutdown capability must be able to achieve and maintain hot standby conditions and achieve cold shutdown conditions within 72 hours and maintain cold shutdown conditions thereafter. During the post-fire safe shutdown, the reactor coolant process variables must remain within those predicted for a loss of normal ac power, and the fission product boundary integrity must not be affected (i.e., no fuel clad damage, rupture of any primary coolant boundary, or rupture of the containment boundary).

a. Inspection Scope

The team reviewed the licensee's performance goals necessary for achieving and maintaining post-fire safe shutdown conditions to determine whether the licensee's post-fire safe shutdown methodology properly identified the SSCs necessary to achieve and maintain post-fire safe shutdown conditions. The team focused on the five performance goals to ensure that at least one post-fire safe shutdown success path was available in the event of a fire in each of the selected fire zones.

The team reviewed the licensee's SSEL to determine whether the components necessary for safe shutdown systems to accomplish their required shutdown functions were included in the SSEL. In addition, the team reviewed the safe shutdown systems' piping and instrumentation diagrams (P&IDs) to identify the components necessary for

successful system operation, which included components that could cause flow diversion or system isolation. The teams' review also included the safe shutdown procedures.

b. Findings

No findings of significance were identified.

.5 Operational Implementation of Alternative Shutdown Capability

The guidelines established by BTP CMEB 9.5-1, Section C.5.c, "Alternative or Dedicated Shutdown Capability," paragraph (2).(d), required that the process monitoring function should be capable of providing direct readings of the process variables necessary to perform and control the above functions.

a. Inspection Scope

The team performed a walkdown of the actions defined in Procedure IOI-11, which was the procedure for performing a plant alternative shutdown from the remote shutdown panel and by manipulating equipment locally in the plant. The team verified that operators could reasonably be expected to perform the procedure actions within the identified applicable plant shutdown time requirements and that equipment labeling was consistent with the procedure.

The team's reviews of the adequacy of communications and emergency lighting associated with these procedures are documented in Sections .6 and .7 of this report.

b. Findings

No findings of significance were identified.

.6 Communications

The guidelines established by BTP CMEB 9.5-1, Section C.5.g, "Lighting and Communication," paragraph (4), required that a portable communications system should be provided for use by the fire brigade and other operations personnel required to achieve safe plant shutdown. This system should not interfere with the communications capabilities of the plant security force. Fixed repeaters installed to permit use of portable radio communication units should be protected from exposure fire damage.

a. Inspection Scope

The team verified that portable radios were staged at the remote shutdown panel for use by operations. The team verified that fixed repeaters for the fire brigade communications were installed and protected such that at least one repeater would be free of damage from an exposure fire damage.

b. Findings

No findings of significance were identified.

.7 Emergency Lighting

The guidelines established by BTP CMEB 9.5-1, Section C.5.g, "Lighting and Communication," paragraph (1), required that fixed self-contained lighting consisting of fluorescent or sealed-beam units with individual 8-hour minimum battery power supplies should be provided in areas that must be manned for safe shutdown and for access and egress routes to and from all fire areas.

a. Inspection Scope

The team performed a walkdown of the actions defined in Procedure IOI-11 and verified that sufficient emergency lighting existed for access and egress to areas and performing necessary operations. The team verified that testing of emergency lighting for the division 1 switchgear room and remote shutdown panel area ensured a minimum of 8-hours of emergency lighting.

b. Findings

No findings of significance were identified.

.8 Cold Shutdown Repairs

The guidelines established by BTP CMEB 9.5-1, Section C.5.c, "Alternative or Dedicated Shutdown Capability," paragraph (5), required that equipment and systems comprising the means to achieve and maintain cold shutdown conditions should not be damaged by fire; or the fire damage to such equipment and systems should be limited so that the systems can be made operable and cold shutdown achieved within 72 hours. Materials for such repairs shall be readily available onsite and procedures shall be in effect to implement such repairs.

a. Inspection Scope

The team reviewed licensee's procedures to determine if any repairs were required to achieve cold shutdown. The team determined that the licensee did require repair of some equipment to reach cold shutdown based on the safe shutdown methods used.

b. Findings

No findings of significance were identified.

.9 Fire Barriers and Fire Zone/Room Penetration Seals

a. Inspection Scope

The team reviewed the test reports for 1-hour rated barrier installed in the plant and performed visual inspection of selected barriers to ensure that the barrier installation was consistent with tested configuration.

b. Findings

No findings of significance were identified.

.10 Fire Protection Systems, Features and Equipment

The guidelines established by BTP CMEB 9.5-1, required that fire protection systems, features and equipment were designed in accordance with the following:

<b>Fire Protection Systems, Features and Equipment</b>	<b>BTP CMEB 9.5-1 Section</b>	<b>BTP CMEB 9.5-1 Title</b>
Fire Brigade Capabilities	C.3	Fire Brigade
Passive Fire Protection Features	C.5.a	Building Design
Fire Detection System	C.6.a	Fire Detection
Fire Suppression System	C.6.b	Fire Protection Water Supply Systems
	C.6.c	Water Sprinkler and Hose Standpipe Systems
Manual Fire Fighting Equipment	C.6.f and C.3	Portable Extinguishers and Fire Brigade

a. Inspection Scope

The team reviewed material condition, operations lineup, operational effectiveness and design of fire detection systems, fire suppression systems, manual fire fighting equipment, fire brigade capability, and passive fire protection features. The team reviewed deviations, detector placement drawings, fire hose stations drawings, carbon dioxide pre-operational test reports, and fire hazard analysis reports to ensure that selected fire detection systems, carbon dioxide system, portable fire extinguishers, and hose stations are installed in accordance with their design, and that their design is adequate given the current equipment layout and plant configuration.

b. Findings

No findings of significance were identified.

.11 Compensatory Measures

a. Inspection Scope

The team conducted a review to verify that adequate compensatory measures were put in place by the licensee for out-of-service, degraded or inoperable fire protection and post-fire safe shutdown equipment, systems, or features. The team also verified that short term compensatory measures were adequate to compensate for a degraded function or feature until appropriate corrective actions were taken.

b. Findings

Related findings are described in section .12 of this report.

.12 Identification and Resolution of Problems

The guidelines established by BTP CMEB 9.5-1, Section C.4, "Quality Assurance [QA] Program," paragraph h, required that measures should be established to ensure that conditions adverse to fire protection, such as failures, malfunctions, deficiencies, deviations, defective components, uncontrolled combustible material and nonconformance, are promptly identified, reported, and corrected.

a. Inspection Scope

The team reviewed the corrective action program procedures and samples of corrective action documents to verify that the licensee was identifying issues related to fire protection at an appropriate threshold and entering them in the corrective action program. The team reviewed selected samples of condition reports, work orders, design packages and fire protection system nonconformance documents.

b. Findings

Review of Control Room Subfloor - Carbon Dioxide System

The fire protection features for the PNPP included a carbon dioxide (CO<sub>2</sub>) system for the control room subfloor. The CO<sub>2</sub> system could be manually actuated by operators from the control room to provide fire suppression for cables routed in the control room subfloor. However, the team determined that the CO<sub>2</sub> system had been inoperable since December 29, 1999, due to a failed compressor for the system. The team noted that a potential problem with the CO<sub>2</sub> system was first identified September 27, 1999 (Repair Tag 72668). The system was subsequently declared inoperable on December 29, 1999. Troubleshooting work on the system was not performed until April 2000. Although the need for a replacement filter-dryer was identified in April 2000, replacement parts were not ordered until July 2000. At the time of this inspection, the system was still inoperable waiting for replacement parts.

The CO<sub>2</sub> system inoperability resulted in an extended degradation of the manual fire fighting capability, one of the defense-in-depth elements for fire protection, for the control room. As such, the issue met Phase 1 screening criteria of NRC Manual Chapter 0609, "Significance Determination Process," Appendix F, "Fire Protection." However, due to the potential ignition sources (equipment within the cabinets) in the control room being above the potential fuel sources (electrical cables within the control room subfloor cable ways), the team determined that a fire scenario within the subfloor area was not sufficiently credible for application of Phase 2 of the Significance Determination Process. Consequently, this finding is considered to be of very low safety significance (Green).

Perry Nuclear Power Plant, Unit No. 1, facility operating license NPF-58 section C(6) states that the licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report, as amended, for the Perry Nuclear Power Plant. Section 9A.5, Position C.8 of the Final Safety Analysis Report, as amended, states, in part, that measures are established to ensure that conditions adverse to fire protection, such as failures, malfunctions, deficiencies, deviations, defective components, uncontrolled combustible material, and nonconformances are promptly identified, reported, and corrected. The team determined that the licensee failed to promptly address extended inoperability of the control room subfloor CO<sub>2</sub> system and, as such, was a violation of the facilities license condition. However, because of the very low safety significance of this item and because the licensee has included this item in their corrective action program (CR 00-3363), this license condition violation is being treated as an example of a Non-Cited Violation (NCV 50-440-00-010-01b).

#### **4 OTHER ACTIVITIES**

##### **40A6 Management Meetings**

###### **Exit Meeting Summary**

The team presented the inspection results to Mr. Neal L Bonner, VP Alternate, and other members of licensee management at the exit meeting held on November 2, 2000. The licensee acknowledged the findings presented.

The team asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.



## PARTIAL LIST OF PERSONS CONTACTED

### Licensee

N. Bonner, Director, Nuclear Maintenance Department, Vice President Alternate  
B. Boles, Operations Manager  
S. Davis, Superintendent, Plant Operations  
G. Dunn, Manager, Regulatory Affairs  
J. Eck, Fire Protection Coordinator  
T. Lentz, Manager, Design Engineering  
B. Luthanen, Compliance Engineer  
M. Makar, DES, Fire Protection Engineer  
K. Ostrowski, Director, Nuclear Services Department  
D. Phillips, Manager, Plant Engineering  
T. Rausch, Director, Nuclear Engineering Department  
R. Swartz, Program Manager, Plant Operations  
R. Tanney, SRVR Elect, Design Engineering

### NRC

J. Grobe, Division Director, Division of Reactor Safety  
R. Gardner, Branch Chief, Electrical Engineering Branch  
C. Lipa, Senior Resident Inspector, Perry

## ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

50-440/00-010-01a	NCV	Failure to update procedure ONI-054 in a timely manner to include information used to alert operators about potential fire impacts upon RHR valves.
50-440/00-010-01b	NCV	Failure to promptly address extended inoperability of the Control Room CO <sub>2</sub> system.

### Closed

50-440/00-010-01a	NCV	Failure to update procedure ONI-054 in a timely manner to include information used to alert operators about potential fire impacts upon RHR valves.
50-440/00-010-01b	NCV	Failure to promptly address extended inoperability of the Control Room CO <sub>2</sub> system.

### Discussed

None

## LIST OF BASELINE PROCEDURES PERFORMED

The following procedure was used to perform the inspection during the report period. Documented findings are contained in the body of the report.

Number	Title	Inspection Procedure(s)
71111.05	Fire Protection	

## LIST OF ACRONYMS USED

ac	Alternating Current
BTP	Branch Technical Position
CFR	Code of Federal Regulations
CMEB	Chemical Engineering Branch
CO <sub>2</sub>	Carbon Dioxide
dc	Direct Current
CR	Condition Report
FPP	Fire Protection Program
FPR	Fire Protection Report
GL	Generic Letter
IN	Information Notice
IOI	Integrated Operating Instruction
IPEEE	Individual Plant Examination of External Events
MCR	Main Control Room
MOV	Motor Operated Valve
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory Commission
ONI	Off-Normal Instruction
RHR	Residual Heat Removal
RSP	Remote Shutdown Panel
PAP	Plant Administrative Procedure
PEI	Plant Emergency Instruction
PNPP	Perry Nuclear Power Plant
SDP	Significance Determination Process
SOI	System Operating Instruction
SRV	Safety Relief Valve
SSA	Safe Shutdown Analysis
SSCR	Safe Shutdown Capabilities Report
WO	Work Order

## LIST OF DOCUMENTS REVIEWED

### Calculation

C-1 "Licensee Response to Inspection Team Concern #1," Submitted to the Team on October 28, 2000  
Calc. P57-13 "Required Air Volume for ADS and MSIV Accumulators," Revision 2  
CEI EPGSAG-WS10 "RPV Variables," March 1, 2000  
CL-ECA-062 "Normal Operating Temperatures of Environmental Zones AB7 and TB1," Revision 1  
CR-686 Revision 0  
CR 00-0939 "Appendix "R" Fire Induced Loss of Water Leg Pumps," Revision 0  
CR-00-3418 "Fire Protection Inspection Exit Meeting Issues," Revision 0  
DCC 86062 B-1 "ADS Emergency Air Supply Capacity," July 7, 1991  
DCN-3358 "Temperature Data For Analysis of Zones AB7 and TB1," Revision 0  
DCP-920060 "Convert Valves OP42F0315A, B & C From MOVs to Manually Operated," Revision 0  
E31-C27 "NUMAC Leak Detection System Loop Accuracy Calculation for 1E31-N700A(B)," Revision 2  
EPG04-W510 "RPV Variables," Revision 2  
GE-NE-A2200084-57-01-R1 "Perry Nuclear Power Plant Asset Improvement Project, Task G1-57," Revision 1  
PCR-2000-0153 "Response to Condition Report #00-0939, June, 1, 2000  
P54-10, "Perry Nuclear Power Plant - Smoke Detectors," dated September 3, 1982  
P54-13, "Perry Nuclear Power Plant - Smoke Detectors Control Buildings," dated February 22, 1983  
SSC-015, "Availability of ESW Flow Indication with Fire Damage to P45 Circuits in Fire Zone CC-1a," dated February 1, 1996  
PRCV-0001, "120 VAC Fault and Coordination Study," dated 3/2/98  
PRDC-0002, "Unit One 125 Volt Direct Current System Coordination," dated 12/15/97  
PRLV-0001, "Fire Protection (Appendix R) Switchgear/MCC Protective Device Coordination," dated 3/15/00  
PRLV-0011, "480 Volt Buses EF-1-A, EF-1-B, EF-1-C and EF-1-D," dated 12/20/99  
PRMV-0002, "EHF-1-A Supply Breaker EH1104," dated 12/15/97  
PRMV-0007, "Extremely High Frequency 1-B Breaker EH1113," dated 12/23/97  
PRMV-0008, "Unit 1 EH Bus Supply Breakers, Preferred and Alternate," dated 9/14/00  
PRMV-0010, "EHF-1-C Transformer Supply Breaker EH1204," dated 12/23/97  
PRMV-0011, "EHF-1-D Transformer Supply Breaker EH1209," dated 12/23/97

### Drawings

B-022-0002 "Environmental Conditions Fore Auxiliary Building," Revision E  
B-022-0004 "Environmental Conditions Fore Auxiliary Building," Revision F  
B-022-0006 "Environmental Conditions Fore Auxiliary Building," Revision E  
D-302-001 "P&ID Symbology," Revision R  
D-302-002 "P&ID Symbology," Revision C  
D-302-102 "Condensate Transfer and Storage System," Revision GG  
D-302-212 "Service Water System," Revision RR  
D-302-214 "Screen Wash System," Revision P

D-302-271 "Safety Related Instrument Air System," Revision M  
 D-302-352 "Standby Diesel Generator, Fuel Oil System," Revision Y  
 D-302-354 "Standby Diesel Generator, Jacket Water," Revision P  
 D-302-602 "Reactor Water Recirculation System," Revision R.  
 D-302-605 "Nuclear Boiler System," Revision U  
 D-302-606 "Nuclear Boiler System," Revision DD  
 D-302-607 "Nuclear Boiler System," Revision M  
 D-302-621 "Emergency Closed Cooling System," Revision EE  
 D-302-622 "Emergency Closed Cooling System," Revision J  
 D-302-631 "Reactor Core Isolation Cooling System," Revision W  
 D-302-632 "Reactor Core Isolation Cooling System," Revision EE  
 D-302-641 "Residual Heat Removal System," Revision SS  
 D-302-642 "Residual Heat Removal System," Revision X  
 D-302-643 "Residual Heat Removal System," Revision KK  
 D-302-671 "Reactor Water Cleanup System," Revision W  
 D-302-672 "Reactor Water Cleanup System," Revision DD  
 D-302-687 "Suppression Pool Makeup System," Revision T  
 D-302-691 "Standby Liquid Control System," Revision T  
 D-302-701 "High Pressure Core Spray," Revision CC  
 D-302-705 "Low Pressure Core Spray," Revision W  
 D-302-791 "Emergency Service Water System," Revision GG  
 D-302-792 "Emergency Service Water System," Revision FF  
 D-302-871 "Control Rod Drive System," Revision Z  
 D-302-872 "Control Rod Drive System," Revision X  
 D-912-609 "MCC Switchgear and Misc. Electrical Equipment Areas, HVAC System and Battery Room Exhaust," Revision X  
 D-912-610 "Control Room HVAC and Emergency Recirculation System," Revision CC  
 D-912-616 "ECCS Pump Rooms Cooling Systems," Revision H  
 D-912-619 "Diesel Generator Building Ventilation System," Revision R  
 D-912-623 "Emergency Closed Cooling Pump Area Cooling System," Revision J  
 D-912 630 "Emergency Service Water Pump House Ventilation System," Revision K  
 D-913-001 "Control Complex Chilled Water," Revision BB  
 D-913-002 "Control Complex Chilled Water," Revision N  
 SS-304-631 "Piping Isometric, Reactor Core Insolation Cooling System, Auxiliary Building," Revision B  
 206-0010-00000, "Electrical Main One Line Diagram 13.8KV & 4.16KV," Revision Z  
 206-0017-00000, "Electrical One Line Diagram Class 1E 4.16KV Bus EH11 & EH12," Revision EE  
 206-0021-00000, "Electrical One Line Diagram Class 1E 480V Bus EF1A," Revision XXX  
 206-0023-00000, "Electrical One Line Diagram Class 1E 480V Bus EF1B," Revision KKK  
 206-0025-00000, "Electrical One Line Diagram Class 1E 480V Bus EF1C," Revision PPP  
 206-0027-00000, "Electrical One Line Diagram Class 1E 480V Bus EF1D," Revision NNN  
 206-0053-00000, "Electrical One Line Diagram Class 1E 120V AC Panels EB-1-A1, EK-1-A1," Revision HH  
 206-0054-00000, "Electrical One Line Diagram Class 1E 120V AC Panels EB-1, EK-1-B1 and EK-1-C1," Revision KK  
 D-206-051, "Electrical One Line Diagram Class 1E DC System," Revision ZZ  
 B-208-011, Sh. C04, "Automatic Depressurization System Power Distribution; Thermocouple Identification," Revision L

B-208-011, Sh. C05, "Automatic Depressurization System Relay Logic," Revision J  
 B-208-011, Sh. C06, "Automatic Depressurization System Relay Logic," Revision F  
 B-208-011, Sh. C07, "Automatic Depressurization System Relay Logic, Analog Circuits,"  
 Revision R  
 B-208-011, Sh. C08, "Automatic Depressurization System Relay Logic, Analog Circuits,"  
 Revision P  
 B-208-011, Sh. C09, "Automatic Depressurization System Relay Logic, Analog Circuits,"  
 Revision B B208-011, Sh. C10, "Automatic Depressurization System Relay Logic, Analog  
 Circuits," Revision K  
 B-208-011, Sh. C11, "Automatic Depressurization System ADS Valves," Revision K  
 B-208-011, Sh. C12, "Automatic Depressurization System ADS Valves," Revision P  
 B-208-011, Sh. C13, "Automatic Depressurization System Safety Relief Valves," Revision L  
 B-208-011, Sh. C14, "Automatic Depressurization System Safety Relief Valves," Revision K  
 B-208-011, Sh. C15, "Automatic Depressurization System Status Lights," Revision F  
 B-208-011, Sh. C17, "Automatic Depressurization System SRV Position Monitors," Revision J  
 B-208-011, Sh. C18, "Automatic Depressurization System Computer Inputs," Revision K  
 B-208-011, Sh. C19, "Automatic Depressurization System Computer Inputs," Revision K  
 208-0013-00021, "Nuclear Steam Supply Shutoff System RHR Suction Cooling Isolation  
 (Inboard) Valve 1E12-F009," Revision X  
 208-0013-00023, "Nuclear Steam Supply Shutoff System RHR Reactor Head Spray Isol Vlv  
 (Throttling) Outboard 1E12-F023," Revision U  
 208-0013-00026, "Nuclear Steam Supply Shutoff System RWCU Discharge Isolation Motor  
 Operated Valve 1G33-F001 (Inboard)," Revision X  
 208-0013-00027, "Nuclear Steam Supply Shutoff System Reactor Water Cleanup Discharge  
 Iso Mtr Operated Vlv 1G33-F004," Revision W  
 B-208-013, Sh. H22, "Nuclear Steam Supply Shutoff System - RHR Suction Cooling Isolation  
 Motor Operated Valve (Outboard) 1E12-F008," Revision S  
 208-0039-00001, "Remote Shutdown System Power Distribution Notes, References & Legend,"  
 Revision CC  
 208-0039-00002, "Remote Shutdown System Switch Development," Revision GG.  
 208-0039-00004, "Remote Shutdown System Division 2 Switch Development and Locations,"  
 Revision K  
 B-208-039, Sh. A03, "Remote Shutdown System Flow Control and Instrumentation,"  
 Revision R  
 B-208-039, Sh. A05, "Remote Shutdown System Division 1, Switch Developments and  
 Locations (NSSS)," Revision D  
 B-208-039, Sh. A100, "Remote Shutdown System Division 1, Switch Developments and  
 Locations (BOP)," Revision G  
 B-208-039, Sh. 200, "Remote Shutdown System Division 2 Instrumentation," Revision H  
 208-0046-00431, "Emergency Response Information System Digital Inputs to Cabinet 1H22-  
 P111B, Rack 1, Card Slot 5," Revision C  
 208-0046-00447, "Emergency Response Information System Digital Inputs to Cabinet 1H22-  
 P111B, Rack 1, Card Slot 10," Revision F  
 208-0046-00458, "Emergency Response Information System Digital Inputs to Cabinet 1H22-  
 P111B, Rack 2, Card Slot 7," Revision D  
 208-0046-00473, "Emergency Response Information System Digital Inputs to Cabinet 1H22-  
 P111B, Rack 2, Card Slot 16," Revision E  
 208-0046-00479, "Emergency Response Information System Digital Inputs to Cabinet 1H22-  
 P111B, Rack 3, Card Slot 8," Revision G

208-0046-00483, "Emergency Response Information System Digital Inputs to Cabinet 1H22-P111B, Rack 3, Card Slot 15," Revision C

208-0046-00500, "Emergency Response Information System Analog Inputs to Cabinet 1H22-P112A, Rack 2, Card Slot 7," Revision H

208-0046-00522, "Emergency Response Information System Digital Inputs to Cabinet 1H22-P112B, Rack 1, Card Slot 13," Revision E

208-0046-00560, "Emergency Response Information System Digital Inputs to Cabinet 1H22-P112B, Rack 2, Card Slot 12," Revision D

208-0046-00561, "Emergency Response Information System Digital Inputs to Cabinet 1H22-P112B, Rack 2, Card Slot 12," Revision H

208-0046-00562, "Emergency Response Information System Digital Inputs to Cabinet 1H22-P112B, Rack 2, Card Slot 14," Revision M

208-0046-00563, "Emergency Response Information System Digital Inputs to Cabinet 1H22-P112B, Rack 2, Card Slot 14," Revision D

208-0055-00007, "Residual Heat Removal System Relay Logic Bus A," Revision DD

208-0055-00008, "Residual Heat Removal System Relay Logic Bus 'B'," Revision BB

208-0055-00010, "Residual Heat Removal System Process Instrumentation," Revision BB

208-0055-00015, "Residual Heat Removal System Testability B," Revision U

208-0055-00022, "Residual Heat Removal System RHR Pump C002B Suction MOV F004B," Revision S

208-0055-00024, "Residual Heat Removal System Containment Spray Valve F028A," Revision V

208-0055-00025, "Residual Heat Removal System Containment Spray Valve - F028B," Revision V

208-0055-00028, "Residual Heat Removal System Shutdown Cooling Valve F006A," Revision U

208-0055-00029, "Residual Heat Removal System Shutdown Cooling Valve F006B," Revision W

208-0055-00038, "Residual Heat Removal System RHR Pump Minimum Flow MOV F064A," Revision S

208-0055-00045, "Residual Heat Removal System Shutdown Cooling Upper Pool MOV F037B (Throttle Valve)," Revision U

208-0055-00046, "Residual Heat Removal System Shutdown Cooling Injection MOV - F053A (Throttle Type)," Revision T

208-0055-00048, "Residual Heat Removal System Heat Exchanger - Shell Side Inlet MOV F047A," Revision N

208-0055-00049, "Residual Heat Removal System Heat Exchanger - Shell Side Inlet MOV F047B," Revision N

B-208-055, Sh. A17, "Residual Heat Removal System RHR Pump C002A," Revision U

B-208-055, Sh. A18, "Residual Heat Removal System RHR Pump C002B," Revision X

B-208-055, Sh. A19, "Residual Heat Removal System RHR Pump C002C," Revision V

B-208-055, Sh. A21, "Residual Heat Removal System RHR Pump C002A Suction MOV F004A," Revision R

B-208-055, Sh. A23, "Residual Heat Removal System RHR Pump C002C Suction MOV F105," Revision N

B-208-055, Sh. A30, "Residual Heat Removal System RHR 'A' Injection MOV F027A," Revision L

B-208-055, Sh. A31, "Residual Heat Removal System RHR 'B' Injection MOV F027B," Revision N



B-208-055, Sh. A33, "Residual Heat Removal System RHR Injection Valve F042B," Revision V  
 B-208-055, Sh. A34, "Residual Heat Removal System RHR Injection Valve F042C," Revision P  
 B-208-055, Sh. A35, "Residual Heat Removal System RHR 'A' Test Return MOV F024A,"  
 Revision V  
 B-208-055, Sh. A36, "Residual Heat Removal System RHR 'B' Test Return MOV F024B,"  
 Revision U  
 B-208-055, Sh. A37, "Residual Heat Removal System RHR 'C' Test Return MOV F021 (Throttle  
 Valve)," Revision N  
 B-208-055, Sh. A39, "Residual Heat Removal System RHR Pump Minimum Flow MOV F064B,"  
 Revision R  
 B-208-055, Sh. A40, "Residual Heat Removal System RHR Pump Minimum Flow MOV F064C,"  
 Revision P  
 B-208-055, Sh. A47, "Residual Heat Removal System Shutdown Cooling Injection MOV F053B  
 (Throttle Valve)," Revision R  
 B-208-055, Sh. A50, "Residual Heat Removal System Heat Exchanger-Shell Side Outlet MOV  
 F003A (Throttle Vlv.)," Revision T  
 B-208-055, Sh. A51, "Residual Heat Removal System Heat Exchanger-Shell Side Outlet MOV  
 F003B (Throttle Valve)," Revision S  
 B-208-055, Sh. A56, "Residual Heat Removal System Heat Exchanger-Shell Side Bypass MOV  
 F048A (Throttle Valve)," Revision R  
 B-208-055, Sh. A57, "Residual Heat Removal System Heat Exchanger-Shell Side Bypass MOV  
 F048B (Throttle Valve)," Revision N  
 208-0060-00010, "Low Pressure Core Spray System Minimum Flow to Suppression Pool MOV  
 F011," Revision N  
 B-208-060, Sh. A04, "Low Pressure Core Spray System Relay Logic & Testable Check Valve  
 F006," Revision Z  
 B-208-060, Sh. A06, "Low Pressure Core Spray System Testability Circuits," Revision X  
 B-208-060, Sh. A08, "Low Pressure Core Spray System LPCS Pump C001," Revision Y  
 B-208-060, Sh. A11, "Low Pressure Core Spray System LPCS Injection Shutoff MOV F005  
 (Throttle Type)," Revision L  
 B-208-060, Sh. A12, "Low Pressure Core Spray System Core Spray Pump Suction MOV F001,"  
 Revision K  
 B-208-060, Sh. A13, "Low Pressure Core Spray System Test Return to Suppression Pool MOV  
 F012 (Throttle Type)," Revision P  
 208-0070-00006, "Leak Detection System Valve Logic," Revision CC  
 208-0075-00004, "Reactor Core Isolation Cooling System Logic Circuit A," Revision FF  
 208-0075-00022, "Reactor Core Isolation Cooling System Turbine Exhaust to Suppression Pool  
 MOV F068," Revision U  
 208-0075-00024, "Reactor Core Iso Cooling System Stm Sply Line Iso Inbrd Valve F063,"  
 Revision AA  
 B-208-075, Sh. A05, "Reactor Core Isolation Cooling System Logic Circuits A and B,"  
 Revision W  
 B-208-075, Sh. A09, "Reactor Core Isolation Cooling System Testability Circuit," Revision BB  
 B-208-075, Sh. A10, "Reactor Core Isolation Cooling System Testability Circuits," Revision K  
 B-208-075, Sh. A11, "Reactor Core Isolation Cooling System Testability Circuits," Revision Z  
 B-208-075, Sh. A13, "Reactor Core Isolation Cooling System Stm Sply Iso Vlv F064 (Outbrd)  
 Throttling, Open Only," Revision U  
 B-208-075, Sh. A14, "Reactor Core Isolation Cooling System RCIC Injection Shutoff MOV  
 F013," Revision T

B-208-075, Sh. A15, "Reactor Core Isolation Cooling System Pump Suction from Condensation Storage Tank MOV F010," Revision N

B-208-075, Sh. A16, "Reactor Core Isolation Cooling System Minimum Flow to Suppression Pool MOV F019," Revision T

B-208-075, Sh. A17, "Reactor Core Isolation Cooling System Steam Admission Vlv to Turbine MOV F045," Revision V

B-208-075, Sh. A21, "Reactor Core Isolation Cooling System Pump Suction from Suppression Pool MOV F031," Revision W

B-208-075, Sh. A28, "Reactor Core Isolation Cooling System Vacuum Breaker Isolation MOV F078 (Inboard)," Revision P

B-208-173, Sh. 32, "ECC Temperature Control Electro-Hydraulic Actuator 1P42- F665A," Revision G

D-209-011, Sh. 1, "Automatic Depressurization System Terminal Box 1-323 and Safety Relief Valves," Revision G

D-209-011, Sh. 2, "Automatic Depressurization System Terminal Box 1-324 and Safety Relief Valves," Revision K

D-209-013, Sh. 16, "Nuclear Steam Supply Shutoff System (1H22-P027) Reactor Vessel Level and Pressure Instr Rack B," Revision L

D-209-035, Sh. 6, "Neutron Monitoring System Detector Drive (-) Splice Boxes," Revision A

D-209-035, Sh. 7, "Neutron Monitoring System Splice/Junction Box 1-3638," 209-0039-00002, "Remote Shutdown System (1C61-P001) Remote Shutdown Panel Section D," Revision R

209-0039-00004, "Remote Shutdown System (1C61-P001) Remote Shutdown Panel - Section B," Revision S

209-0039-00005, "Remote Shutdown System (1C61-P001) Remote Shutdown Panel - Section A," Revision W

209-0039-00006, "Remote Shutdown System (1C61-P001) Remote Shutdown Panel - Section A," Revision Y

D-209-039, Sh. 3, "Remote Shutdown System (1C61-P001) Remote Shutdown Panel - Section C," Revision V

D-209-039, Sh. 16, "Remote Shutdown Panel (1C61-P002) Redundant Remote Shutdown Panel," Revision M

209-0046-00026, "Emergency Response Information System (1H22-P111A) ERIS DAS Cabinet," Revision J

209-0046-00029, "Emergency Response Information System (1H22-P111B) ERIS DAS Cabinet," Revision K

209-0046-00030, "Emergency Response Information System (1H22-P111B) ERIS DAS Cabinet," Revision J.

209-0046-00031, "Emergency Response Information System (1H22-P111B) ERIS DAS Cabinet," Revision M

209-0046-00035, "Emergency Response Information System (1H22-P112A) ERIS DAS Cabinet," Revision R

209-0046-00036, "Emergency Response Information System (1H22-P112A) ERIS DAS Cabinet," Revision F

209-0046-00039, "Emergency Response Information System (1H22-P112B) ERIS DAS Cabinet," Revision N

D-209-046, Sh. 37, "Emergency Response Information System (1H22-P112B) ERIS DAS Cabinet," Revision L

D-209-049, Sh. 15, "Process Computer System (1C91-P614) AIT-7 Computer Analog Termination Cabinet," Revision H

D-209-049, Sh. 16, "Process Computer System (1C91-P614) AIT-8 Computer Analog Termination Cabinet," Revision J

209-0055-00001, "Residual Heat Removal System MOV's 1E12-F053A, F053B, F064A, F064B, F073A and F073B," Revision U

209-0055-00002, "Residual Heat Removal System MOV's 1E12-F064C, F105, F003A, 3B, F004A and 4B," Revision M

209-0055-00003, "Residual Heat Removal System MOV's 1E12-F006A, 6B, 11A, 11B, F021 and F024A," Revision L.

209-0055-00004, "Residual Heat Removal System MOV's 1E12-F024B, F026A and B, F042A and C and F047A," Revision M

209-0055-00005, "Residual Heat Removal System MOV's 1E12-F042B, 47B, 48B, 52A, and 52B," Revision N

209-0055-00006, "Residual Heat Removal System MOV's 1E12-F027A, F028A, F028B, F073B, F074A and F087A," Revision V

209-0055-00007, "Residual Heat Removal System MOV's 1E12-F008, 9, F027B, 87B, F537A and 537B," Revision L

209-0055-00009, "Residual Heat Removal System Process Instrumentation," Revision L

209-0055-00010, "Residual Heat Removal System (1H22-P018) RHR Instrument Panel A," Revision R

209-0055-00011, "Residual Heat Removal System (1H22-P021) RHR Instrument Panel B," Revision S.

209-0055-00013, "Residual Heat Removal System Terminal Boxes 1-296 and 1-297," Revision J

209-0055-00014, "Residual Heat Removal System Process Instrumentation," Revision M.

209-0055-00016, "Residual Heat Removal System Terminal Box 1-295 and MOV's 1E12-F023, F040 and F049," Revision R

209-0055-00016, "Residual Heat Removal System Terminal Box 1-295 and MOV's 1E12-F023, F040 and F049," Revision R

D-209-055, Sh. 08, "Residual Heat Removal System Thermocouples, Temp. Elements and Term Boxes," Revision K

D-209-055, Sh. 12, "Residual Heat Removal System (1H22-P055) RHR Instrument Panel C," Revision F

D-209-060, Sh. 001, "Low Pressure Core Spray System (1E21-F001, F005, F011, & F012)," Revision L

D-209-060, Sh. 3, "Low Pressure Core Spray System (1H22-P001) LPCS Instrument Rack," Revision E

209-0075-00001, "Reactor Core Isolation Cooling System (1E51-F076, F077, F078, F063, and F064) MOV's," Revision U

D-209-075, Sh. 2, "Reactor Core Isolation Cooling System (1E51-F010, F013, F019, F045 and F046) MOV's," Revision Y

D-209-075, Sh. 003, "Reactor Core Isolation Cooling System (1E51-F022, F068, F059, F510 and F031) MOV's," Revision U

D-209-075, Sh. 05, "Reactor Core Isolation Cooling System (1E51-F066) Solenoid Valve and Terminal Box 1-434," Revision M

D-209-075, Sh. 8, "Reactor Core Isolation Cooling System Terminal Box 1-431 and Logic Circuits A and B," Revision M

D-209-075, Sh. 9, "Reactor Core Isolation Cooling System (1H22-P017) Instrument Panel," Revision J

D-209-075, Sh. 10, "Reactor Core Isolation Cooling System Testability Circuits," Revision P

D-209-090, Sh. 3, "Reactor Water Cleanup System Nuclear Safety Related MOV,"  
Revision L

209-0100-00011, "PGCC Termination Cabinet 1H13-P701 Bay E," Revision U

209-0100-00018, "PGCC Termination Cabinet 1H13-P702 Bay B," Revision X

209-0100-00067, "PGCC Termination Cabinet 1H13-P710 Bay A," Revision W

209-0100-00113, "PGCC Termination Cabinet 1H13-P713 Bay B," Revision V

209-0100-00128, "PGCC Termination Cabinet 1H13-P714 Bay B," Revision R

209-0100-00129, "PGCC Termination Cabinet," Revision S

209-0100-00131, "PGCC Termination Cabinet 1H13-P714 Bay D," Revision P

209-0100-00138, "PGCC Termination Cabinet 1H13-P715 Bay A," Revision P

209-0100-00142, "PGCC Termination Cabinet 1H13-P715 Bay B," Revision T

209-0100-00143, "PGCC Termination Cabinet 1H13-P715 Bay B," Revision M

209-0100-00144, "PGCC Termination Cabinet 1H13-P715 Bay B," Revision T

D-209-100, Sh. 12, "PGCC Termination Cabinet 1H13-P701 Bay E," Revision S

D-209-100, Sh. 132, "PGCC Termination Cabinet 1H13-P714 Bay D," Revision T

D-209-100, Sh. 139, "PGCC Termination Cabinet 1H13-P715 Bay A," Revision U

D-209-100, Sh. 140, "PGCC Termination Cabinet 1H13-P715 Bay A," Revision R

D-209-100, Sh. 145, "PGCC Termination Cabinet 1H13-P715 Bay D," Revision U

D-209-100, Sh. 146, "PGCC Termination Cabinet 1H13-P715 Bay D," Revision U

D-209-173, Sh. 02, "Emergency Closed Cooling Valve -F665A and B, MOV -F315A and B, and  
Flow Switch -N360A, B, C," Revision N

D-209-206, Sh. 16, "Metalclad Switchgear (15 KV and 5 KV) (1R22-S007) Bus EH11  
Compartments 03, 04, and 05," Revision V

D-209-206, Sh. 18, "Metalclad Switchgear (15 KV and 5 KV) (1R22-S007) Bus EH11  
Compartments 09 and 10," Revision L

D-209-206, Sh. 28, "Metalclad Switchgear (15 KV and 5 KV) (1R22-S006) Bus EH12  
Compartments 01 and 02," Revision W

D-209-206, Sh. 30, "Metalclad Switchgear (15 KV and 5 KV) (1R22-S006) Bus EH12  
Compartments 06, 07, and 08," Revision S

D-209-206, Sh. 31, "Metalclad Switchgear (15 KV and 5 KV) (1R22-S006) Bus EH12  
Compartments 09, 10, and 11," Revision P

209-208-00252, "(1R24-S021) 480V MCC EF1B07 (Front View) Compartments A, E, and F,"  
Revision K

209-208-00253, "(1R24-S021) 480V MCC EF1B07 (Front View) Compartments B, C, and G,"  
Revision J

209-208-00254, "(1R24-S021) 480V MCC EF1B07 (Front View) Compartments D & H,"  
Revision E.

209-208-00255, "(1R24-S021) 480V MCC EF1B07 (Front View) Compartments J, K, N, and P,"  
Revision H

209-208-00256, "(1R24-S021) 480V MCC EF1B07 (Front View) Compartments L, M, R and S,"  
Revision R

209-208-00257, "(1R24-S021) 480V MCC EF1B07 (Front View) Compartments T, U, WI and  
X," Revision K

209-208-00258, "(1R24-S021) 480V MCC EF1B07 (Front View) Compartments V, W, Y and  
AA," Revision H

209-208-00259, "(1R24-S021) 480V MCC EF1B07 (Front View) Compartments BB, CC, FF and  
GG," Revision K

209-208-00260, "(1R24-S021) 480V MCC EF1B07 (Front View) Compartments DD, EE, HH,  
and JJ," Revision H

209-208-00298, "(1R24-S026) 480V MCC EF1D07 (Front View) Compartments A, B, E, and F," Revision L

209-208-00299, "(1R24-S026) 480V MCC EF1D07 (Front View) Compartments C and G," Revision F

209-208-00300, "(1R24-S026) 480V MCC EF1D07 (Front View) Compartments D and H," Revision M

209-208-00301, "(1R24-S026) 480V MCC EF1D07 (Front View) Compartments J, K, N and P," Revision K

209-208-00302, "(1R24-S026) 480V MCC EF1D07 (Front View) Compartments L, M, R and S," Revision N

209-208-00303, "(1R24-S026) 480V MCC EF1D07 (Front View) Compartments T, U, WI and X," Revision L

209-208-00304, "(1R24-S026) 480V MCC EF1D07 (Front View) Compartments V, W, Y and AA," Revision M

209-208-00305, "(1R24-S026) 480V MCC EF1D07 (Front View) Compartments BB, CC, FF and GG," Revision J

209-208-00306, "(1R24-S026) 480V MCC EF1D07 (Front View) Compartments DD, EE, HH and JJ," Revision K

209-208-00308, "(1R24-S026) 480V MCC EF1D07 (Front View) Compartments MM, NN, SS and TT," Revision G

D-209-208, Sh. 18, "(1R24-S018) 480V MCC EF1A07 (Front View) Compartments M, N, S, and T," Revision E

D-209-208, Sh. 19, "(1R24-S018) 480V MCC EF1A07 (Front View) Compartments U, V, Y and AA," Revision T

D-209-208, Sh. 389, "480V Motor Control Centers (1R24-S018, S021, and S023) Fuse Panels," Revision W

D-209-208, Sh. 390, "480V Motor Control Centers (1R24-S026) Fuse Panels," Revision N.

D-209-215, Sh. 30, "(1R42-S015) MCC 125V DC ED1A09 (Front View) Compartments B, C, E, and F," Revision K

D-209-215, Sh. 31, "(1R42-S015) MCC 125V DC ED1A09 (Front View) Compartments H, J, L, and M," Revision M

D-209-215, Sh. 32, "(1R42-S015) MCC 125V DC ED1A09 (Front View) Compartments P, R, U, and V," Revision K

209-0231-00002, "Containment Penetrations System (1R72-S003) Penetration, Revision CC

209-0231-00003, "Containment Penetrations System (1R72-S004) Penetration, Revision W

209-0231-00009, "Containment Penetration System (1R72-S008) Penetration, Revision N

209-0231-00043, "Containment Penetrations System (1R72-S020) Penetration, Revision Y

D-209-231, Sh. 6, "Containment Penetrations System (1R72-S007) Penetration," Revision L

D-209-231, Sh. 12, "Containment Penetrations System (1R72-S009) Penetration," Revision S

D-209-231, Sh. 13, "Containment Penetrations System (1R72-S009) Penetration," Revision P

D-209-231, Sh. 15, "Containment Penetrations System (1R72-S010) Penetration," Revision L

210-0100-00737, "Power Generation Control Complex (1H13-P601) Reactor Core Cooling - BB," Revision H

E-210-100, Sh. 877, "Power Generation Control Complex (1H13-P631) Div 2 - Automatic Depressurization Relay - VB," Revision D

D-214-005, "Electrical Conduit and Tray Separation Criteria," Revision M

215-0001-00001, "Electrical Conduit Layout Legend and General Notes," Revision KK

803-0055-0506B, "Power Supply Residual Heat Removal System 1R42-S014-05 (Sh. 3 of 6)," Revision A

803-0055-0507B, "Power Supply Residual Heat Removal System 1R42-S012-07 (Sh. 3 of 8)," Revision A

803-0060-00500, "Power Supply Residual Heat Removal 1R25-S014-17 (Sh. 1 of 2)," Revision A

SS-803-055, Sh. 002, "Residual Heat Removal System Suppression Pool Water Flow to Reactor 1E12-N052B," Revision C

SS-803-055, Sh. 009, "Residual Heat Removal System RHR Pump C002C Discharge 1E12-N055C," Revision C

SS-803-055, Sh. 506A, "Power Supply Residual Heat Removal System 1R42-S014-05 (Sh. 2 of 6)," Revision A

SS-803-055, Sh. 507A, "Power Supply Residual Heat Removal System 1R42-S012-07 (Sh. 2 of 8)," Revision A

SS-803-060, Sh. 001, "Low Pressure Core Spray System Pressure Permissive to Test Inj. Valve 1E21-N050," Revision E

SS-803-060, Sh. 002, "Low Pressure Core Spray System Main Pump C001 Discharge 1E21-N051," Revision D

SS-803-075, Sh. 003, "Reactor Core Isolation Cooling System RCIC Pump Discharge Flow 1E51-N051," Revision D

SS-803-075, Sh. 013, "Reactor Core Isolation Cooling System Condensate Storage Tank Water Level 1E51-N035A," Revision E

D-105-012, "Control Complex Floor Plan Elevation 599'-0"," Revision K

D-105-013, "Control Complex Floor Plan Elevation 620'-6"," Revision H

D-201-146, Sh 3, "Electrical Fire Barrier Details Tray and Conduit," Revision J

D-221-034, "Detector Spacing Elevation CC-620'-6"," Revision T

D-221-052, "Detector Spacing Elevation CC-654'-6"," Revision V

D-922-764, "Control Complex EL. 620'-6" - West," Revision F

D-105-015, "Control Complex EL 654'-6"," Revision H

D-922-765, "Control Complex EL. 620'-6" - East," Revision L

D-105-011, "Control Complex Floor Plan Elevation 574'-10"," Revision H

D-221-012, "Detector Spacing Elevation CC-574'-10"," Revision T

D-221-024, "Plant Security and Fire Protection conduit Layout Reactor Plant Auxiliary Plan Elevation 599'-0"," Revision H

Automatic Sprinkler Contract No. 17-937, Sh 294, "Control Complex 574'-10" Wet Pipe Sprinkler System," Revision 3

Automatic Sprinkler Contract No. 17-936, Sh 86, "Low Pressure Carbon Dioxide Fire Protection Systems Control Complex - Control Room Unit 1"

Automatic Sprinkler Contract No. 17-937, Sh 267, "Control Complex 574'-10" Elevation Wet Pipe Sprinkler System," Revision 4

Automatic Sprinkler Contract No. 17-936, Sh 41, "Control Complex Sprinkler Elevation 599'-0"

### Condition Reports

CR 96-3616, "Sprinkler Head Not Provided with a Water shield."

CR 98-1516, "Instruction PTI-P54-P0032 was not IAW PAP-0205 criteria," dated July 9, 1998

CR 98-1612, "PTI-P54-P032 Procedure Problem," dated July 25, 1998

CR 99-2624, "SD 119 Failure to Close," dated November 2, 1999

CR 00-0383, "Fire hose reel and carbon dioxide pilot valve blocked," dated February 7, 2000

CR 00-1863, "Door Impairment Deactivated Prior to being Closed," dated June 15, 2000

CR 00-2091, "Operability Determination Requested for Door CC511," dated July 12, 2000  
CR 00-2271, "CC to SB Swinging Door Needs to be Changed Out," dated July 27, 2000  
CR 00-2382, "Door C-511 Bottom Seal is Leaking," dated August 7, 2000  
CR 00-2770, "Motor Fire Pump Performance Below Degradation Curve," dated Sept. 8, 2000  
CR 00-2916, "Numerous Repairs Completed on Door CC511," dated September 25, 2000  
CR 00-3013, "Request to Eliminate Hourly Firewatch for FINN Team Office," dated Oct. 1, 2000

#### Condition Reports Initiated as a Result of the Inspection

CR 00-3360, "Changes to ONI-P54 Are Not Being Made in a Timely Manner," dated October 31, 2000  
CR 00-3363, "Excessive time taken to affect repairs to CO2 tank 0P54A0009," dated October 31, 2000  
CR 00-3366, "Remote Shutdown Room Equipment and Spare Parts Inventory," dated October 31, 2000  
CR 00-3370, "Fire Plan Instructions," dated November 1, 2000  
CR 00-3369, "Assess Current Format and Content of IOI-011," dated November 1, 2000

#### Procedures

PAP-1922, "Fire Zone OCC-3A, Unit 1 - Division 2 - 4.16KV and 480 V Switchgear and RPS, M/G Room 620'-6" Elevation," Revision 1  
PAP-1922, "Fire Zone OCC-1A, Emergency Closed Cooling B 574' - 10" Elevation," Revision 1  
PAP-1922, "Fire Zone OCC-1B, Emergency closed Cooling A 574' - 10" Elevation," Revision 1  
PAP-1922, "Fire Zone OCC01C, Controlled Complex Chilled Water System 574' - 10" Elevation," Revision 1  
PAP-1922, "Fire Zone OCC-2A, NCC Pumps/Heat Exchangers 599' Elevation East," Revision 1  
PAP-1922, "Fire Zone 1CC-5A, Unit 1 Control Room 654'-6" Elevation," Revision 1  
PTI-P54-P0036, "Diesel and Electric Fire Pumps Flow Data and Control Panel Functional Test," Revision 5  
IOI-4, "Shutdown," Revision 5  
IOI-11, "Shutdown From Outside Control Room," Revision 6  
ONI-C61, "Evacuation of the Control Room (Unit 1)," Revision 2  
ONI-P54, "Fire," Revision 3  
PAP-1914, "Fire Protection System Operability," Revision 5  
PEI-B13, "Emergency Depressurization," Revision F  
PEI-B13, "RPV Control (Non-ATWS)," Revision F  
PEI-T23, "Containment Control," Revision F  
SOI-C61, "Remote Shutdown System," Revision 1  
SOI-E12, "Residual Heat Removal System," Revision 9  
ARI-H13-P601-21, "RCIC and LPCS," Revision 4  
NEI-0330, "Interface Reviews and Evaluations," Revision 5  
NEI-0373, "Engineering Change Packages," Revision 3  
ONI-E12-2, "Loss of Decay Heat Removal," Revision 4  
PAP-0201, "Conduct of Operations," Revision 9.  
PAP-0309, "Configuration Change Processes," Revision 4  
PAP-1402, "Temporary Modification Control," Revision 10  
SOI-E31, "Leak Detection System," Revision 5

SOI-E51, "Reactor Core Isolation Cooling System," Revision 7  
SOI-R43, "Division 1 and 2 Diesel Generator System," Revision 8.  
VLI-P35, "Reactor Plant Sampling System (Unit 1)," Revision 2

### Pre Fire Plans

Fire Zone 0CC-1A, "Emergency Closed Cooling A, 574'-10" Elev.," Revision 1  
Fire Zone 0CC-1B, "Emergency Closed Cooling B, 574'-10" Elev.," Revision 1  
Fire Zone 0CC-1C, "Emergency Closed Cooling C, 574'-10" Elev.," Revision 1  
Fire Zone 0CC-2A, "NCC Pumps/Heat Exchangers, 599' Elev. East," Revision 1  
Fire Zone 1CC-3A, "Unit 1 - Div. 2 - 4.16 kV and 480V Switchgear & RPS, M/G Room, 620'-6" Elev.," Revision 1  
Fire Zone 1CC-5A, "Unit 1 Control Room, 654'-6" Elev.," Revision 1

### Work Orders

99-008245-000, "Surveillance PTI-R71P0004 Self-Contained Emergency Lighting Unit Discharge," completed May 31, 2000  
99-016609-000, "Fire Doors Stay Open During Windy Conditions," completed November 4, 1999  
99-018593-000, "Surveillance SVI-C61T1104 Accident Monitoring and Remote Shutdown Chann." completed October 29, 2000  
00-0619, "Troubleshooting of C.R. and computer room subfloor CO<sub>2</sub> system," initiated January 27, 2000

### Miscellaneous Documents

"Safe Shutdown Capability Report (SSCR)," July 20, 1990  
"Supplemental Safety Evaluation Report #3," Section 9.5.1.4.2,  
"Perry Nuclear Power Plant Updated Safety Analysis Report (USAR),"  
"Perry Nuclear Power Plant Individual Plant External Event Evaluation," June, 1996  
Perry Safety Evaluation Report (SER), Section 9.5, dated May 1982; Supplement 1, dated August 1982; Supplement 2, dated January 1983; Supplement 3, dated April 1983; Supplement 4, dated February 1984; Supplement 5, dated February 1985; Supplement 7, dated November 1985; Supplement 8, dated January 1986; and Supplement 10, dated September 1986  
National Fire Protection Association (NFPA) 12, "Carbon dioxide Systems," 1972  
NFPA 13, "Sprinkler Systems, Installation," 1972  
NFPA 72E, "Automatic Fire Detectors," 1974  
USAR Section 9.5  
USAR Section 9A.7  
Peak Seals Incorporated - Fire Endurance Test of 3M Interam Mat Fire Protective Envelopes, dated September 18, 1995  
DCP 98-0024, "Elimination of Steam Condensing Mode"  
I99-CC-0386, "CO<sub>2</sub> Tank #9 0P54-A009 to C.R. Subfloor and Process Computer Room," dated December 29, 1999  
2000-0181, "IOI-11 still references the steam condensing mode of RHR," dated May 17, 2000  
Letter to Edelman, Cleveland Electric Illuminating Company, from Bernero, NRC, "Issuance of Facility Operating License NPF-58 Perry Nuclear Power Plant, Unit No. 1," dated November 13, 1986